

February 2012

# Three Kings Quarry Management Plan

This Quarry Management Plan (QMP) has been developed by Winstone Aggregates in consultation with the community representatives and the Auckland Council.



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**Text Revised ~~September 2011~~ **February 2012****

**Drawings and Appendices Updated and Added ~~May 2008~~ **February 2012****

## Preamble

- (a) While quarrying is a permitted activity at the existing Three Kings Quarry site, it was agreed by consent between South Epsom Planning Group Inc. and Winstone Aggregates (referred to as Winstone from herein) and the **former** Auckland City Council (referred to as **ACC AC** from herein) that a management plan for the operation of the quarry should be developed by the quarry operator in consultation with the Site Liaison Group (referred to as SLG from herein). This agreement was confirmed by consent order of the Environment Court.
- (b) The SLG was established by Winstone, **ACC AC** and representatives of the local community to provide a forum where such matters can be discussed with a view to the resolution of issues raised and to achieve ongoing good relations and mutual trust between the quarry operator and the local community.
- (c) This management plan will address the same matters as required by rule 8.7.4.2 of the City of Auckland - District Plan, Isthmus Section, Operative 1999 (referred to as the District Plan from herein), for a controlled activity application for quarrying on land which was not zoned for quarrying purposes in previous district plans. It will also address procedures for continued consultation and liaison with community interests while also describing the existing quarry operations and any proposed changes to these **(i.e. the commencement of the rehabilitation of the site)**.
- (d) Winstone will operate its Three Kings Quarry in accordance with this management plan.
- (e) All future owners of the Three Kings Quarry currently owned by Winstone Aggregates will be informed of this QMP and that this site is operated in accordance with this document.

Note - This version of the QMP reflects changes that have occurred since the version September 2001. These changes are to: various aspects of the quarry operation; ~~to the regional consents,~~ **requirements of the recent Environment Court decision authorising rehabilitation of the site; sale of imported aggregate;** ~~authorizing activities within the Auckland Regional Council's jurisdiction;~~ and to Winstone's management structure and procedures.

~~Winstone has also commenced a process of consultation relating to pending applications for the necessary resource consents to commence managed fill and rehabilitation of the quarry site. Should consents be granted a further revision of the QMP will most likely be required to reflect operational and regulatory (consent conditions) changes.~~

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## 1. General Introduction

### 1.1 Background to the QMP

- (a) Quarrying is a permitted activity on the Winstone Three Kings Quarry site. The operator of this quarry together with ACC AC and representatives of the local community have established the SLG. The purpose of this group is to consult on an ongoing and regular basis about matters associated with the operation of the quarry site where they affect the community and are of mutual interest to the representative parties.
- (b) The objective of the SLG is to provide a forum where such matters can be discussed with a view to the resolution of issues raised and to achieve ongoing good relations and mutual trust between the quarry site operator and the local community. The background to this QMP is set out in part 8.7.4.1 and 8.7.4.2 of the District Plan, as follows:

*“While quarrying at the existing quarry is a permitted activity, a management plan for the operation of the quarry is being developed by the quarry operator in consultation with the Site Liaison Group. The management plan will address the same matters as required by Rule 8.7.4.2 for a controlled activity application for quarrying on land which was not zoned for quarrying purposes in previous district plans.”*

*The management plan shall generally address the following matters:*

- *Identification of the area to be quarried.*
- *A description of existing site contours.*
- *An indication of final contours and floor levels resulting from excavation including proposals for the co-ordination of final levels with adjacent land.*
- *A general description of the proposed operations and changes to the operations of any existing quarry on adjoining land.*
- *An indication of the areas used for processing, stockpiling and distribution of quarried material.*
- *Details of any ~~Regional Council~~ resource consents for water management.*
- *Effects on Council drainage system.*
- *Proposals to avoid, remedy or mitigate adverse effects of quarrying and to comply with development controls in relation to:*
  - *Traffic;*
  - *Dust;*
  - *Noise;*
  - *Ground Vibration.*
- *Proposals including screen planting and mounding to avoid, remedy or mitigate adverse visual effects of quarrying on residential activity.*
- *Proposals for progressive rehabilitation before quarrying ceases.*
- *Rehabilitation Objectives and possible techniques and an indication of the range of potential activities which could utilise the quarry when extraction is complete.*

*“In addition to those matters, the management plan will also address procedures for continued consultation and liaison with community interests and it will describe the existing*

*quarrying operations and any proposed changes to these. Changes to the management plan which will change the effects of quarrying beyond the boundary shall only be made after consultation with the Site Liaison Group. The quarry operator has agreed to operate in accordance with this management plan."*

- (c) Resource Consent for the rehabilitation of the site was granted by the Environment Court in July 2011. This QMP has been revised to include the operations associated with filling and sale of imported aggregated, in addition to the quarry activities. This clause is detailed in Advice Note 16 of the rehabilitation consent which states:

*"The Consent Holder is advised that in accordance with the existing Quarry Management plan and the provisions of the District Plan at clauses 8.7.4.1 and 8.7.4.2, that prior to the commencement of fill operations the Quarry management Plan is required to be amended, in consultation with the Site Liaison Group, to include the filling and sale of imported aggregated activities."*

- (d) (e) The purpose of this ~~quarry management~~ plan is to set out objectives and measures to maintain and enhance environmental performance of Winstone's Three Kings Quarry while avoiding, remedying and mitigating adverse environmental effects. These objectives and measures will be set in accordance with the Company's Vision of delivering ~~"Economic Growth through Sustainable Practices"~~ *"Market Leadership for the next 50 years through sustainable practices"* and the Company's principles and policies of ~~the Environmental Policy which the most relevant to this plan are~~ attached in Appendix 1.

### **1.1. Changes or amendments to the QMP**

- (a) Changes to the QMP which will change the effects of quarrying beyond the boundary shall only be made after consultation with the SLG.
- (b) A review of the QMP shall be made every two years by Winstone. Any changes identified from this review that will change the effects of quarrying beyond the boundary shall only be made after consultation with the SLG. Prior to Winstone's two yearly reviews, Winstone will consider any changes identified by the SLG or a resident(s), after consultation with the SLG.

### **1.2. Background to the Quarry**

- (a) The land that the present quarry is sited on was originally granted by Governor Fitzroy to Thomas Hallimore and Joel Pollack in July 1845. The allotments granted were combined into one and issued in fee simple to William Connelly in May 1884. From this time it passed through other owners until purchased by Winstone Limited on the 1st of November 1922.
- (b) Quarrying has been part of the community at Three Kings, employing some local people and providing for their needs, for as long as the community has been there. Production began in the 19th Century, increasing gradually over the years to about present levels in the 1950s.

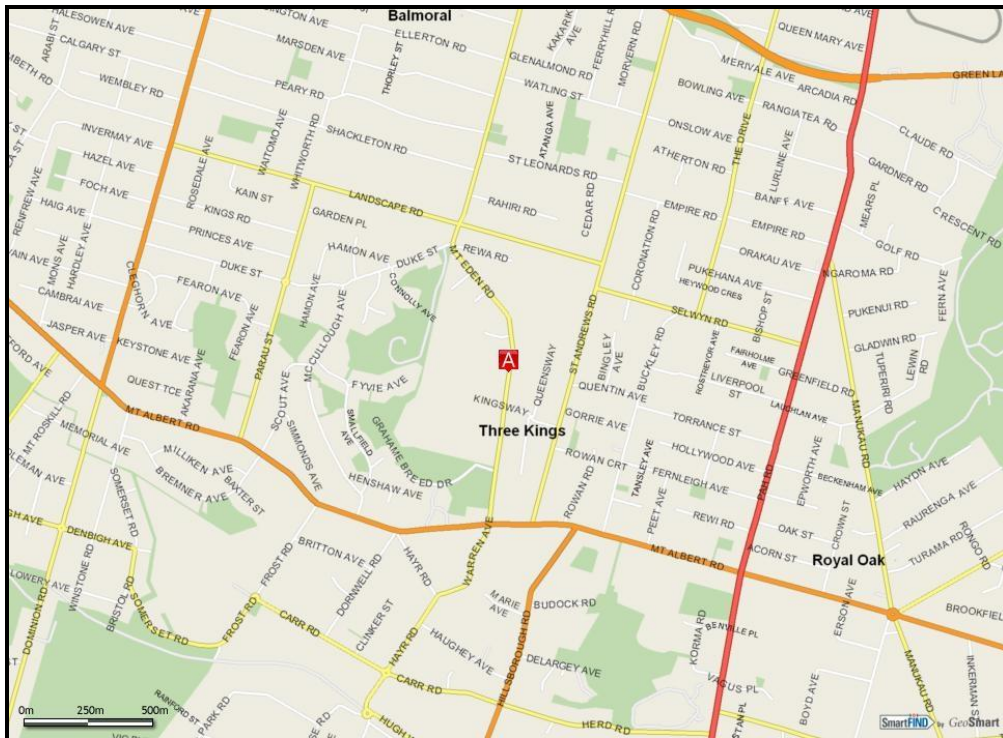
### **1.3. Geology**

- (a) Three Kings Volcano is one of the most complex in the Auckland volcanic field. It was formed about 15,000 to 20,000 years ago.
- (b) Volcanism began with a series of violent explosions which excavated a crater about 200 to 300 metres deep and about 800 metres wide, in the existing landscape of Waitemata Group sandstones and mudstones. The explosions spread ash and tuff over a wide area, at least as far afield as Mt St John, One Tree Hill and Mount Albert, and built up a tuff ring in layers encircling the crater.
- (c) Eruptions then became more passive and lava rose inside the crater to build up a variety of coalescing scoria cone structures from a number of vents. Some more fluid lava flowed into the crater to form a small lava field. Of the large number of cones formed, there were three prominent cones, the highest of which was 135 metres high, giving rise to the name “Three Kings”.
- (d) Quarrying at Three Kings has resulted in two of the three large cones being removed. The remaining cone, 133 metres high, is Te Tatua a Riukiuta (Big King).
- (e) During the main cone-building phase of eruptions there were further explosive eruptions which destroyed the northern part of the tuff ring and possibly parts of earlier cones. Lava erupted from the new vents to discharge showers of fine scoria (lapilli tuff) which were carried northward by the wind to build up the nearby remnant of the tuff ring (Landscape Road) to a much greater height than before. Lava flooded through a breach in the rim formed by the explosions and continued downslope into the Meola Valley. Some flowed beyond Western Springs out into the ancient Waitemata Valley to form Black Reef, extending almost to the present North Shore.
- (f) Later explosive eruptions, to the south and east of the Three Kings crater, also spread some tuff and ash over the area before eruptions ceased.

## **2. Description of Site and Operations (existing and authorised)**

### **2.1 Quarry Location**

- (a) Winstone’s Three Kings Quarry is located at 985-1025 Mt Eden Road, Three Kings, ~~Mt Roskill~~. See Location Map (Figure 1).



**Figure 1 – Location Map**

## 2.2 Adjoining Zonings

(a) The District Plan identifies several different land use zonings associated with land adjoining Winstone’s Three Kings Quarry site. These zonings are indicated on Figure 2. The zones include:

- Residential;
- Open Space Activity (Big King Reserve) and area to the south east;
- Business 4 Zone (medium intensity business activity);
- Business 7 Zone (mineral extraction and processing).

## 2.3 Adjoining land uses

### 2.3.1 To the north

(a) On the northern boundary of the Winstone quarry site an old quarry (formerly referred to as Hunter’s quarry) has been rehabilitated by filling and developed. The activities that take place on this area include residential, service commercial and light industrial business. Residential comprises low rise apartments and townhouses. Businesses established have included a ceramic tile centre and a furniture manufacturer / retailer.

### 2.3.2 To the east

(a) To the east of the Winstone quarry site the land use activity is predominantly residential. Mt Eden Road separates the eastern boundary of the quarry from this residential activity as shown on Figure 2.



- (b) The Three Kings Primary School is located to the south east of the quarry, on the corner of Mt Albert Road and Mount Eden Road. The Carlson School of Cerebral Palsy, the Carlson Kindergarten and the Ranfurly War Veterans Home are also located in this vicinity.

### 2.3.3 To the south and west

- (a) To the south and west of the quarry (excluding Big King Reserve) is public reserve land administered by ~~ACC~~ **AC** (see Figure 2).
- (b) Part of the reserve land is zoned Business 7 (see Figure 2) which allows for the potential extraction of the mineral resources. Quarrying activity has taken place in the past and this is reflected in the much altered landscape which now exists.

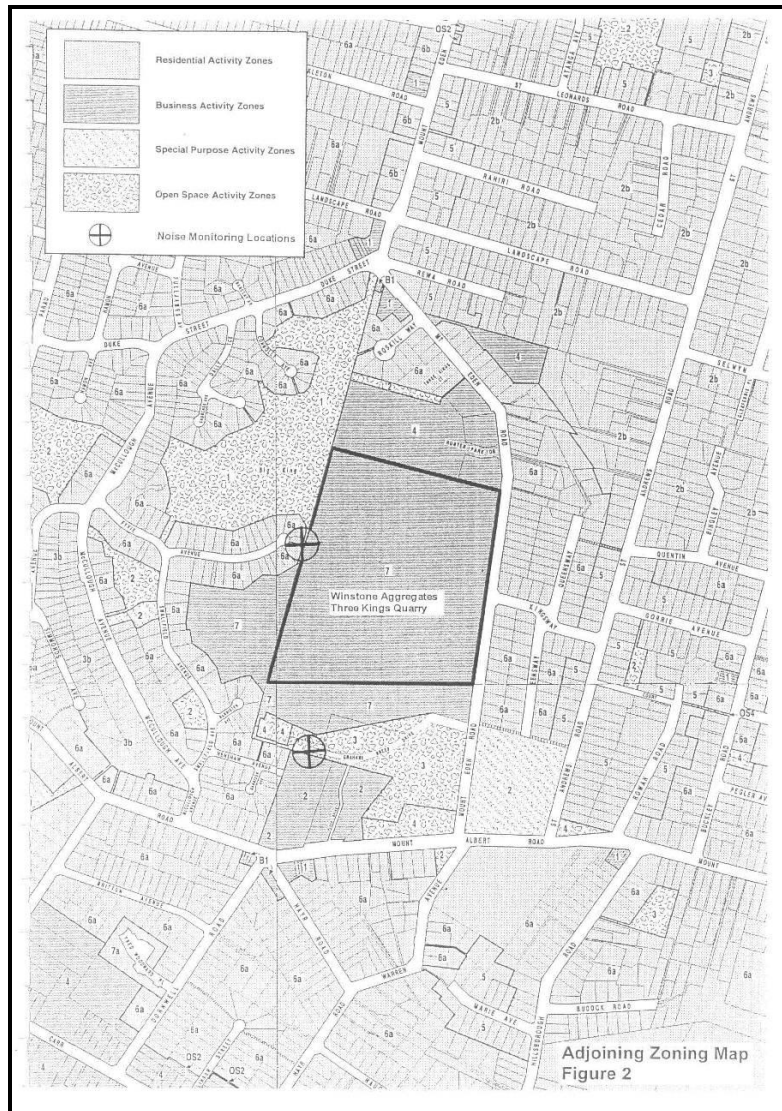
A resource consent for a controlled activity and a corresponding Management Plan, addressing issues outlined in Clause 8.7.4.2 of the District Plan, would be required before quarrying could take place on the Council administered reserve land.

Any quarrying of the land requires resource consent and also Reserves Act procedures. Currently this land is not being quarried.

- (c) Part of the reserve land, i.e. to the southeast corner of the quarry is in the Open Space Zone as shown in Figure 2.
- (d) There is residential activity beyond the reserve land to the southwest along Smallfield Avenue and Barrister Avenue and also to the west along Fyvie Avenue. The Council administered reserves land currently buffers the residential activity in these areas.
- (e) Beyond the reserve land to the south are the following facilities:
- the Three Kings Shopping Plaza;
  - the Fickling Centre;
  - the Community Centre;
  - the Community Library;
  - the Citizens Advice Bureau;
  - ~~Metrowater offices~~ **AC Offices**;
  - playing fields and
- (f) A water treatment plant is located in the south east corner of the Winstone owned land, fronting onto Mt Eden Road.

### 2.3.4 To the north west

- (a) To the north west of the quarry there is the Big King Reserve. This is an Open Space Activity Area for use by the public of Auckland.



**Figure 2 - Zonings**

## 2.4 Winstone site layout plan

- (a) This site plan (see Figure 3) shows the quarry layout at the date noted on the plan. It includes the current locations of buildings, internal roads, and stock pile areas, as well as the mobile processing plant. The mobile processing plant is relocated from time to time, and its location on the pit floor is selected in relation to the position of the quarry faces at the time, as well as in relation to noise considerations. The plan also shows the location of the water treatment plant on Mt Eden Road that is designed to treat groundwater abstracted from beneath the quarry floor. [Note: ACC AC has decided, and directed Metrowater WaterCare accordingly, that the treatment plant will only be operated as emergency back-up in the event of alternative municipal supply being unavailable.]





### Figure 3 – Site Plan

- (b) 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 primarily in the northern corner of the quarry. A plan on the site layout while the quarry and filling operations run in parallel can be found in Appendix 3.

## **2.5 General description of *quarry* operations**

- (a) The purpose of the quarry operation is to extract the rock (in this case mostly scoria) from the ground and process it for use as building, construction and roading aggregates. The process of transforming rock from the ground into aggregate products comprises firstly the loosening and fragmenting of rock from the ground with the use of explosives and/or heavy machinery. The rock is then excavated by heavy machinery and either stockpiled or transported to a mobile processing plant for further crushing and screening into various sizes and grades.
- (b) The methods used in future quarry operations on the site are likely to remain generally similar to those used at present. However it is expected that specific machinery and methods of extraction will vary as technology develops, machinery is renewed, and quarrying techniques are reviewed.

### **2.5.1 Rock extraction**

- (a) Raw material is generally excavated from the working areas by heavy machinery; however layers and irregular masses of harder basalt rock are present amongst the predominant scoria material. The basalt rock requires drilling and blasting, ripping or rock breaking to remove it from the face and reduce it to a manageable size. Blasting techniques are described in greater detail in section 7.4.3. The extracted rock is then either processed in the same way as the scoria or (as required by customer demand) sold in large pieces.

### **2.5.2 Loading and transport to operating plants**

- (a) After excavation or blasting, the fragmented rock is either loaded directly from the face or floor into the crusher of a mobile crushing and screening plant located on the pit floor, or loaded into dump truck(s) and transported to the mobile processing plant. Loading is carried out by hydraulic excavator(s) and/or loader(s). Some rock extracted does not require further processing because it is a directly saleable product. This product is generally either taken directly to stockpile or loaded out.

### **2.5.3 Crushing and screening**

- (a) Rock from the quarry face is generally too large for most products and is reduced by crushing. The material is also sorted into sizes by screening to separate for further crushing and screening into the various products required.



#### 2.5.4 *Stockpiling*

- (a) Products discharge from the processing plant at various points, according to the plant settings and the desired product characteristics. These are transported by truck, loader or conveyor to the stockpile area ready for sale.
- (b) Some unprocessed rock and materials processed within the quarry are stockpiled on the quarry floor or on benches, awaiting sale.
- (c) Additional aggregate will also be brought in and unloaded in the stockpiled area along side the material that has been process and stockpiled onsite. The site will act as a distribution centre for the Auckland region for varying types and grades of scoria and aggregate due to its geographically convenient location. The purpose of bringing in additional material is to provide a diverse product range ensuring the site supplies an efficient service. This is achieved by back-loading trucks that have come to site to tip fill with the stockpiled scoria and / or aggregate to transport the products off site as required by the customer.

#### 2.5.5 *Loading and transport*

- (a) Road trucks are weighed at the weighbridge immediately after entering the site via the main gateway. They then drive to the appropriate stockpiles, where they are loaded, before returning to the weighbridge and main entrance to transport the products off site.
- (b) The stockpiling area is generally a focus of busy activity. As well as vehicles unloading into the stockpiles, there is usually a steady stream of trucks collecting loads for delivery.

### 2.6 *General Description of fill operations*

- (a) The purpose of the fill operation is to rehabilitate ground levels of the quarried site and to leave the area stable, safe and fit for subsequent use. Fill is transported to the site from the Auckland area and placed in designated areas. The material used to fill the site must be able to achieve the objective, in a manner which has no more that minor adverse effects on people or the environment, during, and after the completion of filling.
- (b) A Fill Management Plan has been prepared as required by condition of consent. This plan sets out how the fill material quality is to be managed, and includes the monitoring and reporting to be implemented that will demonstrate the in-situ fill has, and will, not put people or the environment at risk. The Fill Management Plan is the document to refer to for specific details pertaining to the aspects of the fill operation.

## 3. **Resource Consents**

### 3.1 *Planning context*

- (a) Use of the quarry is primarily governed by the provisions of the Resource Management Act 1991. Activities in the quarry which are not permitted activities or existing uses require

resource consents in terms of the District Plan and any relevant Regional Plans of the Auckland Regional Council (ARC).

- (b) At a national level the Resource Management Act 1991 deals with the management of natural and physical resources and establishes a hierarchy of plans and policy statements.
- (c) At a regional level the Regional Policy Statement considers issues of significance to the region and provides policies for the management of land, sea and air resources. The Auckland Regional Policy Statement contains a section on minerals. This section has two objectives:
  1. ***To avoid, remedy or mitigate the adverse effects on the environment of mineral prospecting, exploration, extraction, processing and transportation.***
  2. ***To ensure that mineral extraction activities and mineral deposits which are presently or potentially valuable for development in the Region are not unnecessarily compromised, and the region's need for rock material continues to be met.***
- (d) Regional Plans can be prepared for particular natural resources; however it is not mandatory for Regional Councils to produce these plans, except for the Regional Coastal Plan. Currently the ARC's AC's Proposed Air, Land Water Plan and Sediment Control Plan are the Regional Plans directly relevant to the Quarry's operation.
- (e) At a territorial level District Plans deal with land use issues and the effects of activities on the environment. The District Plan contains objectives, policies and rules that control land use activities in the Auckland area. In particular the Business 7 Zone sections of the Plan relate specifically to activities on the site. Quarrying in the Business 7 Zone is currently a permitted activity on the Winstone Three Kings Quarry site and no land use consent is necessary for quarrying.
- (f) There shall be no new quarry excavation or extraction within 20m of any public road or adjoining property boundary unless authorised by ACC AC in terms of Section 354 of the Local Government Act 1974.
- (g) The District Plan recommends 15m yard boundaries for the quarry site adjoining Mt Eden Road and the Open Space Activity Zone. Winstone acknowledges these yards as operational constraints for the quarry however there are already existing buildings, structures and activities located within the 15m yard that are permitted. These include:
  - the staff amenities and offices;
  - the buildings near the quarry entrance;
  - the water treatment plant on Mt Eden Road.



Other structures include:

- noise and visual bunds on Mt Eden Road;
  - fencing.
- (h) On boundaries where a yard is required, the District Plan provides for a landscaped area with a minimum width of 3m except where it is necessary to provide vehicle access points. The Winstone Site Layout Plan (Appendix 3) shows the location of these existing buildings and structures. The report titled “Three Kings Quarry Boundary Planting Proposals” (see Appendix 5) also shows the location of planting and bunds.
- (i) ~~ACC~~ **AC** also prepared and adopted a planting plan for its reserve land where it borders the quarry which complements the “Three Kings Quarry Boundary Planting Proposals” prepared for Winstone. Work to plant these boundaries in accordance with this plan commenced circa 2000. **Supplementary planting was undertaken in 2011 which only utilised native plants. Any additional planting will again utilise only native species and look to incorporate kohekohe (*Dysoxylum spectabile*) due to its historic significance to this area.**

### **3.2 ~~Resource Consents from ARC and ACC~~**

- (a) The management of effects on the environment of dewatering and water take activities which are authorised by ~~ARC~~ **AC** consents is not a matter listed in rule 8.7.4.2 of the District Plan for inclusion in this QMP. However the rule requires details of these consents to be provided and copies are attached in Appendix 2. **In order to ensure the ongoing management of dewatering and water take a Groundwater Monitoring and Contingency Plan has been created and is attached as Appendix 6. Furthermore, conditions of the fill consent require additional measures to be undertaken. The procedures implemented around these items are specified in the Fill Management Plan.**
- (b) Similarly, while the consent from ~~ACC~~ **AC** for the water treatment plant is not part of this QMP, it is included as background information [Note: ~~ACC~~ **AC** has decided, and directed ~~Metrowater~~ **WaterCare** accordingly, that the treatment plant will only be operated as emergency back-up in the event of alternative municipal supply being unavailable.]
- (c) However, while the management of effects on the environment in relation to air quality is controlled by ~~ARC~~ **AC** consent (**Permit No. 21875 see Appendix 2**), it is also a matter listed in rule 8.7.4.2 of the District Plan. ~~{Historical Note: when the September 2001 QMP was drafted, air quality was authorised by ACC Auckland City Council Permit No. 53, although an application had been made to ARC Auckland Regional Council to renew it. Subsequently, and pursuant to the Resource Management Act, consent was granted and the~~ **The** management of dust emissions is addressed in **the Air Quality Management Plan as well as s7 section 7** of this QMP}.
- (d) **Three resource consents have been issued by the Environment Court to authorise the placement of fill. Two land use consents were granted, one issued pursuant to the AC’s Regional Plan: Sediment Control and the other to AC’s District Plan – Isthmus Section. The third is a Discharge Permit pursuant to AC’s Proposed Regional Plan: Air Land and Water.**

The conditions of these consents were amalgamated and issued as a signal suite of conditions. A copy of the conditions is attached in Appendix 2.

- (e) All relevant ~~ACC and ARC~~ resource consents and permits are copied and attached to this QMP in Appendix 2.

## **4. Consultation Protocol**

### **4.1 The Three Kings Quarry Site Liaison Group (SLG)**

- (a) Winstone, together with the ~~ACC~~ **AC** and representatives of the local community have established the SLG. The purpose of this group is to consult on an ongoing and regular basis about matters associated with the operation of the quarry where they affect the community and are of mutual interest to the representative parties.

#### **4.1.1 Frequency of meetings**

- (a) The SLG will meet as necessary and no less frequently than every three months unless all representative parties agree that there is no need for a meeting. If meetings are to be held less frequently than three monthly ~~as proposed in the QMP~~, then the proposed date of the next meeting should be tabled at the SLG meeting.

#### **4.1.2 Location and time of meetings**

- (a) Meetings will be held at a location agreed to by the majority of representatives of the parties involved in the SLG.
- (b) The time of the meetings will be agreed to by the majority of representatives of the parties involved in the Site Liaison Group.

#### **4.1.3 Notification of meeting**

- (a) Any proposed meeting shall be notified in the public notices section of the “Central Leader” newspaper or an equivalent local paper, by Winstone, at least two weeks prior to the meeting date. Any person who has attended recent meetings of the SLG will also be sent written notice of the coming meeting.

#### **4.1.4 Meeting protocol**

- (a) Meetings shall be conducted in an orderly and respectful manner that is consistent with the objective to provide a forum where matters can be discussed with the intent to resolve issues raised and to achieve ongoing good relations and mutual trust between Winstone and the local community.
- (b) Administration and servicing of meetings will be the responsibility of Winstone.

- (c) Winstone will consult with other SLG parties prior to appointing an independent chairperson for the SLG meetings.

## 5. Future ~~Quarry~~ Site Development

### 5.1 ~~Quarry~~ Site development

- (a) ~~Development at the~~ 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, which may at times be limited by process plant capacity. ~~A topographical site plan indicating how the quarry pit might look in the future if existing consents were exercised fully, can be found in Appendix 3.~~ Similarly the rate of importation of fill is again dictated by the market and the factors that drive projects and their productivity.
- (b) Quarrying below the water table involves the pumping of water from beneath the pit. The resource consent that permits this dewatering activity contains a number of conditions that control how this activity is to take place. The consent was subject to statutory review in 2003 and amended conditions confirmed in 2005. A copy of this consent can be found in Appendix 2 ~~(Permit number 12977).~~ Existing resource consents authorise further excavation of the quarry down to sea-level (RL0m). Winstone intends to cease excavation at about RL34m with fill operations to commence in 2012 as authorised by resource consent (refer Appendix 2). Initially quarry and fill activities will be undertaken concurrently (as shown in the site plan attached as Appendix 3).
- ~~(b) The plan in Appendix 3 indicates what the pit would look like should extraction continue down to RL0 (or sea level at mean high water spring). This plan is intended to illustrate in a schematic way how development may occur should quarrying continue to RL0.~~
- ~~(c) Drilling to date has indicated the possibility that there will be an increase in the proportion of basalt to scoria as the pit deepens.~~
- ~~(e)~~ (d) While quarrying and filling operate concurrently, quarrying will be located primarily in the southern section of the site with fill operations located primarily in the northern portion. As the pit develops quarrying continues there will be a need to relocate the mobile processing plant and other facilities to access the available resource. The tip-head locations will also vary as filling progresses. These locations will be dictated by the season, access, material delivered and as required by the site's Fill Management Plan. Generally relocation of plant will be to areas within the pit site where the noise, visual and dust effects of the operation are minimized.
- ~~(d)~~ (e) Re-vegetation of worked areas that are no longer active will be carried out as soon as practicably possible after quarrying. This will limit dust sources and help to minimise the visual effects of the quarry.
- (f) In the event that taonga or objects of potential archaeological significance are uncovered during the excavation, quarrying works shall cease in that particular area of the site and

tangata whenua and ACC's AC's Heritage Manager consulted with regard to the discovery. All other requirements as set out in the Historic Places Act 1993 will be adhered to.

- (g) Should development plans change in a way that may result in an increase in the scale and intensity of environmental effects beyond the site boundary, then these changes will not be incorporated into the ~~quarry management plan~~ QMP without prior consultation with the SLG and the issuing of any required consents.
- (h) End use for the site has not yet been determined. The consent authorises filling to the levels proposed (and not beyond or above) as shown in Appendix 4. The duration of the rehabilitation is subject to market demand but it is anticipated that the fill operation to be in the vicinity of 8 to 12 years. It is expected that future use will be defined well in advance of the completion of filling, and, if necessary, specific requirements for defined end use(s) accommodated through review of the AC Operative District Plan. Further information regarding rehabilitation and end use is detailed in section 8 of this QMP.

## 6. General environmental objective for quarry management

To manage the extraction and processing of a valuable aggregate resource and site rehabilitation while avoiding, remedying or mitigating adverse effects on the environment and enhancing environmental performance wherever practicable.

### 6.1 Explanation

- (a) The continued and efficient extraction of aggregate resources in the Isthmus is identified in the District Plan as an important resource issue. At the same time, Winstone has an obligation to ensure that the environment is not detrimentally affected by the continued operation of the ~~quarry~~ site.
- (b) Parts 3 and 4 of Winstone's Environmental Policy (see Appendix 1) call for management to continuously improve activities and to lift standards and performance. This focus on improvement will lead to enhanced environmental performance in the future. An example of this type of improvement was the introduction of dust suppression measures such as sprinklers and the ongoing re-vegetation of worked areas. A current example is the company's request to review the Air Quality Management Plan and replace the Hi-Vol TSP samplers with state of the art, "real" time monitoring.

### 6.2 Measures to achieve the general environmental objective

#### 6.2.1 Resource management framework

- (a) To achieve the general environmental objective Winstone will operate within the bounds of the legislative framework for resource management in New Zealand as summarised in section 3.1 above.

### 6.2.2 *Management measures*

- (a) Winstone's management measures to implement this general environmental objective are outside the scope of any particular rules for a permitted activity, conditions of permits, licenses or resource consents, but measures are provided here to give an insight into Winstone's current management practices and to indicate how Winstone intends to manage this quarry. It can be expected that these management measures will change over time as Winstone strives to achieve continuous improvement in environmental performance.
- (b) The current management measures and procedures reflect the growth of environmental responsibility within Winstone. They are explained in sections 6.2.3 - 6.2.5 below. The company recognises the effects its operations may have on the environment and is continually searching for ways in which these effects can be avoided, remedied or mitigated.

### 6.2.3 *Environmental policy*

- (a) Winstone's Environment Policy (see Appendix 1) sets out the overall goals for the company's environmental performance. The environmental policy is used in the following ways to make staff and visitors on site aware of the importance of good environmental performance.
  - displayed to personnel on site
  - displayed to the public in reception areas
  - referred to when setting annual objectives and targets

### 6.2.4 *Environmental management system*

- (a) Winstone Aggregates has in place an Environmental Management System (EMS) that is based upon the framework established by ISO 14001- Environmental Management Systems - Specification with Guidance for Use.
- (b) The EMS is a tool that ensures accountability for environmental performance, providing a management framework that encourages openness and environmental improvement at all operational sites.
- (c) Winstone's Environmental Management Manual (EMM) documents the EMS and ensures that the Environmental Policy is implemented at operational sites. The Manual covers such things as:
  - legal requirements that each site must adhere to;
  - setting environmental targets and objectives for individual quarries;
  - procedures for management of effects on the environment;
  - management structure and responsibilities;
  - record keeping of each quarry's environmental effects;
  - communication including environmental reporting and information sharing;

- review of the EMS and Environmental Policy.
- (d) ~~Site Environmental Manuals (SEMs) are~~ Site Specific Management Plans are prepared and kept at each site. Examples for the Three Kings Quarry includes this QMP as well as plans that cover the management of fill, air quality and traffic. These management plans ~~and~~ contain procedures, monitoring and reporting requirements for that specific activity. In addition to these management plans environmental diaries ~~that~~ are used to record the results of compliance monitoring, complaints, objectives and targets. ~~The~~ Each Winstone sites ~~are~~ is required to report all incidents (non-compliance, non-conformance, complaints) to senior management as they occur, ensuring the appropriate actions are taken. ~~The Environmental Coordinator prepares a~~ A monthly summary report is prepared for the General Manager who in turn is required to report to Fletcher Building Corporate management on environmental performance.
- (e) The EMM and ~~the site SEM~~ Site Specific Management Plans are available for inspection by the public at the site following quarry, ~~only after~~ prior arrangement ~~with the quarry manager.~~ The Site Specific Management Plans are also available to be viewed at any time on the Three Kings Website: <http://threekingsquarry.co.nz>.
- (f) Records of all verbal and written complaints will be maintained on site ~~in the site SEM.~~ The SEM These records will be available for inspection at the site by members of the public and ACC AC following prior arrangement ~~with the quarry manager.~~ The records will be kept for no less than five years and will include:
- name and details of complainant;
  - description of complaint;
  - any follow-up action.
- (g) Site inspections by senior management and specialist internal assessments and audits are made regularly for each quarry Winstone site. The purpose of these inspections is to reinforce the importance of good environmental performance and continual improvement.

#### 6.2.5 Quarry and fill design

- (a) To achieve the general environmental objective Winstone will design the quarry in a way that maximises the extraction of the aggregate resource and ensures efficient fill operation within the property boundary. ~~after due consideration of~~ Due consideration will be given to the relevant factors, including resource consents, district and regional plans and geotechnical constraints.
- (b) The operation of the quarry site is regulated under the Health and Safety in Employment (HSE) Act 1992 and more specifically the Mining Administration Regulations 1996. These regulations are administered by The Ministry of Labour through Occupational Safety and Health (OSH).



## 7. Environmental effects

- (a) **Both quarrying and filling** Quarrying has the potential to have a range of adverse environmental effects. This section identifies these effects and sets out the relevant environmental standards that the **site quarry** has to achieve and the measures and methods for how it will achieve these standards.

### 7.1 Noise

#### 7.1.1 Noise effects

- (a) Noise is generated by a number of different activities carried out at the **site quarry** including: drilling; rock breaking; crushing; extraction; trucks; machinery and blasting. If noise is not controlled at the quarry there is the potential for noise to cause a nuisance to people who live near the quarry.
- (b) It is important to note that blast vibration and noise generated by blasting (air blast overpressure) are treated as separate effects from general noise within the provisions of the District Plan. The different noise effects will also be treated separately within this management plan. Noise and vibration from blasting are dealt within section 7.3.

### 7.2 Noise objective:

**To avoid, remedy or mitigate adverse effects of noise generated by onsite activity on the residents of dwellings and on business activities in the vicinity of the **site quarry**.**

#### 7.2.1 Explanation of objective

Excessive noise of sufficient intensity, or the duration or continuity of noise can be detrimental to public health and to the amenity of adjacent land. The noise objective is a statement of intent by Winstone to keep noise levels from the quarry's activities at or below an acceptable level and to provide the community with an assurance on the level of noise that they can expect from the **site's quarry's** operations. The measure for achieving this objective is set out in the Business 7 Zone noise level controls of the District Plan.

#### 7.2.2. Noise performance standards

(The standards taken directly from the District Plan provisions are shown in italics below.)

- (a) *The L10 noise level and maximum level (L. Max) arising from any activity (except blasting) measured within any residentially zoned property shall not exceed the following limits:*

	<b>TIMES</b>	<b>dBA LEVEL</b>
(i) Within any residentially zoned site	Monday to Saturday 7:00 am to 10:00 pm	L10 55 dBA
	Sunday and Public Holidays 9:00 am to 6:00 pm	L10 55 dBA
	At all other times	L10 45 dBA L Max 75 dBA

(b) ~~In addition, the~~ **The** L10 noise level measured on the boundary of any business zone, other than Business 7, shall not at any time exceed 70 dBA.

(c) In accordance with consent conditions any activity related to fill operations shall not exceed the following noise limits at residentially zoned land fronting Mount Eden Road between street numbers 904 and 944 (including 14-16 Kingsway).

Monday to Saturday	7:00 am to 10:00 pm	L10 60 dBA
Sunday and Public Holidays	9:00 am to 6:00 pm	L10 60 dBA
	At all other times	L10 45 dBA L Max 75 dBA

~~(c)~~ (d) The noise levels shall be measured and assessed in accordance with the requirements of New Zealand Standard NZS 6801: 1991 "Measurement of Sound" and New Zealand Standard NZS 6802: 1991 "Assessment of Environmental Sound". Noise shall be measured with a sound level meter complying at least with International Standard IEC 641 (1979): Sound Level Meters, Type 1.

~~(d)~~ (e) Any construction work on site, will be carried out as provided for within the General Provisions of the District Plan, Part 4A.1 that is, in compliance with the New Zealand Standard for Construction Noise NZS 6803: 1999.

~~(e)~~ (f) Any noise produced from emergency construction work, which is defined as "construction work which is required without delay in order to protect people or avoid damage to property" is allowed for within the General Provisions of the District Plan, Part 4A1, D, d. Winstone shall keep a record of the day, time, and duration of any construction work.

### 7.2.3 Measures to implement noise objective

To comply with the District Plan, **consent conditions** and to keep noise to an acceptable level Winstone implements a range of operational practices that include the following measures.

- (a) Managing the time and location of particularly noisy operations around the site to ensure compliance with the performance standards.
- (b) Predictive computer noise modeling of ~~the quarry~~ **and fill operations**. Modelling has been carried out and has provided ~~quarry~~ management with a good understanding of how

specific activities in different parts of the site influence the noise environment off site. This model will be recalibrated with monitoring data from time to time, and continue to be used as a predictive tool to assist in the management of site activities.

- (c) ~~Winstone has a preference to avoid any general quarry operations (eg extraction, and processing and filling) on Sundays, public holidays and beyond 8pm at night. Winstone undertakes to manage the site quarry in a manner that avoids the need to carry out general quarry operations outside the following hours:~~

<del>Monday – Saturday</del>	<del>7 am – 10.8 pm</del>
<del>Sunday and Public Holidays</del>	<del>9 am – 6 pm.</del>

The site is generally open to customers during the following hours:

Monday – Friday	0700 to 1700
Saturday	0700 to 1400

Circumstances may arise whereby it is necessary to carry out general quarry operations beyond the hours stated above. Such circumstances could include:

- mechanical breakdown;
- ~~unusual customer demand or~~
- safety and emergency work is required.

~~Except where safety or emergency work makes it impractical,~~ During these situations the noise levels in clause 7.2.2. of this management plan shall be complied with.

- (d) The dispatch of aggregates or acceptance of fill will be restricted to no later than 8 pm unless for emergency or special circumstances.
- (e) All processing plant, excluding conveyors will be contained within the protective panels and bodywork of the machinery as manufactured to minimise the noise levels measured at the boundary of the quarry.
- (f) Machinery will be regularly maintained to ensure that noise is kept to a practicable minimum.
- (g) All quarry site vehicles will have appropriate sound arrestors fitted to ensure that operations comply with performance standards.
- (h) Bunds have been constructed where appropriate and practicable on quarry boundaries to reduce the effects of noise beyond the boundary of the quarry.
- (i) When it is necessary to carry out short term construction work, as defined within the general provisions of the District Plan, Part 4A.1, Winstone will notify neighbours who may be potentially affected by the noise from the work. This work will be carried out in compliance with the New Zealand Standard for Construction Noise as allowed for in the General Provisions of the District Plan.

- (j) If any emergency construction work is to be undertaken, neighbours potentially affected by the noise of these works will be notified by Winstone, whenever practicable, prior to the work commencing. Winstone will compile a database of residents potentially affected by the noise and telephone them prior to work commencing.
- (k) When assessing the purchase or arranging for the contracting of any new large machinery (e.g. drilling rig), Winstone undertakes that noise level performance will always be a primary management consideration.
- (l) Managing the arrival and departure of all trucks associated with the quarry as much as practicable (refer to the Traffic Management Plan, required by Conditions 38 to 42 of the fill consent, for further information regarding this item).
- (m) To ensure that the noise performance standards set in the District Plan are met, monitoring will be carried out using appropriate equipment, methods and personnel. The noise monitoring regime will include:
  - Monitoring on two representative occasions per year at the two noise monitoring locations identified on Figure 2;
  - Monitoring shall be carried out following the receipt of a direct complaint to site management regarding noise, if in the opinion of the site manager, monitoring is considered appropriate;
  - Monitoring on up to two occasions per year by an independent noise expert (as agreed to by Winstone) at the two monitoring locations identified on Figure 2, without Winstone's prior knowledge and at Winstone's expense. This monitoring shall be initiated by a request from a designated community representative to an appropriate ACC AC staff member. The results of this random monitoring shall be forwarded to all parties;
  - Prior to any change in the quarry operations occurring that could result in greater noise effects beyond the boundary, a reassessment of the noise from quarry operations shall be carried out, if the changes have not already been predicted or modeled.

### **7.3 Ground vibration, air overpressure, air blast noise and flyrock from blasting**

#### **7.3.1. Effects of blasting**

- (a) The nature of the rock resource at the quarry is predominantly scoria that can generally be extracted without the need for blasting. Blasting is however used in the quarry as a means of fragmenting the less predominant and harder basalt rock prior to processing. As the quarry deepens it is anticipated that relatively more basalt rock may be encountered.
- (b) Blasting causes vibration and air overpressure (air blast noise). These effects have the potential to have a "startling effect" on people, especially when people are not expecting the blast. Ground vibration and air overpressure from blasting also have the potential, if not controlled, to adversely affect building structures and / or adversely affect the amenity

value of residential land in the vicinity of the quarry and / or any cultural heritage or archaeological features.

- (c) If good blasting practice is not utilised, the potential for the discharge of fly rock is also increased. Flyrock is a potential risk to human health and also has the potential to cause damage to property.

#### **7.4 Vibration, air overpressure (air blast noise) & flyrock objective**

**To avoid, remedy, or mitigate adverse effects of vibration and air overpressure (blast noise) and flyrock from blasting, on people and neighbouring buildings.**

##### *7.4.1 Explanation of objective*

- (a) It is necessary to manage the use of explosives to control effects such as vibration, air overpressure and flyrock. This vibration and air over pressure and flyrock objective is a statement of intent by Winstone to keep the effects of vibration, air overpressure to an acceptable level and to avoid flyrock beyond the quarry boundary. The objective provides an assurance to the community that the effects of blasting are being controlled. The measure for achieving this objective is set out in the performance standards below and within the District Plan Business 7 zone controls for “Noise and Vibration Arising from Blasting”.

##### *7.4.2. Blasting performance Standards*

(The standards taken directly from the District Plan provisions are shown in italics below.)

- (a) Any blasting carried out at the quarry will comply with the controls set out in the District Plan, section 8.8.2.7, Noise and Vibration arising from Blasting. The controls in the plan include the following provisions:
- (b) *Blasting activities shall be so controlled as to ensure that any ground vibration as the result of any blasting will not adversely affect the structural stability of any building (that is not connected with the site) or cause a reduction in its utility value....*
- (c) *Ninety five percent of the blasts undertaken (measured over any twenty blasts on the foundation of any building outside the Business 7 zone) shall produce peak particle velocities not exceeding 5mm/s and one hundred percent of the blasts undertaken shall not exceed 10mm/s irrespective of the frequency of the blast measured.*
- (d) *Peak particle velocity means the maximum particle velocity in any of the three mutually perpendicular directions. The units are millimetres per second (mm/s).*
- (e) *The noise created by the use of explosives shall either not exceed a peak overall sound pressure level of 128dB (i.e. a peak over pressure of 0.05kPa) or alternatively the noise shall not exceed a peak sound level of 122dBC. The measurement shall be made in either case at*

any point at the boundary of the Business 7 zone or at locations agreed to by all representatives of the SLG.

- (f) An explanation in the District Plan states that “*vibration monitoring does not necessarily have to be undertaken on the foundation of adjacent buildings provided that the quarry operator can safely extrapolate the measurements taken from the chosen monitoring point to the foundations of adjacent buildings and be assured that the limits of Rule 8.8.2.8 (a) or, as appropriate Rule 8.8.2.8 (e) are not exceeded.*”.

#### 7.4.3 Measures to implement vibration, air overpressure and flyrock objective

The potential effects of ground vibration, air overpressure and flyrock will be controlled by the use of good operating practice to meet the controls set out in the District Plan for the Business 7 zone. Winstone implements a range of operational practices to achieve this objective that include the following.

- (a) Blasting times will be between ~~9:00 am – 12:30pm~~ **9:30am – 2:30pm** Monday to Friday and will be restricted to two times per day except where necessary for emergency or safety reasons. The two times for blasting during the day will be set at approximately 10:15 am and ~~12:15~~ **2:15** pm.
- (b) A siren will be used to alert people in the vicinity to reduce the startling effect of unexpected ground vibration and air overpressure that may be associated with blasting. ~~This siren should be generally audible at least to neighbouring properties, the Three Kings School, Carlson School and the Three Kings shopping centre.~~ **The siren will be audible to all parties within the confines of Lot 1 DP 37020 (also known as Three Kings Quarry).**
- (c) The regime for the use of the siren will be:
- ~~• Five minutes prior to a blast a siren will be sounded continuously for 40 seconds to let people know of an impending blast;~~
  - ~~• Twenty seconds prior to and until the blast is detonated a siren will be sounded continuously.~~
  - ~~• After the blast has been fired and the blast area has been declared safe (usually 5 – 10 minutes following the blast) a siren will be sounded three times in quick short succession.~~
  - **Five minutes prior to a blast the siren will be sounded five times in quick short succession;**
  - **Thirty seconds prior to a blast the siren will be sounded in one long burst; and**
  - **Once the “all clear” is confirmed the siren will be sounded as two short bursts.**
- ~~(e)~~ (d) Signs or notices that describe what the siren blasts mean and the timing of the subsequent blast will be placed in prominent places around the Three Kings Community ~~such as:~~ **For the positions of the signs around the boundary of the site refer to Figure 4.**
- ~~• On Mt Eden Road;~~
  - ~~• In the Mt Roskill Community House;~~



- ~~In the Plunket rooms and~~
- ~~Around the vicinity of the Three Kings shopping centre.~~
- ~~Mt Roskill Library~~
- ~~Advertised in the Central Leader~~

The size of the signs shall be agreed between representatives of all parties to the SLG.



**Figure 4 – Blast Notification Sign Locations**

~~(d)~~ (e) Records will be maintained for each blast including:

- the time of the blast;
- location of the blast;
- weather conditions;
- total charge weight;
- maximum instantaneous charge.

~~(e)~~ (f) Winstone will undertake monitoring of all blasts by reliable and appropriate methods to ensure the set limits for vibration and air overpressure are not exceeded.

~~(f)~~ (g) Monitored blast records shall be made available to ~~ACC~~ AC on request and will also be available for public viewing at the quarry office with prior approval from the site manager.

~~(g)~~ (h) Each blast will be designed and supervised by an appropriately qualified person as specified by OSH mining regulations.

~~(h)~~ (i) Each blast will be designed taking into account:

- general geological conditions;
- cavities and fissures;
- distance to the boundary;
- maximum instantaneous charge;
- direction of initiation;
- orientation of the face;
- weather conditions.

All the factors above, individually or in conjunction with each other can influence the level of effects produced by any one blast. Ensuring that all these factors are taken into consideration when designing a blast will reduce the potential risks associated with ground vibration, air overpressure and flyrock.

~~(i)~~ (j) The effects of air overpressure are controlled by:

- use of good quality stemming material;
- maintenance of correct stemming height;
- maintenance of adequate burden on all free faces;
- optimisation of drill patterns to reflect good geometrical design;
- optimisation of the delay sequence to maintain adequate relief;
- minimisation of secondary blasting;
- close examination of the face for weak seams and clay bands where explosive products may vent freely to air.

By initially utilising the appropriate design factors above and maintaining a corresponding record of representative blast monitoring, an improved understanding of design parameters for specific quarry areas can be gained. This will help to ensure that blasting effects are kept to a practicable minimum.

## **7.5 Traffic**

The effects of traffic on public roads outside the quarry site are generally beyond the control of Winstone and outside the scope of the District Plan rules. Winstone will however take any practicable steps to reduce the effects of traffic directly related to the quarry operation. These effects are associated with noise, dust, safety and congestion.

## 7.6 Traffic objective

**To minimise the adverse effects of traffic, directly generated by site activities quarrying activity, on the environment, where practicable.**

### 7.6.1 Explanation of traffic objective

- (a) This objective is a statement of intent by Winstone to **minimise the** ~~avoid, remedy or mitigate~~ adverse effects associated with **site quarry** traffic. Performance standards associated with achieving this traffic objective are inclusive in those standards dealing with the specific effects of noise and dust. The traffic objective is an assurance to the community that Winstone will control the effects of traffic within its site and where practicable outside the quarry site.
- (b) **A Traffic Management Plan has been prepared specifically to ensure this objective is met as a requirement of the fill consent. The Traffic Management Plan details the measure to implement the traffic object. Several of these measures are detailed in the following section but the Traffic Management Plan is to be referred to for further detail on the matter.**

### 7.6.2 Measures to implement the traffic objective

- (a) The opening of the quarry for dispatch will **typically** be ~~restricted to the following hours:~~

<b>Monday – Friday</b>	<b>7 am – 5 pm</b>
<b>Saturday</b>	<b>7 am – 2 pm</b>

**Furthermore, Winstone undertakes to manage the site in a manner that avoids the need to carry out general quarry operations outside the following hours:**

Monday to Saturday	7:00am to <b>10:00</b> <del>8:00</del> pm
Sundays and Public Holidays	9:00am to 6:00pm

~~(Note: Gates may be opened to customers earlier than 7am to reduce the effects of customer queues on Mt Eden Road however these customers will not be dispatched from the quarry until after 7am.)~~

- (b) To help reduce queuing and congestion on Mt Eden Road outside the **site quarry** customers will be informed of the opening ~~and dispatch hours~~ and requested not to **arrive before this time or** queue at the gate ~~prior to the quarry opening~~.
- (c) The current entrances and exits are shown on the site layout plan (see **Figure Appendix 3**).
- (d) All Winstone owned and operated vehicles will be regularly maintained and checked to ensure that appropriate noise suppression devices are installed and operating effectively.
- (e) Customers will be informed of the need to maintain their vehicle noise suppression devices so noise generated by their vehicles is kept to the practicable minimum level. Any customer

whose vehicle ~~quarry~~ management considers excessively noisy or generates any public complaint(s) of excessive noise emissions due to lack of maintenance will be warned that they will be refused service on any subsequent visit(s) until the problem is rectified, or the vehicle has proof of current compliance with the relevant Ministry of Transport requirements.

- (f) Winstone loader drivers will be appropriately trained to help ensure that customer's trucks are loaded securely. All trucks leaving the quarry with loads of quarry products will be checked for insecure loads. This will also help reduce the risk of quarry products being spilled on public roads. It is however ultimately the responsibility of the individual truck drivers to make sure their load is secure before they drive on a public road.
- (g) In dry weather conditions all Winstone owned and operated vehicles carrying aggregate product will have load covers in place before exiting the site. **Refer to the Traffic Management Plan for the requirements of drivers of customer vehicles to avoid the creation of a dust nuisance.** ~~A sign will also be displayed on site, which requests drivers of customer vehicles carrying aggregate product in dry weather conditions to have load covers in place before exiting the site.~~ [Note: Placing of load covers in wet conditions creates a potential Health and Safety hazard for drivers.]
- (h) A wheel wash will be used to spray truck wheels as they leave the ~~site quarry~~ site. This will help reduce the risk of dust being carried onto public roads by trucks.
- (i) **Monitoring and reporting requirements for this objective are detailed in the Traffic Management Plan.**

## 7.7 **Dust**

Dust can be generated by a variety of different activities that are carried out at the ~~site quarry~~ site including: drilling; rock breaking; crushing; extraction; trucks; machinery and blasting.

## 7.8 **Dust objective**

**To avoid, remedy or mitigate adverse nuisance or amenity effects of dust from quarry operations beyond the boundaries of the quarry site.**

### 7.8.1 *Explanation of dust objective*

- (a) Given the close proximity of the quarry to residential development there is potential for fugitive dust, especially in the drier months of the year, to detrimentally affect the amenity of these residential sites. This dust objective is intended to ensure that emissions of dust from the quarry are controlled at levels that do not cause a nuisance to the quarry's residential neighbours and to provide the community with an assurance that dust emissions will be minimized and in any event will meet the appropriate performance standards. The performance standards to achieve this objective are incorporated in the District Plan

provisions for the Business 7 zone and within the conditions of the ARC's Discharge to Air permit (Permit Number 21875 ~~—see copy at refer Appendix 2) for the quarry.~~

- (b) An Air Quality Management Plan has been prepared specifically to ensure this objective is met.

#### 7.8.2. Performance standards

- (a) The **discharge to air consent** (Permit No. 21875 ~~issued by the ARC (see refer Appendix 2)~~ sets controls on the emission of dust from the ~~quarry site~~. The consent contains a number of limit, process, monitoring, and logging and reporting conditions for controlling dust emissions.
- (b) The operation of the quarry shall not exceed the following:
- An extraction rate of 100 tonne per hour
  - Crushing and screening rates of 200 tonne per hour
  - A total storage capacity of 20,000 m<sup>3</sup>
- (c) The permit requires that an Air Quality Management Plan be maintained which accurately records all management, monitoring and operation procedures necessary to comply with conditions of the permit.
- (d) That is the permit authorises the discharge of contaminants to air from the **quarrying** ~~quarry's~~ activities and processes, but subject to the emissions being at the minimum practicable level. The measures undertaken to ensure compliance with the consent conditions are contained in the following section **and are also further detailed in the Air Quality Management Plan.**

#### 7.8.3 Measures to implement dust objective

- (a) The vegetation on all earth bunds around the quarry will be maintained.
- (b) Drilling equipment shall be fitted with a dust extraction system.
- (c) Measures to reduce the generation of dust during blasting include:
- adoption of good blasting practice to also accord with provisions of the District Plan.
  - using minimum force to produce less dust.
  - sequential firing of charges.
  - wetting blast locations and the surrounding area with water when the ground is particularly dry.
  - consideration of weather conditions as a blast design factor. Blasting will be avoided, or postponed when practicable (except for safety reasons), during periods when weather conditions would most probably result in excessive dust emissions causing a nuisance to the quarry's residential neighbours. Prolonged dry periods

combined with strong winds are the types of weather conditions that are most likely to lead to postponement of blasting.

(d) Measures to reduce the generation of dust from on site activities include:

- a fixed and automated sprinkler system installed around the perimeter of the quarry working area to contribute to minimisation of dust emissions;
- water carts shall be used when required to keep haul roads and areas near the quarry face visibly wet;
- vehicle speed on dry roads will be limited to 20 km per hour to reduce the risk of raising visible dust;
- trucks will be checked for load insecurity to reduce the risk of material falling off and being crushed thereby generating dust;
- Winstone owned and operated trucks will not have exhausts that are vented downward;
- a wheel washing facility shall be maintained for vehicles exiting the quarry that have traversed unsealed roads or had direct contact with aggregate **and/or fill** material;
- sealed roads and yards shall be cleaned as required to ensure dust is kept to a practicable minimum.

(e) Other measures to minimise dust emissions within and from the site will include:

- minimising bare or exposed areas within the quarry;
- where practicable maintaining all **fill and** rock resource being excavated, handled or processed in a visibly damp condition;
- irrigating, or keeping damp by water cart, those areas that are exposed or disturbed on a regular basis and;
- re-vegetating areas within the quarry that no longer play an active part in the operation, or those areas where resource extraction is planned but material is not to be extracted within one year;
- aggregate stockpiles will be located, constructed, and their operations managed to minimize potential dust emissions. Water sprays, where practicable, appropriate, and necessary, shall be incorporated in to process plant, e.g. stockpile conveying equipment. When necessary fixed or mobile water spray misting shall be applied to aggregate stockpiles.

(f) Records to be kept. A continuous record of weather conditions, i.e. wind speed, wind direction, and rainfall shall be kept, as well as a log of all/any air quality complaints received. The ~~quarry~~ **site** manager or his nominee shall also record daily:

- any dust control equipment malfunctions and any remedial actions taken;
- any visual emission of dust;
- sources of visual emission of dust;
- measures initiated in response to visual emission of dust to prevent recurrence or mitigate effects;



- all relevant details relating to monitoring required by the **TSP Total Suspended Particulate** Monitoring Plan; [Note: ~~The TSP Monitoring Plan~~ This plan is an Appendix to the Air Quality Management Plan ~~referred to at 7.8.2(c) above.~~]
  - water cart use and when used, its frequency and volume of water used;
  - date and signature.
- (g) Video monitoring of all blasting is required. Time lapse video of the quarry ~~has been used in the past~~ **is used** to help identify potential sources of dust and assist in the implementation of dust mitigation on site. ~~If considered appropriate by the site manager, or requested in writing by ARC's Manager, this technique may be used from time to time in the future for similar reasons.~~
- (h) Reporting requirements are as listed in the Air Permit (refer Appendix 2) **and detailed in the Air Quality Management Plan.**

## **7.9 Landscape and visual**

Quarrying can change the landscape and subsequently affect the visual amenity of an area. Activities carried out within the quarry can also have visual effects on neighbouring residents.

## **7.10 Landscape and visual objective**

**To minimise adverse landscape and visual effects of the quarry operations on the surrounding community.**

### *7.10.1 Explanation of landscape and visual objective*

- (a) The quarry has been an existing activity on the site for a considerable length of time. The encroachment of residential development in that time has brought with it a change in expectations regarding landscape amenity. It is Winstone's intention to minimise the landscape and visual effects of the quarry operations on the surrounding community and to provide an assurance to neighbours that Winstone will take practicable steps to carry this out.

### *7.10.2 Performance standards*

- (a) The District Plan recommends 15 metre yards for the site that are adjacent to residential and open space zones and any road boundary. Yard distances established prior to the latest District Plan may be less than the yard provisions of the District Plan. These existing yards will not be changed. Some landscaping and planting will also take place within these yards.
- (b) The District Plan requires a landscaped area with a minimum width of 3m to be provided adjacent to the length of the respective site boundary of every required yard, except where it is necessary to provide vehicle access points. The required landscaping shall be planted



and maintained at all times and in such a manner as to create and preserve a visual screen for adjacent sites.

- (c) Winstone agreed to and has implemented the landscaping and planting provisions described in the plan prepared by Boffa Miskell, titled “Three Kings Quarry - Boundary Planting Proposals”, 1996. A copy of this plan can be found in Appendix 5. **Work to plant these boundaries commenced circa 2000 and supplementary planting was undertaken in 2011. Any additional planting will utilise only native species and look to incorporate kohekohe (*Dysoxylum spectabile*) because of its relevance to the area.**

#### 7.10.3 Measures to implement the landscape and visual objective

- (a) A landscaped area with a minimum width of 3m shall be provided adjacent to the site boundary of every required yard, as stated in the District Plan, Business 7 zone, yard provisions. Some boundary plantings will have a width greater than the 3m minimum and these are specified within the Boffa Miskell landscape plan titled “Three Kings Quarry - Boundary Planting Proposals”. This plan details boundary and screen planting in four areas:
- Mt Eden road frontage;
  - an internal access road;
  - western quarry face (adjacent to the Big King Reserve);
  - all other quarry faces.
- (b) Any landscaping shall be planted and maintained at all times and in such a manner as to create and preserve a visual screen for adjacent sites.
- (c) Areas of the quarry where rock recovery has been completed will be revegetated as soon as practicable.
- (d) Final restoration of the visual amenity of the site will be made after consultation with representatives of the local community **and tangata whenua.**
- (e) Where appropriate new buildings will be designed in a way which minimises the visual impact on neighbouring sites, taking into consideration such things as colour, height, screening and relationship to the surrounding topography.

#### 7.11 Auckland Council's Drainage Systems

The District Plan provisions for the Business 7 zone identify “effects on the Council drainage system” as matters to be addressed in this QMP. Winstone has a permit from **ACC AC** to discharge water into the **ACC's AC's** drainage system. A copy of this permit can be found in Appendix 2.

##### 7.11.1 Drainage System Objective

**To appropriately manage the discharge of pumped ground water into **ACC's AC's** drainage system to avoid adverse effects on the drainage system or the environment.**

#### 7.11.2 Explanation of drainage system objective

- (a) The discharging of up to 5,000m<sup>3</sup> of pumped groundwater into the ~~ACC~~ AC drainage system could potentially overload the drainage system during heavy rainfall events leading to flooding, due to the limited capacity within the drainage system.
- (b) Prior to exercising the ~~APC~~ dewatering consent, Winstone commissioned a study to assess the capacity of the system to accommodate the volumes of water to be discharged by Winstone into the ~~ACC~~ AC drainage system. The study found that there was capacity within the drainage system to accommodate the Winstone discharges.
- (c) If the Winstone water was contaminated there would be potential for adverse effects on the environment where the ~~ACC~~ AC drains discharge into the environment.
- (d) Extensive tests have been carried out by ~~the former~~ Metrowater to determine the quality of the pumped groundwater. These tests have shown that the water is of a high quality and suitable for discharge into the ~~ACC~~ AC drainage system and ultimately the Manukau Harbour.

#### 7.11.3 Performance Standards

- (a) The permit to discharge extracted groundwater from the ~~quarry~~ site into the ~~ACC's~~ AC's drainage system contains standards relating to the control of this discharge. These include:
  - The maximum daily discharge shall be 5,000m<sup>3</sup> and the rate of discharge shall not exceed 58 litres per second over 24 hours;
  - In the event of surcharging of the public stormwater system at the point of discharge from the quarry in to the system, the system shall be protected by cessation of discharge.
  - The discharge shall not have a chlorine content exceeding 0.3ppm and have no fluoride content.

#### 7.11.4 Measures to implement Drainage System Objective

- (a) Telemetric devices that can automatically control the volumes and rates of discharge of water into the drainage system have been installed. The devices ensure that during heavy rainfall events there is enough capacity within the drainage system to accommodate the discharges from the quarry as well as the rainfall runoff. Pumping of groundwater will cease when this is not the case.
- (b) Inspect the telemetric devices as soon as possible after any heavy rainfall event and on a regular weekly basis when discharging groundwater to the stormwater drains.
- (c) Appropriate spill procedures and response kits shall be kept on site for use in the event of an accidental spill of substances that could potentially contaminate groundwater. These

procedures and records shall be contained for reference to within the ~~site ERP~~ **relevant Site Specific Management Plans.**

- (d) The pumping of groundwater will take place below the water table to ensure that no substances that could float on the surface of the water table will be discharged to the water treatment plant or the drainage system.

## **8. Rehabilitation and End Use**

### **8.1 Rehabilitation and end use**

- (a) There are many potential options available for rehabilitation and end use once quarrying has been completed at the site. ~~Five basic options are presented later in this section.~~ **Resource consent for the filling of the site was granted by a decision of the Environment Court on 26<sup>th</sup> July 2011. Rehabilitation of the site is to commence in 2012.**
- (b) **End use for the rehabilitated quarry has not yet been determined. The Business 7 zone provisions of the AC Operative District Plan which presently apply to the site effectively restricts land use to quarrying and related activities, including, subject to resource consent, rehabilitation.**
- (c) **Filling of the site to proposed levels is subject to market demand but it is anticipated to be in the vicinity of 8 to 12 years. It is expected that future use will be defined well in advance of the completion of filling, and, if necessary, specific requirements for defined end use(s) accommodated through review of the AC Operative District Plan.**

### **8.2 Current rehabilitation and end use objective (guiding principle)**

- ~~(a)~~ **Selection of an end use for the site and the method of rehabilitation should take into consideration the compatibility of the site with surrounding land forms, the surrounding land uses, Mt. Roskill C community needs as defined by Auckland City Council AC and the economic viability for the land owner.**

#### **8.2.1 Explanation of rehabilitation and end use objective**

- (a) There are many potential options available for ~~the rehabilitation and end use of Winstone's quarry land once quarrying has been completed at the site~~ **and the site rehabilitated to the levels allowed by the fill consent.** ~~The rehabilitation and end use~~ **This** objective helps provide guiding principles for the selection of suitable end use ~~and rehabilitation options.~~
- (b) The rock resource at the Winstone site is a valuable commodity. In order to maximise the value of this resource it is important to extract all economically available rock, subject to control of environmental effects, prior to rehabilitation occurring in any particular part of the site.

- (c) The District Plan allows for quarrying of the ~~ACC~~ **AC** administered land adjoining the quarry as follows:

*“Within the Three Kings Reserve, there is a previously worked quarry immediately to the south and west of the operational quarry at Three Kings. Studies have indicated that substantial amounts of scoria remain and that it is economically viable to extract further scoria from it. Having regard to the value of the scoria resource and the shortage of scoria in the region, the deposit should be quarried before the land is developed for recreational purposes.”*

Given the above statement, Winstone’s current intention is to consider any suitable opportunities that may arise in the future for it to be involved with the quarrying of the adjoining ~~ACC~~ **AC** administered land. Any extraction carried out by Winstone on this adjoining land would occur prior to end use rehabilitation occurring in those particular parts of the site.

- (d) The current resource consent to dewater the quarry expires in December 2030. It is currently estimated that, given existing constraints and predictions for the future aggregate market, the aggregate resource within the Winstone site would be depleted by this date and that rehabilitation would be **well** under way.

- ~~(e) Winstone has stated the option it currently prefers for end use and rehabilitation. It is important to note that this is Winstone’s current preference and that this may change over time. Any future change in Winstone’s preference will however be incorporated into this QMP only after consultation with the SLG.~~

### 8.2.2 End use and rehabilitation options

- ~~(a) The five basic rehabilitation options are listed below with possible uses, and are indicatively illustrated in Appendix 4.~~

- Option 1: No fill, no water pumping. Potential use illustrated: lake for water recreation.
- Option 2: No fill, continuation of water pumping. Potential land use: arena / business park / residential / open space.
- Option 3: Partial fill, continuation of water pumping. Potential land use: business / residential / open space.
- Option 4: Partial fill, no water pumping. Potential land use: business / residential / open space / with some lake.
- Option 5: Total filling. Potential land use: business / residential / public open space with no lake.

- (b) The benefits and disadvantages associated with each option have not been specifically defined as this is beyond the scope of this QMP, and requires additional information that will be obtained from community consultation, and liaison with ACC and ARC.

### ~~8.2.3 The end use and rehabilitation currently preferred by Winstone~~

- (c) Consent was granted to rehabilitate the site through filling to no more than the levels shown in Appendix 4. Filling is to commence in 2012. As such Options 1 and 2 detailed above are no longer relevant.
- ~~(a)~~ (d) ~~The final landform and end use currently preferred by Winstone is represented as Figure 5. To achieve, this final landform~~ no more than, the levels shown in Appendix 4 Winstone will backfill the , ~~Winstone's current intention is to backfill its~~ Three Kings Quarry with fill generally excavated and /or removed from construction sites and other developments.
- ~~(b)~~ (e) In central Auckland there are few sites suitable to accommodate the significant volumes of material excavated and / or removed from sites where construction and development is taking place. Cleanfill is the name generally given to this material, but is a term that fails to capture the fact that even naturally occurring soils generally contain background levels of various contaminants. Therefore Winstone would adopt the expression “managed fill” to describe fill materials brought to and placed on site, where the composition and chemistry of the materials would be subject to monitoring and management processes designed to ensure environmental effects would be no more than minor. An example of managed fill material is the soil excavated for foundations at a new housing development. It may also be noted that Winstone has many years experience operating managed fill sites, including its Puketutu Island site in Manukau City
- ~~(c)~~ (f) Winstone intends initiating the managed fill of the site at the earliest practicable time to minimise environmental effects. However the rate at which filling occurs will be dependent upon:
- the supply of available and suitable fill over time; and
  - the extent to which quarrying continues, either within the Winstone site or beyond its boundaries.
- ~~(d)~~ (g) After backfilling has been completed, the final landform would make available land potentially suitable for such things as building development and public open space. It is envisaged that the land would then be subdivided and sold or leased. At this stage it is thought that subdivision could be designed for light industrial / commercial / residential land use activities. Ultimately the type of subdivision that takes place will depend on what type of demand for land exists at the time of subdivision, and on the rezoning of the land.
- ~~(e)~~ ~~The amount of open space area depicted in Figure 5 is only an indication of what the split in final land use could be. Ultimately the amount of open space area will depend upon the ACC's future willingness to purchase land for public use and the level of reserve contribution required should the land be eventually rezoned and or subdivided.~~
- ~~(f)~~ (h) A managed fill has the potential to provide the landowner with an economic return and the Auckland community with improved recreational facilities, through enhancement of the Three Kings Reserve.



#### 8.2.43 ~~The ACC AC recommendation for end use and rehabilitation~~

- (a) ~~An ACC~~ **The former Auckland City Council** commissioned report titled “Initial Assessment Community and Open Space Needs in the Three Kings Area” recommended that “end use of Winstone Quarry facilitates the development of additional passive and active use areas on adjoining reserves or within the Winstone quarry”. Consultation is to take place with the Auckland City Council on end use ~~and rehabilitation~~ options.

#### 8.2.54 ~~Measures to implement end use and rehabilitation objectives~~

To implement the objective set out in the first part of this section, the following measures are proposed:

- (a) Carry out further resource investigations to better define the rock resource within the Winstone owned and ~~ACC AC~~ administered land to ensure that all economically extractable resource is identified prior to ~~the commencement of~~ **significant progress in the rehabilitation of the site by filling in any particular area.**
- (b) Consult with the community prior to seeking resource consents or plan changes to quarry beyond existing consent limits of timing, extent of extraction or beyond the boundaries of the Winstone owned land, if resource investigations indicate more economically extractable resource is available, subject to control of environmental effects.
- ~~(c) Consult with interested parties, including the community, neighbours, tangata whenua, ARC and ACC, prior to seeking to apply for the necessary resource consents for managed fill.~~
- ~~(d)~~ (c) Consult with interested parties, including the community, neighbours, tangata whenua, ~~ARC and ACC,~~ **and AC,** prior to seeking any plan change or rezoning of the land for end use and/or subdivision.
- ~~(e)~~ (d) ~~Prepare a~~ **A Fill Management Plan has been prepared** prior to the filling activity commencing. The purpose of this plan ~~would be~~ **is** to provide certainty to the community on how the potential environmental effects of filling ~~would~~ **will** be managed. **In addition, a Traffic Management Plan has been prepared to detail the measures to be implemented to minimise the adverse affects of traffic directly generated by the operation of the site.**
- ~~(f)~~ (e) When considering any significant change to the preferred ~~rehabilitation or~~ end use option ~~indicated in this QMP,~~ any community based investigations into the needs of the community shall also be considered and consultation shall be undertaken with interested parties, including the ~~ACC AC~~ and SLG.
- ~~(g)~~ (f) Winstone is committed to continuing to work with ~~ACC AC~~ and the community to scope out and play its part in implementing a study, or studies, to assess the different end use opportunities for the Winstone site which integrate with the adjoining land. It is currently envisaged that any such study would take into consideration such matters as open space, recreation and community and business needs.

- ~~(h)~~(g) This end use and rehabilitation section of the QMP shall be reviewed and updated, if necessary, every two years by Winstone to help provide even greater certainty to the surrounding community.
- ~~(i)~~ (h) End use options will need to be considered by ~~ACC~~ AC and can only be established by way of a plan change to the District Plan.

#### 8.2.65 Performance standards to implement the end use and rehabilitation objective

- (a) If quarrying is to take place beyond existing consent limits on timing or extent of extraction, then new consents or plan changes would be required. These will contain conditions, rules or guidelines to control all the environmental effects of any further quarrying activity.
- (b) Under current legislation ~~resource consents would be required prior to carrying out backfilling activities within the quarry. Similarly,~~ a plan change or rezoning would be required prior to any subdivision of the rehabilitated land. ~~These resource consents and plan~~ Any plan changes would also contain conditions, rules or guidelines to control all the potential environmental effects of any subsequent change in land use.
- (c) A Fill Management Plan ~~will be~~ has been prepared by Winstone Aggregates. This ~~will~~ details how the potential environmental effects of the fill activities will be managed. In addition, a Traffic Management Plan has been prepared to detail the measures to be implemented to minimise the adverse affects of traffic directly generated by the operation of the site.
- (d) The District Plan, Business Zone 7 rule, 8.8.2.9 states that after completion of quarrying, the site will be left in a form that is stable, safe and suitable for subsequent use.

## 9. Monitoring

- (a) The ~~site Environmental Records and Procedures Manual (ERPM)~~ should Site Specific Management Plans shall contain all relevant details relating to the carrying out of all required monitoring including:
- who is responsible for carrying out the monitoring;
  - when it has been carried;
  - where is has been carried out;
  - how it is to be carried out; and
  - the monitored results.

Examples of required monitoring and reporting are for dust, noise, blasting and filling.

- (b) The ~~ERPM~~ relevant Site Specific Management Plans shall also contain records of all complaints received relating to environmental effects associated with the quarry operation:

The record shall include the following information:

- name and details of complainant;

- description of complaint;
  - any follow-up action;
- (c) The ~~ERP~~ **Site Specific Management Plans** are available for inspection ~~only at the quarry site,~~ and may be viewed **at the site** following prior arrangement ~~with the quarry manager or any time online at: <http://threekingsquarry.co.nz>.~~
- (d) **Monitoring and reporting requirements that are not detailed in any other Site Specific Management Plan are detailed in the following sections.**

### **~~9.1~~ Dust**

- ~~(a) Records to be kept. A continuous record of weather conditions, i.e. wind speed, wind direction, and rainfall shall be kept, as well as a log of all/any air quality complaints received. The quarry manager or his nominee shall also record daily:~~
- ~~• any dust control equipment malfunctions and any remedial actions taken;~~
  - ~~• any visual emission of dust;~~
  - ~~• sources of visual emission of dust;~~
  - ~~• measures initiated in response to visual emission of dust to prevent recurrence or mitigate effects;~~
  - ~~• all relevant details relating to monitoring required by the TSP Monitoring Plan;~~
  - ~~• water cart use and when used, its frequency and volume of water used;~~
  - ~~• date and signature.~~
- ~~(b) Video monitoring of all blasting is required. Time lapse video of the quarry has been used in the past to help identify potential sources of dust and assist in the implementation of dust mitigation on site. If considered appropriate by the site manager, or requested in writing by ARC's Manager, this technique may be used from time to time in the future for similar reasons.~~
- ~~(c) Reporting requirements are as listed in the Air Permit (refer Appendix 2).~~

### **~~9.2~~ 9.1 Noise (excluding blasting)**

To ensure that the noise performance standards set in the District Plan are met, monitoring will be carried out using appropriate equipment, methods and personnel. The noise monitoring regime will include:

- Monitoring on two representative occasions per year at the two noise monitoring locations identified on Figure 2;
- Monitoring shall be carried out following the receipt of a direct complaint regarding noise to site management, if, in the opinion of the site manager, monitoring is considered appropriate;
- Monitoring on up to two occasions per year by an independent noise expert (as agreed to by Winstone) at the two monitoring locations identified on Figure 2, without Winstone's prior knowledge and at Winstone's expense. This monitoring

shall be initiated by a request from a designated community representative to an appropriate ~~ACC~~ **AC** staff member. The results of this random monitoring shall be available to all SLG parties on request;

- Prior to any change in the quarry operations occurring that could result in greater noise effects beyond the boundary, a reassessment of the noise from quarry operations shall be carried out, if the changes have not already been predicted or modeled.

### ***9.3 9.2 Ground vibration, air overpressure (blast noise) and fly rock***

- (a) Records will be maintained for each blasting including:
- the time of the blast;
  - location of the blast;
  - weather conditions;
  - total charge weight;
  - maximum instantaneous charge.
- (b) Winstone will undertake monitoring of all blasts by reliable and appropriate methods as set out in the District Plan to ensure the set limits for vibration and air overpressure are not exceeded. These records shall be made available to Council on request. Vibration monitoring does not necessarily have to be undertaken on the foundation of adjacent buildings provided that the quarry operator can safely extrapolate the measurements taken from the chosen monitoring point to the foundation of adjacent buildings.

## Appendix 1

### **~~Winstone Environmental Policy~~**

***Most Relevant Winstone Aggregate Policies – Community Relations, Dust Emission, Environment and the Iwi, Hapu and Whanau Policy***



# Community Relations Policy

As the largest producer of aggregate products in New Zealand, Winstone Aggregates is easily identified by the local communities in which we operate, and throughout New Zealand society as a whole.

Adverse effects generated by our activities and the activities of other players within the industry have the potential to create negative perceptions of 'who we are' and 'what we do' among the community, including not only neighbours but Iwi, local and regional Councils, conservation groups and, to a lesser extent, suppliers and purchasers.

These negative perceptions have the potential to impact upon the business at all levels.

Winstone Aggregates is committed to developing good relations with the community at all levels of the business.

The purpose set out above will be implemented through the following methods:

- Ensure ongoing compliance with regulations, conditions of consent and plan requirements in line with our Environmental Policy
- Promote awareness of the importance of the aggregate industry to communities in New Zealand
- Establish relationships with the community, based on trust and integrity
- Ensure appropriate levels of community consultation and involvement are maintained which may include organised site visits, open days, mail outs, liaison groups and meetings
- Be actively involved in and support the communities in which we operate
- Respond to complaints and enquiries promptly and in an appropriate manner

At an individual site level, Community Relations Plans will be prepared to assist in implementing the methods set out above. These plans will be developed in accordance with the 'Outline for Site Community Relations Plan' included as part of the Community Relations Guidelines, and will recognise the issues relevant to the individual site and how best to apply the above methods.



Bernie Chote, General Manager  
Dated October 2007



# Dust Emission Policy

Winstone Aggregates regards dust emissions as a hazard that can affect the environment and/or the health of individuals and therefore needs continual control, monitoring, evaluation and regular communication within the organisation.

It has been established by research that the dust generated in some quarry operations may be hazardous to the individual if not managed appropriately. The standards for emissions and limits for exposure are outlined in the National Ambient Air Quality Emissions Standards (NAAQES) and the Work Exposure Standards (WES).

From an environmental perspective, Winstone Aggregates is committed to working toward management of dust emissions to standards appropriate to the environments in which we operate in accordance with Ministry for the Environment (MfE) good practice guidelines and below those identified in the NAAQES. The environmental effects of dust emissions will be assessed by:

1. Environmental Monitoring.
2. Complaints Monitoring (neighbours/community).

Based on these assessments, appropriate practices and processes to control environmental dust emissions will continue to be implemented and improved at Winstone sites.

From an employee's health perspective, Winstone Aggregates is committed to working towards the elimination of any adverse health effects resulting from dust exposure, and towards providing a continually improving work environment. To establish and monitor operating performance levels, actual and perceived exposure levels will be recorded through:

1. Personal Dust Monitoring.
2. Positional Dust Monitoring.
3. Complaints Monitoring (employees).

Once the data is analysed and understood, we will seek to achieve the WES standards and eliminate, isolate or minimise the effect of personal exposure. If the standards cannot, or may not, be achieved through modification of processes and practices, and employees are potentially exposed to unacceptable dust levels, then suitable personal protective equipment (PPE) will be provided.

All sites are required to have a written dust hazard management plan (DHMP) which outlines how the effects of dust will be controlled and exposure mitigated. At all operational sites, monitoring will be supplemented by regular medical assessment of employees to evaluate potential health effects at current exposure levels.



Bernie Chote, General Manager  
Dated September 2007



# Environment Policy

Winstone Aggregates is committed to industry leadership in environmental management, We strive to manage operations to achieve sustainable economic development while avoiding, remedying and mitigating adverse effects on the environment. This policy acknowledges the Fletcher Building Ltd Safety, Health and Environment Policy and provides for implementation of the environmental commitments and directives of the policy.

The Company's management is committed to leadership and providing sufficient and appropriate resources to enable its employees and contractors to fulfill their environmental responsibilities. To further these commitments, Winstone Aggregates has resolved to:

1. Establish and maintain an Environmental Management Manual (EMM) that prescribes and provides for appropriate guidelines, standards, measures and procedures to:
  - Identify, manage and report all environmental effects, hazards and incidents
  - Identify and obtain required regulatory authorisations
  - Set objectives and targets and measure and review performance
  - Allocate responsibilities and induct and train staff and contractors
2. Comply with all regulatory and company environmental requirements at all times.
3. Prevent pollution and work towards environmental enhancement, particularly the maintenance and restoration of biodiversity, where practicable.
4. Strive to apply the principle of Best Practicable Option, set targets, measure and review to continually improve performance.
5. Improve resource and energy efficiencies by setting targets to avoid, reduce and recycle wastes and use energy efficiently.
6. Communicate the policy and environmental achievements with all persons working for and on behalf of the company, iwi, neighbours, regulatory authorities, customers and other stakeholders and liaise with them when appropriate in an open, informative and consultative manner.



Bernie Chote, General Manager  
Dated May 2010



# Iwi, Hapu and Whanau Policy

Winstone Aggregates will recognise and respect the special relationship Maori has with the land and its ecosystems by:

- Consulting tangata whenua in a meaningful and timely manner when assessing effects of proposed or operating developments
- Formulating reasonable and practicable protocols through consultation, which recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga and conducting operations in accordance with those protocols.
- Establishing and maintaining relationships with maori groups exercising kaitiakitanga over areas of mutual interest.
- Exploring and considering ways to assist maori in meeting Kaitiaki and/or joint objectives.
- Maintaining equal opportunity employment and management policies.
- Appointing and Iwi Liaison Manager to ensure implementation of this policy and to maintain a register of contacts and relationships of maori groups.
- Providing, where appropriate and related to the Company's activities, training for Winstone Aggregates personnel in Maoritanga.



Bernie Chote, General Manager  
Dated July 2008



## Appendix 2.1

### **~~Regional~~ Water Permit 12977**

~~ARC Permit No. 12977~~

This water permit was issued by the **former** Auckland Regional Council and amended by the Environment Court consent order on 27 March 1997 for the purpose of taking groundwater to dewater Three Kings Quarry to allow quarrying to ground level zero and to provide water for Municipal Supply.

The permit, or resource consent, contains a number of conditions that control how this activity is to take place. The consent was subject to (statutory) review in 2003 and amended conditions confirmed by the Environment Court in July 2005.

The expiry date of the consent is 31 December 2030.

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of an appeal under s120 of the Act

**BETWEEN**

**WINSTONE AGGREGATES, A  
DIVISION OF FLETCHER  
CONCRETE AND  
INFRASTRUCTURE LIMITD** (formerly  
known as Winstone Aggregates Limited)

(RMA 780/03)

Appellant

**AND**

**THREE KINGS UNITED GROUP  
INCORPORATED**

(RMA 779/03)

Appellant

**AND**

**TRANSIT NEW ZEALAND LIMITED**

(RMA 779/03 & 780/03)

Section 274 party

**AND**

**SOUTH EPSOM PLANNING GROUP  
INCORPORATED**

(RMA 780/03)

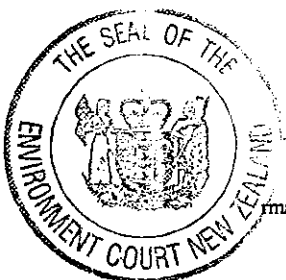
Section 274 party

**AND**

**EPSOM ENVIRONMENTAL  
EFFECTS SOCIETY  
INCORPORATED**

(RMA 780/03)

Section 274 party





AND

AUCKLAND REGIONAL COUNCIL

Respondent

BEFORE THE ENVIRONMENT COURT

Environment Judge L J Newhook sitting alone pursuant to s279 of the Act

IN CHAMBERS at Auckland

CONSENT ORDER

HAVING CONSIDERED the notice of appeal, the respondent's reply and the memorandum requesting a consent order signed on behalf of the parties, THIS COURT ORDERS BY CONSENT:

1. That the respondent's decision be amended as shown on the attached marked up copy of that decision.
2. Any consequential re-numbering and cross referencing required as a result of the above amendments.
3. This order resolves in full RMA 779/03 and RMA 780/03.
4. There is no order as to costs.

DATED at AUCKLAND this 15<sup>th</sup> day of July 2005.



A handwritten signature in black ink, appearing to read "L J Newhook", written over a horizontal line.

L J Newhook  
Environment Judge

# AUCKLAND REGIONAL COUNCIL

## RESOURCE CONSENT

Granted pursuant to the Resource Management Act 1991

### PERMIT NO. 12977

**CONSENT HOLDER:** Winstone Aggregates, a division of Fletcher Concrete and Infrastructure Limited Limited

**FILE REFERENCE:** 9798

### CONDITIONS OF CONSENT

**Duration of Consent:** This consent shall expire on 31 December 2030 unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991.

**Purpose of Consent:** To authorise the taking of groundwater to dewater the Three Kings Quarry on land presently owned by Winstone Aggregates and for municipal supply in accordance with Section 14 of the Resource Management Act 1991.

**Works:** A 200mm diameter bore (8B), an alternative "North Quarry Bore", and a proposed 250mm diameter bore ("Municipal Supply Bore") located approximately 150m west of Mt. Eden Road, and associated Filter Station.

**Site Location:** 987-1021 Mt Eden Road, Three Kings

**Legal Description of Land Where Water is Taken:** Lot 1 DP 37020 (CT 953/21)

**Legal Description of Land Where Water is Used:** Lot 1 DP 37020 (CT 953/21) and properties supplied through municipal supply.

**Territorial Authority:** Auckland City Council

**Map Reference of Take Point:** NZMS 260 R11 669757

**Authorised Quantity:** The Consent Holder shall ensure that:

- (a) The combined daily abstraction from bores 8B, the alternative "North Quarry Bore", and the "Municipal Supply Bore" shall not exceed 7,750 cubic metres.
- (b) The combined annual abstraction over the period commencing 1 June and ending 31 May of any



year from bores 8B, the alternative "North Quarry Bore", and the "Municipal Supply Bore" shall not exceed 2,737,500 cubic metres.

## DEFINITIONS:

Annual Renewal On Demand Bond: means a bond with, in respect of each Bond Period, an initial principal sum of (subject to condition 17(d)(ii)) \$5m that reduces during that Bond Period by the amount of each payment under it.

ARC: \_\_\_\_\_ means the Auckland Regional Council

"Bond Period" means a period of 12 months, the first period commencing on the date on which the bond is established and each subsequent period commencing on an anniversary of that date.

Cessation of settlement: means that there has been no settlement caused by dewatering under this consent greater than 5mm during any continuous 12 month period at any of the monitoring points required by this Consent.

Emergency Repair Works: means repair works undertaken so as to prevent or mitigate:

- (a) \_\_\_\_\_ an adverse effect on the environment which requires immediate preventive or remedial measures; or
- (b) \_\_\_\_\_ any event causing or likely to cause loss of life, injury or serious damage to property.

Manager: means the Manager, Water Resource Allocation, Auckland Regional Council

Dewatering: means the lowering of the water table.

Tonkin and Taylor (2003a): refers to Tonkin and Taylor report "Three Kings Quarry Dewatering, review of settlement predictions" dated February 2003.

Tonkin and Taylor (2003b): refers to Tonkin and Taylor report "Three Kings Quarry Dewatering, Assessment of Supplementary Investigations of April 2003" dated June 2003.

Monitoring and Contingency Plan: refers to the document entitled "Three Kings Quarry Dewatering, Monitoring and Contingency Plan for Ground Settlement" prepared in accordance with Special Condition 14 of this consent.

## GENERAL CONDITIONS:



1. That the servants or agents of the ARC shall be permitted access to the relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.

### **SPECIAL CONDITIONS:**

1. That the conditions of this consent, (including any specified quantity) may be reviewed by the Manager pursuant to Section 128 of the Resource Management Act 1991, by the giving of notice pursuant to Section 129 of the Act within one month of the fifth anniversary of ~~the commencement of the consent~~ the resolution of all outstanding appeals on this consent, and every 5 years thereafter and subsequently at not less than yearly intervals within one month of the second anniversary of the completion of any drawdown stage authorised under conditions 22, 22A and 22B thereafter for the purpose of dealing with any adverse effect on the environment which may arise from the exercise of this consent and in particular effects on the groundwater resources or ground subsidence caused by the dewatering operations. In addition, the consent may be reviewed at the same intervals if the zone of dewatering is found to be larger than anticipated in supporting documentation.
2. That only one of the bores known as "8B" and "North Quarry Bore" shall be in commission at any one time.
3. That the Consent Holder shall ensure that provision at the top of the bore for water level measurements shall be made and be maintained in accordance with the details outlined in this water permit (see Note 1).
4. That the Consent Holder shall ensure that provision at the top of the bore for water quality sampling shall be made and be maintained in accordance with the details outlined in this water permit (see Note 2).
5. That the Consent Holder shall install, within three months, and maintain on the outlet of the pump a meter which shall measure the total quantity of water being taken. The water meter, its installation and maintenance, shall be in accordance with the details outlined in this water permit (see Note 3).
6. That the Consent Holder shall read the meter required under Condition 5 above, at weekly intervals and keep records of each date and corresponding water meter reading. These records for the preceding quarter shall be submitted to the Manager, by no later than 10 working days after 28 February, 31 May, 31 August and 30 November each year.
7. That the Consent Holder shall monitor the groundwater levels in bores 2A ~~(or an alternative approved by the Manager)~~, 6, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 (including all piezometer levels at each location) as shown ~~new bores located at the intersection of Mt. Eden and Landscape Roads, the intersection of Landscape and St Andrews roads, the intersection of McCullough and Duke Streets and to the south of BH27 in Zone IHB,~~ on the "Borehole Location Plan" attached to the Monitoring and Contingency Plan, at monthly intervals, and keep records of each date, and water level for each bore. These records for the preceding quarter shall be submitted to the Manager, by no



later than 10 working days after 28 February, 31 May, 31 August and 30 November. In the event of any of the monitoring bores being destroyed, or becoming inoperable, the Consent Holder shall substitute that bore with another with the approval of the Manager.

8. That if the Consent Holder gives notice of its intention to drawdown below 34m RL in accordance with the conditions of this consent it shall install 4 new bores generally located at the intersection of Mt. Eden and Landscape Roads, the intersection of Landscape and St Andrews roads, the intersection of McCullough and Duke Streets and to the south of BH27 in Zone IIIB. (Zones are depicted on Figure 1 Tonkin and Taylor (2003b)) The exact new bore locations within those general areas will be fixed in consultation with the Manager and monitored in accordance with the provisions of 7 above for not less than 12 months prior to the commencement of drawdown below 34m RL.

9. 8-That the Consent Holder shall ensure that a stratigraphic log is recorded for the bore when it is drilled. The stratigraphic log shall include a description of the geological strata encountered with their respective depths. The total depth, the cased depth of the bore, including details of any screens fitted, and the static level of water in the bore shall also be recorded as an appendix to the stratigraphic log.

10. 9-That the Consent Holder shall forward to the Manager a copy of the stratigraphic log of the bore and its appendix and the results of any hydraulic or chemical testing carried out for the commissioning of the bore.

11. 10-That the consent holder shall ensure that quarry dewatering operations authorised by this permit do not cause structural damage to buildings and services (stormwater, sewage, telephone, power, gas) which have been constructed or installed in accordance with recognised or accepted engineering practices located within the zone of influence of the dewatering wells.

11. Make good any damage

~~The Consent Holder shall repair, forthwith, at its cost, any damage to buildings and services, caused wholly or in part by the exercising of this consent.~~

12. Ground Settlement Monitoring

The Consent Holder shall establish and maintain the network of ground settlement monitoring points in the area shown on Figure 8 (Drawing no. 18670-02 dated October 2002) of Tonkin and Taylor (2003a), to detect vertical movements. The final location and number of monitoring points shall take into account the geology, accessibility to survey the points and risk of damage from ground settlement. The monitoring points shall be listed in the Monitoring and Contingency Plan. The distance between monitoring points added to the existing network shall be no more than 100m except in Zone IIA where the distance between monitoring points shall be no more than 25m. In zones IIB, IIIA and IIIB the distance between monitoring points shall be no more than 50m. In addition, monitoring points shall be at no greater separation than 25m in zone IIA.



In addition, the consent holder shall establish two transects of monitoring points in Zone IIA at approximately right angles to Hillsborough Road. The location of these monitoring points shall be described in the Monitoring and Contingency Plan.

Further additional monitoring points shall be required and added to provide a spacing of not more than 50m at locations in the monitoring network where observed differential settlements exceed 1:5000, at locations of the observed differential settlement, at a maximum spacing of 50m. If at any location observed differential settlements exceed 1:2000 additional monitoring points shall be added at that location to provide a maximum spacing of 25m.

The Consent Holder shall survey the monitoring points every six months while no dewatering is taking place and every three months during periods of dewatering. In addition, all monitoring points in zone IIA shall be surveyed three monthly. The survey shall be to an accuracy range of  $\pm 2\text{mm}$ , or as otherwise achieved by best practice precise levelling, which in any given survey means within the range  $\pm 2\text{mm}$  between adjacent monitoring points. If any part of the monitoring network becomes inoperative, the Consent Holder shall ensure that it is replaced as soon as practicable. The frequency of monitoring shall increase from six monthly to three monthly in those areas where differential settlement exceeds 1:2000. After dewatering has ceased for not less than 2 years and there has been a cessation of settlement, then ground surface monitoring shall be conducted by annual survey, provided that if dewatering recommences then monitoring shall revert to that set out in condition 12 above. The Monitoring and Contingency Plan shall provide for more frequent monitoring if settlement trigger levels are exceeded. The Consent Holder shall forward all survey data to the Manager and Three Kings United Group Incorporated within 10 working days of the completion of the survey.

### 13. Ground Settlement Limits

The Consent Holder shall ensure that the exercising of this consent, shall not cause greater than 1:1000 differential settlement between any two ground settlement monitoring points required by this consent (including any additional points detailed in the Monitoring and Contingency Plan). The Consent Holder shall cease taking water if the differential settlement between any two ground settlement points is steeper than 1:1000. The Consent Holder shall not recommence pumping without the permission of the Manager.

### 14. Monitoring and Contingency Plan

The Consent Holder shall prepare a revised Monitoring and Contingency Plan within three months of the revised conditions commencing (as defined in section 116 of RMA), for dewatering and ground settlement. This plan shall include the requirements of this resource consent, and the following elements:

- Details of how the surveys required by Condition 23 will be undertaken.
- Details of groundwater level monitoring.
- Trigger levels for early warning of excessive ground settlement based on the difference between predicted and actual water level changes.
- Details of ground settlement monitoring to be undertaken.





- Trigger levels (including those in Tables 7 and 8 of Tonkin and Taylor (2003a)) at ground settlement monitoring points at which time contingency measures would be undertaken.
- Details of all contingency measures to be undertaken.
- Details of personnel involved in the project who are identified in the plan as having responsibility for the Monitoring and Contingency Plan.
- Record keeping and reporting requirements of these personnel.
- Details of further reviews of monitoring data, undertaken by the Consent Holder.
- Details of piezometers to measure groundwater drawdowns in the Tauranga Group soils.
- Details of procedures to ensure compliance with conditions 22A, 22B, 22C, and 22D.
- Definition of seasonal variation for groundwater levels.

15. The Consent Holder shall submit the Monitoring and Contingency Plan for the approval of the Manager within three months of the revised conditions commencing (as defined in section 116 of RMA).

16. The Consent Holder shall comply with the Monitoring and Contingency Plan at all times.

17. Bond Conditions

a) The Consent Holder shall within three months of the revised consent conditions commencing (as defined in section 116 of RMA), enter into and maintain an annual renewable on demand bond (cash or equivalent) (the bond) in the terms set out below acceptable to the Manager.

b) The bond shall be in favour of the ARC. The bond shall provide for compliance with conditions of this resource consent for taking of groundwater (Permit No 12977). ~~The bond shall on demand for the sum comprise a sum of \$5.0 million.~~ The bond shall comprise an initial principal sum of \$5m and on each annual renewal be required to have an initial principal sum of \$5m or such other amount agreed under condition 17(d)(ii) ("Renewal Obligation"). If the Manager deems it necessary, the bond sum shall be inflation adjusted on a two yearly basis. During each Bond Period the principal sum of the bond shall reduce by the amount of each payment made under the bond. During such Bond Period, but without prejudice to the Renewal Obligation, the Consent Holder shall have no obligation to top up the bond for any such drawings. and its term shall be equivalent to the term of the resource consent plus 5 years  
12 a cessation of settlementm.

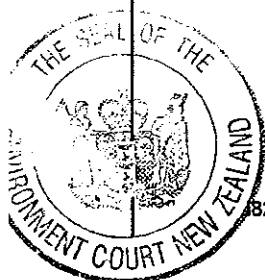
c) The bond requirement shall cease if:

- (i) 12 years has elapsed since written notice from the Consent Holder that dewatering has ceased on a permanent basis; and
- (ii) there has been a cessation of settlement since the cessation of dewatering



e)d) The bond shall also provide for:

- (i) ~~Variation of the bond on an annual basis within the term amending the sum of bond in accordance with an inflation index approved by the Manager. Such variation to be prepared by the Council's solicitors~~Security for assuring compliance with groundwater drawdown and ground settlement limits, monitoring programmes, and structural remediation requirements pursuant to this resource consent which shall be provided by surety or other guarantee or other form acceptable to the Manager and the Consent Holder (either such approval not to be unreasonably withheld).
  - (ii) ~~Security for assuring groundwater drawdown and ground settlement limits are met, monitoring programmes, and structural remediation pursuant to this resource consent to be provided in a lump sum by either a cash deposit with the ARC, a Bank Guarantee or other guarantee acceptable to the Council~~Variation of the bond on an annual basis within the term to amend the initial principal sum of the bond by agreement between the Manager and the Consent Holder for the purposes of ensuring that this condition of consent (including the initial principal sum and duration of the bond) is appropriate to the level of risk occasioned by the activities which are the subject of this consent and the matters to be bonded for in this condition.
  - (iii) ~~Such further or other securities from time to time as the ARC thinks fit for any increased sum of the bond~~Its registration (and as to variations) against the title Lot 1 DP 37020 (CT 953/21).
  - (iv) ~~Its registration (and as to variations) against all certificates of title to the land on which the consent is to be exercised~~Subject to any award of costs in any arbitration required under this consent, payment forthwith upon demand of the ARC's reasonable legal costs and disbursements on a solicitor and own client basis in respect of settling the terms and conditions of the bond, its preparation, execution, generation, variation and ultimate release of the bond and any actions or proceedings relating to the bond, provided that the total amount of costs being paid by the consent holder does not exceed the amount of the bond.
  - (v) ~~Payment forthwith upon demand of the ARC's reasonable legal costs and disbursements on a solicitor and own client basis in respect of settling the terms and conditions of the bond, its preparation, execution, generation, enforcement, variation and ultimate release of the bond and any actions or proceedings relating to it or relative to any section of the conditions of consent under Section 128 of the Resource Management Act 1991.~~
- e) Provided that in the event there is any disagreement between the Manager and the Consent Holder in respect of this condition then any such disagreement shall be resolved by a suitably qualified arbitrator in accordance with the Arbitration Act 1996, and having regard to the matters to be agreed pursuant to condition 21B with the arbitrator's decision being binding on all parties.



18. The Consent Holder shall remain liable under the Resource Management Act 1991 for any breach of the conditions of this resource consent which occur before the expiry of this consent and for any adverse effects on the environment not authorised by this or any other consent which become apparent during or after the expiry of the consent and the bond shall provide accordingly.
19. The terms of the bond may be reviewed on the request of the Consent Holder or by the ARC at yearly intervals pursuant to Section 128 of the Resource Management Act 1991 for the purpose of ensuring that this condition of consent (including the sum and duration of the bond) is appropriate to the level of risk occasioned by the activities which are the subject of this consent and the matters to be bonded for in this condition. (Note: The review provided for in this condition shall be in addition to the reviews provided for elsewhere in this consent).
20. The Consent Holder shall not transfer this resource consent to any person pursuant to Sections 136 and 137 of the Resource Management Act 1991 unless prior to the transfer, the transferee enters into and thereafter maintains a cash (or equivalent) bond in favour of the Council in the same terms as provided in Special Condition 17 above.

#### 21A. Creation of Assessment Panel

The Consent Holder shall establish, and maintain, for the duration of the consent the Assessment Panel. The Assessment Panel shall comprise 3 appropriately qualified experts to be nominated and appointed by agreement between the Manager and the Consent Holder in consultation with Three Kings United Group Incorporated. Prior to any such appointment, the Manager and the Consent Holder, in consultation with Three Kings United Group Incorporated, shall agree an appropriate scope of works for the Assessment Panel together with a process for the appointment and removal of any members of that panel and a 2 yearly report by the Assessment Panel on the Panel's findings and investigations over the previous 2 years. The sole function of the Assessment Panel shall be to determine any claim that dewatering of the quarry has caused damage to property.

#### 21B. Process of Assessment of Claims

If the Manager is notified of damage which the Manager considers, on reasonable grounds, may be the result of the exercise of this consent, or a result of failing to undertake any work required by this consent, then:

- (a) The Manager (or a suitably qualified nominee) and the Consent Holder (or a suitably qualified nominee) shall undertake a joint inspection of the alleged damage.
- (b) Within 10 working days of that inspection, the Consent Holder shall formally notify the claimant and the Manager that the Consent Holder will repair the damage, or invite the claimant to refer the matter to a member of the Assessment Panel.



- (c) Any such abovementioned invitation from the Consent Holder to the claimant to refer the matter to a member of the Assessment Panel shall include the following information:

(i) A description of the assessment process that the Consent Holder has established pursuant to this condition of consent and confirmation that the claimant may choose to have any claim of damage heard by a member of the Assessment Panel;

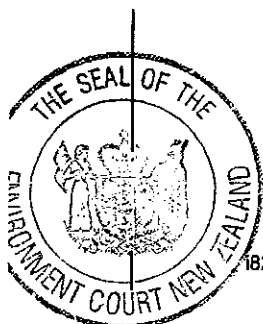
(ii) Provide the contact details of the members of the Assessment Panel;

(iii) An offer to pay 50% of the costs of any assessment pursuant to this condition carried out by a member of the Assessment Panel, provided that for all claims relating to residential or commercial properties the offer is to pay the costs of the assessment subject to payment by the claimant of \$500, unless in respect of any residential or commercial properties the Manager notifies the Consent Holder in writing that the damage was likely to have been caused by the exercise of this consent in which case the offer shall be to pay the costs of the assessment subject to payment by the claimant of \$50 towards the cost of the assessment. In any case, this offer shall lapse and be of no effect unless the claim of damage is referred to a member of the Assessment Panel together with the required payment by the claimant within 30 working days of the date of the invitation by the Consent Holder to the claimant to refer the claim to a member of the Assessment Panel.

- (d) Within 5 working days of receiving the Assessment Panel Decision, the Consent Holder shall make any payment required pursuant to Condition 21B(c)(iii) above to the member of the Assessment Panel who carried out the assessment. ~~Provided that if~~ the Assessment Panel Decision concludes that the claimed damage was caused by quarry dewatering then the Consent Holder shall forthwith refund any costs the claimant paid to the Assessment Panel for that assessment.

- (e) If the Assessment Panel Decision concludes that the claimed damage was caused by quarry dewatering, then the ARC may draw upon the bond to repair the damage unless:

- (i) the Consent Holder has, within 30 working days of receiving the Assessment Panel Decision, undertaken or taken reasonable steps to commence the repairs, or referred the claim to arbitration in accordance with condition 21B(f) below; or,
- (ii) the Consent Holder has, within 30 working days of receiving the Assessment Panel Decision, referred any dispute as to the work required to repair the damage to the assessor who made the Assessment Panel Decision and any such determination shall be final; or
- (iii) the Consent Holder and the claimant have reached an agreement in respect of any damage claimed under this section.



-In ~~any~~ either case the ARC shall not draw on the bond until final determination of those processes and, if the claimed damage was caused by the quarry dewatering, after allowing a reasonable time for any necessary repair works to be undertaken.

- (f) If the cost of undertaking the repair works attributable to quarry dewatering in (e) above, are likely to exceed \$20,000- \$30,000, to be inflation adjusted in accordance with the NZ Statistics residential construction Capital Goods Price Index applying as at the date of the Assessment Panel's decision then the Consent Holder may notify the claimant and the ARC that the claim is to be determined by arbitration in accordance with the Arbitration Act 1996 so as to allow a suitably qualified arbitrator to determine whether the claimed damage was caused by the quarry dewatering and to determine the work required to repair the damage. The claimant shall have the right to make submissions to the arbitrator and otherwise participate in the usual manner of a party to arbitration.
- (g) For the purpose of this condition, if the Consent Holder and the claimant are unable to agree on a suitably qualified arbitrator then one shall be appointed by the President of IPENZ.
- (h) The Consent Holder may, instead of undertaking any repair work or completing the assessment process, chose to negotiate with the claimant to pay the cost of those repair works directly to the claimant, or otherwise reach agreement with the claimant in respect of the damage.
- (i) If in the event that a claimant undertakes any emergency repair works that are necessary to repair damage caused by quarry dewatering in advance of the commencement or completion of the assessment process, the Consent Holder nevertheless remains obliged to comply with the terms of this condition where applicable, provided that the Consent Holder will not be liable under this consent to pay any costs of emergency repair works or related works or the reasonable costs of any emergency alternative accommodation and the ARC may not draw on the bond to pay for any such costs, unless and until such time as the assessment processes (including any arbitration under 21B(f)) are properly commenced and completed in accordance with this condition.

22. The Consent Holder shall maintain the groundwater level in the quarry above 34m RL until 31 December 2004 and may lower the groundwater level below 34m RL after that date if the criteria in Condition 22B, Condition 23, Condition 24, Condition 25 and Condition 7(b) are complied with.

22A. The Consent Holder shall only dewater below 34m RL in a maximum of 5m drawdown steps, as measured in bore 2A, with a period of maintenance pumping (holding water levels in bore 2A above the lower limit of each 5m increment) of at least 2 years at the end of each drawdown step. The Consent Holder shall only continue dewatering (another 5m drawdown step) if the criteria in Conditions 22B, 22C and 22D are met.



22B. The Consent Holder may commence drawdown for another 5m step if the Manager confirms in writing that:

- (i) the time since the end of the last 5m drawdown step is at least 2 years; and,
- (ii) measured settlement, caused by the exercise of this consent, at all settlement monitoring points has ceased for a period of at least 21 years (details of how this will be determined will be contained in the Monitoring and Contingency Plan); and,
- (iii) ~~the written approval has been obtained from the Manager, that the criteria (i) and (ii) in Condition 22B have been met and~~ the criteria in Condition 22D have not been exceeded.

22C. The Consent Holder shall cease dewatering if ground settlement, caused by the exercise of this consent, as measured at any settlement monitoring point required by this consent ~~exceeds a rate of~~ 10mm per year and shall not recommence dewatering until the criteria in Condition 22B are met.

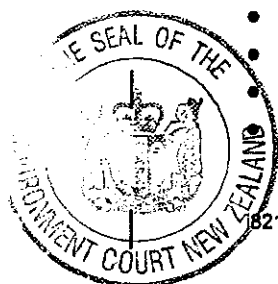
22D. The Consent Holder shall cease dewatering (halt drawdown in the quarry) if:

- (i) the differential settlement between any two settlement monitoring points required by this consent is steeper than 1:2,000; or
- (ii) the total settlement at any settlement monitoring point established before 30 September 2002 is greater than 100mm or the total settlement at any monitoring point established after 30 September 2002 is greater than 75mm, where both limits are absolute and will not be further adjusted for any uncertainties including survey measurement errors or seasonal variations; or and,
- (iii) groundwater drawdown, caused by the exercise of this consent, in excess of the seasonal variation occurs in any one of bores T1, T2, T3, ~~or~~ T4 37, 38, 39 or 40; or
- (iv) the groundwater level in the quarry is at or below ~~above~~ 0m RL;

23. If the Consent Holder gives notice of its intention to drawdown below 34m RL in accordance with the Conditions of this Consent, ~~The~~ Consent Holder shall consult with the owners of property in zone IIA and subject to the owner's approval, undertake, prior to commencing drawdown ~~within three months of the 2003 Review Decision,~~ a detailed condition survey of the buildings in zone IIA to confirm their existing condition (including structural condition) and enable the magnitude of allowable effects from changes in groundwater pressures and ground movements to be accurately determined.

The survey shall include but not necessarily be limited to the following:

- the type and capacity of foundations
- existing levels of aesthetic damage
- existing levels of structural distress
- assessment of structural ductility
- susceptibility to further foundation movements
- assessment of waterproofness of basements





The survey shall be undertaken by an independent experienced engineer approved by the Manager. The Consent Holder shall provide the Council with a certificate, from ~~the Registered a Chartered Engineer~~ who has certified that the survey has been completed in a professional manner and is an accurate assessment of the condition of the buildings concerned within one month of the completion of the survey.

24. If the Consent Holder gives notice of its intention to drawdown below 34m RL in accordance with the Conditions of this Consent, ~~The~~ Consent Holder shall, at the reasonable request of the Manager undertake an additional survey on any building in the dewatering zone for the purpose of checking for damage and for following up on any subsequent report of damage to that building.
25. If the Consent Holder commences drawdown below 34m RL in accordance with the Conditions of this Consent, ~~The~~ Consent Holder shall ensure that the exercise of this consent does not damage any historic buildings protected by the District Plan or the Historic Places Act.
26. The Consent Holder shall be entitled at any time and for whatever reason to apply for a change to any of the conditions of this consent, except for the duration of the consent, (including the removal of any redundant monitoring requirements) and any application shall be processed and assessed in accordance with the Resource Management Act 1991.

#### NOTES:

1. Adequate provision must be made at the wellhead so that a probe can be lowered vertically into the bore between the riser tube and casing to measure the static water level in the bore. This can be achieved by having an access hole of at least 2 centimetres in diameter at the top of the bore. In order to keep out foreign matter, the hole should be fitted with an easily removed plug. The probe hole shall be maintained to the specific dimensions and in working order at all times.
2. Adequate provision must be made at the wellhead so that a sample of water can be taken from the bore for water quality analysis. This can be achieved by fitting a tap or hand valve as close to the pump outlet as possible and before the water enters any storage tank or filter, and it should have approximately 0.3 metre clearance above ground level or other obstruction to allow a sample bottle to be filled. Provision for sampling shall be maintained to the specific dimensions and in working order at all times.
3. The water meter must be capable of measuring to an accuracy of at least plus or minus 5% and it is to display to at least 1 cubic metre. The meter is to be installed to the manufacturer's specifications and to the satisfaction of the Manager and shall be maintained to the specific requirements and in working condition at all times.

#### ADVICE NOTES:

The Resource Consent Holder is advised that they will be required to pay to the Council any administrative charge fixed in accordance with Section 36(1) of the




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Resource Management Act 1991, or any additional charge required pursuant to Section 36(3) of the Resource Management Act 1991 in respect of this consent.

2. The Resource Consent Holder is advised that the date of the commencement of this consent will be as determined by Section 116 of the Resource Management Act 1991, unless a later date is stated as a condition of consent. The provisions of Section 116 of the Resource Management Act 1991 are summarised in the covering letter issued with this consent.
3. The Resource Consent Holder is advised that, pursuant to Section 125 of the Resource Management Act 1991, this resource consent lapses on the expiry of two years after the date of commencement of this consent unless the consent is given effect to or other criteria contained within Section 125 are met.
4. The Resource Consent Holder is advised that, pursuant to Section 126 of the Resource Management Act 1991, if this resource consent has been exercised, but is not subsequently exercised for a continuous period of two years, the consent may be cancelled by the Council unless other criteria contained within Section 126 are met.
5. Any changes, that are more than minor, to the Monitoring and Contingency Plan are to be subject to application for change to consent conditions of resource consent in terms of Section 127 of the Resource Management Act 1991.

\*

The conditions of this consent have been changed by Auckland Regional Council pursuant to the Resource Management Act 1991. These conditions supersede those of permit number 949798 granted by the Environment Court on 27 March 1997.

  
~~Ken Becker~~  
~~Manager~~  
~~Water Resource Allocation~~  
~~Auckland Regional Council~~

~~Date:~~



\* Consent Order of the Environment Court upon 2 appeals against a decision of the



## Appendix 2.2

### ***~~Regional~~ Water Permit 31762***

#### **~~ARC Permit No. 31762~~**

This water permit was issued by the **former** Auckland Regional Council on 24 January 2006 for the purpose of taking groundwater for site dust suppression. It is subject to conditions, and replaced Permit No. 917960 issued in March 1992, which authorised the same activity (groundwater take for dust suppression) which was current in 2001 when the first version of the QMP was drafted.

The expiry date of the consent is 31 December 2020.

**AUCKLAND REGIONAL COUNCIL**

**RESOURCE CONSENT**

**Granted pursuant to the Resource Management Act 1991**

**PERMIT NO. 31762**

**CONSENT HOLDER:** Winstone Aggregates, a division of Fletcher Concrete & Infrastructure Limited

**FILE REFERENCE:** 7960

**CONDITIONS OF CONSENT**

**Duration of Consent:** This consent shall expire on 31 December 2020 unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991.

**Purpose of Consent:** To authorise the taking of groundwater for site dust suppression in accordance with Section 14 of the Resource Management Act 1991.

**Works:** A sump bore located approximately 280 metres west off Mt Eden Road.

**Site Location:** 987 Mt Eden Road, Three Kings

**Legal Description of Land Where Water is Taken and Used:** Lot 1 DP 37020 (CT 953/21)

**Territorial Authority:** Auckland City Council

**Map Reference of Take Point:** NZMS 260 R11 669759

**Authorised Quantity:** The Consent Holder shall ensure that:

- (a) The daily abstraction shall not exceed 1,000 cubic metres.
- (b) the combined daily abstraction under water permits 12799 and 31762 shall not exceed 7,550 cubic metres.
- (c) the annual abstraction over the 12 month period commencing 1 June of any year and ending 31 May of the following year shall not exceed 50,000 cubic metres.
- (d) the combined annual abstraction under water permits 12799 and 31762 over the 12 month period commencing 1 June of any year and ending 31 May of the following year shall not exceed 2,737,500 cubic metres.

**DEFINITIONS:**

- ARC: Means the Auckland Regional Council
- Manager: Means the Manager, Water Resource Allocation Section, Auckland Regional Council, or nominated ARC staff acting on the Manager's behalf.

**GENERAL CONDITIONS:**

1. That the servants or agents of the ARC shall be permitted access to the relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.

**SUMP CONSTRUCTION CONDITIONS:**

2. That the Consent Holder shall ensure that provision at the top of the sump for water level measurements shall be made and be maintained in accordance with the details outlined in this water permit (see Note 1).

**MONITORING AND REPORTING CONDITIONS:**

3. That prior to the exercise of this consent, the Consent Holder shall install, on the outlet of the pump a meter which shall measure the total quantity of water being taken. The water meter must be capable of measuring to an accuracy of at least plus or minus 5% and it is to display to at least 1 cubic metre. The meter is to be installed to the manufacturer's specifications and to the satisfaction of the Manager.
4. That the Consent Holder shall maintain the meter in accordance with the requirements of condition 3 and in working condition at all times.
5. That the Consent Holder shall read the meter required under Condition 3 above, at weekly intervals and keep records of each date and corresponding water meter reading. These records for the preceding quarter shall be submitted to the Manager, by no later than 10 working days after 28 February, 31 May, 31 August and 30 November each year.

**REVIEW CONDITION:**

6. That the conditions of this consent may be reviewed by the Manager pursuant to Section 128 of the Resource Management Act 1991, by the giving of notice pursuant to Section 129 of the Act, in December 2010 and subsequently at intervals of not less than five years thereafter in order:
  - a) to vary the quantities, monitoring and reporting requirements, and performance standards in order to take account of information, including the results of previous monitoring and changed environmental knowledge, on:
    - i) water availability, including alternative water sources;
    - ii) actual and potential water use;
    - iii) groundwater levels; and



- iv) groundwater quality;
- b) to deal with any adverse effect on the environment arising or potentially arising from the exercise of this consent.

**NOTES:**

1. Adequate provision must be made at the wellhead so that a probe can be lowered vertically into the bore between the riser tube and casing to measure the static water level in the bore. This can be achieved by having an access hole of at least 2 centimetres in diameter at the top of the bore. In order to keep out foreign matter, the hole should be fitted with an easily removed plug. The probe hole shall be maintained to the specific dimensions and in working order at all times.
2. Adequate provision must be made at the wellhead so that a sample of water can be taken from the bore for water quality analysis. This can be achieved by fitting a tap or hand valve as close to the pump outlet as possible and before the water enters any storage tank or filter, and it should have approximately 0.3 metre clearance above ground level or other obstruction to allow a sample bottle to be filled. Provision for sampling shall be maintained to the specific dimensions and in working order at all times.

**ADVICE NOTES:**

1. The Resource Consent Holder is advised that they will be required to pay to the Council any administrative charge fixed in accordance with Section 36(1) of the Resource Management Act 1991, or any additional charge required pursuant to Section 36(3) of the Resource Management Act 1991 in respect of this consent.
2. The Resource Consent Holder is advised that the date of the commencement of this consent will be as determined by Section 116 of the Resource Management Act 1991, unless a later date is stated as a condition of consent. The provisions of Section 116 of the Resource Management Act 1991 are summarised in the covering letter issued with this consent.
3. The Resource Consent Holder is advised that, pursuant to Section 125 of the Resource Management Act 1991, this resource consent lapses on the expiry of five years after the date of commencement of this consent unless the consent is given effect to or other criteria contained within Section 125 are met.
4. The Resource Consent Holder is advised that, pursuant to Section 126 of the Resource Management Act 1991, if this resource consent has been exercised, but is not subsequently exercised for a continuous period of five years, the consent may be cancelled by the Council unless other criteria contained within Section 126 are met.

**This consent has been granted by the Auckland Regional Council pursuant to the Resource Management Act 1991.**



**Team Leader  
Water Allocation  
Auckland Regional Council**

**Date:** 24 January 2006

Per:

## Appendix 2.3

### **~~Regional~~ Air Permit No. 21875**

This air permit was granted, subject to conditions, by the **former** Auckland Regional Council in April 2000, and the conditions confirmed by the Environment Court on 21 August 2002.

The permit, or resource consent, contains a number of limit, process, monitoring, and logging and reporting conditions for controlling dust emissions.

The permit expires on the 1 August 2012.

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of appeals under s.120 of the Act

BETWEEN WINSTONE AGGREGATES LIMITED

(RMA 370/00)

AND

THREE KINGS UNITED GROUP INC

(RMA 376/00)

Appellants

AND

AUCKLAND REGIONAL COUNCIL

Respondent

BEFORE THE ENVIRONMENT COURT

His Honour Judge R J Bollard sitting alone under s.279 of the Act

IN CHAMBERS at Auckland

CONSENT ORDER

HAVING CONSIDERED the notices of appeal and the memorandum of counsel lodged on behalf of the parties, THIS COURT HEREBY ORDERS BY CONSENT that:

The appeals be allowed to the extent that:

1. The conditions of consent shall be in the form attached to this order.
2. There is no order as to costs.

DATED this 21<sup>st</sup> day of August 2002.



Winstone & three kings consent.doc (sp)

# AUCKLAND REGIONAL COUNCIL

## RESOURCE CONSENT

Granted pursuant to the Resource Management Act 1991

**PERMIT NO. 21875**

**CONSENT HOLDER:**

**WINSTONE AGGREGATES LIMITED**  
Three Kings Quarry

**FILE REFERENCE:**

**12821**

**CONDITIONS OF CONSENT:**

Date of Commencement of Consent:

1 August 2002

Duration of Consent:

This consent shall expire on **1 August 2012** unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991.

Purpose of Consent:

To authorise the discharge of contaminants to air from the extraction, crushing, screening, transport, storage and processing of aggregate in accordance with Section 15 (1)(c) of the Resource Management Act 1991.

Site Location:

985-1021 Mt Eden Road, Three Kings

Legal Description of Land:

Lot 1 DP 37020 CT 953/21 ("quarry")

Territorial Authority:

Auckland City Council

Approximate Map Reference:

NZMS 260 R11 669 757

Authorised Quantity:

The Consent Holder shall ensure that the operation of the 3 Kings Quarry does not exceed:

- (a) An extraction rate of: 100 tonnes/hour
- (b) A crushing rate of: 200 tonnes/hour
- (c) A screening rate of: 200 tonnes/hour
- (d) And a total storage capacity of: 20,000 m<sup>3</sup>



**DEFINITIONS:**

Council: means the Auckland Regional Council

Manager: means the Manager, Air Quality Section, Auckland Regional Council

**GENERAL CONDITIONS:**

1. That the servants or agents of the Council shall be permitted access to the relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples.
2. That the Consent Holder shall, as far as practicable, operate the plant and associated processes in accordance with the documentation submitted to the Council as part of application number 12821/21875. No alterations shall be made to the plant or processes that do not, or are not likely to, comply with the provisions of this consent, a regional rule, or regulations under the Resource Management Act 1991.
3. That, as allowed for under section 127 (1)(a) of the Resource Management Act 1991, the Consent Holder may apply for a change or cancellation of any condition of this consent, other than the duration of consent, in April 2003 and every year thereafter, for the purpose of enabling the further extraction of rock to the north and east of the site (outside the quarry extraction area defined in Appendix 1).

Note: See Advice Note 5 regarding further information relating to this consent condition.

4. That the Consent Holder shall be responsible for all discharges to air from the site and shall make any person on site aware of any relevant conditions of this consent.

**LIMIT CONDITIONS:**

5. That the Consent Holder shall, at all times, operate, maintain, supervise, monitor and control all processes on site so that emissions authorised by this consent are maintained at the minimum practicable level.
6. That beyond the boundary of the site there shall be no odour, fume or dust caused by discharges from the site which, in the opinion of an enforcement officer, are noxious, offensive or objectionable.
7. That blasting, crushing, screening, transporting of rock and other activities on site which generate dust shall be undertaken to ensure visible discharges to air are kept below levels which, in the opinion of an enforcement officer, are noxious, offensive or objectionable.

**PROCESS CONDITIONS:**

That the Consent Holder shall ensure techniques are used for excavating rock, blasting and drilling, which practicably minimise dust emissions.



9. That dust emissions from all crushing, screening and transfer operations shall be kept to a practicable minimum. Where practicable, all rock processed on site shall be kept in a visibly damp condition.
10. That in order to ensure that dust from the yard, quarry floor and all internal roads is kept to a practicable minimum at all times (including during non-working hours) the yard, quarry floor and all internal roads shall, where necessary, be maintained in a visibly damp condition either by the use of a water cart and/or a reticulated water system. Any sealed roads, including road exits from the site, shall be regularly cleaned to ensure dust from these sources is kept to a practicable minimum.
11. That all vehicle speeds on unsealed roads, or routes, shall be limited to a maximum of 20 kilometres per hour unless the road, or route, is visibly damp and vehicles do not raise visible dust.
12. That the Consent Holder shall provide and maintain a suitably designed wheel washing facility for vehicles. All vehicles that have traversed over unsealed parts of the quarry, or have otherwise come into direct contact with aggregate material, shall use this wheel wash when exiting the quarry.
13. That all stockpiles shall be constructed, positioned and managed to practicably minimise the potential for dust emissions. Stockpiles shall not be within 50 metres of any public road or boundary unless approved in writing by the Manager and shall, where practicable, be situated low in the quarry. Where practicable and appropriate water sprays shall be installed on the permanent stockpiling equipment such as, but not limited to, conveyor belts and truck loading hopper systems.
14. That, the Consent Holder shall operate, to the satisfaction of the Manager, an automatic reticulated dust suppression system (water sprinkler system) or similar, around the perimeter of the quarry working area to aid in minimising dust emissions.
15. That the Consent Holder shall ensure that ponds, or other water supplies, are maintained at such capacities that the application of water as a dust control measure is not limited.
16. That, where practicable, rehabilitation on site shall be undertaken on all batters and on all areas where the resource is depleted or material is not to be extracted within a period of one year. All rehabilitated areas shall be grassed, or preferably hydroseeded, as soon as practicable.
17. That, subject to Condition 3, no extraction, processing or unapproved stockpiling of aggregate, shall occur within the area to the north and east of the site beyond that used for quarry extraction operations at 1 May 2000 (defined in Appendix 1).
18. That, at least 1 month prior to the fixed processing plant and associated equipment being relocated, or new processing plant being installed, within the existing quarry extraction area (defined in Appendix 1), the Consent Holder shall provide to the Manager details of the proposed method of plant removal, the new location of the plant and associated equipment and any mitigation measures proposed for both moving the plant and operating the plant at the new location. The Manager will





advise the Consent Holder, in writing, if any aspects of the processing plant relocation, operation at the new location or mitigation measures are considered to be inconsistent with achieving the provisions of this consent

## MONITORING CONDITIONS:

### Total Suspended Particulate Monitoring

19. That the Consent Holder shall undertake monitoring of total suspended particulate (TSP) in ambient air in the vicinity of the site. The number, type and location of the monitors and monitoring sites shall be determined in the following manner:
  - (a) Within 2 months of the commencement date of this consent, a suitably qualified and appropriate expert in ambient particulate monitoring ("TSP Monitoring Adviser") shall be jointly selected by the Consent Holder, the Manager and representatives of Three Kings United Group Incorporated and South Epsom Planning Group Incorporated;
  - (b) The TSP Monitoring Adviser will, at the Consent Holder's expense, prepare a Recommended TSP Monitoring Plan which:
    - i) Is consistent with USEPA standard methodologies (i.e. standard high volume sampler or equivalent 24 hour sampler for TSP);
    - ii) Specifies the number, type and location of the TSP monitors to be employed by the Consent Holder, and the frequency and duration for 24 hour samplers to monitor TSP in ambient air in the vicinity of the site;
    - iii) Contains recommendations as to when and in what circumstances future continuous monitoring of TSP (or equivalent parameter) in ambient air with a real time monitor should be considered, having regard to the future results of 24 hour TSP monitoring in accordance with sub-paragraph (ii) above);
    - iv) Contains recommendations as to the methodology and frequency for testing of mineralogical composition and radioactivity of dust<sup>1</sup>;
  - (c) The Recommended TSP Monitoring Plan shall be provided to the Manager, Consent Holder and representatives of Three Kings United Group Incorporated and South Epsom Planning Group Incorporated within 2 months of the appointment of the TSP Monitoring Adviser referred to in sub-paragraph (a);
  - (d) On receipt of the Recommended TSP Monitoring Plan, the persons listed in sub-paragraph (a) may commission, at their own expense, a review of the Recommended TSP Monitoring Plan by a suitably qualified and appropriate expert in ambient particulate monitoring, whose report shall be provided to the Manager within 1 month of the event in sub-paragraph (c) occurring;

<sup>1</sup>Testing and monitoring of mineralogical composition and radioactivity may not be related to TSP monitoring although this is included within the Recommended TSP Monitoring Plan.



- (e) Within 1 month of the period in sub-paragraph (d) being completed, the Manager shall approve a TSP Monitoring Plan, having regard to the Recommended TSP Monitoring Plan and any reviews of that Plan provided to the Manager pursuant to sub-paragraph (d);
  - (f) The TSP Monitoring Plan shall be implemented and the monitoring shall be performed to the satisfaction of the Manager;
  - (g) Until the TSP Monitoring Plan is approved in accordance with sub-paragraph (e) above the Consent Holder shall undertake TSP monitoring in ambient air at one location in the vicinity of the site (for the period until 31 October 2002) and at two locations in the vicinity of the site (for the period 1 November 2002 to 30 April 2003 or such earlier date as set by sub-paragraphs (e) and (f)). The location of the monitoring sites shall be the existing site and a site in the vicinity of the water treatment station at the southeast corner of the quarry. The method of sampling shall be consistent with USEPA standard methodologies (standard high volume sampler or equivalent) and shall be performed to the satisfaction of the Manager;
  - (h) The TSP monitoring requirements specified in the TSP Monitoring Plan may change from time to time following the procedure in sub-paragraphs (a) to (e) of this condition. In the event of this procedure being initiated the date of commencement referred to in sub-paragraph (a) shall be either:
    - i) The date written notice is given by the Manager to the Consent Holder of the intention to change the TSP Monitoring Plan; or
    - ii) The date written notice is given by the Consent Holder to the Manager of a proposed amendment to the TSP Monitoring Plan; and
  - (i) Any future consideration as to continuous monitoring of TSP (or equivalent parameter) under sub-paragraph (b)(iii) shall follow the procedure in sub-paragraphs (a) to (e) of this condition.
20. That, without prejudice to the generality of Conditions 5 and 6, if the monitoring shows that total suspended particulate in ambient air at or beyond the boundary of the site, as measured in accordance with Condition 19, exceeds 80 micrograms per cubic metre ( $\mu\text{g.m}^{-3}$ ) as a 24 hour average, an investigation shall be initiated by the Consent Holder as to the probable causes of the exceedence.
21. That, if the cause of the elevated levels of total suspended particulate is identified as being an activity undertaken on the Consent Holder's site, then as far as practicable, action shall be taken by the Consent Holder to reduce those discharges to the satisfaction of the Manager.

#### Video Monitoring



22. That, the Consent Holder shall record, on video, all blasting and associated dust emissions within the quarry area. The recordings shall be labelled with the date and time of the blast and other appropriate details sufficient to identify the blast. The

recordings shall be kept for a minimum period of 6 months from the date of the blast and shall be made available, on request to an enforcement officer, during operating hours.

23. That, over the period of 1 November 2002 to 30 April 2003, and for any other period requested in writing by the Manager, the Consent Holder shall undertake video monitoring of the general operations occurring on site. The recordings shall be labelled with the date and time, shall be kept for a minimum period of 6 months from the date of each entry and shall be made available, on request, to an enforcement officer, during operating hours.

#### **Meteorological Monitoring**

24. That, a weather station shall be installed and operated to the satisfaction of the Manager. The station shall continuously record, and be able to make available, wind speed, wind direction and rainfall.

#### **LOGGING AND REPORTING CONDITIONS:**

25. That the Consent Holder shall maintain an Air Quality Management Plan which accurately records all management, monitoring and operation procedures necessary to comply with the conditions of this consent. The Air Quality Management Plan shall include, but not be limited to, details regarding the following:
- (a) Dust suppression methods for stockpiles, crushing, screening and transfer operations including details relating to water sprays on any permanent stockpiling equipment;
  - (b) Operation of the reticulated dust suppression system;
  - (c) Any other relevant dust suppression techniques to be used on site; and
  - (d) All relevant monitoring procedures required by conditions 19 to 23 including procedures for dealing with elevated dust levels as required by conditions 20 and 21.

The Consent Holder shall submit the Management Plan to the Manager for review by 1 April 2003. Any subsequent changes shall also be submitted for review. The Manager will advise the Consent Holder, in writing, if any aspects of the Management Plan are considered to be inconsistent with achieving the provisions of this consent.

26. That any results of total suspended particulate in ambient air monitoring showing exceedences of the prompts given in Condition 20 or specified in the TSP Monitoring Plan, shall be reported by facsimile to the Manager as soon as practicable. A summary of all monitoring results, including references where applicable to wind and rainfall data, and any remedial actions taken shall be submitted to the Manager at the end of each quarter.

27. That the Consent Holder shall record in a log all such information that is required to enable compliance with the conditions of this consent. The log shall record, on a daily basis, information including, but not limited to:



- (a) Any dust control equipment malfunctions and any remedial action taken;
- (b) Any visible emissions of dust and the source;
- (c) All relevant details relating to the total suspended particulate monitoring or other monitoring required by the TSP Monitoring Plan, to enable compliance with Conditions 19, 20 and 21;
- (d) When a water cart was used and, if so, the frequency of use and the volume of water used; and
- (e) The date and time of the entry and the signature of the person entering the information.

The log shall be made available on request, during operating hours, to an enforcement officer and shall be kept for the term of the consent. A summary of the information recorded shall be submitted to the Manager at the end of each quarter.

28. That the Consent Holder shall provide written notification to the Manager of any blasting to occur on site at least 24 hours prior to blasting being undertaken. Included in the notification shall be details relating to the blast(s) including:

- (a) The proposed date and time of the blast(s);
- (b) The proposed location and size of the blast(s) including what rock type is to be excavated;
- (c) The proposed dust suppression methods to be undertaken; and
- (d) Any other relevant details.

If any of the information provided in the notification changes the Consent Holder shall advise the Manager as soon as practicable.

29. 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 (include a 1:5000 scale plan);
- (b) Areas where rehabilitation has occurred over the previous two years, including the areas fully quarried out and replanted and those areas with temporary planting, and the periods when and areas where hydroseeding or grassing was undertaken (include a 1:5000 scale plan);
- (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.

30. That the Consent Holder shall log all air quality complaints received. The log shall include:

- (a) The date, time, position and nature of the complaint;
- (b) The name, phone number and address of the complainant, unless the complainant refuses to supply these details; and
- (c) Any remedial actions taken.

The log shall be made available on request, during operating hours, to an enforcement officer and shall be kept for the duration of the consent. A summary of all complaints received and any remedial actions shall be submitted to the Manager at the end of each quarter.

#### REVIEW CONDITION:

31. That the conditions of this consent may be reviewed by the Manager pursuant to Section 128 of the Resource Management Act 1991, by the giving of notice pursuant to Section 129 of the Act, in May 2003, May 2004 and every two years thereafter in order:

- (a) To deal with any significant adverse effect on the environment arising from the exercise of this consent which was not foreseen at the time the application was considered and is appropriate to deal with at the time of the review;
- (b) To consider the adequacy of the conditions which prevent nuisance beyond the boundary of the site, particularly if regular or frequent complaints have been received and validated by an enforcement officer;
- (c) To consider developments in control technology and management practices that would enable practicable reductions in the discharge of contaminants;
- (d) To alter the monitoring requirements, including requiring further monitoring, or increasing or reducing the frequency of monitoring, reviewing the TSP Monitoring Plan, or altering the trigger level as given in Condition 20, if it is considered that the monitoring requirements are not appropriate to assess any nuisance beyond the boundary of the site; or
- (e) To consider the adequacy of the conditions which relate to preventing nuisance and controlling discharges to air from blasting operations on site.

#### ADVICE NOTES:



1. The Resource Consent Holder is advised that they will be required to pay to the Council any reasonable administrative charge fixed in accordance with Section 36(1) of the Resource Management Act 1991, or any additional charge required pursuant to Section 36(3) of the Resource Management Act 1991 in respect of this consent. This

will include any actual and reasonable costs associated with the review of the Air Quality Management Plan and any subsequent changes.

2. The Resource Consent Holder is advised that, pursuant to Section 125 of the Resource Management Act 1991, this resource consent lapses on the expiry of two years after the date of commencement of this consent unless the consent is given effect to or other criteria contained within Section 125 are met.
3. The Resource Consent Holder is advised that, pursuant to Section 126 of the Resource Management Act 1991, if this resource consent has been exercised, but is not subsequently exercised for a continuous period of two years, the consent may be cancelled by the Council unless other criteria contained within Section 126 are met.
4. It is recommended that the Resource Consent Holder provide a summary of all monitoring results relating to this consent to the members of the Three Kings Quarry Site Liaison Group. If requested by either the Consent Holder or other members of the Group Auckland Regional Council will provide an officer to attend meetings for matters of clarification relating to the consent, on an as required basis.
5. It is advised that a Memorandum of Understanding between Auckland Regional Council, the Consent Holder, Three Kings United Group Incorporated and South Epsom Planning Group Incorporated dated 17 July 2002 exists. This Memorandum of Understanding relates to any change of consent conditions pursuant to section 127 RMA and/or Condition 3 of this consent or any other application to allow extraction or processing within the area to the north and east of the site beyond that used for quarry extraction operations at 1 May 2000 (defined in Appendix 1).

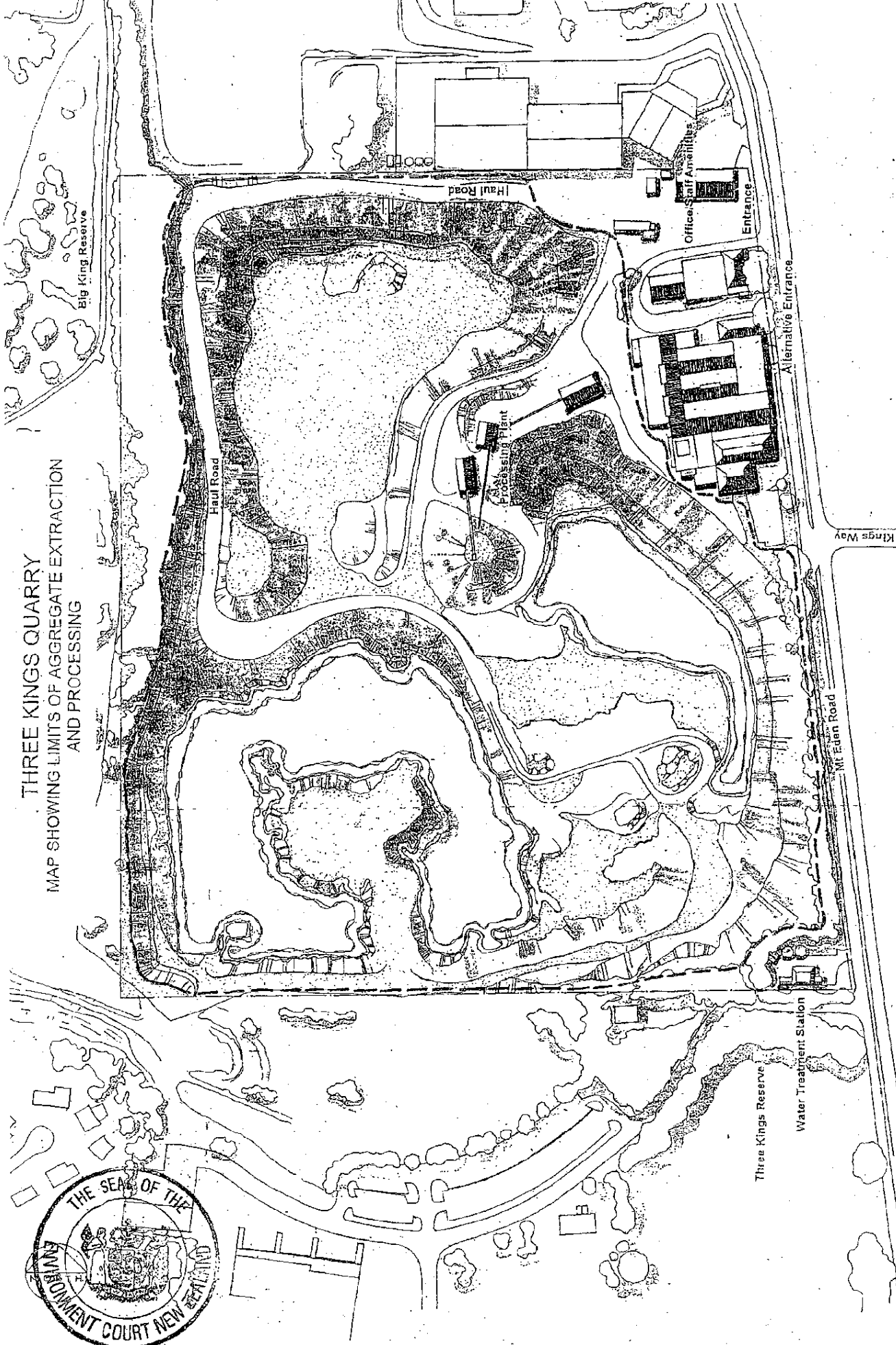
**This consent has been granted by the Auckland Regional Council pursuant to the Resource Management Act 1991.**

Kevin Mahon  
 Manager  
 Air Quality Section  
 Auckland Regional Council

**Date:**



# THREE KINGS QUARRY MAP SHOWING LIMITS OF AGGREGATE EXTRACTION AND PROCESSING



Proposed limit of extraction  
and processing for air permit.





## **Appendix 2.4**

### ***~~Permit to Discharge to ACC Drainage System~~***

~~A permit to discharge extracted groundwater from the quarry into the ACC stormwater drains was granted by ACC in June 1999, and renewed for a further term in August 2004, and will be reviewed again in 2009.~~

## Appendix 2.5 2.4

### ***District Land Use Consent for Water Treatment and Discharge***

~~Auckland City Council (ACC) business unit Metrowater~~ WaterCare has Land Use Consent for water purification works at 1025 Mt Eden Road. A land use consent was granted to Auckland City Development Consultancy (now called City Design) by ~~the former~~ Auckland City Council in December 1995. The purpose of this consent is to permit the establishment of a water purification plant at 1025 Mt Eden Road, to treat water extracted from Winstone Aggregate's Three Kings Quarry for municipal supply during de-watering.

While the plant was established, ~~ACC~~ AC has decided, and directed ~~Metrowater~~ WaterCare accordingly, that the treatment plant will only be operated as emergency back-up in the event of alternative municipal supply being unavailable. **As such, this consent allows for the discharge to the AC stormwater drains subject to conditions.**

There is no expiry date for this land use consent.

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of an appeal under section 120 of the  
Act

BETWEEN

SOUTH EPSOM PLANNING  
GROUP INCORPORATED

(RMA 43/96)

Appellant

AND

AUCKLAND REGIONAL COUNCIL

First Respondent

AND

AUCKLAND CITY COUNCIL

Second Respondent

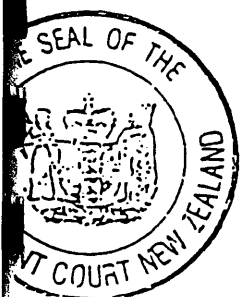
BEFORE THE ENVIRONMENT COURT

Environment Judge J R Jackson sitting alone pursuant to section 279 of the Act

IN CHAMBERS at AUCKLAND 11 April 1997

CONSENT ORDER

Having considered the notice of appeal and the memorandum submitted on behalf of the parties THIS COURT HEREBY ORDERS BY CONSENT that consent be granted to the construction of a water purification works at 1025 Mt Eden Road, Mt Roskill (being Lot 1, DP 37020 as shown on CT 953/21, and as otherwise described



in the information and plans AK970830.016 submitted with the application), subject to the following conditions:

1. The proposed works shall be carried out in accordance with the plans and information submitted as part of this application and at the hearing of it unless otherwise required to be changed by the following conditions.
2. Subject to Condition 11, the procedures for storage and use of hazardous substances on the site shall be in accordance with the details included in the application and particularly Appendix E to the application and the later details included with the memorandum to the Council dated 14 July 1995, the details accompanying the applicant's letter to the Council dated 18 September 1995 and the evidence presented by Messrs G Paterson and A Palman at the hearing of the application. This condition is to ensure all the safety procedures described are implemented.
3. That all the vehicle access, manoeuvring and parking areas shall be formed and maintained to the Council's standards.
4. That the vehicle crossing and access point to the site shall be 6 metres to facilitate easier vehicle manoeuvring to and from the site.
5. That the landscaping works shown on the application plans shall be shown on a landscape plan which shall particularly describe types and sizes of plantings proposed with the intention of that plan being to screen the water plant facility whilst adding to the planted amenity of the locality. The landscape plan shall be approved by the Manager, Auckland City Environments and shall be implemented to the satisfaction of that Council officer.
6. That the whole of the site shall be enclosed with a security fence and gate to a height of two metres.



7. That the generation of noise from the water purification plant shall meet the noise standards of the proposed district plan at all times but rather than these standards being met at the boundary of any residentially zoned property, these shall be met alongside the buildings shown on the proposal plans from which any noise is emitted with those standards being:

Monday to Saturday	7.00am to 10.00pm	
And Sunday and public holidays	9.00am to 6.00pm	55dBA
At all other times		L10 45 dBA Lmax 75 dBA

And in addition the L10 measures alongside these components of the plant facility shall not exceed 70 dBA.

These levels are to be measured in accordance with the requirements of NZS 6801:1991 - Measurement of Sound and NZS 6802:1991 - Assessment of Environment Sound and measured with a sound level meter complying at least with International Standard IEC 651 (1979) - Sound Level Meters Type 1.

This condition is to remove concerns for any continuous noise which could be a nuisance to residents in the locality.

- 7(a) All machinery from which noise emanates shall be contained within the buildings shown on the proposal plans.
8. In accordance with Rule 8.2.2.6 of the proposed district plan, all buildings, structures, facilities and works associated with the water purification plant shall be removable.
9. Any discharge of the extracted ground water from the quarry site to the Council's stormwater drains shall be in accordance with the Council's correspondence dated 2 December 1994 (file reference 985 - 1021 Mr Eden Road) from B Kerr, Engineer allowing such discharge subject to conditions



and further shall be in accordance with the correspondence (same file reference and Council Engineer) dated 18 September 1995 in order that any concerns in respect of potential catchment flooding, particularly in the vicinity of Mr Eden Road, are overcome. There shall be no visible discharge of water to the street at any time.

10. That a management plan be prepared in the terms below:

- (a) The consent holder shall submit a Three Kings municipal supply management plan to the Auckland City Council for approval.
- (b) The management plan shall be prepared to a suitable professional standard and shall be submitted within six months of the date of consent.
- (c) The management plan shall include:

- (i) Operations plan

The operations plan shall include details of the operation and monitoring of the treatment plan, the water supply network operation for the pressure zone supplied by the treatment plant, and water demand and maintenance for that pressure zone.

- (ii) Contingency plan

The contingency plan shall include strategies for avoiding, remedying, and mitigating adverse effects of reasonably foreseen but unscheduled events, and the reporting procedures to the Auckland City Council and ARC Environment for those events.



(iii) Network efficiency and water conservation plan

This plan shall include a statement of:

- Current water supply network management practices for the pressure zone supplied by the treatment plant, in terms of efficiency of use of water resources, and options to improve those management practices.
- Goals in network efficiency performance.
- Goals in water conservation strategies and programmes.
- An annual network efficiency and water conservation report.

(iv) Standards

The plan shall include reference to all relevant standards (including national standards) and guidelines which must be complied with for the management of water treatment plant and related pressure zone.

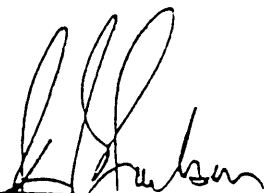
- (d) The consent holder shall operate the treatment plant and the pressure zone it supplies in general accordance with the management plan and any subsequent update to the plan.
- (e) The consent holder shall adopt all reasonably practicable measures to maintain and enhance the efficiency of the treatment plant and the pressure zone it supplies, and to minimise water losses from them.
- (f) The consent holder shall appoint, and maintain the appointment of, a suitably qualified peer reviewer, that person being approved by the Auckland City Council, and the Auckland Regional Council, to ensure that the Three Kings municipal supply management plan is reviewed annually to a suitable professional standard.





- (g) A peer review report must be provided to the Council at twelve monthly intervals ending 30 June each year. The consent holder shall supply to the peer reviewer any information held by the consent holder which is necessary to carry out the peer review.
11. Water shall be treated by the electrolytic generation of sodium hypochlorite at the treatment plant. There shall be no storage or use of chlorine gas at the treatment plant site.
12. In terms of section 128 of the Act the conditions of this consent may be reviewed annually in November of each year by the Council for any of the following purposes:
- (a) To deal with any adverse effect on the environment which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or
  - (b) To deal with any complaints which have been received and validated by the Council.
13. That in respect of all of the above conditions where any matters need to be the subject of contact with, or to the satisfaction of the Council, this shall be arranged through the Manager, Auckland City Environments.

There is no order as to costs.

  
J R Jackson  
Environment Judge

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## **Appendix 2.5**

### ***Fill Permit – Amalgamated Consent Conditions***

This permit to fill was granted, subject to conditions, by the Environmental Court in July 2011.

The permit, or resource consent, contains a number of limit, process, monitoring, and logging and reporting conditions for controlling the environmental effects of the rehabilitation operation.

The permit expires on the 31 December 2030.

BEFORE THE ENVIRONMENT COURT

Decision No. [2011] NZEnvC 214

IN THE MATTER of appeals under section 120 of the  
Resource Management Act 1991 (the  
Act) and in the matter of a direct  
referral of resource consent under  
section 87G of the Act

BETWEEN ENVIROWASTE SERVICES  
LIMITED  
(ENV-2009-AKL-000500)  
(ENV-2009-AKL-000501)

WINSTONE AGGREGATES  
(ENV-2009-AKL-000497)  
(ENV-2010-AKL-000009)  
(ENV-2010-AKL-000176)

Appellants

AND AUCKLAND COUNCIL  
(FORMERLY AUCKLAND CITY  
COUNCIL and AUCKLAND  
REGIONAL COUNCIL)

Respondent

Court: In Auckland, on the papers

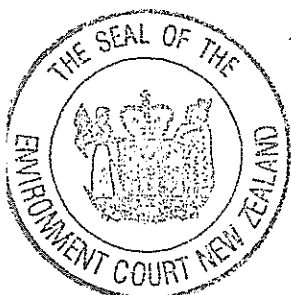
Environment Judge J A Smith, sitting alone under Section 279 of  
the Act

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FINAL DECISION OF THE ENVIRONMENT COURT

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- A. Consent is granted subject to the conditions of consent attached to this  
decision as Annexure "A".



## REASONS FOR THE DECISION

[1] This matter involved decisions by the Auckland City Council and the Auckland Regional Council to grant consent to applications by Winstone Aggregates to carry out reclamation of the Three Kings Quarry by way of controlled filling and to discharge contaminants from a cleanfill at 985 Mount Eden Road, Three Kings, Auckland. The appeals against the Councils' decisions were heard in conjunction with a direct referral of an application by Winstone Aggregates for a supplementary consent.

[2] In decision [2011] NZEnvC 130 the Court held that:

- [a] The decision of the Council is confirmed, subject to amended conditions;
- [b] The resource consent with relevant conditions is to be finalised as directed within this decision for final approval by the Court;
- [c] In addition, the direct referral is granted for a discretionary resource consent on the same terms and conditions as those provided for under the appeal;
- [d] The two decisions can be combined, providing the substitution of the word "cleanfill" and other words for controlled fill, subject to the same terms and conditions as outlined in this decision;
- [e] The applicant is to circulate the draft consent and conditions to allow the parties to submit final wording for both the grant of consent and the conditions to apply in the general form as annexed hereto (**B & C**), modified as directed, within 30 working days. Parties are to reply within 10 working days.

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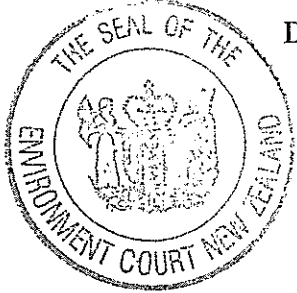
[3] The parties have now advised the Court that they have reached an agreement on the final form of conditions.

[4] The Court has considered the conditions provided and is satisfied that they include the amendments made by the Court, and incorporate the comments received from the other parties.



[5] Accordingly, consent is granted subject to the amalgamated consent conditions attached to this decision as Annexure A.

DATED at Auckland this 26<sup>th</sup> day of July 2011



J A Smith  
Environment Judge

"A"

## **AUCKLAND COUNCIL AMALGAMATED CONSENT CONDITIONS**

<u>CONSENT DETAILS</u>	
<u>Activity</u>	<u>Earthworks, landuse and discharge of contaminants onto or into land from a controlled fill operation -and all other associated discharges to ground</u>
<u>Permit No.</u>	<u>36221 / 36222 / 37770 / R/LUC/2009/743</u>
<u>Consent Holder</u>	<u>Winstone Aggregates, a division of Fletcher Concrete and Infrastructure Ltd.</u>
<u>Duration of Consent</u>	<u>This consent shall expire on 31 December 2030 unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991.</u>
<u>Date of lapsing of Consent</u>	<u>This consent shall lapse after 5 years from the date of the commencement of this consent unless, before the consent lapses, the consent is given effect to or an application is made to extend the period after which the consent lapses pursuant to the Resource Management Act 1991.</u>
<u>Purpose of Consent</u>	<u>To authorise the landuse, earthworks and discharges associated with the development of a controlled fill by Winstone Aggregates at the worked out Three Kings Quarry, Auckland City.</u>
<u>Site location</u>	<u>985 Mount Eden Road, Three Kings, Auckland City</u>
<u>Legal description of Land</u>	<u>Lot 1 DP 37020, CT 953/21</u>
<u>Territorial Authority</u>	<u>Auckland Council</u>

Note: For the purposes of this consent "approval", "review" or "certification" by the Council means assessed by Council staff acting in a technical certification capacity, and in particular as to whether the document or matter is consistent with, or sufficient to meet, the conditions of this consent.

### **Definitions**

ANZECC:	Australian and New Zealand Environment and Conservation Council
Commencement of works:	means the time when the Manager is informed in writing that earthworks are about to commence.
Council	<u>means the Auckland Council</u>

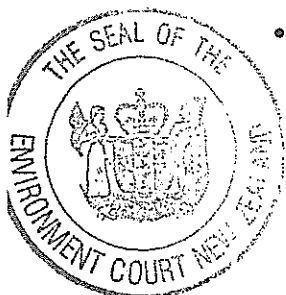


Major contributor of fill:	means any contributor of fill in excess of 200m <sup>3</sup> from any one site.
Manager:	means the Manager, Consents & Consents Compliance Auckland Council; or nominated Council staff acting on the Manager's behalf.
PARP:	Proposed Auckland Regional Plan: Air Land and Water
Stabilised:	means an area inherently resistant to erosion such as rock (excluding Sedimentary Rocks), or rendered resistant by the application of aggregate, geotextile, vegetation or mulch. Where vegetation is to be used on a surface that is not otherwise resistant to erosion, the surface is considered stabilised once an 80% vegetation cover has been established.
TP90:	means ARC Technical Publication No. 90 <i>Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region</i> , March 1999.

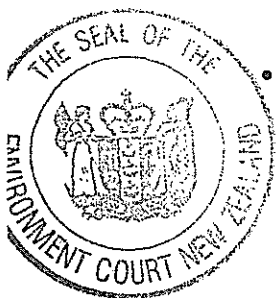
#### PART A: CONDITIONS APPLYING TO ALL CONSENTS

##### GENERAL CONDITIONS

1. That pursuant to Section 36 of the Resource Management Act 1991, this consent (or any part thereof) shall not be exercised until such time as all charges in relation to the receiving, processing and granting of this resource consent are paid in full. **[Replaces Land Use General Condition A]**
2. Except as otherwise required by any other condition of this consent, the proposed activity shall be carried out in accordance with the plans and all information submitted with the applications, including the application numbered 37770, and information subsequently provided in response to section 92 RMA requests for further information, subject to such amendments as may be required by the following conditions of consent (and other than in respect of any plans and other application details showing and referencing a proposed second access which shall be amended by the deletion of that proposed second access in its entirety (as that access is refused consent)), including: **[Replaces Land Use Condition 1 and Discharge Condition 1]**
  - The Assessment of Effects entitled '*Three Kings Quarry Clean fill Proposal, Volume 1: Application for Resource Consent and Assessment of Environmental Effects (February 2009)*' prepared by Richard Compton of Winstone Aggregates, and dated February 2009;
  - The report entitled '*Three Kings Quarry - Modelling of Clean fill Drainage*' prepared by Barnaby C Harding of Pattle Delamore Partnership Ltd, and dated 9th October 2008;
  - The report entitled '*Assessment of Air Quality Effects from the Proposed Clean fill at the Winstone Aggregates Three Kings Quarry*' prepared by Andrew Curtis of URS New Zealand Ltd, and dated 30th July 2008;



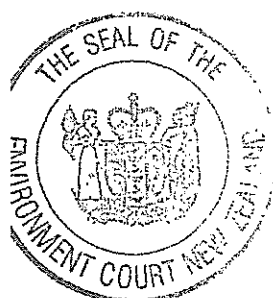
- The report entitled '*Effects of Backfilling Three Kings Quarry on Groundwater Quality*' prepared by Domain Environmental Ltd, and dated 13th October 2008;
  - The report entitled '*Three Kings Quarry, Clean fill Operations - Acoustic Report*' prepared by Siri Wilkening of Marshall Day Acoustics, and dated 17th February 2009;
  - The report entitled '*Three Kings Quarry Filling, Mt Eden Road, Auckland - Transportation Assessment Report*' prepared by Max Robitzsch of Traffic Design Group, and dated 12th June 2008;
  - The letter entitled '*Managed Clean fill at Three Kings Quarry Fill Operations and Development Option Assessment*' prepared by Graeme Twose of Tonkin & Taylor Ltd and dated 1st July 2008;
  - The letter entitled '*Managed Clean fill at Three Kings Quarry Fill Operations and Development Option Assessment*' prepared by Graeme Twose of Tonkin & Taylor Ltd and dated 8th July 2008;
  - The letter entitled '*Three Kings Quarry - Assessment of Backfilling*' prepared by Ian Jenkins of URS New Zealand Ltd and dated 22nd October 2008;
  - The report entitled '*Historical Contamination Assessment Three Kings Quarry*' prepared by Domain Environmental Ltd, and dated 18th February 2009;
  - Plans prepared by Harrison Grierson entitled '*Three Kings Quarry*', being Dwg No. 122314-GIG-001, 002, 003, 004 & 005, all drawn on 29th August 2008 and plotted on 10th October 2008;
  - Plans Figure 1 - 5, entitled '*Winstone Aggregates Ltd Three Kings Quarry, Three Kings*' dated September 2007;
  - Plan prepared by Traffic Design Group, entitled '*Three Kings Quarry, Three Kings, Auckland, Indicative Layout - Proposed Second Access*' Dwg No. 8823A1 1A dated 9th July 2009;
  - The letter entitled '*Notified Resource Consent Application for Three Kings Quarry*' prepared by John Earley of Winstone Aggregates and dated 8th May 2009;
  - The letter entitled '*Application for Resource Consent - ACC Reference RJLUC/2009/743*' prepared by Richard Compton of Winstone Aggregates and dated 21~ May 2009,
  - The letter entitled '*Three Kings Resource Consent - Classification of Activities*' prepared by Bal Matheson of Russell McVeagh and dated 21st May 2009,
- 
- The letter entitled '*Three Kings Quarry - Consent to Fill Geotechnical Response to Section 92 Queries from ACC*' prepared by Graeme Twose of Tonkin & Taylor Ltd and dated 15th May 2009,
  - The letter entitled '*Application for Resource Consent - ACC Reference PJLUC/2009/743: Request for Further Information*' prepared by Richard Compton of Winstone Aggregates and dated 18th May 2009;





- The letter entitled '*Application for Resource Consent - ACC Reference R/LUC/2009/743; Request for Further Information*' prepared by Richard Compton of Winstone Aggregates and dated 16th July 2009;
  - The letter entitled '*Winstone Aggregates Three Kings Quarry, Consent Application, RILUC/2009/743, Assessment of NZTA Submission*' prepared by Max Robitzsch of Traffic Design Group, and dated 16th July 2008;
  - The letter entitled '*Winstone Aggregates Three Kings Quarry, Consent Application, RILUC/2009/743, Section 92 Response*' prepared by Max Robitzsch of Traffic Design Group, and dated 15th July 2008;
  - The letter from Tim Sinclair of Tonkin & Taylor Ltd, entitled '*Managed Clean fill at Three Kings Discussion on Potential Vibration Issues*' dated 20th August 2009; and
  - The letter from Richard Compton of Winstone Aggregates dated 3<sup>rd</sup> September 2009.
3. This consent shall expire on 31 December 2030 unless it has lapsed, been surrendered or been cancelled at an earlier date pursuant to the Resource Management Act 1991. **[Replaces Land Use Condition 49 and Discharge Condition 2]**
  4. The servants or agents of the Council~~Consent Authority~~ shall be permitted access to the relevant parts of the property at all reasonable times for the purpose of carrying out inspections, surveys, investigations, tests, measurements or taking samples. **[Replaces Land Use General Condition B and Discharge Condition 3]**
  5. That legal and physical access to the sampling and monitoring locations be maintained for sampling and monitoring and also for the implementation of the Fill Management Plan and also for any contingency measures. **[Replaces Discharge Condition 4]**
  6. At least (1) one copy of this consent and reference documentation, including management plans, shall be retained and available for use on-site at all times for all personnel, in particular the cContractor importing and placing the imported fill at the site. **[Replaces Land Use Condition 2 and Discharge Condition 5]**

~~If implemented by the consent holder, this consent will replace the discharge of contaminants (cleanfill) consent [Permit 36222] and the consent holder shall surrender that earlier consent if it has been granted.~~
  7. For the purposes of this consent, unless the context otherwise requires, "fill" or "controlled fill" means material that meets the acceptance criteria set out in Conditions ~~40-14~~, 16 and Table 1. ~~Contaminant concentrations for which acceptance criteria are not set out in Condition 10, Table 1, shall be evaluated against Auckland City Council Investigation/Preliminary remediation criteria for soils - Human Health, or in accordance with Ministry for the Environment Contaminated Land Management Guidelines No.2, Hierarchy and Application in New Zealand of Environmental Guideline Values.~~ **[Replaces Land Use Condition 1A]**

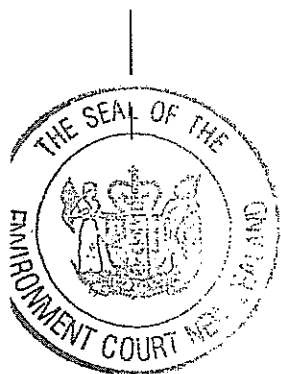


## PREDEVELOPMENT CONDITIONS

8. The consent holder shall pay the Council a consent compliance monitoring charge of \$2000.00 (inclusive of GST), plus any further monitoring charge or charges to recover the actual and reasonable costs that have been incurred to ensure compliance with the conditions attached to this consent. (This charge is to cover the cost of inspecting the site, carrying out tests, reviewing conditions, updating files, etc, all being work to ensure compliance with the resource consent). The \$2000.00 (inclusive of GST) charge shall be paid as part of the resource consent fee and the consent holder will be advised of the further monitoring charge or charges as they fall due. Such further charges are to be paid within one month of the date of invoice. **[Replaces Land Use Condition 3]**
9. The controlled fill in the upper 5m layer shall be engineered to a compaction and stability standard in accordance with NZS 4431:1989 (Code of practice for Earth Fill for Residential Development) that enables future residential use of the finished landform no longer than 5 years after cessation of filling. This condition may be reviewed where a proposed Plan Change or review (or any resource consent addressing the use of the site as a whole) indicates that future uses will demand a lesser standard of compaction. The consent holder shall provide an annual report to the Manager, or his or her nominee, which contains sufficient detail to confirm the engineering standards required to meet NZS 4431:1989 have been achieved for the fill. **[Replaces Land Use Condition 4]**
10. The final (upper) 2m of controlled fill material must meet the acceptance criteria set out in Conditions 14, 16 and Table 1 or the Auckland City Council Human Health Guideline Values for Residential Land Uses (whichever is the more stringent) and must not contain anthropogenic extraneous waste material that presents a risk to human health. The consent holder shall provide a completion report to the Manager that confirms that those standards are met. **[Replaces Land Use Condition 5]**

## OPERATIONAL CONDITIONS

11. All fill placement and management works shall be undertaken in accordance with the Fill Management Plan as described in Condition 4426. **[Replaces Land Use Condition 6 and Discharge Condition 6]**
12. The site shall be operated as a private commercial facility for filling and will not be open to the general public. **[Replaces Land Use Condition 6A and Discharge Condition 6A]**
13. The following operations shall be carried out:
  - (a) All vehicles transporting fill shall report to a designated reception area at the site entrance on Mt Eden Road;
  - (b) A suitably trained person shall inspect all incoming loads and these inspections shall be documented and subject to internal quality procedures and audit which shall be reported to the Manager Consent Authority (regional consents monitoring) annually. For all incoming loads not subject to pre-approval, such inspections shall include analysis by x-ray fluorescence or an alternative method approved by the Consent Authority Council to check for the presence of metals;



- (c) All necessary records and documentation as per the Fill Management Plan shall be obtained and maintained;
- (d) Any load with obvious evidence of hydrocarbons or other contamination (for example discolouration or odours) shall not be disposed of on the site unless it clearly meets all acceptance criteria contained in this consent.
- (e) All loads shall be inspected at the tip point of disposal in accordance with the Fill Management Plan. The entire load of material will be fully exposed and spotters or plant operators fully trained in inspection and rejection procedures are to verify the deposited material is of an acceptable type, smell, colour and texture. **[Replaces Land Use Condition 7 and Discharge Condition 7]**

14. Fill originating from any site providing more than 200m<sup>3</sup> of fill or from any known horticultural site, or from any site located within the area covered by Auckland City Council District Plan - Central Area Section, or any site listed on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL) shall be placed into the fill area only with appropriate documentation of the suitability of the fill prepared by a suitably qualified contaminated land specialist in the form of a Site Investigation Report, or Site Validation Report, that has been prepared in accordance with the Ministry for the Environment guidelines *Reporting on Contaminated Sites in New Zealand, Contaminated Land Guidelines No 1*, November 2003 (or equivalent standards as approved in writing by the Manager) and which has been prepared in accordance with all acceptance criteria set out in this consent and with reference to any contaminants that could reasonably be expected to be present due to the current and former land use of the site of origin of the material. Any fill with contaminants of concern identified in the pre-approval documentation and not listed in Table 1 shall not be accepted at concentrations above TP153 soil background concentrations. For constituents not listed in TP153 or Condition 4016, contaminants of concern shall not be accepted at concentrations above 5% of the permitted activity low level contamination concentration defined in Rule 5.5.41(a)(i)(3) of the Auckland Regional Plan: Air, Land and Water (October 2010) or in any subsequent update of the guidelines referred to in that rule. **[Replaces Land Use Condition 8 and Discharge Condition 8]**
15. If the fill has not previously been tested to at least the same extent by the fill generator as detailed in Condition 8-14 then the consent holder shall undertake analytical testing of imported fill for the chemical parameters set out in Table 1 at a rate of not less than 1 in every 150 incoming trucks or every 1400 tonnes (whichever comes first). **[Replaces Land Use Condition 9 and Discharge Condition 9]**
16. The analytical testing shall demonstrate that chemical parameter concentrations in the imported fill set out below are not exceeded: **[Replaces Land Use Condition 10 and Discharge Condition 10]**

Table 1

**Note: for the avoidance of confusion Bboth the maximum and wweighted rolling mean criteria must be met.**

Parameters	Fill < 2m depth from finished level (Shallow Fill) (mg/kg)	Fill > 2m depth (Deeper Fill) (mg/kg)	Weighted Rolling 12- Month Mean Shallow Fill	Weighted Rolling 12- Month Mean Deeper Fill
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			Acceptance Criteria (<2m deep)	Acceptance Criteria (>2m deep)
Arsenic	30	100	12	12
Boron	260	260	130	130
Cadmium	1	7.5	0.65	0.65
Chromium	400	400	125	125
Copper	325	325	90	90
Cyanide	0	25	0	1.0
Lead	250	250	65	65
Mercury	0.75	0.75	0.45	0.45
Nickel	320	320	105	105
Zinc	1160	1160	400	400
TPH				
C <sup>7</sup> -C <sup>9</sup>	120	300	20	20
C <sup>10</sup> -C <sup>14</sup>	300	300	50	50
C <sup>15</sup> -C <sup>36</sup>	1000	5600	500	500
DDT	0.7	12	0.35	0.7
Aldrin	0.7	12	0.35	0.7
Dieldrin	0.7	6	0.35	0.7
BaP (eq) <sup>3</sup>	0.27	2.15	0.1	1.0
Benzene	0.2	1 <sup>1</sup>	0.2	0.4
TEX(Total) <sup>2</sup>	20	20	3	3

Note 1: To meet MfE Guidelines (1999) for residential use all pathways

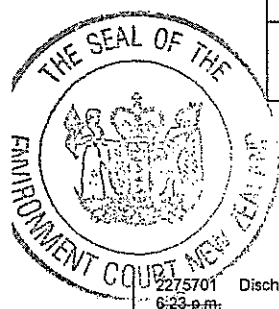
Note 2: Sum of Toluene, Ethyl benzene and Xylenes

Note 3: Includes group of 7 compounds with equivalence factors that contribute to BaP(eq)

17. ~~40A.~~ Only materials of the following nature and from within the Auckland Region are acceptable fill materials (as defined in *A Guide to the Management of Cleanfills*, Ministry for the Environment, 2002) and may be received at the site, provided they also comply with conditions 4A-7 for all fill and ~~5-conditions 7 and 10~~ for the upper 2m of fill: **[Replaces Land Use Condition 10A and Discharge Condition 10A]**

Table 2: Fill material

Material	Discussion
Asphalt (cured)	Weathered (cured) asphalt is acceptable. After asphalt has been exposed to the elements for some time, the initial oily surface will have gone and the asphalt is considered inert.
Bricks	Inert – will undergo no degradation.
Ceramics	Inert.
Concrete	Inert material and may include attached structural building materials with a maximum 1% by volume of structural or reinforcing steel or 5% by volume of wood.
Fibre cement building	Inert material comprising cellulose fibre, Portland cement and sand. Care needs to be taken that the product does not contain asbestos.



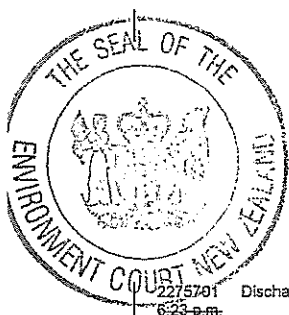
Material	Discussion
products	which is unacceptable.
Glass	Inert and poses little threat to the environment. May pose a safety risk if placed near the surface in public areas, or if later excavated. The safety risk on excavation should become immediately apparent, so glass is considered acceptable provided it is not placed immediately adjacent to the finished surface.
Road sub-base	Inert.
Soils, rock, gravel, sand, clay.	Acceptable provided they meet acceptance criteria outlined in Condition 40-16 and Table 1 and do not have more than 5% of volume of organic content, ie. plant material, tree roots and grass associated with the surface layers of source sites.
Tiles (clay, concrete or ceramic)	Inert.

17-18. All monitoring, chemical analyses and sampling undertaken in accordance with this consent shall be carried out by suitably qualified personnel in accordance with Ministry for the Environment *Contaminated Land Management Guidelines No 5, Site Investigation and Analysis of Soils* and the Fill Management Plan for the site, or equivalent standards approved in writing by the Manager. **[Replaces Land Use Condition 11 and Discharge Condition 11]**

18-19. The weighted rolling 12-month mean will be updated continuously as sample results are received. If the data reveals that the fill is above 85% of the weighted 12-month mean, the consent holder will report immediately to the Consent Authority Council and continue to report on a monthly basis while the data shows that the fill remains above 85% of the weighted 12-month mean. The consent holder shall take action to ensure that the fill reduces below 85% of the weighted 12-month mean as soon as possible. Once the fill reduces below 85% of the weighted 12-month mean, annual reporting to the Consent Authority Council shall resume. **[Replaces Land Use Condition 11A and Discharge Condition 11A and includes amendment as per Decision at paragraph 93]**

19-20. Within the first 12 months of the filling operation the monthly weighted rolling mean shall be no greater than the weighted rolling 12-month mean in Table 1. **[Replaces Land Use Condition 11B and Discharge Condition 11B and includes amendment as per Decision at paragraph 93]**

20-21. If the imported-controlled fill does not meet the fill acceptance criteria listed in Condition 40-16 or 40A-17 and Tables 1 and 2, the fill shall be rejected and removed to a suitably authorised off-site disposal facility. Material not meeting the criteria of Table 1 Condition 1640 shall be removed from the site within two weeks of receiving laboratory test results confirming unacceptability, whereas material not meeting Condition 40A-17 and Table 2 shall be rejected at the point of inspection. **[Replaces Land Use Condition 12 and Discharge Condition 12]**



~~21-22.~~ If a load of fill has been removed from the site in accordance with Condition 4221, the disposal location of all other loads received and placed from the same originating site (if any) shall be assessed by an independent expert approved by the ~~Consent Authority~~Council. If the assessment concludes that the fill material from the other loads from the same originating site does not meet the fill acceptance criteria then fill material from those loads shall also be removed from the site. **[Replaces Land Use Condition 12A and Discharge Condition 12A]**

~~22-23.~~ The consent holder will insert a condition in any contract between the consent holder and any major contributors of fill requiring contractors to agree that if the consent holder rejects a load it shall be removed immediately. **[Replaces Land Use Condition 12B and Discharge Condition 12B]**

~~23-24.~~ A written report, detailing the reasons for rejection, final disposal location of the rejected fill, volume of fill disposed of, and copies of the laboratory test results, within one month of disposing of the rejected fill shall be provided to the Manager. **[Replaces Land Use Condition 13 and Discharge Condition 13]**

~~24-25.~~ The Consent Holder shall meet the cost of ~~random audit full sampling tests representative of the previous one month's fill material (of no more than two core samples or composite samples on each occasion) to be undertaken twice a year at random intervals every six months for the first two years of the consent by council officers or an independent consultant approved by the consent authority~~Council. ~~After two years the audit sampling shall occur annually. For the avoidance of doubt the Council may choose to undertake random audit sampling at any stage at its own cost. If an exceedance is detected as a result of the random audit sampling the Council may seek to recover the cost of that sampling from the Consent Holder.~~ **[Replaces Land Use Condition 13A and Discharge Condition 13A and includes revisions as per the Decision at paragraph 88]**

#### FILL MANAGEMENT PLAN

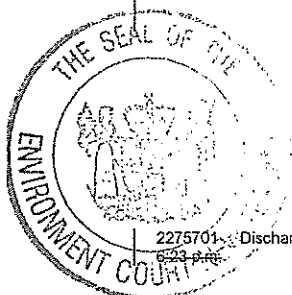
~~25-26.~~ Not less than 3 months prior to the commencement of fill activities authorised by this consent, a Fill Management Plan shall be provided to the Manager for certification. Certification by the Manager is required prior to the commencement of filling. The Manager may inform the consent holder of any aspects of the FMP, or subsequent changes considered to be inconsistent with achieving compliance with the provisions of the consent. The FMP shall include, but not be limited to, the following:

- (a) An introduction, including but not necessarily limited to:
  - (i) Project description.
  - (ii) Purpose
- (b) A list of relevant Resource Consent conditions.
- (c) Details of site management responsibilities including but not necessarily limited to:
  - (i) Site owner and operator.
  - (ii) Management structure.



- (iii) Right of access.
- (iv) Operating hours.
- (v) Staff requirements.
- ~~(d)~~(vi) Training.
- (vii) Health and safety.
- ~~(e)~~(d) The fill acceptance procedures necessary to ensure compliance with Condition 713, Condition 4016, Condition 40A17 and Condition 4531.
- ~~(f)~~(e) A list of unacceptable fill materials that will prevent acceptance of fill that would have more than minor adverse effects on people and the environment.
- ~~(g)~~(f) Fill acceptance criteria (as set out in Condition 4016 and 40A17) for the parameters to be monitored and tested.
- ~~(h)~~(g) Pre-approval procedures for offsite acceptance.
- ~~(i)~~(h) Fill acceptance, rejection, sampling, testing and quarantine procedures for material not subject to pre-acceptance approval including recording and reporting.
- ~~(j)~~(i) A contingency plan for the removal and disposal of fill which does not meet the conditions of this consent but was not previously identified as such prior to placement of the fill.
- ~~(k)~~(j) Describe the means to maintain the following information for the life time of this consent and two years thereafter:
  - (i) Load inspection.
  - (ii) Monitoring, testing and sampling documentation relating to fill material acceptance.
  - (iii) Training procedures for staff and a record of employees who have undertaken relevant training.
- ~~(l)~~(k) Plans for filling and associated earthworks over the next 12 months.
- ~~(m)~~(l) Measures to be used to track fill to the final disposal location on-site.
- ~~(n)~~(m) Details of the proposed works around any stockpiles of fill, including quarantine areas, to minimise the potential of contamination migration via stormwater runoff, in particular, keeping stockpiled material away from temporary and permanent surface water ponds, and bunding to contain stormwater runoff.
- ~~(o)~~(n) Proposed groundwater monitoring regime.

**[Replaces Land Use Condition 14 and Discharge Condition 14 and includes revisions as per the Decision at paragraph 90 and 94]**



## REPORTING

- ~~26-27.~~ An Annual Compliance Report shall be submitted to the Manager by 30 June each year which provides an analysis of the results of data collected for the Fill Management Plan and an evaluation of the results in respect of compliance levels. The report shall be prepared by a suitably qualified person to a standard acceptable to the Manager and shall consider all data collected from the commencement date of this Resource Consent and up until 31 May prior to reporting. On the basis of this report the Consent Holder may submit recommended changes to the Fill Management Plan to the Manager for certification. **[Replaces Land Use Condition 15 and Discharge Condition 20]**
- ~~28.~~ ~~The Manager may require a review of the Fill Management Plan may be reviewed annually by the Consent Holder and shall be reviewed in any given year if required by the Manager. [at 2-yearly intervals. Any changes resulting from a review whether in response to the Manager's requirement, or as initiated by the Consent Holder shall be submitted to the Manager for review prior to becoming operational. The Manager may advise the Consent Holder, in writing, if any aspects of the Plan are considered to be inconsistent with achieving the provisions of the consent. [Replaces Land Use Condition 16 and Discharge Condition 21 and includes revisions as per the Decision at paragraph 91]~~
- ~~27.~~ 28A. The consent holder shall notify the Manager no less than six months prior to any proposed transfer of the consent.

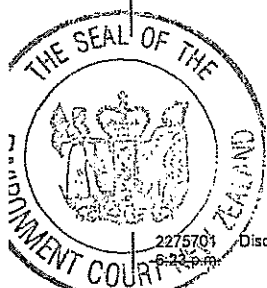
## CONSENT REVIEW

- ~~28.~~ The conditions of this consent may be reviewed by the Manager pursuant to Section 128 of the Resource Management Act 1991~~thereafter~~, by the giving of notice pursuant to Section 129 of the Act, annually for the first three years after the commencement of the consent and, in the event a review is not required in the first three years of the consent, every two years thereafter, in one or more of the following times: June 2012;
- ~~29.~~ June 2013;
- ~~30-29.~~ June 2014 and at two-yearly intervals thereafter.

The purpose of the review shall be:

- (a) To deal with any actual or potential adverse effects on human health or the environment which may arise from the exercise of the consent.
- (b) To review the engineering standards for the controlled fill as set out in condition 94.
- (a)(c) To ensure that any relevant amendments to guideline values referred to in condition 7 and 14 are considered and any measures are implemented (where necessary) to the satisfaction of the Manager to protect human health and the environment.

~~To ensure that any relevant amendments to guideline values referred to in condition 1A and 8 are considered and any measures are implemented.~~





This consent may also be reviewed by the Manager pursuant to Section 128, by the giving of notice pursuant to Section 129 of the Act, in the event of any transfer of the consent under condition 28A of this consent. The purpose of the review shall be to consider the solvency of any new consent holder to determine whether it is desirable to impose a condition specifying the payment of a bond to secure costs potentially associated with future mitigation requirements under the conditions of consent. Any notification of such a transfer to the consent authority under section 137(6) of the Act shall draw the Manager's attention to condition 29 of this consent.

**[Replaces Land Use Condition 22 and Discharge Condition 35 with amendments as per Decision at paragraphs 92, 97 and 98]**

~~, where it is appropriate to deal with such effects at a later stage; or~~

~~— To require a consent holder to adopt the best practicable option to avoid or mitigate any adverse effects on the environment; or~~

~~To deal with any other adverse environment effect, which the exercise of the consent may have an influence on.~~

~~To ensure that any relevant amendments to guideline values referred to in Condition 8 are considered.~~

#### **PART B: CONDITIONS APPLYING ONLY TO DISCHARGE PERMIT**

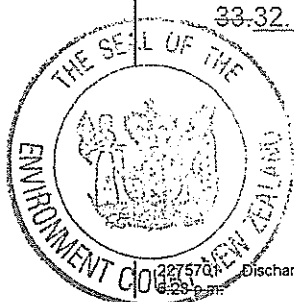
#### **GROUNDWATER MONITORING**

~~31.30.~~ The consent holder shall install a continuous electrical conductivity and pH meter at the dewatering well head and report the results to the ~~consent authority~~ Council as part of the Annual Compliance Report. The independent expert who is appointed to undertake audit sampling in accordance with condition ~~43A-25~~ shall review the conductivity and pH results to identify and report on any undesirable trends. **[Replaces Discharge Condition 14B]**

~~32.31.~~ Groundwater monitoring shall be carried out at both the dewatering well and monitoring well BH7 at 109 Landscape Road (i.e. the existing borehole in the network that is used for monitoring groundwater behaviour for Auckland Regional Council dewatering permit 12977) in the following way:

- (a) For the first two years after the commencement of the consent, the samples shall be analysed for the chemical constituents listed in Table 3 Condition 46 ~~32~~ at quarterly intervals, commencing within three months of the commencement of consent.
- (b) ~~If after the first two years after the commencement of consent no groundwater trigger level has been exceeded then the samples shall be analysed for the chemical constituents listed in Table 3 Condition 46-32 at six monthly intervals for the remainder of the term of the consent.~~ **[Replaces Discharge Condition 15]**

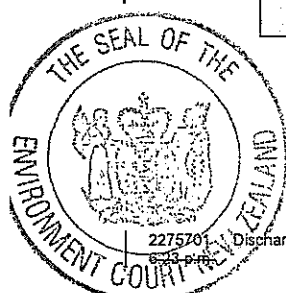
~~33.32.~~ Trigger levels for inorganic and organic constituents as measured at the dewatering well and BH7 shall be the ~~maximum recorded (2007/2008 data) concentrations plus~~



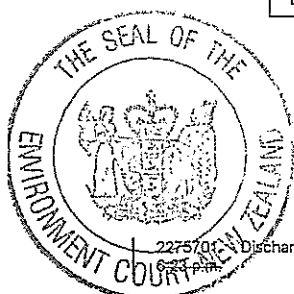
3 standard deviations as listed below in Table 3 for Arsenic, Boron, Cadmium, Chromium, Copper, Mercury, Nickel and Lead, or as set for other constituents in accordance with Conditions 4733 and 3448. [Replaces Discharge Condition 16]

Table 3: Groundwater trigger levels for the dewatering well (g/m<sup>3</sup>)

Chemical Constituent	Proposed Groundwater Trigger Levels	Ministry of Health (2005) Drinking Water Standards (revised 2008) Maximum Acceptable Value (MAV)
Arsenic	0.002	0.01
Boron	0.07	1.4
Cadmium	0.00009	0.003
Chromium	0.0011	0.05
Copper	0.003	1(GV) 2 MAV
Mercury	0.0004	0.002 total
Nickel	0.003	0.02
Lead	0.0007	0.01
Zinc	0.008	1.5(GV) No MAV
Benzo-a-pyrene equivalent	0.00035	0.0007
DDT	0.0005	0.001
Aldrin & dieldrin	0.00002	0.00004
Benzene (TPH (total) surrogate)	0.005	0.01
Cyanide	0.04	0.08
Bromodichloromethane	0.03	0.06
Bromoform	0.05	0.1
Carbon tetrachloride	0.0025	0.005
Chloroform	0.1	0.2
Di(2-ethylhexyl)adipate	0.05	0.1
Di(2-ethylhexyl)phthalate	0.0045	0.009



Chemical Constituent	Proposed Groundwater Trigger Levels	Ministry of Health (2005) Drinking Water Standards (revised 2008) Maximum Acceptable Value (MAV)
1,2-dibromo-3-chloropropane	0.0005	0.001
Dibromochloromethane	0.075	0.15
1,2-dibromomethane	0.0002	0.0004
1,2-dichlorobenzene	0.75	1.5
1,4-dichlorobenzene	0.2	0.4
1,2-dichloropropane	0.025	0.05
1,3-dichloropropene	0.01	0.02
Endosulfan	0.01	0.02
Endrin	0.0005	0.001
Ethylbenzene	0.15	0.3
Fluoranthene	0.002	0.004
Heptachlor and its epoxide	0.00002	0.00004
Hexachlorobenzene	0.00005	0.0001
Hexachlorobutadiene	0.00035	0.0007
Lindane	0.001	0.002
Pentachlorophenol	0.0045	0.009
pH	Below 7 or greater than 8.5 pH	7.0 - 8.5 pH
Styrene	0.015	0.03
Tetrachloroethene	0.025	0.05
Toluene	0.4	0.8
Trichlorobenzenes	0.015	0.03
1,1,1-trichloroethane	1.0	2.0
Trichloroethene	0.04	0.08



Chemical Constituent	Proposed Groundwater Trigger Levels	Ministry of Health (2005) Drinking Water Standards (revised 2008) Maximum Acceptable Value (MAV)
2,4,6-trichlorophenol	0.1	0.2
Vinyl chloride	0.00015	0.0003
Xylenes	0.3	0.6

34.33. The trigger level shown for zinc in Table 3 is an interim value set at the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 ANZECC(2000) guideline (95%) protection level ("ANZECC (2000)"). After a minimum 2 years and not more than 5 years of monitoring in accordance with Condition 4531, this trigger shall ~~may~~ be re-set by the Council at the maximum confirmed recorded concentration plus three standard deviations. [Replaces Discharge Condition 17]

35.34. For cyanide and all of the organic constituents listed in Table 3, trigger levels shown are also interim values based on the more stringent criteria of either 50% MAV or ANZECC (2000). ~~Soluble~~ Trigger levels for constituents in solution at the dewatering well shall ~~may~~ be re-set by the Council at maximum confirmed levels of recorded soluble concentrations plus 3 standard deviations established after a minimum 2 years and not more than 5 years of quarterly sampling and analysis provided that the resetting of these maximum levels shall be no greater than the 50% MAV or ANZECC (2000) levels. [Replaces Discharge Condition 18]

36. Each report on groundwater monitoring required under Condition 20-27 shall include a conclusion on whether any of the groundwater monitoring data assessed to date has revealed any undesirable trend in the quality of the groundwater and shall provide the Manager with details of the proposed groundwater monitoring for the ensuing 12 months. [Replaces Discharge Condition 18A and includes revision as per the Decision at paragraph 90]

35.

#### GROUNDWATER CONTINGENCY

37. In the event that there is an exceedance of a groundwater trigger level (as described in Table 3 of Condition 16) the following contingency measures shall be adopted, with all resulting costs borne by the consent holder:

(a) The monitoring well shall be resampled and analysed as soon as practicable. If the check sample results do not exceed a trigger level no further action will be taken. If the check sample results confirm a trigger level exceedance, then some or all of the following actions will be taken:



~~(b) — The Consent Authority and Watercare will be advised immediately of the confirmed trigger level exceedance.~~

~~(c) — An investigation shall be carried out to determine the cause of the trigger level exceedance. This may include additional sampling of groundwater (including the provision of and sampling at additional wells) and, in the case of the dewatering well, investigation of filling activities in the vicinity of the monitoring well.~~

~~(d) — If the concentration of any of the chemical constituent listed in Table 3, Condition 16 in the monitoring well continues to increase, the monitoring frequency for the chemical constituents that exceed the trigger level will be increased to monthly and consideration will be given to modifying or ceasing filling activities in the vicinity of the monitoring well.~~

~~(e) — If the concentration of chemical constituent in the monitoring well continues to increase and exceeds the guidelines in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC (95%) guidelines) but do not exceed the drinking water MAVs then the Council will be consulted to determine whether resource consent will be required to authorise the on-going discharge to stormwater from the dewatering well.~~

If the concentrations of any chemical constituent in the monitoring well continue to increase and exceed both ANZECC (95%) guidelines and drinking water MAVs then options for treatment of the groundwater shall be identified and, if it represents the best practicable option, be implemented. If options for treatment cannot be implemented, the Council will be consulted to assess the need for a consent application to authorise the on-going discharge of groundwater from beneath the quarry to either stormwater or into the Three Kings basalt aquifer.

36. The following groundwater contingency measures shall be adopted, with all the resulting costs associated with (a) and (c) below borne by the consent holder:  
**[Replaces Discharge Condition 19(a)-19(f) and rewritten as per Decision at paragraph 89]**

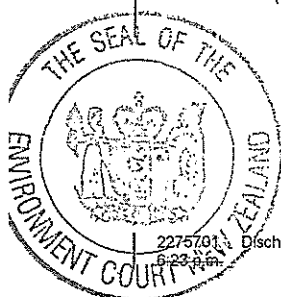
(a) In the event there is an exceedance of a groundwater trigger level (as described in Conditions 32, 33 and 34) the monitoring well shall be resampled and analysed as soon as practicable. If the check sample results do not exceed a trigger level, no further action will be taken. If the check sample results confirm a trigger level exceedance the following actions will be taken:

(i) The Council and Watercare Services Limited will be advised immediately of the confirmed trigger level exceedance.

(ii) An investigation shall be carried out to determine the cause of the trigger level exceedance.

(b) If the cause of the trigger level exceedance can be reasonably shown not to be a result of the filling operation then the Council and Watercare Services Limited will be advised as soon as practicable and the Consent Holder will participate in meetings with the Council and Watercare Services Limited to assist in identifying appropriate options to reduce chemical constituent concentrations.

(c) If the cause of the trigger level exceedance can be reasonably shown to be a result of the filling operation the following actions will be taken:

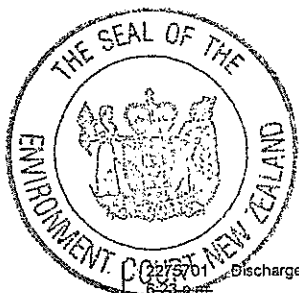


- (a)(i) If the concentration of a chemical constituent in a monitoring well exceeds the guidelines in the ANZECC 2000 guidelines but does not exceed 50% of the drinking water MAVs then the Council will be consulted to determine whether resource consent will be required to authorise the on-going discharge to stormwater from the dewatering well.
- (i)(ii) If the concentration of a chemical constituent in a monitoring well exceeds 50% of the drinking water MAV the monitoring frequency for the chemical constituents that exceed 50% of the MAV will be increased to monthly and, in consultation with the Council and Watercare Services Limited, options for reducing the chemical constituent concentrations will be identified and appropriate interventions carried out.
- (ii)(iii) If the concentration of a chemical constituent in a monitoring well exceeds 75% of the MAV a remediation plan will be prepared in consultation with the Council and Watercare Services Limited and interventions, possibly including dewatering and groundwater treatment, will be carried out to ensure MAV criteria are not exceeded and to reduce chemical constituent concentrations to less than 50% of the drinking water MAV within twelve months. If the site is still operating, only pre-approved fill will be accepted for disposal until the chemical constituent concentrations in the monitoring wells are less than 50% of the MAV.

37. The following groundwater contingency measures shall be adopted with respect to dewatering: [Replaces Discharge Condition 19(g), 19(h) and 19(i)]

- 38.(a) The consent holder shall continue to dewater dewatering for at least 5 years, and at least until December 2030, following the completion of commercial filling operations at the site and shall continue to exercise Permit 12977 at least until December 2030. Dewatering beyond December 2030, if necessary, will be subject to the grant of any necessary resource consents.
- 39.(b) If, after 5 years of continuous monitoring contaminant levels are below drinking water MAV trigger levels set out in this consent, pumping may cease.
- 40.(c) Should subsequent monitoring at any of the monitoring bores indicate a drinking water MAV trigger level set out in this consent is exceeded, which can be reasonably shown to be a result of the filling operation, then either the consent holder will resume dewatering, or will adopt some other mitigation method agreed as between the Council, Watercare and the Consent Holder to ensure that there will be no adverse effects on human health or the environment.

#### PART C: CONDITIONS APPLYING ONLY TO LANDUSE CONSENT



## OPERATIONAL CONDITIONS

### **Traffic Management Plan**

~~41-38.~~ Not less than three (3) months prior to the commencement of fill operations authorised by this consent, the Consent Holder shall prepare, and submit for review to the Manager, a Traffic Management Plan (TMP) to ensure compliance with conditions of this Resource Consent.

The Council will advise the Consent Holder in writing if any aspects of the TMP are considered to be inconsistent with achieving compliance with the provisions of this consent. The TMP may form part of an overall management plan for the site.

The TMP shall include details of site traffic management practices, and the monitoring and reporting required for compliance. This shall generally address, but not be limited to the following details:

- (a) Ingress and egress to/from the site.
- (b) Indicative routes to the site from the State Highways
- (c) Parking for contractors and workers.
- (d) Details of how traffic will be managed, including overflow parking for truck waiting to deliver fill or collect aggregate from the site
- (e) Location of any traffic signage required and any proposed signage for traffic management purposes during operations.
- (f) Contact details of the site manager.
- (g) The consent holder shall use all reasonable endeavours to ensure that heavy vehicles carrying fill to the site are covered where necessary and do not use local roads unless absolutely necessary.

### **[Replaces Land Use Condition 17]**

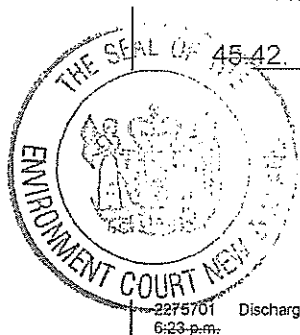
~~42-39.~~ The consent holder will insert a condition in any contract between the consent holder and any major contributors of fill for Three Kings Quarry that any trucks transporting such fill to the Quarry are not to use St Andrews Road, unless the fill originates from along St Andrews Road. **[Replaces Land Use Condition 17A]**

~~43-40.~~ The consent holder will insert a condition in any contract between the consent holder and any major contributor of fill requiring contractors to comply with the drivers code of conduct and the traffic management plan (including to cover loads where necessary). **[Replaces Land Use Condition 17B]**

~~44-41.~~ The consent holder shall use all reasonable endeavours to ensure that loads from pre-approved sites shall be covered where necessary to avoid dust nuisance. **[Replaces Land Use Condition 17C]**

### **Site Traffic Safety Plan - Drivers Code of Conduct**

~~45-42.~~ For the purposes of ensuring the safety of all transportation modes, i.e. motorists, cyclists and pedestrians, and to minimise the effects of site traffic on the



community, the Consent Holder shall develop and implement a Site Traffic Safety Plan - Drivers Code of Conduct (STSP) for all traffic visiting the site which shall address the following:

- (a) consideration for all other transport modes and road users beyond the site, particularly those in the immediate vicinity of any site access point;
- (b) attention to vehicle maintenance for vehicles travelling to and from the site on public roads;
- (c) the requirement for vehicular users of the site to be made aware of the presence of Three Kings and Carlson Schools, and that during school terms best endeavours shall be made to avoid arriving at the site in the hours between 0830 to 0930 and 1430 to 1530;
- (d) appropriate signage to be erected at any site access point reminding drivers to take care, particularly during the hours in (c) above, and also "Trucks Crossing~ signage to alert pedestrian traffic on the western side of Mt Eden Road to a potential hazard, as required by Condition 20-44 of this resource consent.
- (e) a procedure for monitoring and reporting, by drivers and/or members of the public, of any safety incidents or breaches of the STSP. All such events reported under this condition shall also be reported to the Manager and at the Site Liaison Group (SLG) meeting following such reported incidents.

The STSP shall be brought to the attention of all drivers and/or vehicle owners using the site. Furthermore the STSP shall be developed in consultation with the Site Liaison Group and the Principals, or their nominees, of Three Kings and Carlson Schools.

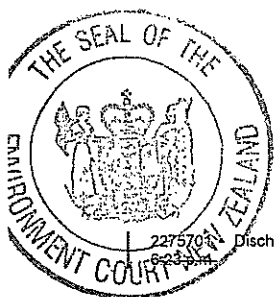
To the satisfaction of the Manager the consent holder shall take all practicable steps to ensure that:

- (a) safe pedestrian access and thoroughfare shall be maintained on all footpaths adjacent to the site.
- (b) drivers using the site shall be made aware of the preferred routes to and from the site as indicated in the TMP, and that the use of engine brakes for vehicles travelling through Mt Eden Village and along Mt Eden Road outside the subject site is to be avoided.
- (c) all signage shown on the TMP is to be erected and maintained in good order during the exercise of this Resource Consent.

**[Replaces Land Use Condition 18]**

### **Construction Noise Management Plan**

- 46-43. If the consent holder intends to rely on the construction noise limits set out in the District Plan for any construction works on the site, the consent holder shall, prior to the commencement of any such construction, submit a Construction Noise Management Plan (CNMP) consistent with the NZS standard 6803:1999 Acoustics - Construction Noise prepared by a person suitably qualified in environmental





acoustics to the satisfaction of the Manager. The CNMP shall include but not be limited to: **[Replaces Land Use Condition 19]**

- (a) A description of the final construction methodology, including a list of potentially noisy plant and equipment, the estimated noise levels and the approximate locations within the site;
- (b) Predicted noise levels and where the predicted noise levels exceed the construction noise standard NZS 6803:1999, specific noise mitigation measures must be implemented which may include but not be limited to acoustic screening, alternative equipment etc;
- (c) Noise monitoring must be undertaken at the onset of works that are likely to exceed the relevant noise limits. Additional monitoring will be required to be undertaken in the event of any complaints received;
- (d) In the event of the measured noise levels exceeding the relevant standard, the Manager must be notified without delay and further mitigation options shall be investigated and implemented;
- (e) A complaints management system must be implemented. It must specify the responsible persons for maintaining the complaints register, procedures to be followed in investigating and resolving complaints and procedures for reporting complaints to council; and
- (f) The name and contact telephone numbers of the Site Manager or other persons responsible for supervision of the works, implementation of the Noise Management Plan and complaint receipts and investigations.

#### Signage

47.44. Prior to the fill activity commencing, the consent holder shall erect signs at the existing access way off Mt Eden Road which detail:

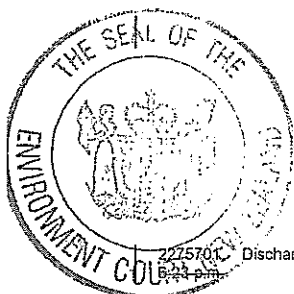
- (a) that the fill is a private operation,
- (b) that access is not open to the general public,
- (c) hours of operation and when the gates will be opened to customer vehicles,
- (d) contact details, including after hours emergency contacts.

The signs shall be made and erected to the satisfaction of the Manager.

**[Replaces Land Use Condition 20]**

#### Road Condition Survey

45. Prior to commencement of fill activity, the Consent Holder in conjunction with a representative of the Manager shall undertake a carriageway condition survey of Mount Eden Road, between points 50m north and south of the existing and proposed site access ways. The condition survey shall include a photographic or video record of the specified section of carriageway and footpaths at the crossing location.



48. [Replaces Land Use Condition 21 and removes reference to second access way as this part of the application was withdrawn at the Council hearing]

#### Road Maintenance Agreement

49.46. Following the road condition survey, and prior to the commencement of the fill activity, the Consent Holder shall enter into a maintenance agreement with Council to cover the costs of repair of any damage to public carriageways and footpaths (and associated road components) within the zones surveyed under condition 45(24), attributable to the site activities authorised by this Resource Consent. [Replaces Land Use Condition 22]

#### Air Quality Monitoring Equipment

50.47. Prior to the commencement of the Fill operation the dust monitor recommended in the Consent Holder's report 'Assessment of Air Quality Effects' shall be installed in accordance with, and incorporated into the Air Quality Management Plan required by, ARC Permit 21875. [Replaces Land Use Condition 23]

#### DEVELOPMENT IN PROGRESS CONDITIONS

##### Hours of Operation

51.48. The hours of operations for the fill activity and sale of imported aggregate activities shall be between 7am to 10pm Mondays to Saturdays and 9am to 6pm on Sundays and public holidays except that ancillary activities (such as maintenance of machinery) may occur outside of those hours where such activities are in compliance with the conditions of this consent including Condition 5127(a). [Replaces Land Use Condition 24]

##### Pedestrian Refuge

52.49. For the purpose of ensuring pedestrian safety, the consent holder shall appoint, at their cost, a professional traffic engineer to provide a design for a pedestrian refuge island on Mount Eden Road at an appropriate location between Graham Breed Drive and the entrance to Three Kings School to the satisfaction of the Manager. The facility shall then be installed at the consent holder's expense. The refuge is to be installed prior to the cleanfilling operations commencing. [Replaces Land Use Condition 25 and includes edit as per the Decision at paragraph 96]

##### Truck Movements

53.50. In accordance with the details of the resource consent application, no more than 375 trucks shall enter the site per day. A register shall be kept on site which records all truck movements to and from the site, and shall include the category of vehicle, i.e. identification as a four, six or eight wheeler, articulated truck or truck and trailer heavy vehicles and a copy of it shall be submitted to the Manager on a quarterly basis to certify compliance with this condition. [Replaces Land Use Condition 26]

##### Noise Control

54.51. Any activity on the site associated with fill operations at the Three Kings Quarry shall not exceed the following noise limits at residentially zoned land fronting Mount



Eden Road between street numbers 904 and 944 (including 14-16 Kingsway):

Monday to Saturday	7:00 am to 10:00 pm	L <sub>10</sub> 60 dBA
Sunday & Public Holidays	9.00 am to 6.00 pm	
At all other times	L <sub>10</sub> 45 dBA L <sub>MAX</sub> 75 dBA	

At all other residentially zoned land noise limits as per the table below shall not be exceeded.

Monday to Saturday	7:00 am to 10:00 pm	L <sub>10</sub> 55 dBA
Sunday & Public Holidays	9.00 am to 6.00 pm	
At all other times	L <sub>10</sub> 45 dBA L <sub>MAX</sub> 75 dBA	

*N.B - Noise shall be measured and assessed in accordance with NZS6801.: 1991 and NZS6802.2008*

**[Replaces Land Use Condition 27a]**

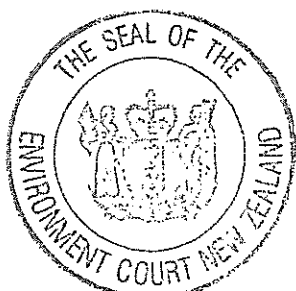
- 55-52. Within 3 months of the commencement of the fill activity the consent holder shall submit to Manager a report demonstrating that the activity meets the noise standards outlined in this condition. **[Replaces Land Use Condition 27b]**
- 56-53. The consent holder shall undertake further monitoring confirming compliance with the noise limits when the majority of the fill operation is occurring above RL 70m and following this at a 6 monthly interval. **[Replaces Land Use Condition 27c]**
- 57-54. Should the consent holder propose to use self propelled compaction equipment, a suitably qualified acoustical consultant shall, prior to the equipments use, undertake noise modelling to predict noise levels to demonstrate that the revised fill procedure will not generate noise in excess of the noise limits in Condition 5127(a). Monitoring confirming compliance with the noise limits shall be conducted within one month of implementation of the revised procedures. **[Replaces Land Use Condition 27d]**
- 58-55. The existing vegetated earth bund parallel to Mount Eden Road shall be retained for the duration of the filling activity. **[Replaces Land Use Condition 27e]**

**Fill Volumes**

- 59-56. This Resource Consent does not authorise any filling of the site beyond and above the contours shown on Figure 2 - Proposed Landform for Fill Consents, (Drawing 122314-FIG-002 dated 29/08/08 and prepared by Harrison Grierson Consultants) as submitted with the application. **[Replaces Land Use Condition 28]**

**Sale of Aggregate**

- 60-57. The sale of aggregate to the general public is not permitted. **[Replaces Land Use Condition 29]**



### Control of Deposition of Material on Public Roads

61-58. All necessary measures, including, but not limited to maintenance of access roads and manoeuvring areas, wheel washing facilities shall be used to prevent the deposition of sediment, and any other materials on the public roads by vehicles leaving the site. Should material be deposited on the road to an extent considered significant by the Manager it shall be removed immediately by and at the cost of the Consent Holder. **[Replaces Land Use Condition 30]**

### Dust Suppression

62-59. All necessary actions shall be taken to ensure compliance with the regional air discharge permit 21875 to prevent dust nuisance from the filling to neighbouring properties and public roads, reserves and areas outside of the subject site. These include, but shall not be limited to: **[Replaces Land Use Condition 31]**

- (a) Staging of areas of works
- (b) Retention of existing vegetation and bunds around the perimeter of the site
- (c) The installation and maintenance of wind fences and where practicable vegetated strips as the fill level rises
- (d) Watering down of internal haul roads which are not metalled or adequately sealed.
- (e) Watering down fill materials which are dry and/or contain dust substances.
- (f) Suspension of fill operations if necessitated by the prevailing weather conditions
- (g) Providing dust prevention monitoring records to Manager on a 3 monthly basis after commencement of the fill activities to ensure on-going compliance with this condition.

### Vibration Controls

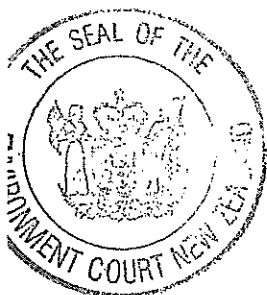
63-60. Vibration from the fill activity and associated compaction of fill shall not exceed the levels permitted by clause 8.8.1 of the Auckland City Operative District Plan. **[Replaces Land Use Condition 32]**

### POST FILL COMPLETION CONDITIONS

#### Final Fill Validation Report

64-61. If in the reasonable opinion of the Manager information and data provided in the Annual Compliance Reports tendered under Condition 28-(16) are insufficient to demonstrate the final 2m depth of fill complies with Auckland City Council's Human Health Guideline Values for Residential Land Use then the Consent Holder shall provide a fill validation report on the completion of fill, to the satisfaction of the Manager.

The consent holder shall consult with the Manager and Council's Environmental Health Officer (Contamination) prior to undertaking the validation exercise to ensure that the proposed validation methodologies are appropriate.



The validation report shall be in respect of the top 2m of fill and shall:

- (a) Show the final filled levels on an appropriately scaled site plan, including the relative levels prior to and post fill completion, as well as showing the location by grid co-ordinate references of the fill material defined by its compaction and stability characteristics;
- (b) Specify the status of the fill at each location by grid co-ordinate references on a appropriately scaled plan in terms of the chemical parameter acceptance criteria set out in Condition 1640;
- (c) Demonstrate that the site is suitable for residential land use with respect to the levels of contamination in the uppermost 2m of soil.

In the event of the validation report identifying contamination levels in excess of the Auckland City Council's Human Health Guideline Values for Residential Land Uses in the top 2m of fill, the consent holder at their own expense will remediate that top 2m of fill to the extent necessary to comply with the Guideline Values.

**[Replaces Land Use Condition 34]**

#### **Traffic Review**

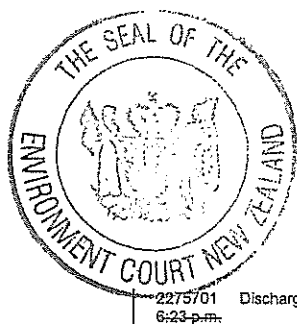
65-62. If after the fill activity commences it becomes evident that the traffic generated by the development is causing an operational or safety problem on the surrounding road network, determined by accidents, complaints to Council, or by observations and data collected by suitably experienced Council staff, within a two year period of the consent to fill being exercised, then the applicant will be required to appoint, at their cost, a professional traffic engineer to investigate and recommend means of rectifying any problem(s) identified, to the satisfaction of the Manager. Should the recommended means of rectifying issues which are attributable to the Consent Holders activities be physical works, then these physical works shall be installed at the consent holders expense. Provided that the total financial obligation of the Consent Holder under this condition shall be limited to \$20,000. If the recommended physical works exceed \$20,000, then the Consent Holder acknowledges that the recommendations for such works constitute a reason for Council to review this consent, pursuant to s128 of RMA. **[Replaces Land Use Condition 35a]**

#### **Cessation of Fill Activity**

66-63. Should the consent holder cease or abandon work on-site, they shall first take adequate preventative and remedial measures to control sediment discharge and site stability, and shall thereafter maintain these measures for so long as necessary to prevent sediment discharge from the site and ground stability within the quarry pit. All such measures shall be of a type, and to a standard, which are to the satisfaction of the Manager. **[Replaces Land Use Condition 36]**

#### **Earthworks**

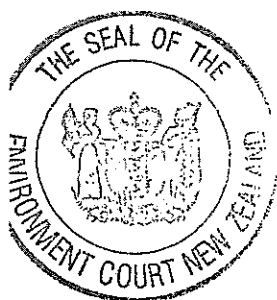
67-64. All personnel working on site are made aware of and have access to the contents of this consent document and the associated erosion and sediment control plan and methodology. **[Replaces Land Use Condition 37]**



- 68-65. Adequate preventative and remedial measures to control sediment discharge shall be put in place in case work on the site is abandoned, and thereafter those measures maintained for so long as necessary to prevent sediment discharge from the site. All such measures shall be of a type, and to a standard, which are to the satisfaction of the Manager. **[Replaces Land Use Condition 38]**
- 69-66. All erosion and sediment control measures shall be constructed and maintained in accordance with those described in the application for Land Use Consent: Sediment Control No. 36221 (File Reference 20828). These measures shall be documented by the Consent Holder in an Annual Management Plan ("AMP"). **[Replaces Land Use Condition 39]**
- 70-67. Any future amendments to the AMP that may affect the performance of erosion and sediment control measures on site shall be submitted to the Manager for review prior to the implementation of the changes. The Manager will advise in writing if any aspects of the Plan are considered to be inconsistent with achieving the provision of this consent. The AMP may form part of an overall management plan for the site. All subsequent changes shall be submitted to the Manager for review prior to becoming operational. **[Replaces Land Use Condition 40]**
- 71-68. All erosion and sediment control measures shall be constructed and maintained in general accordance with TP90 and any amendments to that document, except where an alternative standard is accepted in accordance with Conditions 6739, 6840 or 7648. **[Replaces Land Use Condition 41]**
- 72-69. All 'cleanwater' runoff from stabilised surfaces including catchment areas above the site shall be diverted away from earthworks areas via a stabilised system, so as to prevent surface erosion and sediment generation. **[Replaces Land Use Condition 42]**
- 73-70. Erosion and sediment control measures are to be implemented in accordance with best engineering practice, and maintained to perform at full operational capacity until the site has been stabilised against future sediment generation. Site stabilisation shall mean when the site is covered by an erosion proof ground cover, and includes vegetative cover which has obtained a density of more than 80% of a normal pasture sward. **[Replaces Land Use Condition 43]**
- 74-71. A certificate, signed by an appropriately qualified and experienced person, shall be submitted to the Manager, to certify that any new erosion and sediment control measures have been constructed in accordance with Conditions 6739, 6840 or 7648 of this consent, within 2 weeks following the construction of the controls. **[Replaces Land Use Condition 44]**

Information supplied shall include:

- (a) contributing catchment area
- (b) retention volume of the structures, including dead and live storage
- (c) shape and dimensions of structures
- (d) position of inlets/outlets
- (e) stabilisation of structures/measures



(f) confirmation of compliance (or otherwise) with TP90

~~75-72.~~ To prevent the deposition of slurry, clay or other materials on public roads by vehicles leaving the site, a suitably designed wheel wash facility shall be provided, operated and maintained for as long as this consent is exercised. When exiting the site all vehicles that have traversed over unsealed parts of the site, or have had wheels otherwise come into direct contact with cleanfill material shall use this facility. Should any material be deposited on the road by vehicles exiting the site it shall be removed immediately. The wheel wash shall remain in operation at all times. **[Replaces Land Use Condition 45]**

~~76-73.~~ No further quarrying shall be undertaken within 20m of the bore identified as the "Municipal Supply Bore" in ARC Permit 12977. **[Replaces Land Use Condition 46]**

~~77-74.~~ A minimum buffer distance of at least 50 metres shall be maintained between any rainfall soakage point and the dewatering bore intake. **[Replaces Land Use Condition 46A]**

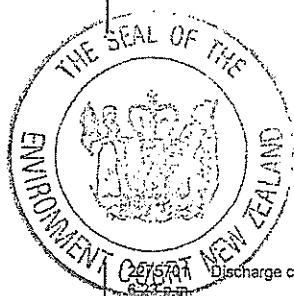
#### Earthworks - monitoring

~~78-75.~~ Groundwater pumped from the site shall be monitored for suspended solids and turbidity, as part of the contaminant monitoring regime of associated consent ~~36222~~the associated discharge permit. The concentration of suspended solids in the groundwater being discharged from the site shall not exceed 30 mg/l, and turbidity shall not exceed 30NTU. The results of this sampling shall be provided to the ~~Consent Authority~~Council on a quarterly basis. Provided that if the groundwater is ever to be used as potable water, that portion being used as potable water shall be subject to a limit of 5mg/l TSS and a turbidity of no more than 5 NTU. **[Replaces Land Use Condition 47]**

#### Earthworks - reporting

~~79-76.~~ (48) Prior to the commencement of work, and annually thereafter, the AMP shall be submitted to the ~~Consent Authority~~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.
- (e)(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.

(f)(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; and
- 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.

The Annual Management Plan commencing 31 May 2011, shall be submitted by 30 June every year, for the period ending 31 May of that year, for the Manager's review, prior to the commencement of works proposed in the Annual Management Plan. **[Replaces Land Use Condition 48 with an amendment as per Decision at paragraph 95]**

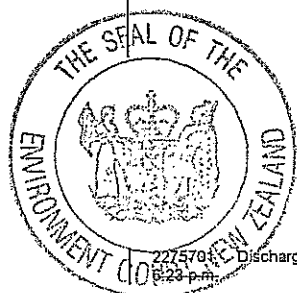
#### **Finished Contour Plan and Landscaping**

80-77. Not less than 24 months prior to the cessation of fill operations, or not less than 6 months prior to the consent holder submitting any Plan Change or resource consent application in respect of the end use of the site, or not less than 1 month following the notification of any Council plan change applying to the site (whichever of those is the earlier), the consent holder shall consult with relevant stakeholders (including South Epsom Planning Group, Three Kings United Group, Auckland Council, iwi and the Auckland Volcanic Cones Society) in respect of a proposed Final Contour Plan.

The consultation process shall involve consideration of the following:

- The desirability of an integrated final landform, and a more usable and efficient open space network surrounding the site.
- How the landform might best relate to the surrounding topography, in particular Big King Reserve, Hunters Quarry, and the Council Sites.
- Whether the contour should rise toward Big King Reserve on the northern part of the site, and if so how this rising contour is to be provided

The Final Contour Plan produced by the consent holder, after having had regard to the feedback obtained through the stakeholder consultation, shall be submitted to the Manager and shall form part of any Plan Change or resource consent application sought by the consent holder in respect of the site, or in the event of a Council Plan Change shall be promoted by the consent holder through the submission process.



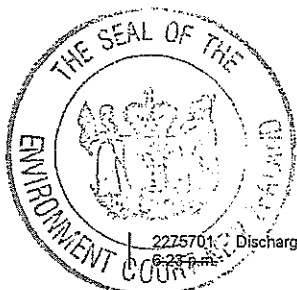


For the avoidance of doubt, once a final fill contour plan is approved for the site (either through a plan change process or further resource consent), then the identification of the upper 5m of fill (and the obligations and restrictions imposed by this consent in respect of that upper 5m) shall be by reference to that approved final fill contour plan.

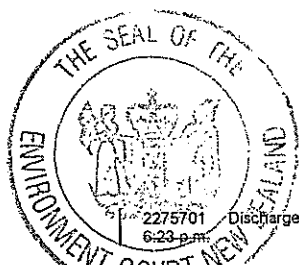
Within 3 months of the completion of the fill works the consent holder shall submit to the Manager an as-built contour plan of the site a qualified surveyor shall certify that the finished contour levels match those set out in the finished contour plan and, and, should if the site is to remain vacant with no further building or earthworks to be conducted on the site in the following 3 month period (following the completion of fill), then the site shall be hydroseeded or otherwise sown with appropriate ground cover to the satisfaction of the Manager. [Replaces Land Use Condition 33]

#### **PART D: ADVICE NOTES APPLYING TO ALL CONSENTS**

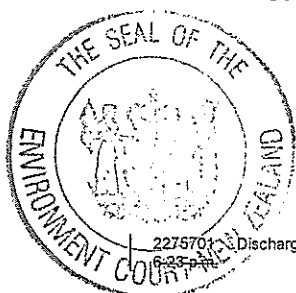
1. The consent holder is advised that the date of the commencement of this consent will be as determined by Section 116 of the RMA, unless a later date is stated as a condition of this consent. **[Discharge Advice Note 1 and Land Use Advice Note 12]**
2. The consent holder is referred to Section 124 of the Resource Management Act 1991, which provides for the exercising of a consent while applying for a new consent for the same activity. **[Discharge Advice Note 2 and Land Use Advice Note 14]**
3. This consent does not absolve the grantee from obtaining all other necessary consents or permits that may be required for the activity. The applicant needs to obtain all other necessary consents and permits, including those under the Building Act 2004, and comply with all relevant Council Bylaws. It is further noted that this consent does not constitute building consent approval. Please check as to whether or not a building consent is required under the Building Act 2004. If a building consent application is already lodged with Council or has already been obtained, you are advised that, unless otherwise stated, the use shall not commence until conditions of this resource consent have been met. Furthermore, if this consent and its conditions alter or affect a previously approved building consent for the same project, you are advised that a new building consent may need to be applied for. If the tree/s to which this consent relates are not located on land owned by the consent holder, the approval of the tree owner/s or an order to be made by the court under Section 129C of the Property Law Amendment Act 1952 may need to be obtained to give effect to the consent. **[Discharge Advice Note 3 and Land Use Advice Notes 3 and 15]**
4. The consent holder shall ensure that there are adequate provisions on site to prevent possible fuel spillage. **[Discharge Advice Note 4 and Land Use Advice Note 16]**
5. The purpose of the Fill Management Plan is to ensure that the consent holder implements, and complies with, the conditions of the consents. **[Discharge Advice Note 5]**



6. All archaeological sites are protected under the provisions of the Historic Places Act 1993 (HPA). It is an offence under the HPA to destroy, damage or modify any archaeological site whether or not the site is entered on the New Zealand Historic Places Trust (NZHPT) register of historic places, historic areas, wahi tapu and wahi tapu areas. Under sections 11 and 12 of the HPA, an application must be made to the NZHPT for an authority to destroy, damage or modify an archaeological site(s) where avoidance of effect is not practicable. It is the responsibility of the consent holder to consult with NZHPT about the requirements of the HPA should these become necessary as a result of any activity associated with the proposed development. **[Discharge Advice Note 6 and Land Use Advice Note 17]**
7. Section 137 RMA allows for the transfer of a resource consent by the holder to any owner or occupier of the site in respect of which the permit is granted, or to a local authority, unless the permit expressly provides otherwise. **[Discharge Advice Note 7 and Land Use Advice Note 18]**
8. The Applicant may wish to transfer this resource consent, if granted, to any subsequent owner of the property, if sold, or to occupiers of the land. **[Discharge Advice Note 8 and Land Use Advice Note 19]**
9. Section 138 RMA details the conditions relating to surrender of a resource consent. A consent authority may refuse to accept the surrender of part of a resource consent where that may (2)(b) affect the ability of the consent holder to meet other conditions of the consent; or (2)(c) lead to an adverse effect on the environment. There also remains some liability to the person surrendering the resource consent under (3)(a) and (b) of this section. This liability relates to breaches of conditions of the consent occurring before surrender and to the completion of the work required to give effect to the consent. **[Discharge Advice Note 9 and Land Use Advice Note 20]**
10. The ~~Consent Authority~~ Council would be unlikely to allow the surrender of part of this consent under section 138(2)(c) without substantial supporting information indicating that the predicted fate and transport of contaminants had occurred and that no on-going risk was posed to human health or the environment. **[Discharge Advice Note 10 and Land Use Advice Note 21]**
11. The Consent Holder is advised that, pursuant to Section 126 of the RMA, if this resource consent has been exercised, but is not subsequently exercised for a continuous period of five years, the consent may be cancelled by the ~~Consent Authority~~ Council unless other criteria contained within Section 126 are met. **[Discharge Advice Note 11 and Land Use Advice Note 22]**
12. That any dust emissions during the earthworks operations are controlled in accordance with the Ministry for the Environment guidelines *Good Practice Guide for Assessing and Managing the Environmental Effects of Dust*, 2001. Dust shall be mitigated, as a minimum, by: **[Discharge Advice Note 12 and Land Use Advice Note 23]**
  - (a) Using a water truck to dampen dust on the access road and filling areas. Wind direction, strength and soil conditions shall be considered and an appropriate level of watering and material covering established prior to daily works commencing;
  - (b) Covering of inbound dusty loads;
  - (c) Use of a wheelwash for outbound vehicles; and

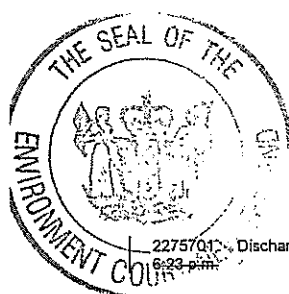


- (d) Limiting vehicle speeds to avoid dust mobilisation.
13. The Consent Holder is referred to Section 127 of the RMA which provides for the application, at any time, for changes to or cancellation of conditions of consent other than duration, and the provisions therein for making application to do so. **[Discharge Advice Note 13 and Land Use Advice Notes 9 and 24]**
  14. Upon commencement of this consent, the ~~consent authority~~ Council's staff shall provide to the consent holder's Quarry Manager a list of consented contaminated sites and will ensure that an updated list is provided to the quarry manager quarterly. This will assist the Quarry Manager in making fill waste acceptance decisions. **[Discharge Advice Note 14]**
  15. Subject to section 198 of the Local Government Act 2002 and Auckland Council's Policy on Development Contributions, a development contribution is payable on this proposal. A notice of assessment will be sent out which outlines the quantum of the contribution payable for this consent. Please note that with respect to this development, building consents will not be released, code of compliance certificates will not be issued. **[Land Use Advice Note 1]**
  16. The Consent Holder is advised that in accordance with the existing Quarry Management Plan (July 2007) and the provisions of the District Plan at clauses 8.7.4.1 and 8.7.4.2, that prior to the commencement of fill operations the Quarry Management Plan (July 2007) is required to be amended, in consultation with the Site Liaison Group, to include the filling and sale of imported aggregated activities. **[Land Use Advice Note 2]**
  17. Pursuant to section 125 of the Resource Management Act 1991, this resource consent will expire 5 years after the date of commencement of consent unless, before the consent lapses; **[Land Use Advice Note 4]**
    - the consent is given effect to; or
    - an application is made to the consent authority to extend the period of the consent, and the consent authority decides to grant an extension after taking into account the statutory considerations, set out in section 125(1)(b) of the Resource Management Act 1991.
  18. A copy of this consent should be held on site at all times during the establishment and construction phase of the activity. **[Land Use Advice Note 5]**
  19. The consent holder is requested to notify Council, in writing, of their intention to begin works, a minimum of fourteen days prior to commencement. Notification should be provided on the Resource Consent Monitoring - Notice of Works Starting form included with this consent decision. Notification can be submitted by email, phone or fax. **[Land Use Advice Note 6]**
  20. This consent does not constitute building consent approval Please check as to whether or not a building consent is required under the Building Act 2004. If a building consent application is already lodged with Council or has already been obtained you are advised that unless otherwise stated, the use shall not commence until conditions of this resource consent have been met. **[Land Use Advice Note 7]**
  21. The consent holder shall comply with all relevant Council Bylaws. In particular the consent holder shall comply with Part 27 of the Auckland Council Consolidated Bylaw,



which addresses signage, or seek a dispensation from the Bylaw. **[Land Use Advice Note 8]**

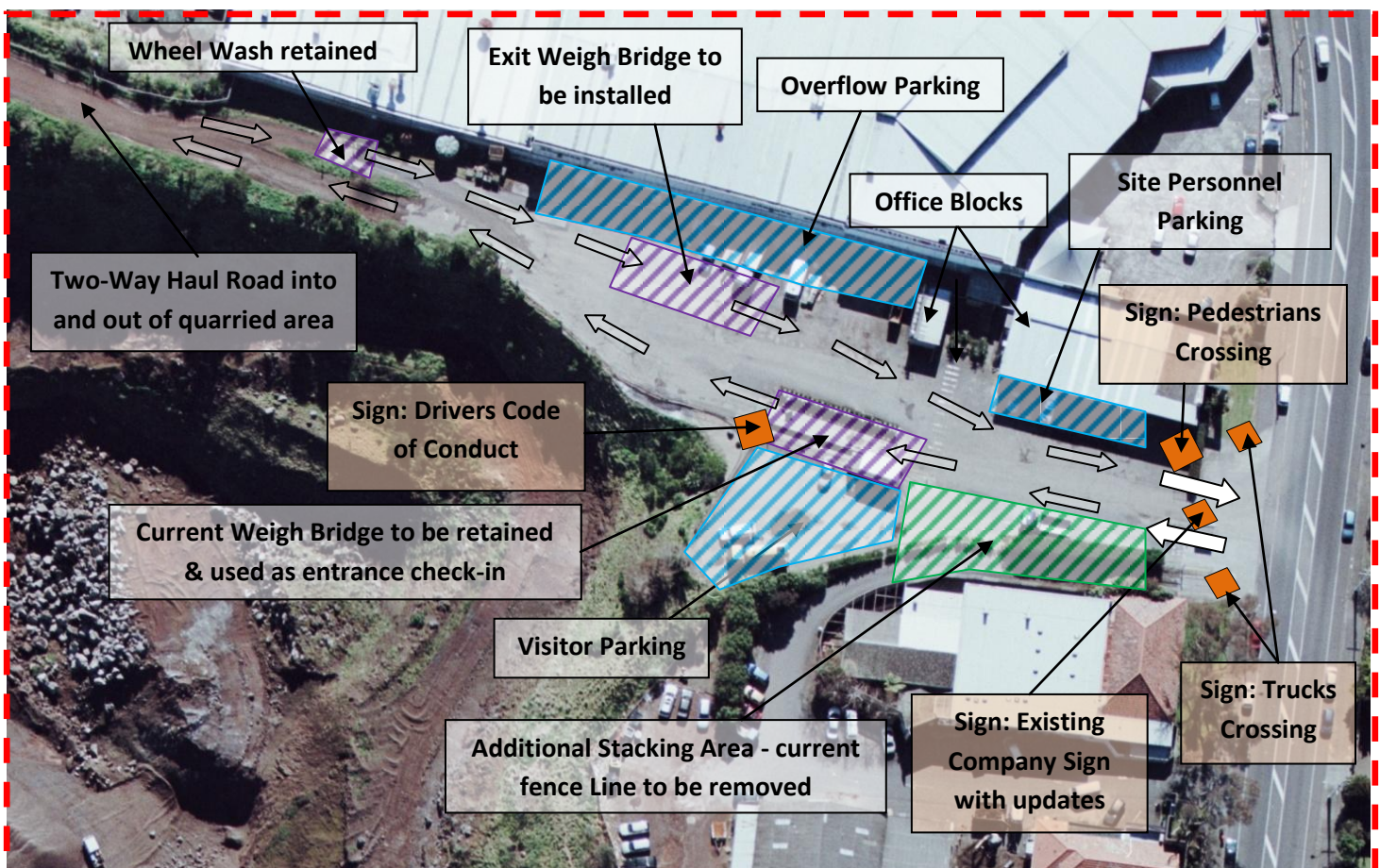
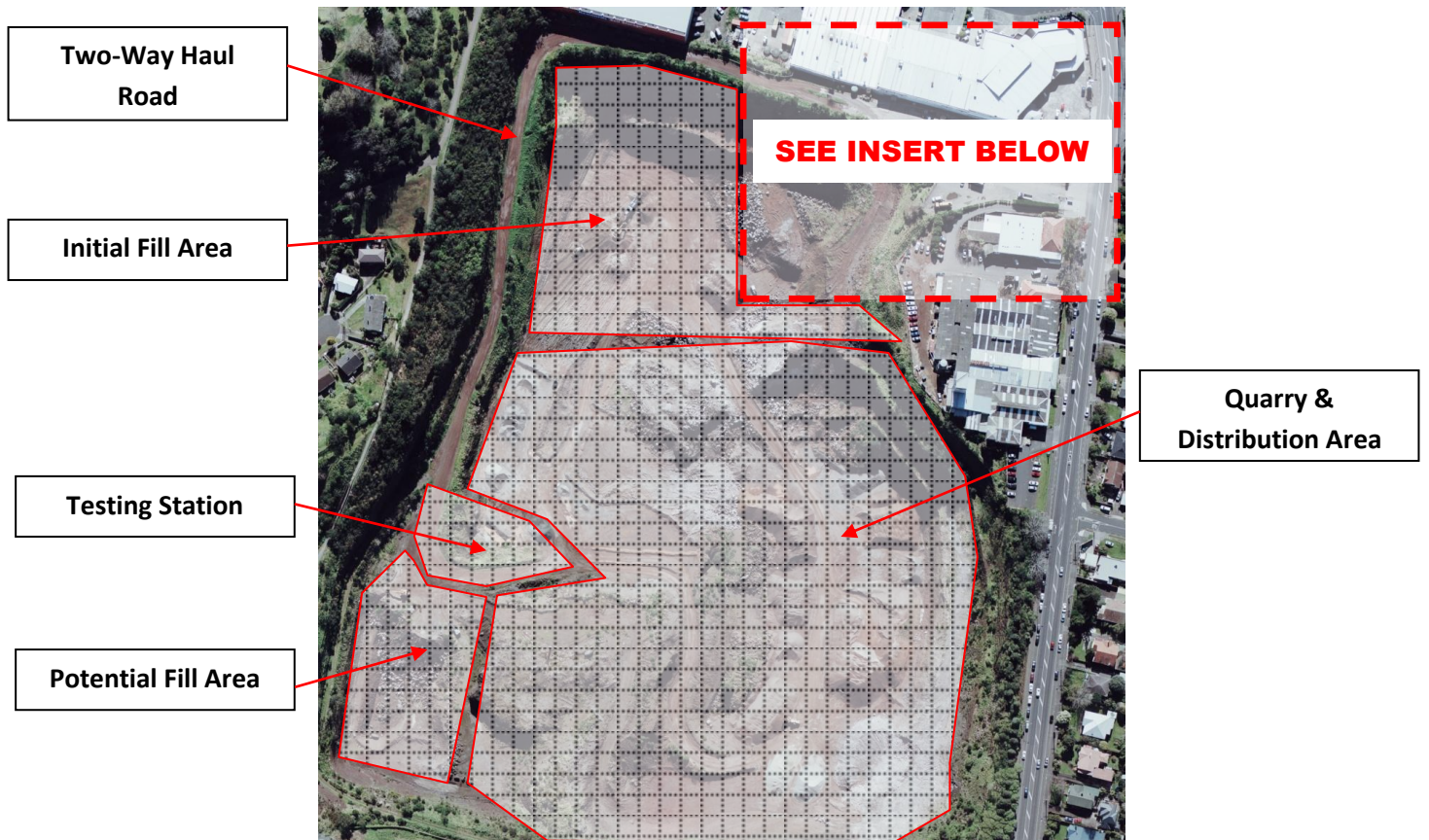
22. The conditions of consent apply to the consent holder and all persons, companies, contractors and agents, including sub-contractors, carrying out works on the site and activities authorised by this consent. **[Land Use Advice Note 10]**
23. The Land Use Consent: Sediment Control and associated conditions shall be included with any Contract Documents and all personnel working on the site (consultants, contractors and sub contractors) shall have access to the relevant documentation inclusive of the consent conditions. **[Land Use Advice Note 11]**
24. The consent holder shall make the Contractor/Consultant associated with the proposed works aware of the Industry Education Programme available to Plan Preparers and Plan Implementers through the Auckland Council. **[Land Use Advice Note 13]**
25. As part of the any consent process for the future use of the site, and if dewatering continues, the consent holder shall consider options for discharging stormwater runoff back to the Three Kings aquifer or to otherwise divert from soakage to ground. **[Land Use Advice Note 25]**



## Appendix 3

~~Indicative Quarry Development if pit dewatered and excavated to 0m RL~~  
*General site layout during concurrent quarry and fill operations*





## SITE PLAN AND LAYOUT MAP

## Appendix 4

### ~~End use options 1 – 5~~

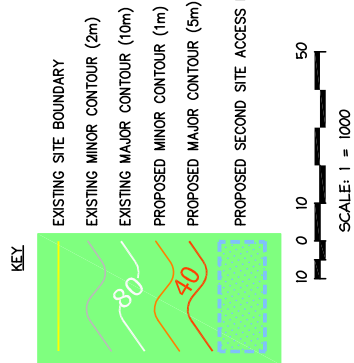
~~Note – Options are as developed for QMP September 2001. These options assume excavation to, and where applicable backfill from, 0m RL~~

### ***Proposed Landform Drawing***

This drawing is referred to in the fill consent as Figure 2 – Proposed Landform for Fill Consents, (Drawing 122314-FIG-002 dated 29/08/08). The fill consent does not authorise any filling of the site beyond and above the contours shown in this drawing.



AREAS AND BOUNDARIES SHOWN ARE  
SUBJECT TO SURVEY.



**HARRISON  
GRIERSON**

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**CONSULTING ENGINEERS SURVEYORS PLANNERS**

71 Great South Road Auckland Ph 09 917 5000 Fax 09 917 5001

[illegible]

# THREE KINGS QUARRY



FIGURE 2  
PROPOSED LANDFORM FOR  
CLEANFILL CONSENTS

DESIGNED:	DATE:	SIGNATURE:	PLOT DATE:	10.10.08
DRAWN:	DATE:	SIGNATURE:	CAD REF:	12314F6-0077114.jpg
DAS	29/08/2008		CAD REF:	
CHECKED:	DATE:	SIGNATURE:	SURVEY BY:	
APPROVED:	DATE:	SIGNATURE:	SURVEY DATE:	
			SUR REF:	

EOP CONSENT

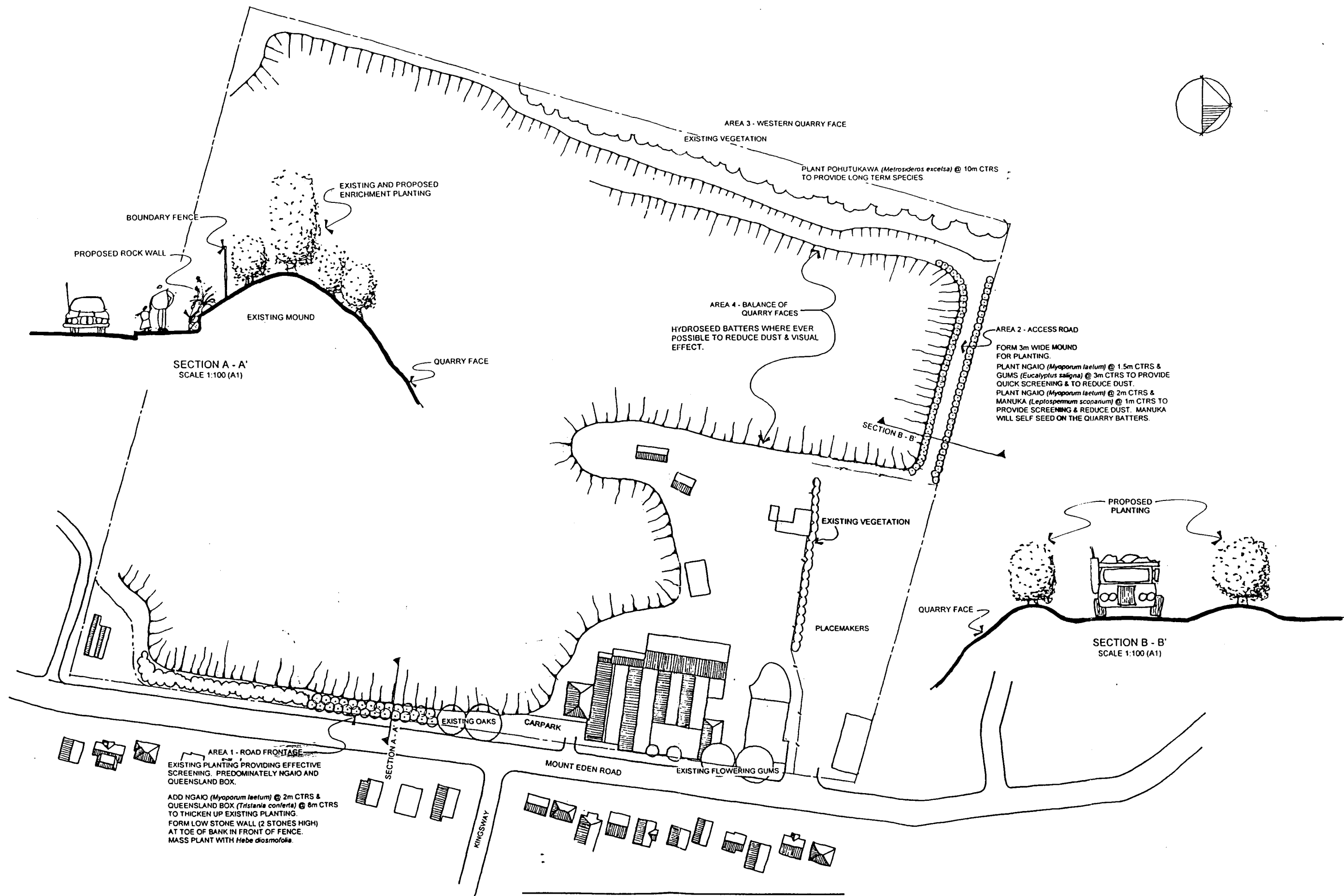
FIG REF:	1:1000	A1
1021-122314-01	1:2000 (A3)	
DRAWING No:		REV

122314-FIG-002



## **Appendix 5**

### ***Three Kings Quarry Boundary Planting Proposals***



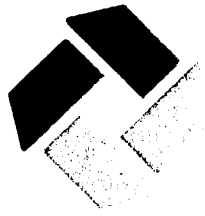
## THREE KINGS QUARRY PLANTING PROPOSALS

PREPARED FOR WINSTONE AGGREGATES BY BOFFA MISKELL LIMITED  
JUNE 1996 SCALE 1:1000 (A1)

**BOFFA  
MISKELL**  
ENVIRONMENTAL PLANNING  
LANDSCAPE ARCHITECTURE

## **Appendix 6**

### ***Groundwater Monitoring and Contingency Plan – September 2005***



**WINSTONE**  
AGGREGATES

**WINSTONE AGGREGATES**

**THREE KINGS QUARRY**

**MONITORING AND CONTINGENCY  
PLAN FOR DEWATERING THREE  
KINGS QUARRY**

**SEPTEMBER 2005**

## **Three Kings Quarry**

### **Monitoring and Contingency Plan for Dewatering Three Kings Quarry**

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2.0 Quarry Dewatering	4
3.0 Groundwater Monitoring	7
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5.0 Building Condition Survey	10
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8.0 Measures to Control Groundwater Induced Settlement	16
9.0 Reporting	17
10.0 Personnel	17
Appendix A	Consent to Dewater Three Kings Quarry (Permit No 12997)
Appendix B	Piezometer Details
Appendix C	Surface Level Monitoring Points
Appendix D	Settlement Zones (Drawing Number 18670-04)

## **Three Kings Quarry**

### **Monitoring and Contingency Plan for Dewatering Three Kings Quarry**

A monitoring and contingency plan for dewatering Three Kings Quarry is required by condition 14 of the consent to dewater Three Kings Quarry – Permit No. 12997 (attached as Appendix A).

This monitoring and condition plan must be complied with at all times [Condition 16].

Relevant conditions of consent are shown in square brackets.

#### **1.0 Background and Definitions**

The original consent to dewater Three Kings Quarry was granted by Environment Court order in March 1997. In preparation for dewatering to commence, a monitoring and contingency plan for ground subsidence was prepared and submitted to the Auckland Regional Council (Three Kings Quarry Monitoring and Contingency Plan for Ground Subsidence dated November 1998). Dewatering of Three Kings Quarry commenced in March 1999.

In April 2001 a comprehensive review of the monitoring data and predictive models was commenced to check monitoring results against predictions. A new groundwater model was developed to supplement the existing groundwater model. Settlement predictions were revised to reflect the changes to the groundwater model and settlements observed since dewatering commenced in March 1999.

In April 2003 the Auckland Regional Council issued a notice to review conditions of consent to dewater Three Kings Quarry under Section 128 of the Resource Management Act. This review was publicly notified and submissions were received. A hearing before Commissioners was held in July/August 2003. In the Commissioners decision dated 5 September 2003, changes to conditions of consent, in particular to boreholes to be monitored, ground surface level benchmarks to be surveyed, ground settlement limits and the content of the Monitoring and Contingency Plan were made. Appeals to the Commissioners

decision were lodged. These appeals were settled by an Environment Court consent order dated 15 July 2005.

An interim monitoring and contingency plan was prepared to cover the appeal period (Interim Monitoring and Contingency Plan dated February 2004).

This Monitoring and Contingency Plan is a result of and subject to the conditions of consent to dewater Three Kings Quarry granted by consent order dated 15 July 2005 – Permit No 12977 (Appendix A).

The information used in the preparation of this monitoring and contingency plan is based on information and recommendations contained within:

- The resource consent to dewater Three Kings Quarry (Permit No 12977),
- The Tonkin and Taylor report (2003a) entitled “Three Kings Quarry Dewatering – Review of Settlement Predictions” dated February 2003,
- The Tonkin and Taylor report (2003b) entitled “Three Kings Quarry Dewatering – Assessment of Supplementary Investigations of April 2003” dated July 2003,
- The Pattle Delamore report entitled “Groundwater Modelling of the Waitematas near Three Kings Quarry” dated February 2003,
- The Pattle Delamore report entitled “Three Kings Dewatering: Assessment of Groundwater Information April 2003” dated July 2003,
- The Pattle Delamore report entitled “2003/2004 Groundwater Monitoring Report, Three Kings Quarry” dated February 2005, and
- Groundwater level monitoring results and precise level survey data to July 31 2005.

### **Definitions**

**Dewatering** – means the lowering of the groundwater table (as measured in the quarry reference bore).

**Total Settlement** – the total settlement of a surface level monitoring point is the difference between the original (baseline) level of the monitoring point and the

level recorded in the most recent precise level survey.

Differential Settlement – is the difference in total settlement between two adjacent surface level monitoring points divided by the distance between the two monitoring points.

Where a surface level monitoring point has been established subsequent to dewatering commencing, the total settlement of that monitoring point must be adjusted for any settlement occurring between the time when dewatering commenced and when the monitoring point was established. This adjustment will be determined by a linear calculation derived from the total settlements of adjacent surface level monitoring points (these may be an “adjusted” total settlement where adjacent surface level monitoring points were established subsequent to dewatering commencing).

Cessation of Settlement – means that there has been no settlement caused by dewatering, as a result of the exercise of the consent to dewater Three Kings Quarry, greater than 5mm during any continuous 12 month period at any of the surface level monitoring points required by this Monitoring and Contingency Plan.

This will be determined by comparing the survey levels of all surface level monitoring points surveyed in a 12 month period with the survey level recorded at the start of the 12 month period.

In Excess of Seasonal Variation – means that the groundwater level measured in two successive groundwater level measurements in boreholes BH37, BH38, BH39 and BH40 measured in accordance with this Monitoring and Contingency Plan is below the greater of 0.2 metres below the bottom level of the natural groundwater level range, or the bottom 99.9% probability limit calculated from the first two years of data (in accordance with Section 6 of this Monitoring and Contingency Plan).

The natural groundwater level range is obtained from determining the 99% probability limits for the groundwater monitoring data for each groundwater monitoring bore (in accordance with Section 6 of this Monitoring and Contingency Plan).

The 99% probability limits are defined by the sample mean, plus or minus the product of 2.58 times the standard deviation of the data. The 99.9% probability



limits are defined by the sample mean plus or minus the product of 3.29 times the standard deviation of the data.

## **2.0 Quarry Dewatering**

Dewatering of Three Kings Quarry commenced in March 1999. Groundwater levels in the quarry were lowered to RL34m by October 2002 when dewatering was halted while the review of the dewatering was being undertaken. Since October 2002 the groundwater level in the quarry has been held above RL34metres.

### **Dewatering Procedure**

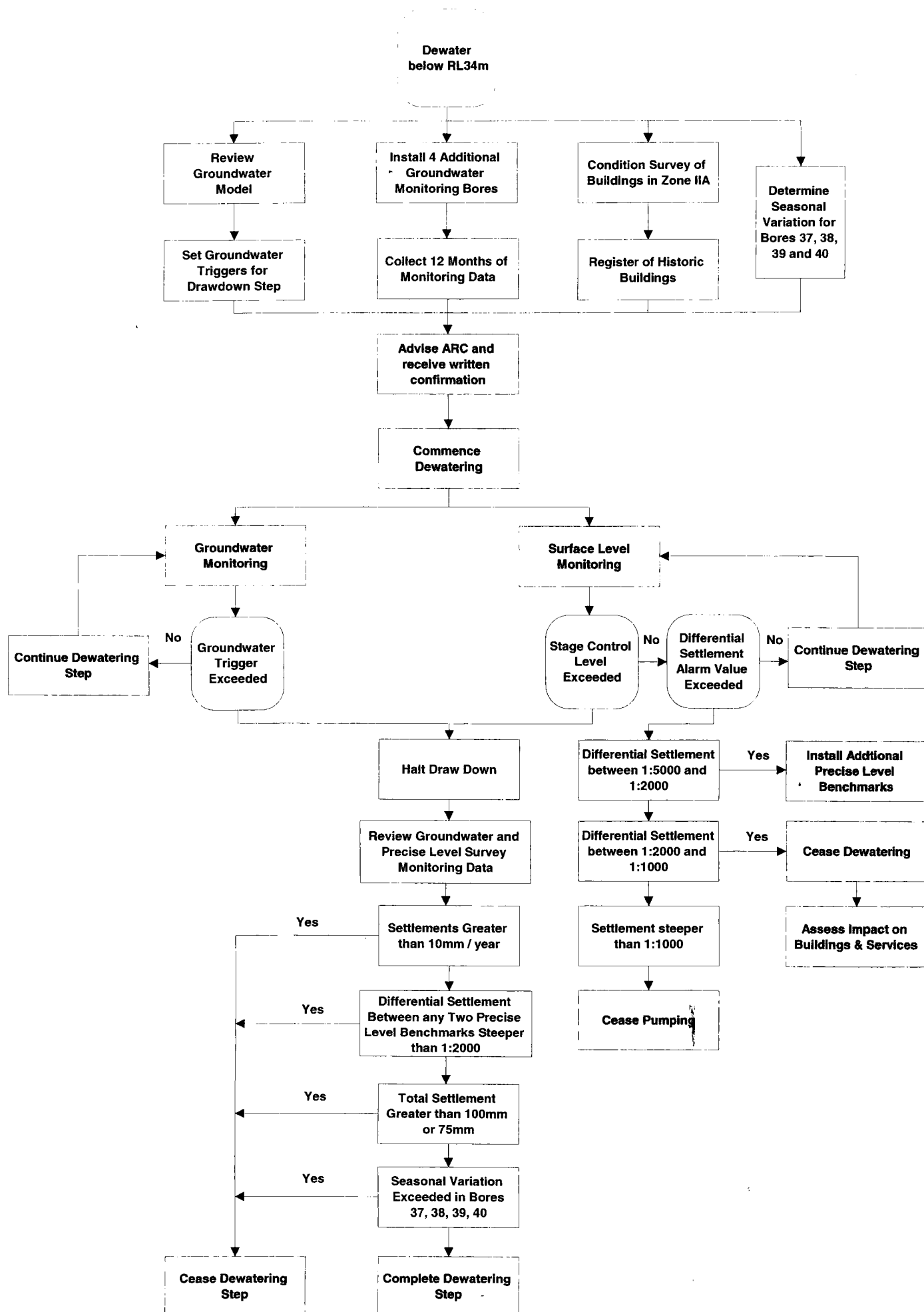
The quarry groundwater level must be maintained above RL34m until the following criteria are complied with [Condition 22]. Dewatering can then only occur in a maximum of 5m drawdown steps with a period of maintenance pumping of at least 2 years at the end of each drawdown step. Dewatering can only continue following each drawdown step if criteria in 2.7 and 2.8 are met. Dewatering must cease if the criteria in 2.9 and 2.10 are exceeded [Condition 22A].

Pumping of groundwater must cease if the differential settlement between any two ground settlement points is steeper than 1:1000. Pumping of groundwater is not allowed to recommence without the permission of the Auckland Regional Council [Condition 13].

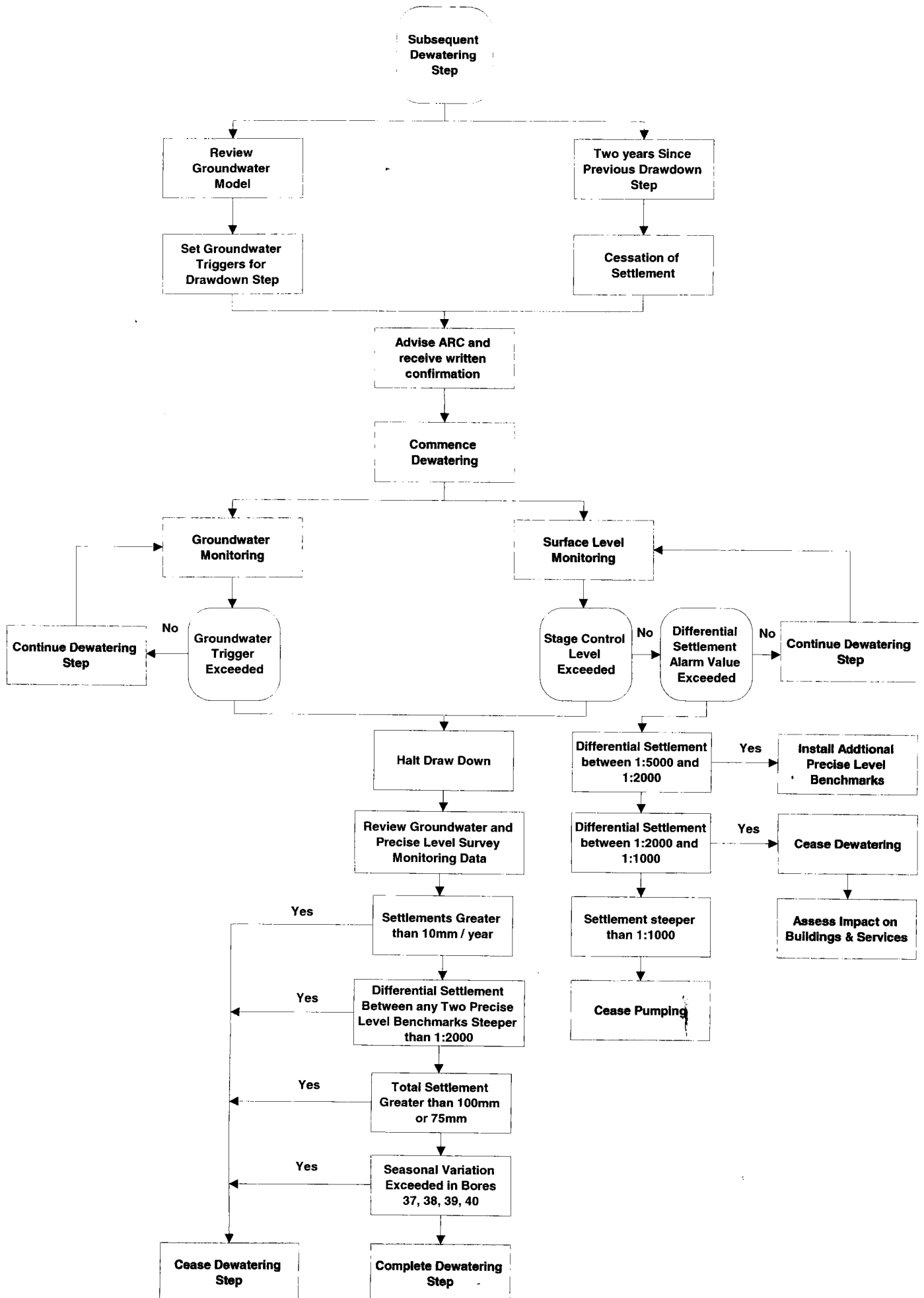
To ensure the following criteria are complied with, any lowering of the quarry groundwater level must be fully documented and communicated with the Auckland Regional Council. The Annual Report (Section 9.0) must contain all details of and actions resulting from the lowering of the quarry groundwater level.

Dewatering action plans for the initial drawdown step below RL34m and for subsequent dewatering steps are presented in Figure 1 and 2 respectively. These figures show a summary of actions outlined in more detail in Sections 2, 3, 4, 5 and 6 of this Monitoring and Contingency Plan.

Figure 1: Action Plan for the Initial Dewatering Step Below RL34m



**Figure 2: Action Plan for Subsequent Dewatering Steps**



### **Dewatering Below RL34m**

Prior to dewatering below RL34m, the following is required to be undertaken:

- 2.1 Installation of four additional groundwater monitoring bores generally located at the intersection of Mt Eden and Landscape Roads, the intersection of Landscape and St Andrews Roads, the intersection of McCullough and Duke Streets and to the south of BH27 in Settlement Zone IIB (Drawing 18670-04, Appendix D). These bores must be monitored for not less than 12 months prior to the commencement of drawdown below RL34m. The exact locations of the bores are to be fixed in consultation with the Auckland Regional Council [Condition 8].
- 2.2 The owners of properties in Settlement Zone IIA (Drawing 18670-04, Appendix D) are to be consulted and, subject to the owners approval, a detailed condition survey of buildings in Zone IIA in accordance with this Monitoring and Contingency Plan (Section 5.0) is to be undertaken to confirm their existing condition and to enable the magnitude of allowable effects from changes in groundwater pressures and ground movements to be accurately determined [Condition 23].
- 2.3 The groundwater model is to be reviewed and groundwater triggers determined for a drawdown to RL29m in accordance with this Monitoring and Contingency Plan (Section 6.0). The groundwater model review and groundwater triggers are to be reported to the Auckland Regional Council.
- 2.4 The seasonal variation of bores 37, 38, 39 and 40 are to be determined in accordance with this Monitoring and Contingency Plan (Section 6.0).
- 2.5 A register of historic buildings in the area of dewatering protected by the District Plan or the Historic Places Act is to be compiled in accordance with this Monitoring and Contingency Plan (Section 5.0).

- 2.6 The Auckland Region Council must be notified that dewatering below RL34m is to commence. Dewatering of a 5m drawdown step can only commence if the Auckland Regional Council confirms in writing that the criteria in section 2.7 have been complied with [Condition 22B].

In addition, when notice of drawdown below RL34m is given, the Auckland Regional Council may request an additional condition survey on any building in the dewatering zone for the purpose of checking for damage and for following up on any subsequent report of damage to that building [Condition 24].

### **Dewatering of a Drawdown Step**

Prior to commencing a 5m drawdown step, the following criteria must be met:

- 2.7 Dewatering of a 5m drawdown step can only commence if the Auckland Regional Council confirms in writing that the time since the end of the last 5m drawdown step is at least 2 years; measured settlement, caused by the exercise of the consent to dewater Three Kings Quarry, has ceased at all settlement points for a period of 1 year; and the criteria in 2.10 have not been exceeded [Condition 22B].
- 2.8 The groundwater model is to be reviewed and groundwater triggers determined for the drawdown step as defined in Section 6.0. The groundwater model review and groundwater triggers are to be reported to the Auckland Regional Council.

Dewatering of any drawdown step will cease if:

- 2.9 Ground settlement, caused by the exercise of the consent to dewater Three Kings Quarry, as measured at any settlement monitoring point required by this monitoring and contingency plan exceeds 10mm per year. Dewatering will not recommence until the criteria in 2.7 are met [Condition 22C].

- 2.10 The differential settlement between any two settlement monitoring points required by this monitoring and contingency plan is steeper than 1:2000; or the total settlement at any settlement monitoring point established before 30 September 2002 is greater than 100mm; or the total settlement at any monitoring point established after 30 September 2002 is greater than 75mm; or groundwater drawdown, caused by the exercise of the consent to dewater Three Kings Quarry is in excess of the seasonal variation in any one of bores 37, 38, 39 or 40; or if the groundwater level in the quarry is at or below RL0m [Condition 22D].

### **3.0 Groundwater Monitoring**

Piezometers are used to monitor changes in groundwater level within Three Kings Quarry and in the surrounding area. The location and general details for each piezometer monitoring changes in groundwater levels, including those monitoring groundwater levels in Tauranga Group Sediments, are contained within Appendix B.

- 3.1 Groundwater levels will be monitored in bores 2B, 6, 7, 10, 11, 12, 13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 and in any other bore required by this monitoring and contingency plan [Condition 7].
- 3.2 Groundwater levels will be measured in all piezometer levels at each bore location [Condition 7].
- 3.3 The groundwater level in bore 2B will represent the quarry water level (the quarry reference bore).
- 3.4 In the event that a bore is destroyed or becomes inoperable, that bore will be substituted with another [Condition 7].
- 3.5 The approval of the Auckland Regional Council will be gained prior to the substitution of any bore with another [Condition 7].
- 3.6 Monitoring of groundwater levels in all piezometers will be

undertaken monthly [Condition 7].

- 3.7 The date of monitoring and the water level in each piezometer is to be recorded and a groundwater monitoring database will be maintained by Winstone Aggregates [Condition 7].
- 3.8 The water level monitoring results for the preceding quarter will be submitted to the Auckland Regional Council no later than 10 working days after 28 February, 31 May, 31 August and 30 November [Condition 7].
- 3.9 A meter to measure the total quantity of groundwater being taken from beneath Three Kings Quarry must be maintained on the outlet of the pump [Condition 5].
- 3.10 The water meter must be read at weekly intervals and a record kept of the date and water meter reading [Condition 6].
- 3.11 The water meter results for the preceding quarter will be submitted to the Auckland Regional Council no later than 10 working days after 28 February, 31 May, 31 August and 30 November [Condition 6].

#### **4.0 Surface Level Monitoring**

Surface level monitoring points are used to determine change in surface level in the area surrounding Three Kings Quarry. The location and original (baseline) level for surface level monitoring points used in determining changes in surface level are contained within Appendix C. [The following all are requirements of Condition 12.]

- 4.1 The network of surface level monitoring points listed in Appendix C will be maintained.
- 4.2 If any part of the monitoring network becomes inoperative, or if a surface level monitoring point is destroyed, it will be replaced as soon as practicable.

- 4.3 Additional surface level monitoring points to those contained within Appendix C will be installed taking into account the geology, accessibility to survey points and risk of damage from ground settlement.
- 4.4 The distance between surface level monitoring points added to the existing network will be no more than 100metres.
- 4.5 The distance between surface level monitoring points in Settlement Zone IIA (Drawing 18670-04, Appendix D) will be no greater than 25metres.
- 4.6 Two transects of surface level monitoring points at approximately right angles to Hillsborough Road will be maintained in Settlement Zone IIA (along Mt Albert Road and Budock Road, Drawing 18670-04, Appendix D).
- 4.7 Surface level monitoring points will be installed to provide a spacing of not more than 50m at locations in the survey network where observed differential settlements exceed 1:5000 and at a spacing of not more than 25m at locations in the survey network where observed differential settlements exceed 1:2000
- 4.8 All surface level monitoring points will be surveyed once every six months while no dewatering is taking place and every three months during periods of dewatering. In addition, all surface level monitoring points in Settlement Zone IIA (Drawing 18670-04, Appendix D) will be surveyed three monthly.
- 4.9 The frequency of monitoring will increase to three monthly in those areas where differential settlement exceeds 1:2000.
- 4.10 When dewatering has ceased for more than 2 years and there has been a cessation of settlement, then all ground surface monitoring will be conducted by annual survey provided that if dewatering re-



commences, the frequency of survey monitoring will revert to that set out in 4.8.

- 4.11 The survey will be to an accuracy range achieved by best practice precise levelling, which in any given survey means within a range of +/- 2mm between adjacent surface level monitoring points.
- 4.12 A database of precise level survey measurements will be maintained by Winstone Aggregates.
- 4.13 The results of each survey will be forwarded to the Auckland Regional Council and the Three Kings United Group within 10 working days of the completion of the survey.

## **5.0 Building Condition Survey**

### **Settlement Zone IIA**

A detailed building condition survey of buildings within Settlement Zone IIA (Drawing 18670-04, Appendix D) will be undertaken prior to drawdown of groundwater in the quarry below RL34m [Condition 23]. This building condition survey will be undertaken in consultation with the owners of the properties and will be subject to the owner's approval. It will include but not necessarily be limited to the following:

- The type and capacity of foundations
- Existing levels of aesthetic damage
- Existing levels of structural distress
- Assessment of structural ductility
- Susceptibility to further foundation movements
- Assessment of waterproofness of basements

The survey will be undertaken by an independent experienced engineer approved by the Auckland Regional Council. A certificate will be issued by a Chartered Engineer within one month of the completion of the survey that certifies that the survey has been completed in a professional manner and is an accurate assessment of the condition of the buildings concerned.

The procedure for undertaking the building condition surveys will be as follows:

1. The owners of building in Zone IIA will be identified and consulted with regarding the purpose and extent of building conditions surveys proposed.
2. Only those buildings with the owner's approval will be surveyed.
3. An independent experienced engineer will be identified to undertake the surveys and that persons details will be submitted to the Auckland Regional Council for approval.
4. Subject to the owner's written approval the building survey will be undertaken and may include a photographic record of the building.
5. A report for each building will be prepared.
6. A certificate will be issued by a Chartered Engineer within one month of the completion of the survey that certifies that the survey has been completed in a professional manner and is an accurate assessment of the condition of the buildings concerned.

### **Historic Buildings**

Prior to dewatering below RL34m, a register of historic buildings within the area of dewatering protected by the District Plan or the Historic Places Act will be compiled and their locations plotted on a map of the Three Kings area together with surface level monitoring points. An appraisal of their condition together with existing and predicted settlements in the immediate vicinity of each building will be undertaken to ensure that dewatering authorised by the consent to dewater Three Kings Quarry does not result in damage to any historic building [Condition 25].

## **6.0 Groundwater Monitoring Action Plan**

Groundwater levels will be monitored in and around Three Kings Quarry in accordance with Section 3.0 of this Monitoring and Contingency Plan. The groundwater level in the quarry is currently being held above RL34m. The

procedures and criteria for drawing the quarry groundwater level below RL34m are detailed in Section 2.0 of this Monitoring and Contingency Plan.

Trigger levels are required for the early warning of excessive ground settlement based on the difference between predicted and actual groundwater level changes, and the calculated seasonal variation in bores 37, 38, 39 and 40.

### **Groundwater Triggers**

For each drawdown step, groundwater triggers will be determined as follows:

- 6.1 The groundwater model will be reviewed prior to a groundwater drawdown step to track calibration accuracy, to validate drawdown predictions and to ensure recharge estimates are reasonable.
- 6.2 A prediction of groundwater levels in each of the monitoring bores will be made prior to each groundwater drawdown step. These predictions will be compared with those used to determine the settlement values in Table 1 (Section 7).
- 6.3 Groundwater triggers will be set to ensure that settlements greater than those values in Table 1 are not exceeded.
- 6.4 The results of the prediction review at each drawdown step will be forwarded to the Auckland Regional Council prior to that drawdown step being commenced.
- 6.5 Dewatering will cease (by halting the drawdown of groundwater levels in the quarry) if groundwater triggers in any dewatering step are exceeded. A review of the groundwater levels and precise level survey data will be undertaken. Dewatering can only be recommenced if the review of precise level survey data demonstrates that criteria in section 2.9 and 2.10 will not be exceeded.
- 6.6 The results of the review will be forwarded to the Auckland Regional Council prior to dewatering recommencing.

### **Seasonal Variation Calculation**

- 6.7 Groundwater monitoring data for boreholes BH37, BH38, BH39 and BH40 for the first 12 month period will be analysed and the natural groundwater level range, including seasonal fluctuations, will be determined for each borehole by determining the 99% probability limits for the data. The 99% probability limits are defined by the sample mean, plus or minus the product of 2.58 times the standard deviation of the data. Data from the second 12 months of monitoring will be used to recalculate the natural groundwater level range if the 95% confidence limits of the second 12 month monitoring data set overlap with the 95% confidence limits of the first 12 month monitoring data set. The calculated natural range will not be altered after the first 2 years of monitoring.
- 6.8 Dewatering will cease (by halting the drawdown of groundwater levels in the quarry) if groundwater drawdown caused by the consent to dewater Three Kings Quarry is in excess of seasonal variation in any one of bores 37, 38, 39 or 40.
- 6.9 The calculated natural groundwater level range and the 99.9% probably limit in bores 37, 38, 39 and 40 will be forwarded to the Auckland Regional Council by 31 March 2006 and 31 March 2007 following the first and second anniversary respectively of monitoring water levels in bores 37, 38, 39 and 40.

### **7.0 Surface Level Monitoring Action Plan**

Ground surface levels will be monitored by precise level survey of surface level monitoring points as detailed in Section 4. Precise level settlement triggers for both total settlement and differential settlement will be established.

#### **Total Settlement**

Settlements for surface level monitoring points in the zones shown in Drawing No

18670-04 (Appendix D) have been calculated for various stages of drawdown of quarry groundwater levels. These Stage Control Levels are presented in Table 1.

Should settlements greater than the Stage Control Levels be measured, the following actions will be undertaken:

- 7.1 Dewatering will cease (by halting the drawdown of groundwater levels in the quarry) if groundwater drawdown caused by the exercise of the consent to dewater Three Kings Quarry is in excess of any Stage Control Level (Table 1).
- 7.2 A review of groundwater levels and precise level survey data will be undertaken. Dewatering can only be recommenced if the review demonstrates that criteria in section 2.9 and 2.10 will not be exceeded with any further drawdown.
- 7.3 The results of the review will be forwarded to the Auckland Regional Council prior to dewatering recommencing.

Table 1 Stage Control Levels for Total Settlement									
	Intermediate Trigger (mm) for Settlement Zones								
	I	II	IIA	IIB	III	IV	V	IIIA	IIIB
Quarry Drawdown to RL30m	10	20	45	15	10	10	5	25	20
Quarry Drawdown to RL15m	15	25	55	35	15	10	5	35	30
Quarry Drawdown to RL0m	20	30	65	45	20	15	5	45	40
Steady State Water Level (at RL0m)	20	35	75	50	25	20	5	65	60

### **Differential Settlement**

Differential settlements between adjacent surface level monitoring points will be calculated following each precise level survey. Differential Settlement Alarm Values are defined as set out in Table 2.

Table 2 Differential Settlement Alarm Values	
Trigger Status	Measured Differential Settlement
Trigger for Installation of Additional Survey Marks	1:5,000
Trigger to Halt Dewatering and Assess Impact of Settlement on Buildings and Services	1:2,000
Trigger to Cease Pumping	1: 1000

Where differential settlements between surface level monitoring points exceed Differential Settlement Alarm Values as a result of the exercise of the consent to dewater Three Kings Quarry, the following will be implemented:

At a differential settlement steeper than 1 in 5,000, in the area affected:

- a) Install additional surface level monitoring points at 50metre centres between existing survey marks.
- b) Report the settlements to the Quarry Manager and the Auckland Regional Council.

At a differential settlement steeper than 1 in 2000, cease lowering the groundwater (as measured in the quarry reference bore) and, in the area affected:

- a) Install additional survey marks at 25metre centres between existing survey marks.
- b) Report settlements to the Quarry Manager, the Auckland Regional Council, affected property owners and the following Community Groups and Community Boards: South Epsom Planning, Three Kings United, Epsom Environmental Effects, Mt Roskill Community Board, and Eden-Albert Community Board.
- c) Assess the potential impact of ongoing settlement on buildings and services.
- d) Undertake a review of the groundwater model and settlement predictions.

- e) Report assessment to the Quarry Manager, the Auckland Regional Council and property owners.
- f) The frequency of survey monitoring will be increased to 3-monthly until no further settlements are recorded.

At a differential settlement steeper than 1 in 1,000:

- a) The taking of groundwater authorised by the consent to dewater Three Kings Quarry will cease immediately. Pumping of groundwater will not recommence without the permission of the Auckland Regional Council.
- b) Report settlements to the Quarry Manager, the Auckland Regional Council, property owners in the area affected and the following Community Groups and Community Boards: South Epsom Planning, Three Kings United, Epsom Environmental Effects, Mt Roskill Community Board, and Eden-Albert Community Board.
- c) Assess the potential impact of ongoing settlement on affected structures.
- d) If settlements cause damage in breach of special condition 11 of the consent to dewater Three Kings Quarry, then any damage will be assessed and repaired in accordance with special condition 21B.

## **8.0 Measures to Control Groundwater Induced Settlement**

If differential settlements induced by quarry dewatering exceed 1:1000, the following contingency measures will be considered:

- i) Allow or assist parts of the groundwater system to recharge, either naturally or by injection of water into the groundwater system in the vicinity of any location identified as affected
- ii) Monitoring of potentially affected structures (condition assessment monitoring)
- iii) Remediation of any affected structures (i.e. underpinning and/or strengthening works).

## **9.0 Reporting**

All groundwater triggers, settlement alarms, reviews of monitoring data and any subsequent actions will be documented. Where a review indicates that a change to a groundwater trigger, settlement alarm, groundwater/settlement models or pumping strategy is required, the Auckland Regional Council will be notified. This may result in a change to the monitoring and contingency plan.

The results of groundwater level monitoring and water meter readings will be forwarded to the Auckland Regional Council at quarterly intervals no later than 10 working days after 28 February, 31 May, 31 August and 30 November [Conditions 6 and 7] .

Precise level survey results will be forwarded to the Auckland Regional Council and the Three Kings United Group within 10 working days of the completion of the precise level survey [Condition 12].

An annual Three Kings Quarry Monitoring Report will be prepared by 30 April for the year ending 31 March compiling all data and documenting any groundwater triggers, settlement alarm value events, reviews and remedial action required by this monitoring and contingency plan or any lowering of the groundwater level within the quarry undertaken during that year. This report will be forwarded to the Auckland Regional Council and the following Community Groups and Community Boards: South Epsom Planning, Three Kings United, Epsom Environmental Effects, Mt Roskill Community Board, and Eden-Albert Community Board.

## **10.0 Personnel**

The Three Kings Quarry Manager has overall responsibility for the operation at Three Kings Quarry. The Quarry Manager is assisted by site personnel, specialist Winstone staff, and the Winstone Aggregates Management Team.

The responsibility for this Monitoring and Contingency Plan has been delegated



to the Resource and Environment Team of Winstone Aggregates, specifically the Three Kings Quarry Dewatering Monitoring Manager. This position is currently held by Michael Harris.

The Three Kings Quarry Dewatering Monitoring Manager has responsibility to maintain and ensure compliance with this Monitoring and Contingency Plan, and for the collection, recording and reporting of monitoring data as detailed within this Monitoring and Contingency Plan.

The collection of groundwater and precise level survey data is currently undertaken by consultants as follows:

- Groundwater Monitoring – Environmental and Earth Sciences Ltd (standpipe piezometers), Tonkin and Taylor Ltd (pneumatic piezometers)
- Precise level Surveys – Harrison Grierson Consultants Limited

Monitoring results will be forwarded to the Three Kings Quarry Dewatering Monitoring Manager as the information is collected. The Three Kings Quarry Dewatering Monitoring Manager will maintain a database of the monitoring information and report to the Auckland Regional Council, the Three Kings Quarry Manager and community groups as required by this Monitoring and Contingency Plan.

The validation of the groundwater model and any groundwater prediction reviews are currently undertaken by groundwater consultants Pattle Delamore Partners Ltd. The assessment and review of surface settlements is currently being undertaken by environmental and engineering consultants Tonkin and Taylor Ltd. Additional specialist consultants may be engaged to review the dewatering of Three Kings Quarry.

## APPENDIX A

### CONSENT TO DEWATER THREE KINGS QUARRY - PERMIT NO 12997

[NOTE: Document not included here as already reproduced in Appendix 2 of the Quarry Management Plan. Also a copy of Permit N0 12977 is available on the Winstone Web Site "Community Files" via the link:  
[http://www.winstoneaggregates.co.nz/Three\\_Kings\\_Quarry.php](http://www.winstoneaggregates.co.nz/Three_Kings_Quarry.php) ]

## **APPENDIX B**

### **PIEZOMETER DETAILS**

## PIEZOMETER DETAILS

Piezometers have been subdivided into two groups.

Group A Piezometers – this group contains all piezometers predicted to respond by similar amounts to the groundwater level within the quarry (as defined by a quarry reference bore).

Group A piezometers are located within:

- the scoria and basalt deposit of the Three Kings Volcanic Centre
- higher permeability Waitemata Group sedimentary rocks immediately adjacent to the Three King Volcanic Centre.

Group B Piezometers – this group contains piezometers that may be affected by dewatering Three Kings Quarry but to a much lesser degree than Group A piezometers (with effects reducing with distance from the quarry) and piezometers within deposits predicted to be unaffected by quarry dewatering.

Group B piezometers are located:

- at shallow depths within the higher permeability Waitemata,
- within lower permeability Waitemata further out from the volcanic centre,
- within perched groundwater systems in volcanic sediments or basalt associated with the Three Kings Volcanic Centre,
- within basalt not associated with the Three Kings Volcanic Centre, or
- within Tauranga Group sediments.

Locations and general details piezometers are summarised in Tables 1A and 1B.

## Tauranga Group Piezometers

Details of piezometers located within Tauranga Group sediments are as follows:

Piezometer ID	Surface Location	Piezometer Details
25b2	Hillsborough Road	Pneumatic piezometer located at 20.5m depth at the top of 5.0metre thick clay (Tauranga Group) overlying basalt (One Tree Hill Basalt).
29	Hillsborough Road	Standpipe piezometer screened from 13.5 to 16.5m depth within clay (Tauranga Group) and weathered Waitemata sediments.
34	Mt Albert Road	Standpipe piezometer screened from 29.0 to 30.5m depth within clay (Tauranga Group) underlying basalt (One Tree Hill Basalt).

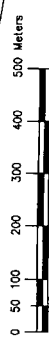
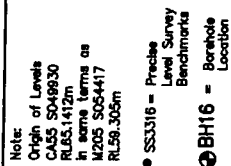
## List of all Piezometers

<b>TABLE 1A – GROUP A PIEZOMETERS</b> Piezometers Expected to be Significantly Affected by Dewatering Three Kings Quarry		
Piezometer	Location	Geological Setting
1B	Three Kings Quarry	Scoria (within quarry)
2B	Three Kings Quarry	Scoria (Quarry Reference Bore)
5B	Three Kings Quarry	Basalt (immediately adjacent to quarry)
6A	Three Kings Reserve	Higher Permeability Waitemata (within Tuff ring – mid level)
6B	Three Kings Reserve	Higher Permeability Waitemata (within Tuff ring – mid level)
6C	Three Kings Reserve	Higher Permeability Waitemata (within Tuff ring – deep)
17	Fyvie Avenue	Basalt (immediately adjacent to quarry - deep)
18A	Three Kings Plaza	Higher Permeability Waitemata (within tuff ring – deep)
18B	Three Kings Plaza	Higher Permeability Waitemata (within tuff ring – mid level)
19a	Rowens Reserve	Higher Permeability Waitemata (on tuff ring – deep)
19b	Rowens Reserve	Higher Permeability Waitemata (on tuff ring – mid level)
21	Arthur Richards Reserve	Higher Permeability Waitemata (within tuff ring – deep)
22	Frost Road	Higher Permeability Waitemata (beyond crest of tuff ring – deep)
25	Hillsborough Road	Higher Permeability Waitemata (beyond crest of tuff ring – deep)

**TABLE 1B – GROUP B PIEZOMETERS**

Piezometer not Expected to be Significantly Affected by Dewatering Three Kings Quarry

Piezometer	Location	Geological Setting
7	Landscape Road	Tuff/Basalt (beyond tuff ring)
10a	Gorrie Avenue	Tuff (beyond tuff ring)
10b	Gorrie Avenue	Tuff (beyond tuff ring – shallow)
11b	Rowans Reserve	Basalt (beyond tuff ring – shallow)
12a	Gorrie Avenue	Basalt (beyond tuff ring)
12b	Gorrie Avenue	Tuff (beyond tuff ring – shallow)
13a	Authur Richards Reserve	Tuff (inside tuff ring)
13c	Arthur Richards Reserve	Tuff (inside tuff ring – shallow)
16	St Andrews Road	Tuff/Waitemata (on tuff ring)
20	Hillsborough Road	Waitemata (beyond tuff ring - deep)
20a	Hillsborough Road	Waitemata (beyond tuff ring - shallow)
22a	Frost Road	Tuff (on tuff ring)
23	Fearon Avenue	Waitemata (beyond tuff ring)
23a	Fearon Avenue	Waitemata (beyond tuff ring - shallow)
24	St Leonards Road	Waitemata (beyond tuff ring)
24a	St Leonards Road	Waitemata (beyond tuff ring - shallow)
25a	Hillsborough Road	Basalt (beyond tuff ring)
25b1	Hillsborough Road	Tuff (beyond tuff ring)
25b2	Hillsborough Road	Tauranga Group (above basalt beyond tuff ring)
26	Frost Road	Waitemata (beyond tuff ring – deep)
26a	Frost Road	Waitemata (beyond tuff ring – shallow)
27	Fearon Park	Waitemata (beyond tuff ring – deep)
28a	Hillsborough Road	Tuff (beyond tuff ring)
28b	Hillsborough Road	Weathered Waitemata (beyond tuff ring)
29	Hillsborough Road	Tauranga Group/Weathered Waitemata (beyond to tuff ring)
30	St Leonards Road	Weathered Waitemata (beyond tuff ring)
31a	Shackleton Road	Weathered Waitemata (beyond tuff ring)
31b	Shackleton Road	Waitemata (beyond tuff ring – shallow)
32	Shackleton Road	Tuff (beyond tuff ring)
33	Peary Road	Waitemata (beyond tuff ring – shallow)
34	Mt Albert Road	Tauranga Group (below basalt beyond tuff ring)
35a	Dornwell Road	Waitemata (beyond tuff ring)
35b	Dornwell Road	Waitemata (beyond tuff ring - shallow)
36a	Haughey Avenue	Waitemata (beyond tuff ring)
36b	Haughey Avenue	Waitemata (beyond tuff ring - shallow)
37a	Frost Road	Waitemata (beyond tuff ring)
37b	Frost Road	Waitemata (beyond tuff ring - shallow)
38a	Carr Road	Waitemata (beyond tuff ring)
38b	Carr Road	Waitemata (beyond tuff ring - shallow)
39a	Carr Road	Waitemata (beyond tuff ring)
39b	Carr Road	Waitemata (beyond tuff ring - shallow)
40a	Hillsborough Road	Waitemata (beyond tuff ring)
40b	Hillsborough Road	Waitemata (beyond tuff ring - shallow)




PROJECT STATUS	PROJECT NO.	1130/006451	REV	B
	SIZES:	A1 1:5000 A3 1:10000	A1 A3	
DRAWING NO:			6451-100	

BOREHOLE LOCATION PLAN  
AS AT 10-3-05

WINSTONE AGGREGATES LTD  
THREE KINGS QUARRY

**H C**  
**HARRISON**  
**GRIERSON**  
CONSULTING ENGINEERS SURVEYORS PLANNERS  
Level 5, Ogilvy House, 20 Abernethy Way, Meridian City Ph 06 566 3380 Fax 06 566 3390

	ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND	ISO 9001 QUALITY ASSURED
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[illegible]

## **APPENDIX C**

### **SURFACE LEVEL MONITORING POINTS**



Surface Level Monitoring Points	Location	Coordinates		Baseline Level
		mN	mE	mRL
SS 3136	Mt Eden Rd	697910.7	299385.7	63.05
SS 3137	Mt Eden Rd	698072.6	299427.1	63.34
M 212A	Mt Albert Rd	696504.4	299153.2	86.13
SM 4163	Mt Albert Rd	696843	298513	74.14
SM 4164	Mt Albert Rd	696728.6	298688.4	75.85
SM 4165	Mt Albert Rd	696625.1	298783.3	83.63
SM 3882	Parau St	697063.3	298555.5	63.30
RM 3898	McCullough Ave	697067.1	298760.3	76.08
RM 3899	McCullough Ave	696901	298813.2	77.81
RM 3900	McCullough Ave	696713.6	298916.5	76.66
RM 3901	Smallfield Ave	696669.6	298986.6	78.93
RM 3902	Smallfield Ave	696747.4	299014.2	80.18
RM 3903	Smallfield Ave	696834.7	298965.1	82.52
RM 3904	Smallfield Ave	696940	298912.5	82.71
RM 3907	Fyvie Ave	697063.3	299054.6	80.32
RM 3910	Scout Ave	696974.9	298672.9	83.41
RM 3925	Bremner Ave	696727.7	298541.5	65.42
RM 3926	Bremner Ave	696630.5	298449	59.09
RM 3933	Milliken Rd	696725.1	298412.7	71.05
RM 3934	Milliken Rd	696742.7	298472.3	66.30
RM 3935	Simmonds Ave	696877	298725.7	91.76
RM 3936	Simmonds Ave	696788.8	298756.8	90.87
RM 7440	Hayr Rd	696258.1	299279.7	84.03
RM 7457	Mt Albert Rd	696575.4	298967.9	85.71
AP 1	Plaza, Mt Albert Rd	696589.8	299127.2	81.27
AP 2	Plaza, Mt Albert Rd	696706.4	299158.2	76.29
AP 2A	Plaza, Mt Albert Rd	696679.3	299152.5	77.58
AP 3	Plaza, Mt Albert Rd	696693	299259.1	77.37
AP 4	Plaza, Mt Albert Rd	696564.8	299244.9	83.37
AP 13	Barrister Ave	696796	299064.3	79.87
AP 20	Grahame Breed Dr	696723.1	299358.5	76.79
SM 3123	Mt Eden Rd	697750.1	299344.8	75.68
SM 3124	Landscape Rd	697715.8	299328	77.72
SM 3125	Landscape Rd	697810.2	298959.4	69.44
SM 3126	Landscape Rd	697873	298716.4	63.01
SS 3127	Landscape Rd	697912	298565.7	59.72
SS 3132	Waitomo St	697987.8	298590.9	61.69
SM 3883	Parau St	697157	298581	64.37
RM 3884	Parau St	697302	298629.2	62.54
SM 3885	Duke St	697474.4	298680.3	61.86
RM 3886	Fearon Ave	697329.6	298529.5	55.24
RM 3887	Fearon Ave	697221.3	298498.2	51.55
OCP 3888	Parau St	697732.6	298744.4	62.51
RM 3889	Duke St	697452.3	298785.5	69.23
RM 3891	Duke St	697515.9	299039.8	77.58
RM 3892	Duke St	697529.2	299086.3	78.01
RM 3893	Duke St	697610.7	299248.1	79.15
RM 3894	Fulljames Ave	697586.8	298923.4	72.08

RM 3895	Hamon Ave	697620.4	298829.5	65.19
RM 3896	McCullough Ave	697345.5	298887	69.82
RM 3897	McCullough Ave	697170.6	298776.6	75.08
RM 3905	Fyvie Ave	697080.6	298924	75.81
RM 3906	Fyvie Ave	697134.6	298836.1	77.45
RM 3908	Fyvie Ave	697093.6	299129.2	82.07
RM 3909	Scout Ave	697136.4	298680.6	80.06
RM 3911	Dally Tce	697387.5	298991.1	88.89
RM 3912	Fearon Ave	697399.3	298512.8	51.65
RM 3913	Fearon Ave	697445.8	298362	49.24
RM 3921	Duncumb St	697530.8	298402.7	50.03
RM 3923	Connelly Ave	697465.9	299086.3	74.29
RM 3924	Connelly Ave	697424.6	299131.9	73.03
SM 4354	Mt Eden Rd	697606	299322.2	80.16
SM 6241	Duke St	697468.6	298893.4	70.01
OCP 90B	Duke St	697480.4	298934.3	71.80
AP 10	Roskill Way	697458.1	299308.7	82.67
AP 14	Churches Ave	697318.1	298969.2	91.33
AP 15	Dally Terrace	697357.2	299055.9	90.82
AP 17C	Hunters Park Dr	697293.9	299402.9	74.60
AP 29A	Duke St	697501.6	298517.8	49.54
M 220	Mt Eden Rd	697232.6	299557.2	81.70
M 221	Mt Eden Rd	697359.1	299539.9	83.45
SS 1555	Selwyn Rd	697413.6	300062.9	99.58
SS 1556	Selwyn Rd	697425.9	300012.8	102.37
SS 1617	St Andrews Rd	697887.7	299983.3	81.44
SS 1618	St Leonards Rd	697906	299884.5	78.48
SS 1619	St Leonards Rd	697935.7	299724.6	66.62
SS 1623	St Andrews Rd	697461.1	299875	107.52
SS 3306	Mt Eden Rd	697993.2	299406.8	60.57
SS 3307	St Leonards Rd	697985.8	299454.7	59.66
SS 3308	St Leonards Rd	697952.2	299636	63.28
SS 3311	Rahiri Rd	697752	299610.9	95.31
SS 3312	Rahiri Rd	697733.6	299683	95.93
SS 3313	Landscape Rd	697648.3	299592.5	112.63
SS 3315	Rewa Rd	697613.4	299396.6	80.94
SS 3316	Rewa Rd	697579.5	299529.8	98.90
RM 6807	St Andrews Rd	697216.7	299808.1	102.49
RM 6812	St Andrews Rd	697370.6	299846.6	108.91
SM 6826	Buckley Rd	697157.9	300077.5	74.71
RM 6827	Buckley Rd	697346	300128	83.33
SM 6828	Buckley Rd	697383.8	300177.4	87.95
SS 7701B	Landscape Rd	697619.7	299657.1	115.51
SS 7702B	Landscape Rd	697602.3	299725.8	110.54
RM 7703	Landscape Rd	697589.2	299808.4	100.15
SM 7704	St Andrews Rd	697556.9	299894.5	97.82
RM 7705	St Andrews Rd	697703.3	299921.8	88.09
AP 9	St Andrews Rd	697103.9	299782.2	92.80
AP 11	Mt Eden Rd	697168.4	299548.7	80.19
AP 16	Queens Way	697156.2	299676.2	83.65
AP 18A	Mt Eden Rd	697510.4	299381.6	81.50
M 205	Mt Albert Rd	696471.2	300138.5	59.31
AP 206	Mt Albert Rd	696526.7	299919.5	59.98

M 210	Mt Albert Rd	696536.1	299441.6	83.05
SM 1979	Hillsborough Rd	696308	299637.3	61.24
BP 1977B	Hillsborough Rd	696141.8	299609.9	71.99
SM 6809	St Andrews Rd	697001.3	299757.4	81.80
SM 6810	St Andrews Rd	696925.6	299720.9	76.96
RM 6811	St Andrews Rd	696849	299715.4	76.53
RM 6813	St Andrews Rd	696632	299653	80.91
RM 6816	Rowan Rd	696721.9	299845.7	78.91
SM 6817	Rowan Rd	696808.8	299876.8	81.00
RM 6818	Rowan Rd	696826.7	299791.3	81.97
RM 6819	Buckley Rd	696678	299942.3	65.62
SM 6820	Buckley Rd	696808.1	299988.8	71.96
SM 6821	Buckley Rd	696938.5	300004.3	71.11
SM 6822	Gorrie Ave	696973.9	299863.2	81.87
SM 6823	Buckley Rd	697012.4	300021.7	70.59
RM 6824	Buckley Rd	697044.4	300030.4	71.08
RM 6825	Quentin Ave	697092.9	299916.8	81.39
SM 6835	Torrance St	696970	300185.7	70.78
SM 6836	Torrance St	696930.3	300343.3	65.95
RM 6838	Fernleigh Ave	696773.3	300065.8	70.30
SM 6839	Fernleigh Ave	696748.1	300163.5	67.49
SM 6840	Fernleigh Ave	696714.7	300296	63.28
SM 6841	Peet Ave	696626.7	300131.6	65.70
SM 6843	Kings Way	696958.8	299640.6	75.16
RM 7647	Mt Albert Rd	696565	299755.1	67.60
ORM.I	Weaver Street	696836.5	300316.2	63.58
AP 5	Mt Eden Rd	696757	299500.9	75.75
AP 6	Queens Way	696746.9	299590.6	75.31
AP 7	St Andrews Rd	696780.6	299702.3	76.83
AP 8B	Mt Albert Rd	696559.1	299633.5	75.74
AP 12	Warren Ave	696409.1	299402.2	94.36
OAP 19	St Andrews Rd	696725	299676.4	77.51
AP 21	Mt Eden Rd	696997.1	299533	77.40
AP 22	Queens Way	697069.3	299667.6	78.35
AP 23	Queens Way	696858.6	299609.6	74.40
AP 30	Mt Eden Rd	696966.2	299525.1	77.33
AP 31	Mt Eden Rd	696934.2	299521.4	76.86
AP 32	Mt Eden Rd	696902.6	299517.8	76.20
AP 33	Mt Eden Rd	696855.1	299512.3	75.12
AP 34	Mt Eden Rd	696807.3	299506.8	74.94
SM 5387	Erson Ave	696146.2	300815.9	56.75
SM 5386	Symonds St	696104.1	300983.3	55.18
M 638	Manukau Rd	696081.5	301109.3	54.69
CA 55	Manukau Rd	696605.9	300894.3	65.14
CA 53	Akarana Ave	696935.9	298292.1	70.59
M 216	Mt Albert Rd	696903.5	298347.9	72.66
SS 1977	Hillsborough Rd	696020.2	299595.8	74.45
RM 3927	Bremner Ave	696633.3	298338.8	62.65
RM 3928	Bremner Ave	696727.8	298195.8	56.14
AP 139	Bremner Ave	696788	298157.4	56.23
RM 3931	Milliken Ave	696817.5	298257.5	62.50
RM 3932	Milliken Ave	696734	298363.2	71.72
SS 3004	Dominion Rd	698058.8	298223.5	51.81

SS 3131	Shackleton Rd	698110.5	298631.8	59.42
SS 3133	Shackleton Rd	698071.3	298770.7	59.55
SS 3134	Shackleton Rd	698021.7	298946.5	61.48
SS 3135	Shackleton Rd	697966.3	299165.8	61.68
SS 3151	Mt Eden Rd	698285.9	299497.7	67.99
SS 1905	St Andrews Rd	698147.7	300049.4	88.81
RM 7707	St Andrews Rd	697973.7	299991	81.21
SS 1558	Empire Rd	697813.8	300111.4	92.17
SS 1559	Empire Rd	697800	300165.5	96.02
SS 1549	The Drive	697753.3	300348.7	85.87
SS 1550	The Drive	697589.9	300306.7	84.43
RM 6830	The Drive	697538.2	300294.8	81.64
SS 1551	The Drive	697492.5	300281.7	77.48
RM 6829	Selwyn Rd	697363.1	300258.1	79.86
RM 6832	Selwyn Rd	697337.4	300403.6	80.19
SM 5912	Pah Rd	697278.1	300666.2	74.29
AP 35	Mt Albert Rd	696402.1	300407.2	54.19
AP 37	Hillsborough Rd	696407.4	299705.9	59.34
AP 38	Budock Rd	696246.8	299834.7	69.27
AP 39	Hillsborough Bowling	696383.1	299856.3	56.30
AP 40	Hillsborough Bowling	696445.9	299895.6	55.76
IS 41	Hillsborough Bowling	696403.8	299804.8	56.34
AP 42	Dornwell Rd	696378.4	299015.9	76.37
AP 43	Dornwell Rd	696260.6	298956.8	66.00
AP 44	Dornwell Rd	696110	298858.9	58.49
AP 45	Frost Rd	696471.9	298726.9	64.92
AP 54	Frost Rd	696264.7	298577.8	57.86
AP 46	Dominion Rd	697995.6	298226.6	50.44
AP 47	Landscape Rd	697950.6	298343.5	52.52
AP 48	Landscape Rd	697921.3	298458.6	56.82
AP 49A	Landscape Rd	697784.6	299050.5	70.32
AP 50	Landscape Rd	697765.1	299133.1	71.65
AP 51A	Landscape Rd	697744.9	299214.7	74.05
AP 55	Mt Eden Rd	698209	299461.8	68.26
AP 56	Mt Albert Rd	696314.4	300774.8	58.41
AP 60	Rowan Rd	696681.1	299826.3	76.28
AP 61	Rowan Rd	696616.5	299797.1	71.31
AP 62	Mt Albert Rd	696530.2	299814	63.07
AP 63	Mt Albert Rd	696521.1	299876.4	61.25
AP 64	Hillsborough Rd	696478.5	299774.3	60.58
AP 65	Hillsborough Rd	696446.6	299735.8	59.55
OAP 66	Hillsborough Rd	696359.4	299672.8	59.99
AP 67	Hillsborough Rd	696248.4	299622.2	63.87
OCP 68	Budock Rd	696236	299684.4	66.30
AP 69	Budock Rd	696249.6	299731.2	65.98
AP 70	Budock Rd	696244.1	299790.4	71.21
OAP 71	Hillsborough Rd	696195.2	299615.8	67.65
AP 72	Hillsborough Rd	696072.4	299594	74.08
AP 73	Marie Ave	696238.3	299544.5	70.87
AP 74	Marie Ave	696260.9	299489.2	80.33
AP 75	Marie Ave	696280.1	299452.9	86.88
AP 77	Mt Albert Rd	696539.6	299487.2	82.75
AP 78	Mt Albert Rd	696559.4	299551.5	81.02

AP 79	Mt Albert Rd	696558.5	299588.5	78.66
AP 80	Mt Albert Rd	696561.9	299691.5	71.41
AP 81	Mt Albert Rd	696500.8	300015.1	58.44
AP 82	Mt Albert Rd	696507	299990.9	58.51
AP 83	Mt Albert Rd	696514.4	299967	58.86
AP 84	Mt Albert Rd	696520.4	299943.3	59.35
AP 85	Mt Albert Rd	696516.2	299894.4	60.62
AP 86	Mt Albert Rd	696524.8	299855.8	62.05
AP 87	Mt Albert Rd	696530.6	299833.5	62.73
AP 88	Mt Albert Rd	696541.7	299788.5	64.83
AP 89	Mt Albert Rd	696560.9	299777.8	65.94
AP 90	Mt Albert Rd	696562.9	299734.3	68.69
AP 91	Mt Albert Rd	696562.4	299712.5	70.08
AP 92	Mt Albert Rd	696560.5	299673.8	72.61
AP 93	Mt Albert Rd	696559.9	299657.2	73.86
AP 94	Mt Albert Rd	696558.6	299610.3	77.10
AP 95	Mt Albert Rd	696559.2	299570	79.96
AP 96	St Andrews Rd	696582.9	299641.1	77.90
AP 97	St Andrews Rd	696607.7	299646.9	80.32
AP 98	Rowan Rd	696588.1	299763.7	68.50
AP 99	Rowan Rd	696594.2	299786.1	69.48
AP 100	Hillsborough Rd	696522	299784.9	62.97
AP 101	Hillsborough Rd	696494.7	299787	61.36
AP 102	Hillsborough Rd	696457.2	299761.1	60.01
AP 103	Hillsborough Rd	696427.8	299719.8	59.40
AP 104A	Hillsborough Rd	696385.1	299690.2	59.55
AP 105	Hillsborough Rd	696373.8	299682.7	59.71
AP 106	Hillsborough Rd	696341.9	299660.5	60.46
AP 107	Hillsborough Rd	696324.6	299648.6	60.88
AP 108	Hillsborough Rd	696290.8	299628.8	62.06
AP 109	Hillsborough Rd	696270	299627.8	62.81
AP 110	Hillsborough Rd	696230.6	299619.6	65.00
AP 111	Hillsborough Rd	696213.1	299617.1	66.32
AP 112	Budock Rd	696247.8	299636.8	63.70
AP 113	Budock Rd	696235.6	299662.4	65.55
AP 114	Budock Rd	696238.5	299707.3	65.88
AP 115	Budock Rd	696251.2	299753.1	67.58
AP 116	Budock Rd	696251.9	299773.3	69.48
AP 117	Budock Rd	696245.2	299811.8	70.83
OAP 118	Mt Albert Rd	696509.2	299918.4	59.90
AP 119	Haughey Ave	696165.2	299223.4	72.95
AP 120	Haughey Ave	696109.9	299304.3	67.45
AP 121	Haughey Ave	696056.8	299385.1	66.67
AP 122	Haughey Ave	696006.9	299462.7	66.03
AP 123	Haughey Ave	695958.9	299555.5	73.23
OAP 125	Hillsborough Rd	695847.4	299535.5	69.96
SS 1976	Hillsborough Rd	695759.4	299503.9	71.14
AP 126	Carr Rd	695885.7	299463.4	65.13
OAP 127	Carr Rd	695905.6	299370.9	61.44
RM 7441	Carr Rd	695901.9	299261.4	58.50
AP 129	Carr Rd	695939	299189.3	58.15
OAP 130	Dornwell Rd	696185.8	298907.6	60.67
OAP 131	Hayr Rd	696067.4	299157.7	63.12

OCP 41B	Carr/Hayr Rds	695981.2	299080.4	58.36
AP 132	Carr Rd	696043.8	298963.6	58.40
AP 133	Carr Rd	696128.8	298776.8	58.16
AP 134	Carr Rd	696177.9	298685.5	58.03
AP 135	Frost Rd	696157.9	298506.1	57.40
AP 136	Frost Rd	696363.4	298640.3	59.26







## **APPENDIX D**

### **SETTLEMENT ZONES (DRAWING NUMBER 18670-04)**

