APPENDIX A

CONSENT TO DEWATER THREE KINGS QUARRY - PERMIT NO 12997

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**
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 resolution of all outstanding appeals on this consent, and every 5 years thereafter and 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, 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 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 McCollough 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. 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. 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. 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.

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 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 1:5,000. If at any location observed differential settlements exceed 1:2,000 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 achieved by best practice precise levelling, which in any given survey means within the range +(/-) 2mm 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 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 1:1,000 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 1:1,000. 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 section116 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.

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 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.

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.

d) The bond shall also provide for:
(i) 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) 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) Its registration (and as to variations) against the title Lot 1 DP 37020 (CT 953/21).

(iv) 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.

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 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

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(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. 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 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 $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 2B, with a period of maintenance pumping (holding water levels in bore 2B 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 1 year (details of how this will be determined will be contained in the Monitoring and Contingency Plan); and,

(iii) 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 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

(iii) groundwater drawdown, caused by the exercise of this consent, in excess of the seasonal variation occurs in any one of bores 37, 38, 39 or 40;or

(iv) the groundwater level in the quarry is at or below 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 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 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:

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

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

TABLE 1A – GROUP A PIEZOMETERS 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)

Note:
Origin of Levels
CA55 SO49930
RL65.1412m
in same terms as
M205 SO54417
RL59.305m

● SS3316 = Precise Level Survey Benchmarks

⊕ BH16 = Borehole Location

				DESIGNED:	DATE:	SIGNATURE:	PLOT DATE: 10/5/05	ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND	ISO 9001 QUALITY ASSURED	PROJECT: WINSTONE AGGREGATES LTD THREE KINGS QUARRY
				DRAWN:	DATE:	SIGNATURE:	CAD REF: BOREHOLES			TITLE: BOREHOLE LOCATION PLAN AS AT 10-3-05
				CHECKED:	DATE:	SIGNATURE:	CAD XREF:			PLOT STATUS:
B	BHs 37, 37A, 38, 38A, 39, 39A, 40 & 40A ADDED	MD	10/3/05	APPROVED:	DATE:	SIGNATURE:	SURVEY BY: MD	THIS DRAWING AND DESIGN REMAINS THE PROPERTY OF, AND MAY NOT BE REPRODUCED OR ALTERED, WITHOUT THE WRITTEN PERMISSION OF HARRISON GRIERSON CONSULTANTS LIMITED. NO LIABILITY SHALL BE ACCEPTED FOR UNAUTHORISED USE OF THIS DRAWING.		PROJECT No: 1130/006451 SCALES: A1 1:5000 A3 1:10000 A1 A3
A	SCALE BAR ADDED	MD	11/5/04				SURVEY DATE: 10/3/05			DRAWING No: 6451-100 REV B
REF	AMENDMENT	BY	DATE				SDR REF: BOR			

HARRISON GRIERSON
CONSULTING ENGINEERS SURVEYORS PLANNERS
Level 5 Cogita House. 20 Amersham Way Manukau City Ph 09 966 3380 Fax 09 966 3390

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

Note:
Origin of Levels
CA55 SO49930
RL65.1412m
in same terms as
M205 SO54417
RL59.305m
(as at 5/02)

SS3316 = Level Control Pt Existing

ORIGIN OF LEVELS CHECK
RL 70.5937m

ORIGIN OF LEVELS
RL 65.1412m
CA55

SEE DIAGRAM SHEET 2
FOR POINTS IN THIS AREA

0 50 100 200 300 400 500 Meters

SHEET 1 OF 2

W	AP3125A, OIT219D & AP24 DELETED	MD	8/05	DESIGNED:	DATE:	SIGNATURE:	PLOT DATE: 22/8/05	ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND ACENZ	ISO 9001 QUALITY ASSURED	PROJECT: WINSTONE AGGREGATES THREE KINGS QUARRY	TITLE: SURVEY MONITORING LEVEL CONTROL POINTS
				DRAWN:	DATE:	SIGNATURE:	CAD REF: Control_pts_plan_from_vU				
				CHECKED:	DATE:	SIGNATURE:	CAD XREF:				
							SURVEY BY:				
M	ORIGIN OF LEVELS CHANGED	MD	5/02	APPROVED:	DATE:	SIGNATURE:	SURVEY DATE:				
REF	AMENDMENT	BY	DATE				SDR REF: PLN				

HARRISON GRIERSON
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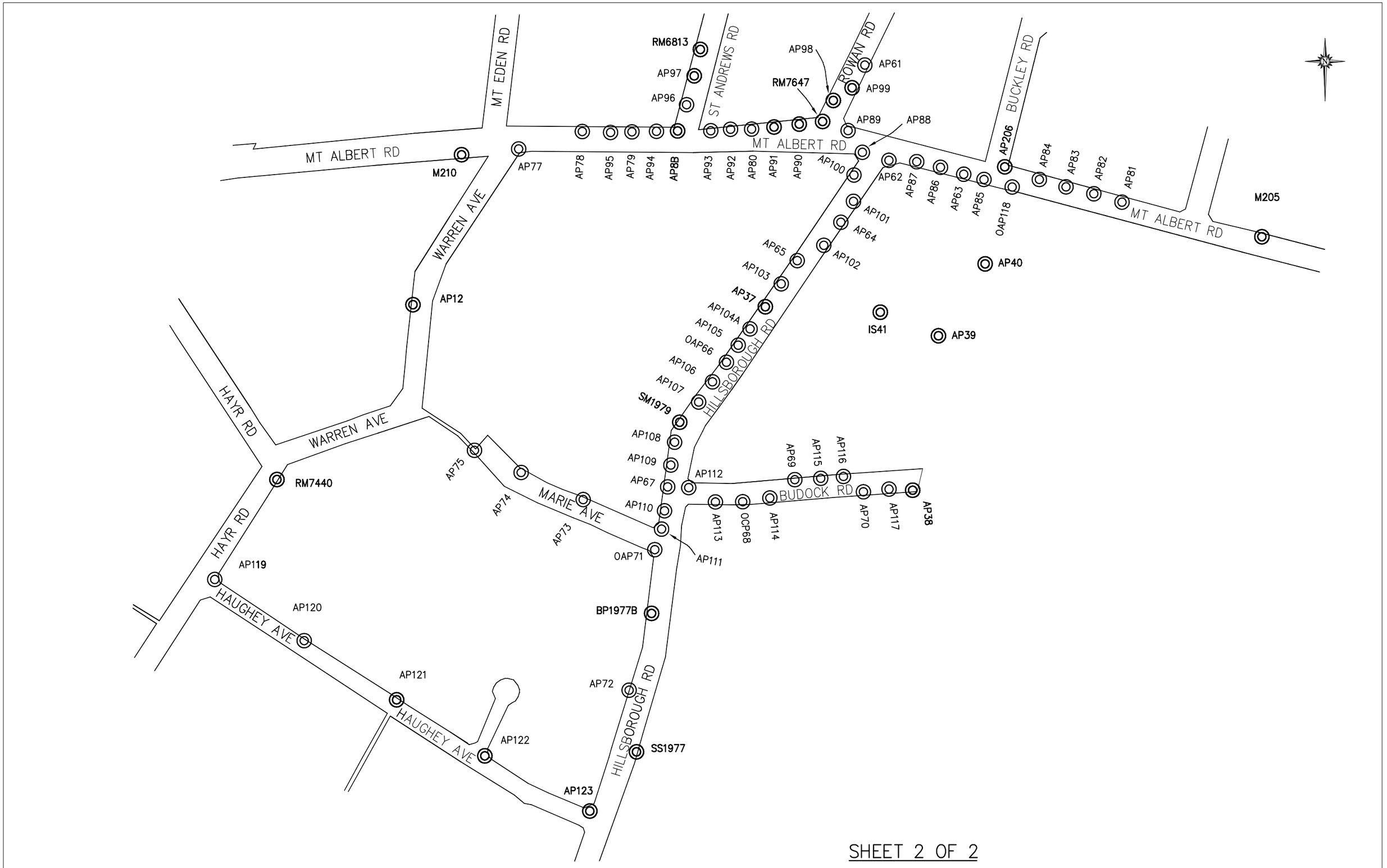
Level 5 Cogita House. 20 Amersham Way Manukau City Ph 09 966 3380 Fax 09 966 3390

PLOT STATUS:

PROJECT No: 1130/006451 | SCALES: A1 1:5000, A3 1:10000 | A1 A3

DRAWING No: 6451_101 | REV W



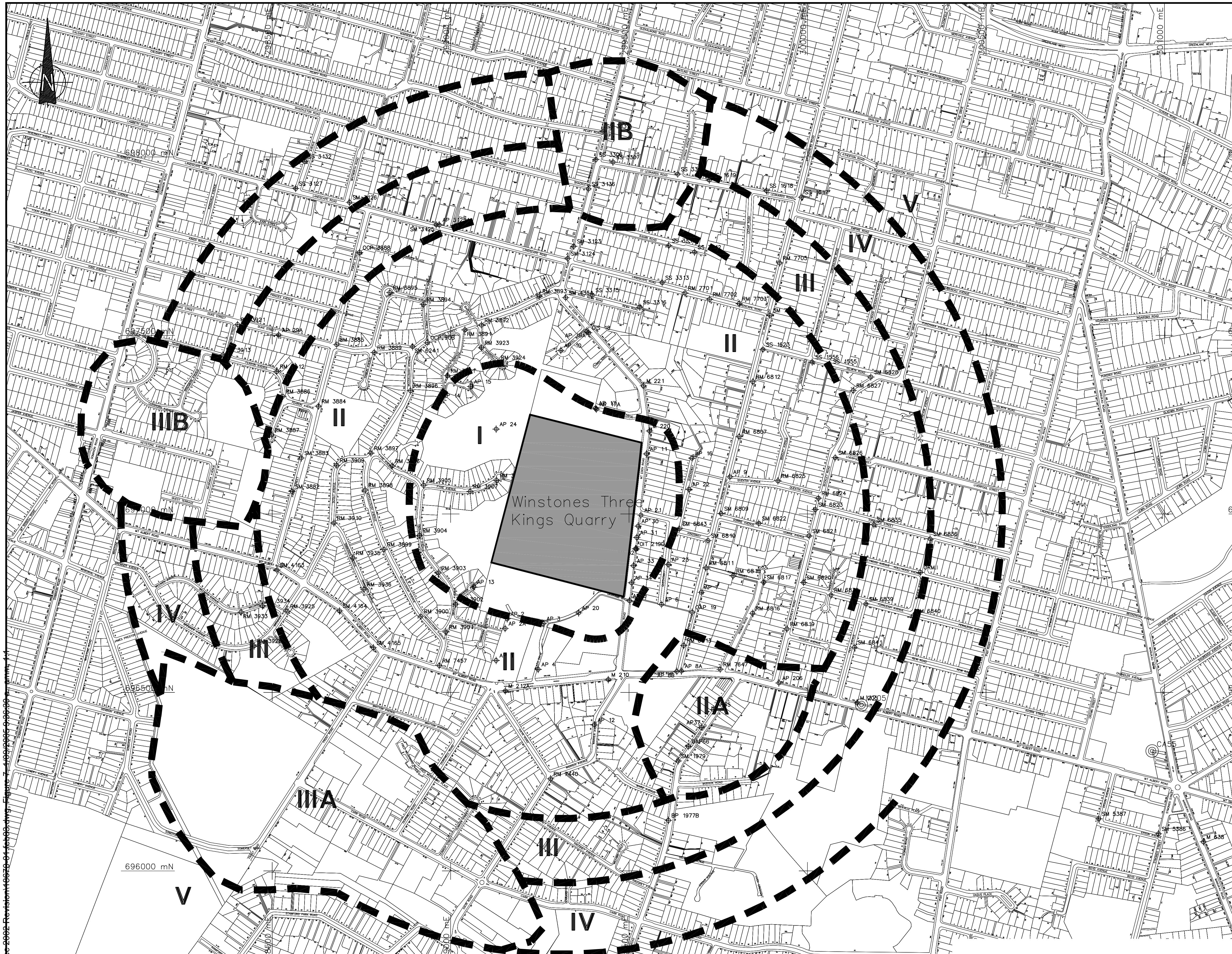
SHEET 2 OF 2

W	SEE SHEET 1			DESIGNED:	DATE:	SIGNATURE:	PLOT DATE: 22/8/05	ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND	ISO 9001 QUALITY ASSURED	HARRISON GRIERSON	PROJECT: WINSTONE AGGREGATES THREE KINGS QUARRY	TITLE: SURVEY MONITORING LEVEL CONTROL POINTS	PLOT STATUS:
				DRAWN:	DATE:	SIGNATURE:	CAD REF: Control_pts_plan_from_vti						PROJECT No: 1130/006451
				CHECKED:	DATE:	SIGNATURE:	CAD XREF:						SCALES: A1 1:1500 A3 1:3000
M	ORIGIN OF LEVELS CHANGED	MD	5/02	APPROVED:	DATE:	SIGNATURE:	SURVEY BY:						A1 A3
REF	AMENDMENT	BY	DATE				SURVEY DATE:						DRAWING No: 6451_101
							SDR REF: PLN						REV W

CONSULTING ENGINEERS SURVEYORS PLANNERS
Level 5 Cogita House. 20 Amersham Way Manukau City Ph 09 966 3380 Fax 09 966 3390

APPENDIX D

SETTLEMENT ZONES (DRAWING NUMBER 18670-04)



Revised Settlement Zones

NOTES
1. All dimensions are in metres unless noted otherwise.

LEGEND

Quarry

REVISION	DESCRIPTION	BY	DATE
0	First Issue		

DESIGNED :
DRAWN : AMM OCT 02
DESIGN CHECKED :
DRAFTING CHECKED :
REFERENCE :

CADFILE : L:\18670\18670-01

APPROVED :
NOT FOR CONSTRUCTION
This drawing is not to be used for construction purposes unless signed as approved

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WINSTONE AGGREGATES LTD

THREE KINGS QUARRY DEWATERING

REVIEW OF SETTLEMENT PREDICTIONS

Figure 7

SCALES (AT A3 SIZE) 1: 10000

DWG. No. 18670-04

REV. 0