AA Contracting
Quarry Monitoring Programme
Biennial Report
2011-2013

Technical Report 2014–85

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Executive summary

AA Contracting Limited (the Company) operates a quarry located at Te Arei Road, in the Waiongana catchment. The Company holds one consent to allow it to discharge treated stormwater and washwater onto land and into the Waiongana River. This report for the period July 2011-June 2013 describes the monitoring programme implemented by the Taranaki Regional Council (The Council) to assess the environmental performance of the Company during the period under review, and the results and environmental effects of the Company's activities.

The Company holds one resource consent, which includes a total of 13 conditions setting out the requirements that the Company must satisfy. The consent allows the Company to discharge treated stormwater and washwater from quarry operations into land and into the Mangaoraka Stream.

During the period under review, the Company demonstrated a high level of environmental performance and compliance with the resource consents.

The Council's monitoring programme for the 2011-2013 period included five site inspections. The monitoring inspections showed that the discharge was within consent limits and was not having an adverse effect on the Mangaoraka Stream.

All settling ponds and drains were adequately maintained by The Company to ensure compliance with consent conditions. As in previous years, the monitoring indicated that the discharge was not having an adverse effect on the Mangaoraka Stream. A review of the Company's updated contingency plan in December 2013 confirmed appropriate measures are in place to mitigate effects of any accidental spillage or discharge of contaminants.

For reference, in the 2011-2013 year, 35% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 59% demonstrated a good level of environmental performance and compliance with their consents.

This report includes recommendations for the 2013-2015 monitoring period.

Table of contents

List of tables

List of figures

1. Introduction

1.1 Compliance monitoring programme reports and the Resource Management Act 1991

1.1.1 Introduction

This report is the Biennial Report for the period July 2011- June 2013 by the Taranaki Regional Council (the Council) on the monitoring programme associated with resource consents held by AA Contracting Limited (the Company). The Company operates a quarry situated on Te Arei Road, Lepperton, in the Waiongana catchment.

One of the intents of the *Resource Management Act 1991* (RMA) is that environmental management should be integrated across all media, so that a consent holder's use of water, air, and land should be considered from a single comprehensive environmental perspective. Accordingly, the Council generally implements integrated environmental monitoring programmes and reports the results of the programmes jointly. This report discusses the environmental effects of the Company's use of water, land and air, and is the tenth combined report by the Council in relation to the Company's activities.

1.1.2 Structure of this report

Section 1 of this report is a background section. It sets out general information about compliance monitoring under the RMA, and the Council's obligations and general approach to monitoring sites through annual programmes, the resource consents held by the Company in the Waiongana catchment, the nature of the monitoring programme in place for the period under review, and a description of the activities and operations conducted in the Waiongana catchment.

Section 2 presents the results of monitoring during the period under review, including scientific and technical data.

Section 3 discusses the results, their interpretation, and their significance for the environment.

Section 4 presents recommendations to be implemented in the 2013-2015 monitoring period.

A glossary of common abbreviations and scientific terms, and a bibliography, are presented at the end of the report.

1.1.3 The Resource Management Act 1991 and monitoring

The RMA primarily addresses environmental 'effects' which are defined as positive or adverse, temporary or permanent, past, present or future, or cumulative. Effects may arise in relation to:

(a) the neighbourhood or the wider community around an activity, and may include cultural and social-economic effects;
(b) physical effects on the locality, including landscape, amenity and visual effects;

(c) ecosystems, including effects on plants, animals, or habitats, whether aquatic or terrestrial;
(d) natural and physical resources having special significance (eg, recreational, cultural, or aesthetic);
(e) risks to the neighbourhood or environment.

In drafting and reviewing conditions on discharge permits, and in implementing monitoring programmes, the Council is recognising the comprehensive meaning of 'effects' inasmuch as is appropriate for each activity. Monitoring programmes are not only based on existing permit conditions, but also on the obligations of the RMA to assess the effects of the exercise of consents. In accordance with section 35 of the RMA, the Council undertakes compliance monitoring for consents and rules in regional plans, and maintains an overview of the performance of resource users and consent holders. Compliance monitoring, including both activity and impact monitoring, enables the Council to continually re-evaluate its approach and that of consent holders to resource management and, ultimately, through the refinement of methods and considered responsible resource utilisation, to move closer to achieving sustainable development of the region's resources.

1.1.4 Evaluation of environmental and administrative performance

Besides discussing the various details of the performance and extent of compliance by the consent holder/s during the period under review, this report also assigns a rating as to each Company's environmental and administrative performance.

Environmental performance is concerned with actual or likely effects on the receiving environment from the activities during the monitoring year.
Administrative performance is concerned with the Company's approach to demonstrating consent compliance in site operations and management including the timely provision of information to Council (such as contingency plans and water take data) in accordance with consent conditions.

Events that were beyond the control of the consent holder and unforeseeable (i.e. a defence under the provisions of the RMA can be established) may be excluded with regard to the performance rating applied. For example loss of data due to a flood destroying deployed field equipment.

The categories used by the Council for this monitoring period, and their interpretation, are as follows:

Environmental Performance

- **High** No or inconsequential (short-term duration, less than minor in severity) breaches of consent or regional plan parameters resulting from the activity; no adverse effects of significance noted or likely in the receiving environment .The Council did not record any verified unauthorised incidents involving significant environmental impacts and was not obliged to issue any abatement notices or infringement notices in relation to such impacts.

- **Good** Likely or actual adverse effects of activities on the receiving environment were negligible or minor at most. There were some such issues noted during

monitoring, from self reports, or in response to unauthorised incident reports, but these items were not critical, and follow-up inspections showed they have been dealt with. These minor issues were resolved positively, co-operatively, and quickly. The Council was not obliged to issue any abatement notices or infringement notices in relation to the minor non-compliant effects; however abatement notices may have been issued to mitigate an identified potential for an environmental effect to occur.

For example:

- -High suspended solid values recorded in discharge samples, however the discharge was to land or to receiving waters that were in high flow at the time;
- -Strong odour beyond boundary but no residential properties or other recipient nearby.

- **Improvement required** Likely or actual adverse effects of activities on the receiving environment were more than minor, but not substantial. There were some issues noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent minor non-compliant activity could elevate a minor issue to this level. Abatement notices and infringement notices may have been issued in respect of effects.

- **Poor** Likely or actual adverse effects of activities on the receiving environment were significant. There were some items noted during monitoring, from self reports, or in response to unauthorised incident reports. Cumulative adverse effects of a persistent moderate non-compliant activity could elevate an 'improvement required' issue to this level. Typically there were grounds for either a prosecution or an infringement notice in respect of effects.

Administrative performance

- **High** The administrative requirements of the resource consents were met, or any failure to do this had trivial consequences and were addressed promptly and co-operatively.

- **Good** Perhaps some administrative requirements of the resource consents were not met at a particular time, however this was addressed without repeated interventions from the Council staff. Alternatively adequate reason was provided for matters such as the no or late provision of information, interpretation of 'best practical option' for avoiding potential effects, etc.

- **Improvement required** Repeated interventions to meet the administrative requirements of the resource consents were made by Council staff. These matters took some time to resolve, or remained unresolved at the end of the period under review. The Council may have issued an abatement notice to attain compliance.

- **Poor** Material failings to meet the administrative requirements of the resource consents. Significant intervention by the Council was required. Typically there were grounds for an infringement notice.

For reference, in the 2012-2013 year, 35% of consent holders in Taranaki monitored through tailored compliance monitoring programmes achieved a high level of environmental performance and compliance with their consents, while another 59% demonstrated a good level of environmental performance and compliance with their consents. In the 2013-2014 year, 60% of consent holders achieved a high level of environmental performance and compliance with their consents, while another 29% demonstrated a good level of environmental performance and compliance.

1.2 Process description

1.2.1 Background

In the past, a large percentage of aggregate production came from river-based sites within Taranaki. The Waiwhakaiho River supplied much of New Plymouth's requirements as far back as the 1950s with the Waitara River, Waiongana River, Kapuni Stream and Waingongoro River also providing a valuable source of aggregate. The aggregate source within these rivers was often over-exploited. The protective armouring of the boulders and gravel was removed in places, exposing the underlying erodible ash beds and creating deep narrow channels, which moved progressively upstream with no noticeable recovery. This brought about the need for the Shingle Extraction Bylaw introduced in 1974. Aggregate extraction from rivers was then controlled through the issue of permits accompanied by a set of conditions, with the removal of river-based aggregate being restricted to that for river control purposes only.

Historically, land-based sites required steady markets to compete with the easily won river-based extraction operations. However, in the early 1980s, due to the restriction placed on river-based aggregate extraction (and the completion of various major river control programmes and 'Think Big' projects) land-based sites became more widespread (Taranaki Regional Council, 1992).

Twenty-six operating quarries presently supply aggregate in Taranaki. These quarries are generally located in a reasonable proximity to urban areas, from which the greatest demand for aggregate stems.

Provision of aggregate to meet longer term demand will continue to be dominated by several large quarry operations. Extra demand on alluvial terraces and laharic deposits has occurred due to the controlled river bed extraction. These resources are of good quality and are relatively plentiful. Importation of various aggregates may need to continue to meet the requirement for aggregate types not available in Taranaki.

Quarrying and extraction of gravel in NZ is regulated by two statutory processes. Allocation and protection of priority rights to extract gravel is obtained under the Crown Minerals Act from NZ Petroleum and Minerals, a division of the Ministry of Economic Development.

Regulatory responsibility for control of environmental effects of quarrying and extraction is under the RMA as applied by respective regional councils. In some cases these controls may act as a constraint or limitation on allocation decisions.

Sections 15 and 30 of the RMA give regional councils responsibility for regulating and monitoring the discharge of contaminants into the environment. Discharges of water into water, contaminants onto or into land that may result in water contamination, and contaminants from industrial premises into air or onto/into land, may not take place unless expressly allowed by a rule in a regional plan, a resource consent, or national regulations. Aggregate extraction usually involves washing aggregates, and therefore requires the discharge of wastes. Other discharges, such as emissions to air from crushing and processing plants, disposal of spoil and solid wastes, and discharges of stormwater are also the responsibility of regional councils.

1.2.2 AA Contracting Quarry

The Company's site is located at Te Arei Road, approximately 1.5 km southeast of the Bell Block industrial area. The Mangaoraka Stream runs along the eastern boundary of the site (Figure 1). The maximum area of ground to be disturbed at any one time is two hectares. Machinery includes a dry crusher and screening plant, digger and front-end loader.

Figure 1 Aerial Photo of The Company, Te Arei Road quarry Site

Stormwater is collected in a series of drains which are interconnected with the settling pond; the point of discharge into the Mangaoraka Stream is approximately 120 metres from the pond through a deep drain. Silt is collected in the drain prior to discharge through a controlled exit point into the stream. The site is contoured and bunded so that stormwater is directed away from the stream to the drain.

From July to August 2006, the Company deepened and augmented an existing sediment pond to cater for their stormwater discharges; this pond now has enough capacity to not only capture and treat stormwater but also for dealing with wash-

water when necessary.

1.3 Resource consents

1.3.1 Water abstraction permit

Section 14 of the RMA stipulates that no person may take, use, dam or divert any water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan.

Ensuring there are sufficient volumes of water within streams and rivers to protect aquatic habitat is a primary concern of The Council with respect to water abstraction permits. Water abstraction for quarries is primarily only required for the washing of aggregate, and in this regard the Council encourages the recycling of both washwater and stormwater to minimise the requirement to abstract surface water. Often when combined with efficient recycling, the small volumes of surface water required to be abstracted for washing at quarries fit within the permitted activity rule [Rule 15] of the Regional Fresh Water Plan for Taranaki. That is, the abstraction volume shall not exceed 50 cubic metres per day, and the abstraction rate shall not exceed 1.5 litres per second. Accordingly, AA contracting is not required to hold a water abstraction permit for its operation at Te Arei Road quarry.

1.3.2 Water discharge permit

Section 15(1)(a) of the RMA stipulates that no person may discharge any contaminant into water, unless the activity is expressly allowed for by a resource consent or a rule in a regional plan, or by national regulations.

Water quality is a primary concern to The Council with regard to aggregate extraction. A quarry can operate as either a dry quarry discharging only stormwater or a 'washing' quarry where aggregate washing facilities are in place. Many of the quarries in Taranaki have some form of washing facility and also operate in the vicinity of a water body or have some form of discharge into a water body.

Waste water from aggregate washing has a high silt concentration. Discharge of this water into a waterbody, particularly to a river during low flow, results in a smothering of instream life and deterioration in aesthetic conditions and can affect downstream abstractions of water, local fisheries and recreational activity.

Stormwater is generally less contaminated (in terms of silt concentration) and run-off tends to occur when rivers are in higher flow. This means that the effect of silt contamination is reduced due to lower quantities, dilution and carrying capacity. The installation of appropriate stormwater diversion structures, together with construction and maintenance of contaminated stormwater and aggregate washing discharge treatment facilities are to ensure quarry operations do not adversely affect water quality. Early in the 2009-2011 monitoring period the consent holder applied for a change of conditions to include the discharge of treated washwater.

The Company was granted water discharge permit 5651 to discharge treated stormwater and washwater from quarry operations into land and into the Mangaoraka Stream in the Waiongana catchment. The Council issued this permit on

28 July 2009 under section 87(e) of the RMA. This consent expired on 1 June 2014. An application for a consent renewal was received by The Council and is currently being processed.

There are 13 special conditions attached to this consent.

Condition 1 requires consent holder to adopt best practicable option to prevent adverse effects.

Condition 2 relates to maximum stormwater catchment area.

Condition 3 requires the consent holder to annually review and maintain the contingency plan.

Condition 4 relates to design, maintenance and management of stormwater systems.

Condition 5 states there is to be no direct discharge of untreated stormwater.

Condition 6 requires contouring and bunding to direct stormwater for treatment.

Condition 7 requires consent holder to control erosion in excavated areas and minimise silt and sediment in stormwater.

Condition 8 relates to progressive reinstatement of site to minimise excavated area.

Condition 9 requires maintenance of the silt control structures.

Condition 10 states the concentration limits the discharge must not exceed.

Condition 11 limits effects on water quality in the mixing zone.

Condition 12 limits effects on water clarity in the mixing zone.

Condition 13 relates to reinstatement of the quarry site.

A copy of the permit is attached in Appendix I.

1.3.3 Air discharge permit

Section 15(1)(c) of the RMA stipulates that no person may discharge any contaminant from any industrial or trade premises into air, unless the activity is expressly allowed for by a resource consent, a rule in a regional plan, or by national regulations.

Rule 16 of the Council's Regional Air Quality Plan for Taranaki (July 2011) allows the discharge of emissions from quarrying operations as a permitted activity, subject to compliance with various environmental performance conditions.

1.4 Monitoring programme

1.4.1 Introduction

Section 35 of the RMA sets out obligations upon the Council to: gather information, monitor, and conduct research on the exercise of resource consents, and the effects arising, within the Taranaki region and report upon these.

The Council may therefore make and record measurements of physical and chemical parameters, take samples for analysis, carry out surveys and inspections, conduct investigations, and seek information from consent holders.

The monitoring programme implemented by The Council in relation to the Company's quarry operation consisted of three primary components.

1.4.2 Programme liaison and management

There is generally a significant investment of time and resources by the Council in ongoing liaison with resource consent holders over consent conditions and their interpretation and application, in discussion over monitoring requirements, preparation for any reviews, renewals, or new consents, advice on the Council's environmental management strategies and the content of regional plans, and consultation on associated matters.

1.4.3 Site inspections

The Company's site was visited five times during the monitoring period. With regard to consents for the abstraction of or discharge to water, the main points of interest were plant processes with potential or actual discharges to receiving watercourses, including contaminated stormwater and process wastewaters. Air inspections focused on plant processes with associated actual and potential emission sources and characteristics, including potential odour, dust, noxious or offensive emissions. Sources of data being collected by the consent holder were identified and accessed, so that performance in respect of operation, internal monitoring, and supervision could be reviewed by the Council. The neighbourhood was surveyed for environmental effects.

1.4.4 Chemical sampling

A sampling site has been established by the Council, with a sample of the discharge to be collected once a year if warranted. Samples would only be obtained if a discharge was occurring from the site and a visual inspection of the discharge observed it was having an adverse effect on the receiving waters. No samples were collected during the 2011-2013 monitoring period.

2. Results

2.1 Water

2.1.1 Inspections

3 October 2011
The inspection was undertaken during wet weather. The Gates were locked and there was no one onsite. There was some product stockpiled onsite. The stormwater was directed to the silt ponds. The discharge was clear and was having no effect on the receiving waters which were in flood. Over all the site was tidy and appeared to be complying with consent conditions at the time of inspection.

14 February 2012
The quarry gates were open but the site was unmanned at the time of inspection. There was some product stockpiled onsite. The site was tidy with and stormwater was directed to the settling ponds. The receiving waters looked clear below the discharge point. Over all the site was tidy and appeared to be complying with consent conditions at the time of inspection.

31 May 2012
The quarry gates were open and there was one staff member onsite extracting material to be processed, although no processing was taking place at the time of inspection. The stormwater was directed to the settling ponds which had a small discharge into the river. There was no visual impact on the receiving waters observed. There was some pampas and gorse on the property which needs spraying. The site was tidy and complying with consent conditions at the time of inspection.

17 September 2012
The quarry was manned. There was processing and washing of product occurring at the time of inspection. The washwater was directed to the silt ponds. The discharge was having no visual effect on the receiving waters which were in flood. The site is tidy and appeared to be complying with consent conditions at the time of inspection.

28 January 2013
There was no processing occurring at time of Inspection. The workers were sandblasting a digger. There was not a lot of product stockpiled onsite. Overall the site was tidy and appeared to be complying with consent conditions at the time of inspection.

2.1.2 Results of receiving environment monitoring

During the monitoring period under review no samples of the receiving waters were collected from the Te Arei Road Quarry site. Inspection of the discharge from the ponds found the treated stormwater/washwater was causing no adverse effects in the receiving waters. No water samples were taken during the period under review.

2.2 Register of incidents

The Council operates and maintains a register of all complaints or reported and discovered excursions from acceptable limits and practices, including non-compliance with consents, which may damage the environment. The Incident Register includes events where the company concerned has itself notified the Council. The register contains details of any investigation and corrective action taken.

Incidents may be alleged to be associated with a particular site. If there is an issue of legal liability, the Council must be able to prove by investigation that the identified company is indeed the source of the incident (or that the allegation cannot be proven).

During the 2011-2014 monitoring period there were no incidents recorded by the Council that were associated with the Company's Te Arei Road Quarry.

3. Discussion

3.1 Discussion of site performance

The Te Arei Road quarry site was well maintained and generally tidy over the monitoring period July 2011-June 2013.

The site was appropriately contoured to direct all contaminated runoff to the stormwater settlement ponds. The recently improved settlement areas were maintained adequately (Figure 2).

Figure 2: Photo of the main settling pond

All conditions of consent were complied with during the monitoring period under review.

The Company's contingency plan for the site (as required by condition three of the consent) was reviewed and found satisfactory in December 2013.

3.2 Environmental effects of exercise of consents

The main potential environmental effect quarries have on waterways is the discharge of washwater containing high levels of suspended sediment into nearby waterways. Such discharges may result in discolouration of the waterway near the discharge point and potentially smother benthic lifeforms, form a barrier to fish movement and affect fish spawning habitats.

The Council monitors for possible effects on stream life by conducting a visual inspection of the discharge from the quarry and streambed both up and downstream of the quarry discharge point.

Inspections of the site over the 2011-2013 monitoring period did not note any adverse effects occurring in the receiving waters. As in previous years, the stormwater discharges were within levels prescribed by the consent.

3.3 Evaluation of performance

A tabular summary of the Company's compliance record for the year under review is set out in Table 1.

Table 1 Summary of performance for Consent 5651-1 Discharge of stormwater and washwater to land and to the Mangaoraka Stream

Condition requirement	Means of monitoring during period under review	Compliance achieved?
1. Best practicable option to prevent or minimise adverse effects	Site inspections	Yes
2. Maximum stormwater catchment area	Site inspections	Yes
3. Annually review and maintain a contingency plan	Contingency plan reviewed December 2013	Yes
4. Maintenance of the stormwater system to ensure consent conditions are met	Consultation and inspection to ensure effective operation of system	Yes
5. No direct discharge of untreated stormwater or groundwater	Inspections of site and river	Yes
6. Contour the active quarry site so that all water is directed for treatment	Site inspections	Yes
7. Control erosion and minimise silt and sediment in the stormwater	Inspections of site and downstream of discharge point	Yes
8. Progressive reinstatement of the quarry to minimise the area of exposed earth	Site inspections	Yes
9. Proper and efficient maintenance of silt control structures to maximise stormwater treatment	Site inspections	Yes
10. Concentration limits in the discharge	Site inspections and sampling	Yes
11. Discharge cannot cause adverse effects beyond mixing zone	Sampling not undertaken– discharge visually clean	Yes
12. Discharge not to increase turbidity by more than 50%	Site inspections	Yes
13. Site reinstatement at cessation of quarrying	N/A	N/A
Overall assessment of consent compliance and environmental performance in respect of this consent		High
Overall assessment of administrative performance in respect of this consent		High

During the year, the Company demonstrated a high level of environmental performance and compliance with the resource consents.

3.4 Recommendations from the 2009-2011 Annual Report

THAT monitoring of discharges from AA Contracting's Te Arei Road site in the 2013-2015 period continue at the same level as in 2011-2013.

3.5 Alterations to monitoring programmes for 2013-2015

In designing and implementing the monitoring programmes for water discharges in the region, the Council has taken into account the extent of information made available by previous authorities, its relevance under the RMA, the obligations of the RMA in terms of monitoring discharges and effects, and subsequently reporting to the regional community, the scope of assessments required at the time of renewal of permits, and the need to maintain a sound understanding of industrial processes within Taranaki discharging water to the environment.

It is proposed that for the 2013-2015 monitoring period that the programme is unaltered from that of 2011-2013.

4. Recommendation

THAT monitoring of discharges from AA Contracting's Te Arei Road site in the 2013-2015 period continue at the same level as in 2011-2013.

Glossary of common terms and abbreviations

The following abbreviations and terms may be used within this report:

Al*	aluminium
As*	arsenic
Biomonitoring	assessing the health of the environment using aquatic organisms
BOD	biochemical oxygen demand. A measure of the presence of degradable organic matter, taking into account the biological conversion of ammonia to nitrate
BODF	biochemical oxygen demand of a filtered sample
bund	a wall around a tank to contain its contents in the case of a leak
CBOD	carbonaceous biochemical oxygen demand. A measure of the presence of degradable organic matter, excluding the biological conversion of ammonia to nitrate
cfu	colony forming units. A measure of the concentration of bacteria usually expressed as per 100 millilitre sample
COD	chemical oxygen demand. A measure of the oxygen required to oxidise all matter in a sample by chemical reaction
Condy	conductivity, an indication of the level of dissolved salts in a sample, usually measured at 20°C and expressed in mS/m
Cu*	copper
Cumec	A volumetric measure of flow- 1 cubic metre per second (1 m^3s^{-1})
DO	dissolved oxygen
DRP	dissolved reactive phosphorus
E.coli	*escherichia coli,* an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
Ent	enterococci, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre of sample
F	fluoride
FC	faecal coliforms, an indicator of the possible presence of faecal material and pathological micro-organisms. Usually expressed as colony forming units per 100 millilitre sample
fresh	elevated flow in a stream, such as after heavy rainfall
g/m^3	grams per cubic metre, and equivalent to milligrams per litre (mg/L). In water, this is also equivalent to parts per million (ppm), but the same does not apply to gaseous mixtures
l/s	litres per second
MCI	macroinvertebrate community index; a numerical indication of the state of biological life in a stream that takes into account the sensitivity of the taxa present to organic pollution in stony habitats
mS/m	millisiemens per metre
Mixing zone	the zone below a discharge point where the discharge is not fully mixed with the receiving environment. For a stream, conventionally taken as a length equivalent to 7 times the width of the stream at the discharge point
NH_4	ammonium, normally expressed in terms of the mass of nitrogen (N)
NH_3	unionised ammonia, normally expressed in terms of the mass of nitrogen

	(N)
NO_3	nitrate, normally expressed in terms of the mass of nitrogen (N)
NTU	Nephelometric Turbidity Unit, a measure of the turbidity of water
O&G	oil and grease, defined as anything that will dissolve into a particular organic solvent (e.g. hexane). May include both animal material (fats) and mineral matter (hydrocarbons)
Pb*	lead
pH	a numerical system for measuring acidity in solutions, with 7 as neutral. Numbers lower than 7 are increasingly acidic and higher than 7 are increasingly alkaline. The scale is logarithmic i.e. a change of 1 represents a ten-fold change in strength. For example, a pH of 4 is ten times more acidic than a pH of 5
Physicochemical	measurement of both physical properties (e.g. temperature, clarity, density) and chemical determinants (e.g. metals and nutrients) to characterise the state of an environment
PM_{10}	relatively fine airborne particles (less than 10 micrometre diameter)
Resource consent	refer Section 87 of the RMA. Resource consents include land use consents (refer Sections 9 and 13 of the RMA), coastal permits (Sections 12, 14 and 15), water permits (Section 14) and discharge permits (Section 15)
RMA	RMA1991 and including all subsequent amendments
SS	suspended solids
SQMCI	semi quantitative macroinvertebrate community index;
Temp	temperature, measured in °C (degrees Celsius)
Turb	turbidity, expressed in NTU
UI	Unauthorised Incident
UIR	Unauthorised Incident Register – contains a list of events recorded by the Council on the basis that they may have the potential or actual environmental consequences that may represent a breach of a consent or provision in a Regional Plan
Zn*	zinc

*an abbreviation for a metal or other analyte may be followed by the letters 'As', to denote the amount of metal recoverable in acidic conditions. This is taken as indicating the total amount of metal that might be solubilised under extreme environmental conditions. The abbreviation may alternatively be followed by the letter 'D', denoting the amount of the metal present in dissolved form rather than in particulate or solid form.

For further information on analytical methods, contact the Council's laboratory.

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Appendix I

Resource consents held by AA Contracting

Discharge Permit

Pursuant to the Resource Management Act 1991
a resource consent is hereby granted by the
Taranaki Regional Council

Name of Consent Holder:	AA Contracting Limited 68 Henwood Road R D 2 NEW PLYMOUTH 4372
Change To Conditions Date:	28 July 2009 [Granted: 21 July 2000]

Conditions of Consent

Consent Granted:	To discharge treated stormwater and washwater from quarry operations into land and into the Mangaoraka Stream in the Waiongana catchment at or about (NZTM) 1703148E-5678355N
Expiry Date:	1 June 2014
Site Location:	179 Te Arei Road, Lepperton
Legal Description:	Kaipakopako 4B Blk III Paritutu SD
Catchment:	Waiongana
Tributary:	Mangaoraka

For General, Standard and Special conditions
pertaining to this consent please see reverse side of this document

General conditions

a) On receipt of a requirement from the Chief Executive, Taranaki Regional Council the consent holder shall, within the time specified in the requirement, supply the information required relating to the exercise of this consent.

b) Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent must be at the consent holder's own expense.

c) The consent holder shall pay to the Council all required administrative charges fixed by the Council pursuant to section 36 in relation to:

   i) the administration, monitoring and supervision of this consent; and
   ii) charges authorised by regulations.

Special conditions

Conditions 1 – 2 [unchanged]

1. The consent holder shall at all times adopt the best practicable option to prevent or minimise any adverse effects of the discharge on any water body.

2. The maximum stormwater catchment area shall be no more than 20 000 m^2.

Condition 3 – [changed]

3. The consent holder shall annually review and maintain the contingency plan.

Conditions 4 – 5 [unchanged]

4. The design, management and maintenance of the stormwater system shall be generally undertaken in accordance with the information submitted in support of the application and to ensure that the conditions of this consent can be met.

5. There shall be no direct discharge of untreated stormwater or groundwater from the active quarry site into the Mangaoraka Stream as a result of the exercise of this consent.

[Previously condition 6 deleted]

Conditions 6 – 13 [Previously conditions 7 – 14 unchanged]

6. That as far as practicable the active quarry area shall be contoured/bunded so that all water generated in this area is directed to the silt control structures for treatment prior to discharge and so that the flow of uncontaminated stormwater into this area is prevented.

7. The consent holder shall undertake measures during excavation to control erosion of exposed areas within the quarry site and to minimise the amounts of silt and sediment which could be contained in the stormwater licensed by this consent.

8. The consent holder shall operate and progressively reinstate the quarry site in a manner which minimises the quarry stormwater catchment area, and ensures that the area of exposed unvegetated earth within the quarry's stormwater catchment is kept to a minimum at all times.

9. That the consent holder shall properly and efficiently maintain and operate the silt control structures in such a manner that any discharge which may occur shall not breach the conditions of this consent. The silt control structures shall be operated, as far as practicable, so as to maximise the treatment of the stormwater, and to minimise the duration, frequency, and rate of the discharge.

10. The following concentrations shall not be exceeded in the discharge effluent:

Component	**Concentration**
pH (range)	6.5-8.5
suspended solids	100 gm^{-3}
total recoverable hydrocarbons [infrared spectroscopic technique]	15 gm^{-3}

This condition shall apply prior to the entry of the treated stormwater into the receiving waters of the Mangaoraka Stream, at a designated sampling point approved by the Chief Executive, Taranaki Regional Council.

11. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the discharge point, the discharge shall not give rise to any of the following effects in the receiving waters of the Mangaoraka Stream:

a) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
b) any conspicuous change in the colour or visual clarity;
c) any emission of objectionable odour;
d) the rendering of fresh water unsuitable for consumption by farm animals;
e) any significant adverse effects on aquatic life.

12. After allowing for reasonable mixing, within a mixing zone extending 25 metres downstream of the discharge point, the discharge shall not give rise to an increase in turbidity of more than 50%, as determined using the standard black disk measure, in the receiving waters of the Mangaoraka Stream.

13. On cessation of quarrying operations at the site licensed by this consent, the active quarry area, including the silt control structures and surrounding areas, shall be reinstated satisfactorily, prior to the surrender or lapsing of this consent.

[Previously condition 15 – Deleted]

Signed at Stratford on 28 July 2009

For and on behalf of
Taranaki Regional Council

Director-Resource Management