# RESOURCE CONSENT

Environment Waikato
REGIONAL COUNCIL

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File Number: 60 55 28A
Resource Consent Number: 950671

**Pursuant to the Resource Management Act 1991, the Waikato Regional Council hereby grants consent to:**

Taupo District Council
Private Bag 2005
TAUPO

(hereinafter referred to as the Consent Holder)

**This consent authorises the Consent Holder to**: discharge up to 128 cubic metres per day of treated domestic effluent onto the ground for domestic waste disposal purposes in the vicinity of Motutere, Taupo at or about map reference NZMS 260 T18:673-533

**On the land described as**: Section 5 Blk II Tokaanu SD

**For a term to expire on:** 31 January 2016

**Subject to the following conditions:**

# CONDITIONS

## General

1 The consent holder shall retain a suitably qualified and experienced person to review and provide a management plan for this site. This plan is intended to address how the treatment system will be operated and maintained to optimise nutrient removal and prevent loss of nutrients to ground or surface water. This plan shall include appropriate procedures to monitor and manage effects of effluent discharge on the environment. It shall include as a minimum the following matters;

(i) comprehensive description of the treatment and disposal facility;
(ii) procedures for monitoring treatment processes and providing a log of relevant events e.g. significant equipment failure and weather conditions;
(iii) consideration of buffer zones downwind of irrigation areas to ensure there are no unacceptable health risks to land users on adjacent properties;
(iv) development, management and maintenance of the disposal area including spray disposal infrastructure, buffer zones;
(v) crop management and harvesting procedures;
(vi) management procedures and lines of responsibility;
(vii) contingency measures to address unusual events;
(viii) reporting procedures; and,
(ix) procedures for reviewing and improving the operations manual.

The management plan shall be to Waikato Regional Council satisfaction and provided within 6 months of the date of granting of this consent.

2 The total nitrogen loading rate of the treated wastewater discharged onto land should not exceed 200 kilograms per hectare per year.

3 The maximum rate of wastewater application onto the land treatment site shall not exceed 2.7 litres per second over the 1.2 hectare land disposal site.

4 Irrigation shall not be conducted on areas where ponded surface water is present or in a manner, or at a time, when waste water may flow into natural watercourses or beyond the property boundaries.

5 The wastewater treatment system shall be operated, maintained and managed in accordance with the management plan accepted by Waikato Regional Council under condition (1) of this consent, or any subsequent update to that manual as accepted in writing by Waikato Regional Council.

6 The consent holder shall retain appropriately experienced personnel to operate the treatment and disposal system.

7 Any erosion control works that become necessary as a result of the exercise of this consent shall be undertaken at the expense of the consent holder to the satisfaction of Waikato Regional Council.

## Monitoring

8 The quality, quantity and variability of the treated waste water to be discharged onto the land disposal area shall be determined by the consent holder. To this end the consent holder shall undertake the following monitoring to the satisfaction of Waikato Regional Council during the months November to March inclusive:

(i) determine the volume of effluent discharged onto the land disposal area on a weekly basis;
(ii) determine the total nitrogen, nitrate-nitrogen, and total phosphorus concentrations, suspended solids and 5 day biochemical oxygen demand ($BOD_5$) on a monthly basis (see note 1).
(iii) an estimate of the nitrogen loading rate irrigated on the land disposal area on a monthly basis.

The results of this monitoring shall be provided to Waikato Regional Council by April of each year in an agreed analysed report and data form.

9 The consent holder shall retain an appropriately experienced person to develop a monitoring programme to evaluate the environmental effects of this effluent discharge. This programme shall be to the satisfaction of Waikato Regional Council. The completed description of this programme shall be provided to Waikato Regional Council within six months of the granting of the consent. This programme shall address at least the following:

(i) monitoring of groundwater quality down gradient of the land treatment site on a quarterly basis. Groundwater samples should be analysed for $NO_3$-N and $NH_4$-N, the sum of which would represent dissolved inorganic nitrogen (DIN), and conductivity (see note 1).

(ii) analysis shall be undertaken from the groundwater monitoring piezometers for enterococci bacteria on an annual basis. If more than 1 enterococci bacteria is found as a result of this monitoring the source of this contamination shall be investigated. This investigation will include analysis for enterococci bacteria on a quarterly basis.

(iii) groundwater levels shall be monitored on a quarterly basis. The relative level of all piezometers should initially be obtained by surveying.

(iv) construction of two additional piezometers within the effluent plume to be used to measure the groundwater's piezometric surface and groundwater flow direction. These piezometers will be constructed in such a manner that they can be used to determine the hydraulic conductivity and groundwater velocity of the effluent plume within the groundwater.

(v) monitoring to check for potential surface water runoff or seepage shall be undertaken. Any runoff should be analysed for organic, nutrient and bacterial contamination.

(vi) the results of this monitoring shall be provided to Waikato Regional Council at six monthly intervals in an agreed analysed report and data form unless otherwise agreed to in writing by Waikato Regional Council.

10 The consent holder shall undertake the environmental monitoring programme referred to in conditions (8) and (9) above. The written report required as part of this programme will be forwarded to Waikato Regional Council by the period specified in those conditions or such later time as agreed upon in writing by Waikato Regional Council.

## Odour

11 As a result of the exercise of this consent there shall be no odour detectable beyond the boundary of the treatment system legal boundary which causes an objectionable or offensive effect.

12 Should an event occur which has an objectionable or offensive effect, the consent holder shall, within 5 days of being advised of this event by Waikato Regional Council, provide a written report to Waikato Regional Council specifying:

(i) the cause or likely cause of the event and any factors which influenced its severity;

(ii) the nature and timing of any measures implemented by the consent holder to avoid, remedy or mitigate any adverse effects;

(iii) the steps to be taken in the future to prevent a recurrence of similar events.

**Practice Note:**

For the purpose of condition (11) of this consent, the Waikato Regional Council will consider an effect that is objectionable or offensive to have occurred if any appropriately experienced officer of the Waikato Regional Council deems it so having regard to:

(i) the frequency, intensity, duration, amount and location of the effect(s) of the odour; and/or,

(ii) a written declaration from no less than three individuals that the effect odour was objectionable or offensive. That declaration shall include the individuals' names and addresses, the date and time that the nuisance event occurred and when it was detected. Where a declaration is made following a number of discharge events having objectionable or offensive effects, that declaration shall provide details of the frequency, intensity, duration and location of those events. The individuals shall also state the circumstances

which led to the declaration (for example, called upon by another individual, detected from a distance). The declaration shall be signed and dated. And/or,

(iii) relevant written advice or a report from an Environmental Health Officer of a territorial authority or Health Authority.

13 There shall be no discharge of treated effluent as a result of spray irrigation on adjacent properties without the agreement of those property owners in writing.

**Administration**

14 Waikato Regional Council may review the conditions of this consent every five years from the date of the granting of this consent, for any of the purposes specified in Section 128 of the Resource Management Act 1991, and specifically for the purpose of reviewing any adverse effects on ground or surface water due to the discharge of domestic effluent into the ground as authorised by this consent.

15 Pragmatic operational alternatives for optimising nutrient treatment and minimising the effects of effluent discharge on the environment should be considered and the findings reported in writing to Waikato Regional Council at each five yearly review period. The best practicable option should be adopted to minimise the amount of nitrogen leaching from the treatment site.

16 The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or ~~any~~ charge prescribed in accordance with regulations made under section 360 of the Resource Management Act.

**Note 1** All water quality sample analyses required shall be undertaken using standard methods as detailed in the "Standard Methods For The Examination Of Water And Waste Water, 1995" 19th edition by A.P.H.A. and A.W.W.A. and W.E.F. and any subsequent updates or by some other method approved of in advance by Waikato Regional Council.

Dated at Hamilton this 8TH day of JANUARY 1997

For and on behalf of the
Waikato Regional Council

.....
for Secretary

In reply quote 60 55 28A
Enquiries to Mrs R Hutchinson

Environment Waikato
REGIONAL COUNCIL

8 October 1996

96/39084

Taupo District Council
Attention CS Light
Private Bag 2005
TAUPO

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401 Grey Street,
P.O. Box 4010, Hamilton East
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13 Opatito Road, Paeroa
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Dear Sir/Madam

**RESOURCE CONSENT APPLICATION NUMBER 950671**

Your application of 21 June 1995, to discharge up to 128 cubic metres of treated domestic effluent into the ground for domestic waste disposal purposes in the vicinity of Motutere, Taupo, has been considered in accordance with provisions of the Resource Management Act 1991.

In terms of authority delegated by Council resolution a decision has been made in respect of your application and notice of the decision and the reasons are as detailed in the attached report.

Costs for considering your application will be forwarded in due course.

The applicant, or you as a party who made a submission on the application, may appeal this decision to The Registrar, Planning Tribunal, Box 5027, Wellington, within 15 working days of notice of this decision being received. The procedure for filing appeals is set out in Sections 120 and 121 and Form 7 of the Resource Management Act and Regulations respectively. We can make copies of this information available to you on request.

The above resource consent will be granted if no appeals are lodged with the Planning Tribunal within the above appeal period.

Please contact the Hamilton office if you have any queries regarding the above advice.

Yours faithfully

Ruth Hutchinson
**Administration officer**
**RESOURCE USE**

Taupo District Council (Motutere) -Taupo District Application Number: 950671
File Number: 60 55 28A

Background

The Taupo District Council applied in June 1995 for a discharge consent to authorise the discharge of up to 128 cubic metres per day of treated domestic effluent by spray irrigation onto land at Motutere. This application was publicly notified in the Taupo Times on the and no submissions in opposition to this activity were received. The previous consent which expired in September 1995 was for a similar rate of discharge. The effluent treatment system was commissioned by the applicant in 1990.

The domestic influent receives pre-treated by coarse screening, pre-aeration and settling. The treated effluent is then irrigated onto 1.2 hectares of eucalyptus trees via nozzles located between the trees, the trees are coppiced for firewood. The spray irrigation area is located on a north-west facing slope (gradient 0.09) approximately 50 metres from S.H.1 and 100 metres from Lake Taupo (map ref. NZMS 260 T18:673-533). There are no down-gradient groundwater users between the effluent disposal site and Lake Taupo.

The effluent is entirely derived from the Motutere holiday camp. The patronage of the camp is very seasonal with the peak discharge from the holiday camp being during the summer holiday season with the discharge from this source estimated at 106 cubic metres per day.

Treatment System Operation

Motutere motor camp is connected to the reticulated sewerage scheme. The scheme is operated by the applicants and has been fully operational since 1990. The primary effluent is treated in septic tanks which are desludged annually. The effluent is then piped to the main treatment site where the septic tank treated waste is aerated and then gravity flows to a settlement/storage tank. The aeration and settlement tanks are desludged as necessary with the sludge being taken to the Taupo PCP plant for treatment. Once the effluent has been treated it is spray irrigated onto the land disposal area. The land disposal site consists of 1.2 hectares that is planted with eucalyptus trees. The irrigation system consists of low pressure low angle irrigators to minimise aerosol production and drift outside the spray area. The irrigation area has a 30 metre buffer area of vegetation planted around the site. The irrigation area is located approximately 350 metres from the edge of lake Taupo and 400 metres from the closest dwelling.

The irrigation area consists of 7 rows of 7 sprinklers, the rows are 14 metres apart with a row of trees 2.5 metres each side of the irrigators. During the majority of the year irrigation occurs over two rows once per day with an application rate of 4 millimetres per hour. The settling tank has a high level probe that automatically initiates the irrigation sequence. The irrigation area is changed manually once or twice each week. During peak periods of effluent disposal irrigation will occur two to three times per day, four to eight hours apart.

No reports of visible pollution from the site e.g. surface ponding, runoff or odour incidents have been received.

Affects Assessment

An investigation of the site was undertaken by the Forest Research Institute during 1989 to assess its suitability for land treatment. This work included examination of the soil profile in a series of 15 auger holes. Dark brown loamy soils varied in thickness from about 0.05 m to 0.5 m. This was underlain by variable yellow to grey pumice sands and gravel's. Infiltration tests were carried out at this time of six sites. The relatively high infiltration rates indicate that nitrogen loading rather than the infiltration rate is the constraint for land treatment. The maximum rate of effluent irrigation at Motutere site is 2.7 litres per second.

Three piezometers were constructed in 1990 to enable the potential impact of effluent discharge on groundwater quality to be monitored. These piezometers are located near S.H.1 between the lake and the treatment site. Groundwater samples are collected over the summer period months of January, February and March and are analysed for BOD, TN, TP and enterococci bacteria.

Groundwater quality monitoring commenced in July 1990. Total nitrogen concentration in these piezometers was typically less than 1 ppm. Recent data has contained errors in the results obtained for the nitrogen concentration. Changes to the methods of analyses are recommended to correct this problem

Monitoring Plan

A management plan has been provided by the applicant in respect of the operation of the land treatment system. Some concerns have been expressed by Lakeland Health regarding the need for more formalised operational procedures by way of a Management Plan for the site and the lack of adequate signage at the treatment site.

It is the opinion of staff that the management plan provided lacked detail and did not provide adequate detail in respect of contingency measures, the operational regime, maintenance etc. As such it will be necessary to provide further detail in respect of the plants management. A condition is suggested for any consent granted that requires the applicant to provide further information in respect of management of this site.

Potential Effects

The spray irrigation of treated domestic effluent onto the ground has the potential to contaminate both groundwater and surface water. Due to the effluent being spray irrigated there is potential for spray drift onto adjacent land and odours to be generated from the irrigation system and treatment tanks. These potential effects are discussed below.

It is staff opinion that the main contaminants with potential to cause significant adverse effects on the environment are phosphorus, nitrogen and bacteria. The adverse effects that these contaminants can have relate to health problems and/or promote nuisance growths of algae if they enter surface water. As there is no industrial input to the reticulation system and sewage sludge's are removed from the site heavy metals are not expected to be present in sufficient concentrations to cause any environmental effects.

Aerosols

The spray irrigation of the treated waste onto the ground is via fixed irrigators. The use of irrigators has the potential to promote the loss of air borne contaminants from the site to adjoining properties. The applicant is utilising low pressure sprayers with a low angle of spray to reduce the production of aerosols. A buffer area is incorporated in the land disposal design with tree planting established that help contain the aerosols. The site is also located away from existing dwellings and not in areas that are frequented for recreational purposes. It is staff opinion that this discharge will not result in any significant adverse effect resulting from the production of aerosols.

Odours

The applicant has installed aerators to maintain/raise oxygen levels in the tank. The treatment system is also located over 400 metres from the closest dwelling. However it is recommended that a condition is included on any consent granted that requires the oxidation pond and spray irrigation system is operated in such a manner that there is no detectable odours beyond the legal boundary of the treatment site.

Overland Flows

With effluent being spray irrigated onto the ground there is the potential for waste to flow off the land disposal area. Any such flow has the potential to cause pollution of natural water should it reach it. Any such discharge of this type is not acceptable due to the potential effects on water quality and aquatic biota that it may have. As the application rate is only 4 millimetres per hour and the infiltration rate is approximately 10 times this amount the potential for overland flow is relatively remote. However a condition is recommended for any consent granted that requires the applicant to stop/not irrigate during periods should water begin running off the land disposal area.

Bacterial Contamination

Once the effluent has been spray irrigated it is expected that it will soak to groundwater and/or seep through the soil to surface water. Bacteria sprayed onto land die off relatively quickly as long as the water and waste is not allowed to pond on the land disposal area. Due to the high infiltration rate and low application rate it is not expected there will be any ponding on the disposal area. A condition is recommended for any consent granted that requires the applicant to operate the land disposal area in such a manner that ponding does not occur.

Although bacteria are not expected to cause contamination of groundwater it is recommended that should this consent be granted a condition is included that requires the applicant to monitor groundwater for bacteria contamination. Should bacteria be found in the analysis of these samples and they can be attributed to this discharge it would suggest the treatment system is not operating as intended. If the system is not operating satisfactorily the management plan for the site will require updating to ensure the reasons for this contamination do not continue to occur and the conditions of the consent may need to be reviewed.

Chemical Contamination

Phosphorus sprayed onto land bonds to soil particles and as such is not expected to cause contamination of any water source.

The biochemical oxygen demand (BOD) of the discharge is not expected to have a significant impact on ground or surface water. The effect is expected to be minor as soil bacteria result in

renovation of the effluent relatively rapidly. It is suggested that a condition should be included on any consent granted that requires the applicant to monitor the groundwater concentration of BOD. Should a BOD concentration that is over 20 grams per cubic metre occur in the groundwater it would suggest that the treatment system is not operating as intended. If the system is not operating satisfactorily the operating regime of the system will need to be reviewed to achieve a higher level of treatment.

One of the major focuses of sewage treatment in the Taupo Basin area is the prevention of nutrient enrichment of surface waters. As such it is important that sewage treatment systems are operated in such a manner that nutrient removal is optimised. The primary constraint to irrigation with regard to optimising nutrient removal is the nitrogen loading rate. The proposed maximum nitrogen loading rate for "cut and carry" pasture is 600 kg $ha^{-1}$ and for forest is 200 kg $ha^{-1}$. These rates are considered appropriate for ungrazed systems with appropriate site management based on sufficient monitoring information.

Total nitrogen concentration of the influent is reported to average 43 ppm (TDC application monitoring information). From an environmental perspective an average annual nitrogen loading rate of 200 kg $ha^{-1}$ is considered an appropriate maximum limit for the uptake of nitrogen by eucalyptus forest. This equates to 240 kg $y^{-1}$ of nitrogen for a 1.2 ha site such as Motutere or an average daily discharge of 0.66 kg of nitrogen. This daily nitrogen loading limit would be derived from about 15 $m^3$ $d^{-1}$ of treated effluent with a nitrogen content of 43 ppm. The average annual effluent discharge rate for Motutere has not been measured however discussions with the applicant suggest that it is likely to be similar to this rate.

Dispersivity will tend to substantially reduce excessive nitrogen in groundwater during migration of effluent to the lake. Attenuation may also occur due to denitrification during transport. There is little information from which to contemplate these aspects. Both mass loading and relative nitrogen concentration on mixing at the lake edge are significant factors with respect to the effects of potential nutrient enrichment. The applicant intends to operate the system (as described in the operations manual provided in support of this application) in a manner that limits the loss of nutrients from the site eg reduced loading rates, pre-treatment etc.

As such the effect of nitrogen in this discharge on both surface and ground water is considered by the applicant to be minor. Due to the size of the discharge and proposed treatment system it is also staff opinion that the effects of this discharge will be minor. The monitoring data from three piezometers located in the vicinity of the disposal area suggests the discharge will have no more than a minor effect on the environment. However staff consider that on going monitoring of the discharge and its effect on groundwater are necessary to ensure that the adverse environmental effects are no more than minor. If this application is granted conditions are suggested that require monitoring is undertaken by the applicant that include sampling for total nitrogen, nitrate nitrogen and ammonia and conductivity. These levels will indicate attenuation trends in the groundwater and the expected level of nitrogen concentration that will occur in the effluent plume as the effluent moves away from the plant. Suggested monitoring should also provide an expanded description of contingency plans that could be activated in the event of unexpected impacts and reporting procedures should be detailed.

Monitoring

The effects of the proposed discharge are envisaged by the applicants to be minor. It is generally also the opinion of staff that the effects of this land based discharge will be minor. However on going monitoring will be required to ensure that the impacts of the discharge are no more significant than occurs at present As such it is suggested that a condition be included that requires a monitoring programme be developed by the applicant to the satisfaction of the Regional Council to address on going monitoring requirements.

No groundwater level data has been provided from which water table contours and flow direction can be calculated. To provide this information it is necessary to construct two further piezometers closer to the treatment site to establish the piezometric surface and groundwater flow direction. Slug tests using appropriately constructed piezometers would provide an indication of hydraulic conductivity and groundwater velocity. These additional piezometers will more accurately define the level of effluent attenuation that results from renovation in the groundwater and movement through the soil horizon as well as dispersivity. After the first two years of monitoring the total number of piezometers monitored could be reduced to the three piezometers that are best situated in the effluent plume.

Any potential plume development from the site would be sufficiently slow to allow monitoring of the piezometers to be undertaken initially on a quarterly basis. This may be subsequently reduced to a six monthly basis once initial trends are confidently established. (e.g. after 2 years).

Chemical analyses should be undertaken using standard methods. It is understood that the total nitrogen analysis method used is not standard. It is also carried out on filtered samples and hence represents dissolved nitrogen. It is suggested that analyses be undertaken for nitrate-N and ammonium-N. The sum of these two components would represent dissolved inorganic nitrogen (DIN). This type of analysis is most relevant for groundwater samples. TKN or TN should however still be undertaken on the treated effluent discharged due to the relatively high organic content. Conductivity should also be measured as it provides a cheap and easy check of salinity changes which typically increase as a result of sewage effluent contamination. Enterococci bacteria should also be analysed on a less frequent basis as an indicator of microbial contamination.

It is not envisaged that specific monitoring of water quality at the Lake shore would be required at this site. Monitoring of groundwater quality would be sufficient to indicate the effects on the immediate receiving environment.

Summary

The use of land treatment as a means of sewage treatment offers substantial benefits in terms of reduced adverse effects on the environment over other forms of treatment. Due to the minor effects of this discharge on the environment and the public generally it is recommended that this application be granted with conditions in line with Council policy.

Council policy for this type of treatment system allows a consent to be granted for a maximum term of 20 years. It is envisaged that the granting of a 20 year term would require a 5 yearly review period. Should the information collected as part of the proposed monitoring plan show the impacts of this discharge are more significant than envisaged at the time of processing the conditions of the consent may be changed under the review provisions. As such it is recommended that a consent be granted for a 20 year term with a five yearly review period.

Recommendations

It is recommended that a discharge consent (No. 950671) be granted to Taupo District Council, Private Bag, Taupo to discharge up to 128 cubic metres per day of treated domestic effluent onto the ground for domestic waste disposal purposes in the vicinity of Motutere, Taupo at or about map reference NZMS 260 T18:673-533 on Section 5 Blk II Tokaanu S.D. for a term to expire on 31 January 2016 subject to the following conditions:

General

(1) The consent holder shall retain a suitably qualified and experienced person to review and provide a management plan for this site. This plan is intended to address how the treatment system will be operated and maintained to optimise nutrient removal and prevent loss of nutrients to ground or surface water. This plan shall include appropriate procedures to monitor and manage effects of effluent discharge on the environment. It shall include as a minimum the following matters;

(i) comprehensive description of the treatment and disposal facility;
(ii) procedures for monitoring treatment processes and providing a log of relevant events e.g. significant equipment failure and weather conditions;
(iii) consideration of buffer zones downwind of irrigation areas to ensure there are no unacceptable health risks to land users on adjacent properties;
(iv) development, management and maintenance of the disposal area including spray disposal infrastructure, buffer zones;
(v) crop management and harvesting procedures;
(vi) management procedures and lines of responsibility;
(vii) contingency measures to address unusual events;
(viii) reporting procedures; and,
(ix) procedures for reviewing and improving the operations manual.

The management plan shall be to Waikato Regional Council satisfaction and provided within 6 months of the date of granting of this consent.

(2) The total nitrogen loading rate of the treated wastewater discharged onto land should not exceed 200 kilograms per hectare per year.

(3) The maximum rate of wastewater application onto the land treatment site shall not exceed 2.7 litres per second over the 1.2 hectare land disposal site.

(4) Irrigation shall not be conducted on areas where ponded surface water is present or in a manner, or at a time, when waste water may flow into natural watercourses or beyond the property boundaries.

(5) The wastewater treatment system shall be operated, maintained and managed in accordance with the management plan accepted by Waikato Regional Council under condition (1) of this consent, or any subsequent update to that manual as accepted in writing by Waikato Regional Council.

(6) The consent holder shall retain appropriately experienced personnel to operate the treatment and disposal system.

(7) Any erosion control works that become necessary as a result of the exercise of this consent shall be undertaken at the expense of the consent holder to the satisfaction of Waikato Regional Council.

Monitoring

(8) The quality, quantity and variability of the treated waste water to be discharged onto the land disposal area shall be determined by the consent holder. To this end the consent holder shall undertake the following monitoring to the satisfaction of Waikato Regional Council during the months November to March inclusive:

(i) determine the volume of effluent discharged onto the land disposal area on a weekly basis;

(ii) determine the total nitrogen, nitrate-nitrogen, and total phosphorus concentrations, suspended solids and 5 day biochemical oxygen demand ($BOD_5$) on a monthly basis (see note 1).

(iii) an estimate of the nitrogen loading rate irrigated on the land disposal area on a monthly basis.

The results of this monitoring shall be provided to Waikato Regional Council by April of each year in an agreed analysed report and data form.

(9) The consent holder shall retain an appropriately experienced person to develop a monitoring programme to evaluate the environmental effects of this effluent discharge. This programme shall be to the satisfaction of Waikato Regional Council. The completed description of this programme shall be provided to Waikato Regional Council within six months of the granting of the consent. This programme shall address at least the following:

(i) monitoring of groundwater quality down gradient of the land treatment site on a quarterly basis. Groundwater samples should be analysed for $NO_3$-N and $NH_4$-N, the sum of which would represent dissolved inorganic nitrogen (DIN), and conductivity (see note 1).

(ii) analysis shall be undertaken from the groundwater monitoring piezometers for enterococci bacteria on an annual basis. If more than 1 enterococci bacteria is found as a result of this monitoring the source of this contamination shall be investigated. This investigation will include analysis for enterococci bacteria on a quarterly basis.

(iii) groundwater levels shall be monitored on a quarterly basis. The relative level of all piezometers should initially be obtained by surveying.

(iv) construction of two additional piezometers within the effluent plume to be used to measure the groundwater's piezometric surface and groundwater flow direction. These piezometers will be constructed in such a manner that they can be used to determine the hydraulic conductivity and groundwater velocity of the effluent plume within the groundwater.

(v) monitoring to check for potential surface water runoff or seepage shall be undertaken. Any runoff should be analysed for organic, nutrient and bacterial contamination.

(vi) the results of this monitoring shall be provided to Waikato Regional Council at six monthly intervals in an agreed analysed report and data form unless otherwise agreed to in writing by Waikato Regional Council.

(10) The consent holder shall undertake the environmental monitoring programme referred to in conditions (8) and (9) above. The written report required as part of this programme will be forwarded to Waikato Regional Council by the period specified in those conditions or such later time as agreed upon in writing by Waikato Regional Council.

Odour

(11) As a result of the exercise of this consent there shall be no odour detectable beyond the boundary of the treatment system legal boundary which causes an objectionable or offensive effect.

(12) Should an event occur which has an objectionable or offensive effect, the consent holder shall, within 5 days of being advised of this event by Waikato Regional Council, provide a written report to Waikato Regional Council specifying:

1 the cause or likely cause of the event and any factors which influenced its severity;

2 the nature and timing of any measures implemented by the consent holder to avoid, remedy or mitigate any adverse effects;

3 the steps to be taken in the future to prevent a recurrence of similar events.

Practice Note:

For the purpose of condition (11) of this consent, the Waikato Regional Council will consider an effect that is objectionable or offensive to have occurred if any appropriately experienced officer of the Waikato Regional Council deems it so having regard to:

i) the frequency, intensity, duration, amount and location of the effect(s) of the odour; and/or,

ii) a written declaration from no less than three individuals that the effect odour was objectionable or offensive. That declaration shall include the individuals' names and addresses, the date and time that the nuisance event occurred and when it was detected. Where a declaration is made following a number of discharge events having objectionable or offensive effects, that declaration shall provide details of the frequency, intensity, duration and location of those events. The individuals shall also state the circumstances which led to the declaration (for example, called upon by another individual, detected from a distance). The declaration shall be signed and dated. And/or,

iii) relevant written advice or a report from an Environmental Health Officer of a territorial authority or Health Authority.

(13) There shall be no discharge of treated effluent as a result of spray irrigation on adjacent properties without the agreement of those property owners in writing.

Administration

(14) Waikato Regional Council may review the conditions of this consent every five years from the date of the granting of this consent, for any of the purposes specified in Section 128 of the Resource Management Act 1991, and specifically for the purpose of reviewing any adverse effects on ground or surface water due to the discharge of domestic effluent into the ground as authorised by this consent.

(15) Pragmatic operational alternatives for optimising nutrient treatment and minimising the effects of effluent discharge on the environment should be considered and the findings reported in writing to Waikato Regional Council at each five yearly review period. The best practicable option should be adopted to minimise the amount of nitrogen leaching from the treatment site.

(16) The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations made under section 360 of the Resource Management Act.

Note 1: All water quality sample analyses required shall be undertaken using standard methods as detailed in the "Standard Methods For The Examination Of Water And Waste Water, 1995" 19th edition by A.P.H.A. and A.W.W.A. and W.E.F. and any subsequent updates or by some other method approved of in advance by Waikato Regional Council.

Mark Henry

M Henry
Resource Officer, Consents
Dated 7/10 1996

D Pearks
Programme Manager, Energy and Utilities
Dated 7/10 1996
That the above recommendation be Approved/~~Declined~~.

**Acting under authority delegated subject to the provisions of section 34 of the Resource Management Act 1991 which at the time of decision had not been revoked.**