

FILE



Auckland **Regional** Council

Vodafone House
21 Pitt Street
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New Zealand

27 May 1999

DX CP 28 008 Pitt St
tel 64 9 379 4420
fax 64 9 366 2155

Brian Morrison
C/o Colin Ashby Consulting Ltd
P.O. Box 124
Warkworth

File Ref: 7835

Attention: Colin Ashby

Dear Sir

RE: DRAFT PROPOSED CONDITION - SANDSPIT MOTOR CAMP

Further to our telephone conversation on Monday 24 May regarding the draft conditions for Sandspit Motor Camp the following changes have been made.

1. Date of expiry - the proposed date of expiry is 30 June 2014.
2. Quantity - it is not ARC practice to grant an average daily discharge volume as this may result in significant exceedance of the capacity of the treatment and disposal field. Generally consents are granted for the maximum daily discharge volume, and the system sized accordingly.

In this case the ARC has considered your arguments that the current system (which in the ARC's opinion is under sized) is working effectively with no problems; that the specific environmental conditions of the site assist in the treatment and disposal process; that the quality of the effluent has improved; and your acceptance of specific review conditions. In view of the concerns raised by the ARC and by Ian Gunn, we consider that significant concessions have been made with regard to this application on our behalf to avoid further significant costs to your client.

However, we note, following our discussions, that the new maximum daily discharge volume proposed is 25m³, not 18m³ as previously applied for. Given the ARC's previous concerns with regard to the sizing of the disposal field, and the increase in daily discharge volume, we strongly recommend you re-consider the use of additional dripper lines to facilitate the even distribution of the effluent over the disposal area. The cost of RAAM line is not significant.

Notwithstanding the preceding comments, it is accepted that a better understanding of the discharge volume will be achieved with the installation of a water meter on the discharge point.

3. Discharge to Estuary - the ARC have previously advised that the current resource consent, for discharge to the estuary, was unlikely to be granted as a result of a greater awareness of both cultural and environmental concerns with regard to this disposal technique.

The ARC recommends that 24 hour storage is provided for all systems in the event of pump failure. In this case, you have proposed 2 hours of storage, with the provision for pumping out and tankering the waste off-site. This practice has been accepted with other systems within the region, but with much higher storage capacities (e.g 12-16 hours). However, there is some concern that during peak flow generation this system is unlikely to be able to cope with the proposed maximum daily discharge volume of 25m³.

If provision is made for 2 hours of storage, the tanks would require pumping out every 2 hours, during peak flow periods, notwithstanding that you may be able to manage the camp output to reduce the discharge volume, as proposed. Therefore, while the risk of failure may be low, and the provision of standby pumps has been proposed, the risk of discharging to the environment should a pump failure occur is considered high. It is therefore considered that additional contingency should be provided (such as that proposed in your condition 12(iii)) rather than use the receiving environment as a fall back.

Accordingly, it is considered that a variation to the application to provide for the emergency discharge of waste water to the estuary is not appropriate, and that further alternative emergency measures should be investigated.

4. Condition 2(v) - the proposed variation to the wording of this condition is accepted.
5. Special Condition 3 (new) - further to our discussions it is proposed to include the following condition specifically relating to the review of the discharge volume.

"The maximum daily discharge volume permitted by this consent will be reviewed 12 months from the granting of this consent and may be varied, with the agreement of the Council and the Consent Holder, according to the results of water meter readings taken from the water meter specified in condition 18."

6. Condition 8 - the proposed variation to the wording of this condition is accepted.
7. Condition 12 - the proposed wording of the condition is generally acceptable to the ARC. However, please refer to the comments made in 3 above.
8. Condition 18 - the proposed changes to the condition are not accepted for the following reasons:
 - i. Specific concerns have been raised regarding the actual maximum daily discharge volume. Accordingly the ARC has proposed, and your client has accepted, the installation of a water meter to monitor the volume of wastewater discharged. The reading of this meter on a daily basis is essential to determine the actual discharge volumes. Average daily volumes measured over a 7 day period will result in too

much variance, and it will not be possible to accurately determine the maximum daily discharge volume, on which a review of this consent is based.

- ii. The proposed change to condition 18(i) pre-supposes that sufficient information is obtained over the period 1 December - 28 February 1999-2000. However, there is a risk that, for as yet undetermined reasons, the motor camp will not reach its usual peak occupancy over this period. Accordingly, an accurate estimate of the maximum daily discharge volumes may not be achievable over a 1 year period. Specific provision is made in condition 2 for any of the conditions of the consent to be reviewed. Accordingly it is considered that, should it be appropriate to vary this condition, sufficient provision is currently made for this.

10. Condition 20 (new) - it is proposed to include the following additional condition:

"The samples required by condition 19 shall; be analysed for the following parameters:

- *Suspended Solids*
- *Faecal Coliforms*
- *Enterococi"*

11. Condition 22 - the wording of this condition shall be modified as follows:

"The quality of the wastewater discharged to the irrigation system shall conform with the following standard:

- *Suspended solids* *better than 20mg/l."*

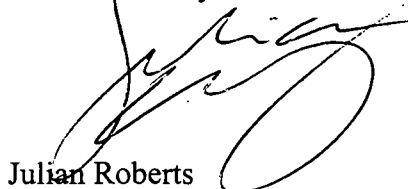
12. Condition 26 - shall be deleted

13. Condition 27 - the wording proposed by yourself is considered unnecessary as this has previously been provided for in condition 16.

The ARC proposes to continue with the processing of this consent on the basis of the discussion above.

Should you have any queries, please do not hesitate to contact me.

Yours faithfully



Julian Roberts
Pollution Control Officer

c.c Brian Morrison



Auckland **Regional** Council

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14 May 1999

Mr B. Morrison
Sandspit Motor Camp
1334 Sandspit Road
RD2
Warkworth

File Ref: 7835

Dear Sir

RE: EXTENSION OF TIME DISCHARGE PERMIT NO.7835

Section 37 of the Resource Management Act 1991 allows the Auckland Regional Council to extend, by not more than double, a time period specified in the Act, in relation to the processing of consent applications. Accordingly, the Auckland Regional Council has extended the time period within which it is required to notify you of its decision regarding its application for a consent to discharge contaminants at Sandspit Motor Camp.

The date by which the decision will be advised is now 8 June 1999. The time limit has been extended to allow the ARC to consult with you with regard to the proposed conditions of consent.

Accordingly we have attached a draft copy of the proposed conditions for your information. Should you wish to make any comments on the proposed conditions, please contact the undersigned no later than 25 May 1999. Should we not receive any comments from you by that time we will assume you have no concerns and process the application accordingly.

Yours faithfully

Julian Roberts
Pollution Control Officer

c.c Colin Ashby

Enc.

AUCKLAND REGIONAL COUNCIL

SUBJECT: Discharge permit application to discharge up to 18m³ of treated waste water to ground soakage.

FROM: Julian Roberts

FILE: 7835

PERMIT: Discharge 22315
to ground

TO: The Manager
Land & Water Quality Section

DATE: 12 May 1999

(This report is confidential until it has been considered and is not to be construed as Council policy until adopted).

APPLICATION

Applicant

B & V Morrison.

Proposal

To discharge up to 18m³/day of contaminants to land for the purpose of disposing of treated wastewater to ground soakage in accordance with Section 15(1) of the Resource Management Act 1991.

Location

NZMS 260 R09 655327 – Sandspit Motor Camp, Sandspit.



Colin Ashby Consulting

Structural, Civil & Geotechnical Engineering

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Rodney District. N.Z.

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Job No 1939-B
ca/lc

10 May 1999

Mr Julian Roberts
Pollution Control Officer
Auckland Regional Council
Private Bag 92-012
AUCKLAND

FILE No:	
UNIQUE No:	6386
RECEIVED	
 17 MAY 1999	
Auckland Regional Council	
ATTENTION:	
INFORMATION:	
ACTIONED:	

Dear Julian

Re: DISCHARGE PERMIT 7835

Proposal

Following discussions with both yourself and the client it is hereby proposed that a discharge permit be granted for 15 years overall, with review after 3 months with regard to filtration and review after 2 years with regard to the irrigation system.

Monitoring

1. It is proposed to install a water meter so as to monitor effluent flow rates directly and record these regularly.
2. At the next 3 monthly effluent quality test, once the Biotube Filter recently installed has had a chance to bed down and the system purge itself of solids, it is intended to review the effluent quality to ensure that suspended solids are equal to or better than 10 parts per million, so as not to cause blockage in the dripper line system longer term.

If however this criteria cannot be achieved then Arkal Disc Filters or similar will be considered for installation to reduce the amount of suspended solids. The ultra violet light filter shall be placed after the filters, where it is envisaged that it will be more effective, providing flow rates are controlled to ensure adequate contact time.
3. That the effectiveness of the surface drip irrigation scheme be reassessed after 2 years and at that time upgraded if necessary.

General Comments

Effluent Quality

The effluent quality has improved dramatically since Mr Morrison implemented the recommendations of my report dated November 1998. However, although the suspended solids are below 20 parts per million at the last test at Easter, it is considered that there may be some further improvement in this result given another 3 months when the bio filter recently installed has had a chance to build up bio mass and the system downstream of the filter has had a time to purge itself of any build up of solids. Before spending any further money, Mr Morrison would prefer to wait the 3 months and reassess the quality of the effluent at that time before incurring further expense with additional filtration and plant upgrading.

Filtration

I have spoken to Mr Ian Gunn and he has recommended that if a filter is required, that Arkal Disc Filters, rather than a sand filter, be considered due to efficiency and cost. I have contacted Irrigation Technologies Services and appendix to this report, an outline of their equipment.

Metering

At present the system is metered off the bore for water supply. Much of the water is used for washing down boats etc and the meter is read on a 3 monthly basis. The installation of a meter in to the system so as to measure effluent flow rates directly would prove more helpful in monitoring the system and flow rates etc which in turn will assist in assessing how affective the treatment and disposal system is.

Disposal Systems Options

Although Mr Morrison had a water right to discharge to the estuary, of his own initiative he did construct and install a Raam Drip Irrigation System. Everyone would agree that such a system would be far preferable than discharging effluent straight to an estuary. Mr Morrison is to be commended on his initiative. This system was not designed in accordance with TP58, but never the less "The proof of the pudding is in the eating" and the system has worked well over the past 2 years, inspite of poor quality effluent (which has since been improved).

Mr Morrison foresees no need to upgrade this system at this time and from my own on-site inspection, I would agree with him. It is requested that a license be granted to operate this system, using the higher grade effluent, for a further 2 years and then reassess the system at that time, upgrading it if necessary. In support of this proposal I outline the following:

1. The Resource Management Act purposely stays away from been prescriptive legislation, allowing room for solutions outside the norm, to be implemented. The Act is looking at end result and off site affects.
2. While TP58 is accepted as a means of compliance it is in itself not the end all and b all, to providing satisfactory solutions.

Taking the loading rate as an example; Appendix F of TP58 sets out the design size and disposal area requirements but in all the headings with respect to design size, the comment is that it is the most conservative design loading. Further, for the soil category for the topsoil on this site would be perhaps 3 or 4 instead of 5 or 6 thus having better absorption and drainage characteristics. Other factors to be considered, are that under dose loading situations, it has been found overseas that the quality of the soil and its ability to absorb effluent actually improves with time. So if we can get a good quality effluent and the system is already working well it is considered that the absorption ability of the soil will not deteriorate. Other factors with this site which need to be considered, are that the maximum loading is during the summer period when evapo-transpiration rates are high. The site is well raised and facing north with moderate slope and has limited rainfall catchment above it. The effluent is surface supplied which would improve absorption by plants and evapo transpiration over and above the case of a varied drip line. Ultra violet light exposure will also be very good enhancing treatment. Although the drip lines run down the hill rather than parallel to the contour, visual inspection of the site indicates that where the line stops, the lush green grass also stops in close proximity and there is no trail of nutrient further down hill than one would expect if the loading rate and stormwater flushing characteristics were too high.

A further factor with regard to the site is that Mr Morrison has established an Olive Grove with trees in rows running downhill. The layout of the rows of trees down the slope does not suit a horizontal layout of distribution lines, but rather the lines running down the slope. His existing system of movable above ground lines suits his planting layout well. It is also not in Mr Morrisons interests for his trees to get wet feet. The system has been in and operating for two summers with no adverse effect on the trees.

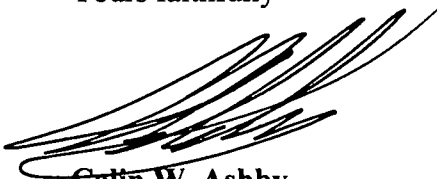
Conclusion

In conclusion the effluent distribution system although a little unauthorised, appears to be working adequately and serving its purpose without causing nuisance either on-site or off site and in my opinion meets the requirements of the Resource Management Act. It is considered worth while to monitor the system over a further 2 year period and if at that time it is found to not be adequate to then upgrade it.

With respect to management of this system, Mr Morrison is running a Motor Camp and management of the effluent disposal system is as much a part of the routine and management of the camp as cleaning the toilets and mowing the lawns. It is an acceptable part of management practice in this case which might not otherwise be so.

I would trust that the Auckland Regional Council would support and approve the continuation of the Discharge Consent as outlined above.

Yours faithfully



Colin W. Ashby
MIPENZ. BE. NZCE. Reg. Eng.

FILE



Auckland **Regional** Council

BellSouth Centre
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20 April 1999

Colin Ashby Consulting
P.O. Box 124
Warkworth

File Ref: 7835

Attention: Colin Ashby

Dear Colin

RE: REQUEST FOR ADDITIONAL INFORMATION - DISCHARGE PERMIT 7835

Thank you for your letter dated 1 April 1999 and the comments you have made with regard to the operation of the wastewater treatment and disposal system at Sandspit Motor Camp.

At the outset I would like to stress that we recognise Mr Morrison has been very co-operative with the ARC regarding the treatment system, and that he has made significant improvements to address the previous poor performance of this system. It is not the ARC's wish to be obstructive in this matter, nor to require information that is unnecessary. However, there are a number of significant issues concerning the proposed wastewater disposal option that must be addressed prior to any consent being granted.

I have spoken to Ian Gunn this morning with regard to this application, and am satisfied that the concerns previously raised have not been adequately addressed. Therefore I have outlined below the specific concerns of the ARC and the reasons for these concerns.

Disposal System Option

The use of Raam irrigators is well documented for the on-site disposal of domestic wastewater. Typically these systems require minimal maintenance and perform well. However, it is not common practice within the region for systems to be installed that require the dripper lines to be moved constantly in order to achieve 100% coverage of the disposal field. The main concern with this approach is that in order to ensure 100% **even** coverage of the disposal site, the correct management of the system is essential. This is likely to require daily management and maintenance of the system, and if the irrigation lines are not moved accurately (to within 100mm) then some areas of the disposal field will be loaded at higher rates than others.

Loading Rates

We have previously raised concerns over the proposed loading rate of 25mm/day/ This figure seems to be based on the premise that the system is operating without problem at the moment. However, guidelines for loading rates for dripper irrigation systems indicate that loading rates

should be 3-5mm/day depending on soil type (TP58). A maximum of 16mm/day is noted from one source (Crites & Tchobanoglous 1998). A loading rate of 25mm/day is therefore quite unacceptable and would be considered high even for a trench.

While the system may be operating correctly at present, there is no evidence to indicate that the long term loading rates of the soil will be able to assimilate such high loading rates over time. Furthermore, given the quality of the effluent, it is considered even more unlikely that the disposal field will be able to assimilate such volumes for extended periods of time.

Given the topography of the site, and the concerns raised above, Ian Gunn agrees with our opinion that such a loading rate is inappropriate, and that such a loading rate, coupled with the proposal to move the dripper lines will ultimately lead to a failure of the system.

Quality of the Effluent

We have received copies of the analysis of samples taken over the Easter period. Notwithstanding the continued high bacterial values of the samples, the levels of suspended solids present in the samples leads us to the conclusion that over time, the dripper lines are likely to suffer from clogging, resulting in localised failure of the disposal bed. This view is also shared by Ian Gunn.

Typically the ARC requires effluent quality to achieve at least the following parameter values consistently:

- Biochemical Oxygen Demand - better than 20 mg /l; and
- Suspended Solids - better than 20 mg /l.

In Ian's opinion levels of suspended solids greater than 10ppm may cause blockage of the dripper lines.

The engineering report prepared in November 1998 suggested that a sand filter may be required to address the poor quality effluent. In our opinion such a filter would most likely address all remaining quality issues.

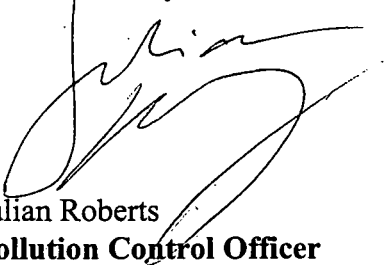
Given the concern's raised above and based on the current information provided in support of this application it is considered that the following options are available to the ARC:

1. Decline the application in its present form on the basis that there are significant concerns, that have not been adequately addressed, that granting of this consent may result in adverse effects to the environment. In this case all discharges must cease, and all wastewater will be required to be removed from the site by tanker for offsite disposal;
2. Grant the consent for a short duration 1-2 years as there is no evidence to suggest that the disposal field will be able to assimilate the loading rates proposed for any greater length of time. This will require the consent holder to apply for a consent within 2 years therefore increasing the overall costs. Furthermore, any consent granted will require significant additional monitoring conditions to ensure the system operates effectively;

3. The applicant provide an independent review of the current system by a consultant engineer, who in the opinion of the ARC is an expert in the field of waste water treatment and disposal, in order to satisfy the ARC that the concerns raised above are not relevant in this case;
4. The applicant re-design the disposal field and loading rates in accordance with the ARC's TP58.

I hope this clarifies the ARC's concerns with regard to this matter, and the reasons for those concerns. However, should you wish to discuss the matters raised above please do not hesitate to contact me.

Yours faithfully



Julian Roberts
Pollution Control Officer

cc Brian Morrison

Coastal Resource - 3rd Flr



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Job No 1939A

ca/lc

1 April 1999

Mr Julian Roberts
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AUCKLAND

FILE No:	
UNIQUE No:	3765
RECEIVED	
 - 7 APR 1999	
Auckland Regional Council	
ATTENTION:	
INFORMATION:	
ACTIONED:	

Dear Julian

Re: SANDSPIT MOTOR CAMP ADDITIONAL INFORMATION DISCHARGE PERMIT 7835

I write to advise that I have inspected the site on Tuesday the 30 March 1999 and report that the Bio-tube filter has now been installed and is working properly. The revamping of the plumbing to the aeration tanks has also been undertaken and completed. Visually and smell wise there is a vast improvement in the quality of effluent been produced. The Camp Owner Mr Brian Morrison intends carrying out further testing and sampling over the Easter period, when the camp is heavily loaded.

With respect to the dripper irrigation system, I have measured the site and confirm that the area irrigated is some 4,000 sq metres.

Hand augers over this site have revealed top soil depth from 300 - 400mm. The topsoil is a friable sandy silty organically material with very good moisture absorption characteristics and is ideal for the intended use. The underlying material is residential Waitemata Series clay to a depth of approximately 0.9m, overlying a reddy brown clayey silt to a depth of approximately 1.3m before sandstone was encountered, which was too hard to auger at 1.5m depth. All the soils were dryish and well below optimum moisture content. The disposal field site is north facing at a slope of approximately 1 in 6, with good wind and sun exposure and is ideal for use as an effluent disposal field. The area is not a public garden.

The present scheme of moving the dripper lines and laying them out on the surface appears to work very well. There is no evidence of ponding or any problems occurring and the soil appears well able to absorb the loading rates imposed.

I would maintain that with this setup remote from the public, the surface application of effluent would be superior to sub-surface irrigation for the following reasons:

- 1 The effluent is exposed to wind, air, and sunlight including ultra violet light. It is in very small drip doses, enabling the natural elements to act upon it effectively.
- 2 The dripper lines at present run down the hill, which in the longer term is superior to ensure that lines do not silt up. As from time to time the end fitting can be released and the line purged, with any sediment gathering at the bottom of the line.
- 3 In an underground situation, the lines would need to run parallel to the contour, so as the mole ploughed holes do not form a conduit in which effluent would concentrate and run down to the bottom of the hill. In laying sub surface lines horizontally around the contour, it is a certainty that the line will silt and clog in due course, unless highly prefiltered and regularly purged.

Treatment via Bacterial reduction in the soil is part of process and information from ON-SITE NewZ Issue 97/2 April 1997 suggests that after effluent has passed through 300mm of unsaturated soil, significant removal of bacteria in moderate draining soils will have occurred.

Surface irrigation systems are nothing new, there are many such with sprinkler sprayed irrigation systems within pine forests. This system is a little different in that drip irrigation line is laid out on the ground, which is not going to create the spray drift problems usually associated with spray irrigation.

I am satisfied that the system as setup does work very well and that no pollution of the ground water is occurring or is likely to occur in this instance. It is noted that groundwater was not encountered within the 1.5m deep hand auger hole. From the lie of the country and the dryness of the materials encountered, I would expect ground water level some 6m or more below the surface.

The topsoil was of a sandy friable nature and I would anticipate would easily take a loading rate, particularly if applied via surface irrigation, of in excess of 25mm per sq. metre per day.

It should further be noted that the maximum discharge volume would only be achieved during summer peak, when evapo-transpiration rates are high.

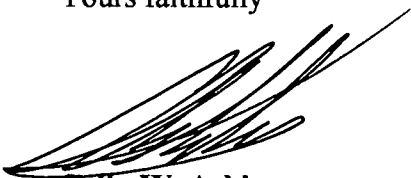
The whole intent of the Resource Management Act and the Building Act was to get away from prescriptive solutions to problems and to permit some innovation in design with a view to end result.

Conclusion

I am satisfied that the setup as it presently is would meet the requirements of the Resource Management Act and is working and will continue to work well.

I am satisfied that the above ground drip irrigation system as currently constructed and operated is fit for purpose and will provide a good end result solution.

Yours faithfully



Colin W. Ashby
MIPENZ. BE. NZCE. Reg. Eng.

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27 March 1999

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Sandspit Motor Camp
1334 Sandspit Road
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Warkworth

File Ref: 7835

Attention: Brian Morrison

Dear Sir

RE: REQUEST FOR ADDITIONAL INFORMATION - DISCHARGE PERMIT 7835

I refer to your letter dated 10 March providing the additional information requested by this office.

We note your proposal to install a biofilter and consider that this will indeed be an improvement to the system. We also note your intention to sample the effluent over Easter and confirm our agreement to your proposal.

1. With regard to the effluent quality, the Ministry of Health has established clear guidelines as to the quality of wastewater to be discharge to public gardens. Given the previous monitoring results it seems unlikely that you will be able to meet the Ministry's criteria. It is accepted that your disposal field lies some distance from surface waters and is no longer discharging to the estuary, and that it is located on a site inaccessible to the public. It is also accepted that the existing effluent quality is significantly better than previously. However, it is current practice with the Council to require quite stringent effluent quality parameters to be met in order to achieve both the Ministry of Heath criteria, and to ensure the disposal system functions correctly. With the use of surface dripper disposal, the quality of the effluent is of paramount importance if the system is to function correctly.
2. With regard to the dripper irrigation system, as explained in my letter of 4 March, the recommended loading rates for such systems is 3-5mm day, with dripper lines being position parallel to each other at not more than 1m intervals. The design loading area for your proposed maximum discharge rate would require a disposal area of 3600m² based on dripper lines spaced 1m apart. We accept that your maximum discharge volume will only be achieved during summer peak when evapotranspiration rates are high, but it is Council practice to require systems to be designed for the maximum permitted volume. In this case we are unable to accept the proposal to move the dripper lines periodically, and require that a permanent disposal field be established which remain undisturbed. You may wish to consider the option of sub-surface dripper lines.

3. Your proposal to utilise a contractor in the event of a system failure is acknowledged. However, you should be aware that in the event of a discharge due to power failure the ARC will take enforcement action if it is demonstrated that this system was unable to be utilised.
4. As per my previous advice, the ARC does require that you undertake soil analysis of the site.

The reasons for this are outlined below:

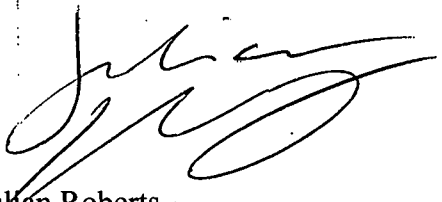
- i. To determine the depth of topsoil on the site. This is important considering the method of disposal you have selected. Dripper irrigation depends on topsoil to provide a final polishing of the discharged effluent.
- ii. To verify the depth of groundwater in the area. The ARC accepts that it is extremely unlikely that groundwater will be encountered close to the surface at this site. However, in assessing applications for effluent discharge the ARC requires that it be clearly demonstrated that groundwater will not be impacted by the effluent.
- iii. To allow the classification of soils in accordance with the ARC's TP58 Guideline. This is not a requirement for trenches only. The aerial loading rates for dripper irrigation are also based on soil characteristics, although this is to a lesser extent than for trench disposal.

In view of the comments made above, the ARC requests that you review the disposal field option, particularly with regard to the permanence of the dripper lines, and provide the additional information requested. We will await the results of future monitoring before we make any further determination regarding the efficiency and suitability of the treatment plant.

I apologise for this additional delay, however, the ARC is keen to ensure that the system operates within the specified environmental and health guidelines, and that its operation is sustainable.

To this end, your application will remain on hold until the further information is provided.

Yours faithfully


Julian Roberts
Pollution Control Officer

Approved
E.T. Grogan
28/3/99

Sandspit Motor Camp

1334 Sandspit Road

R.D.2.

Warkworth

Ph/Fax 09 4258610

10.3.99

Julian Roberts

A.R.C.

Private bag 92012

Auckland

FILE No:	
UNIQUE No:	2030
RECEIVED	
	12 MAR 1999
Auckland Regional Council	
ATTENTION:	
INFORMATION:	
ACTIONED:	

Dear Julian,

Replying to your letter 4.3.99

Re (1) Waste Water Treatment

I will do further sampling over Easter as requested and forward the results when received. I note that you refer to the levels of pathogens in our previous consent. Part of the reason for discharging to land rather than directly to the mangroves was that I understood the level of bugs was not so critical with this method. Is this Correct? Note the application differs from the previous consent in this respect.

I would be happy to install a biofilter if it is needed to reach the required level but would prefer to avoid spending more money on the system than necessary at this stage. We have already spent a large amount of money upgrading the plant over the last 18 months in an attempt to get the levels of bacteria down. This was a fruitless battle as the main cause of the problem was a simple flaw in the original plumbing installation as you know. The improvement after this was remedied was obvious in the improved clarity of the outflow.

Money spent on improvements include

A larger aerator pump \$7000.00

A higher capacity U.V. Lamp, approx \$2000.00

On top of this was the cost of tank, pump and raam system for distribution which came to several thousand dollars.

Re (2) Waste Water Disposal

With the regard to the aerial loading rates for the dripper irrigation. The engineer failed to note in the report that the irrigation lines are not fixed in place but are shifted at regular intervals to give full coverage of the disposal area. Thus although the lines are set at 5 metres apart they would equate to 5 lines at one metre apart. The lines are shifted every couple of days when the camp is busy, or less frequently

when we are not so busy, usually when I mow the grass between the trees. It is a simple matter to run the line through your hand as you mow down the lines with the ride on mower and so shift the line to the previously mown strip. This also has the advantage of allowing the soil to dry out between times. I am concerned as you are with the possible over-saturation of the soil as Olive trees don't like wet feet.

I also found that I obtained more even distribution by operating 1/2 of the field at a time. This is because when the siphoning action started from the top tank I found that some of the lines would not operate at all due to a spiralling of the water inside the main feeder line as it flowed down the hill causing it to miss the outlet to these particular lines. By using half of the field at once this problem was solved. The siphon tank takes about 20 minutes to empty and this will happen randomly depending of course on the amount of water fed to it, i.e. usage at the camp. This alternates the areas being irrigated and allows each half to dry out further between application which can only be advantageous to the aeration.

The engineer was very impressed with the system I had set up and agreed with me on these points. I think he mentioned in the report that only 1/2 of the field was operating at the time of his inspection but didn't note that this was done intentionally for the above reasons. I have through careful observation over the summer period ironed out any problems by trial and error. The results are obvious to me by the even green-ness of the grass over the whole field. This is how I discovered that some line were not operating when the full field was being used. The Raam system is indeed operating efficiently as I have observed it while operating and the dripping is obviously even and the grass response is the same all the way down the rows. The suggestion that there was a problem refers to the problem mentioned above which was corrected by using half the field at a time. I hope this clears up the misunderstanding.

Re (3) Contingency Measures

We do have a contractor that we have used a number of times to remove excess sludge from the septic tank. He has always responded promptly to our needs. We have already booked him in to empty the system on the 31st of December 1999 in case there is a problem with the power supply due to the millennium bug. This booking was done two months ago. He has assured us that we will be first on the list to be serviced on that day as we were the first clients to take the precaution of booking him in early. We have also booked 2 generators for the 31st December for as long as necessary for the same reason. You can be assured that we do not want disruption to our business through breakdowns just as you do. The effluent removal contractor is;

McJimray Septic Tank Cleaning Services

R.D.3.

Wellsford

Phone 09 4237014

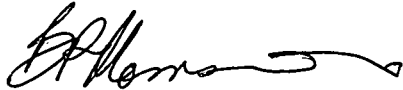
You are welcome to contact him for verification of the above or do you need it in writing?

I have contacted Watercare Lab Services to ensure that they will be operating over the Easter period as samples need to be received at the lab the same day as they are taken. They are operating on a skeleton staff but I will have to deliver them myself as there will be no Courier services operating. I intend to sample on Easter Saturday and Monday. Is this O.K.

Note the results will not be available from these test until up to two weeks later so the decision date would need to be extended a further month to accommodate this. In your letter of 25th Feb you had indicated 25th March as a date.

I hope this clears up some of your concerns

Yours faithfully



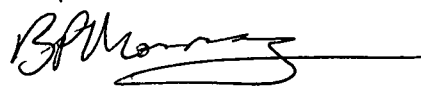
Brian Morrison

P.S. I have since approached Colin Asby who did the engineering report for him to do bore log analysis of the soils and he expressed surprise that you would require the tests. He confirmed my thoughts expressed in my fax sent to you on 2nd Mar. is that the site is much larger than needed and the only period of sustained heavy loading is in the dry summer period. He also says that log analysis is used more for trenches or soak holes and as this is surface application ~~of~~ bore analysis is not appropriate. He is happy for you to contact him to discuss the matter.

He has also convinced me that I should invest in a biotube filter as recommended because as well as improving the processing of the waste, it will save wear and tear on the pumping systems and potential blocking of disposal lines in the future.

I have contacted innaflow technologies in this regard as I figure it would be best to instal it before doing the tests at Easter.

Yours faithfully



FILE



Auckland **Regional** Council

BellSouth Centre
21 Pitt Street
Private Bag 92 012
Auckland
New Zealand

4 March 1999

DX CP 28 008 Pitt St
tel 64 9 379 4420
fax 64 9 366 2155

Mr Brian Morrison
1334 Sandspit Road
RD 2
Warkworth

File Ref: 7835

Dear Sir

RE: REQUEST FOR ADDITIONAL INFORMATION - DISCHARGE PERMIT 7835

Thank you for your facsimile dated 2 March 1999, responding to our request for additional information. With regard to the information you provided, I make the following comments in the order in which they were addressed in your facsimile.

1. Wastewater Treatment

We understand that the recommendations made by the engineer have been implemented, and that these have resulted in a significant improvement in the effluent quality. Nonetheless, the "post-alteration" monitoring results still demonstrate a significant exceedance of the trigger levels specified for pathogens in the special condition 4 of your previous consent. In order for the ARC to be satisfied that no further modifications are required to be made to the treatment plant, we request that you provide additional monitoring results taken on two separate occasions during a peak occupancy period (e.g. Easter weekend).

Unless it can clearly be demonstrated that the existing system is able to meet the minimum discharge standards acceptable to this Council, we will be unable to grant your consent to discharge wastewater.

Please find enclosed a copy of the relevant page of the engineer's report referring to the installation of sand filters.

2. Waste Water Disposal

I apologise for this oversight, the information was, as you correctly stated, included in the report. I have reviewed this information and have a number of concerns with the design approach taken.

The ARC's Technical Publication "New Zealand Manual of Alternative Wastewater Treatment and Disposal Systems - On-Site Wastewater Disposal from Households & Institutions" (TP58) provides indicated areal loading rates for dripper irrigation systems. These guidelines are generally accepted for the design of such systems throughout the region. The recommended loading rate for such systems is 3-5mm/day, or up to 7mm/day with

certain soil types (hence my request for bore log analysis of the soils). The information provided by Mr Ashton indicates that the existing disposal field is sized for a loading rate of 25mm/day, which, even taking into account the evapotranspiration potential of the disposal field, is considered too high for the effective disposal of the wastewater. Furthermore irrigation line spacing should not exceed 1m centres for effective operation. In this case 5m centres are not an efficient use of the system, and is not considered appropriate.

There also seems to be some confusion over the operation of RAAM irrigation. This system is designed to compensate for pressure fluctuations within the line, thereby ensuring even distribution of wastewater over the entire disposal bed. The suggestion that the irrigation line is not achieving this indicates that it is either not installed correctly or that it is not RAAM irrigation line.

Given the concerns raised over loading rates above, we consider bore log analysis an essential component of the application in order to verify the actual soil type present at the site. While we do not recommend consultants, the following consultants regularly submit applications of this nature to the ARC:

Ormiston Associates: Phone (09) 378 1081 - Attn. Sandy Ormiston

Riley Consultants: Phone (09) 489 7872 - Attn. Brett Black

These consultants may also be able to assist you in the modification of the disposal field to suit the specific conditions of the site.

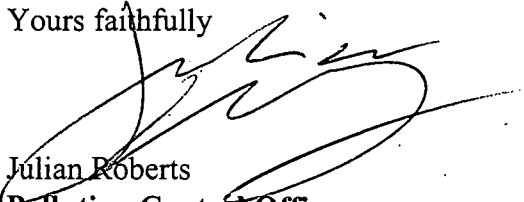
3. Contingency measures

It is acknowledged that there is sufficient contingency for 24 hours storage during off-peak periods. Unfortunately, despite the previous operation of this system, an overflow of wastewater to the nearby mangroves is not acceptable as a contingency measure. In particular, the wastewater that has been discharged previously was at least treated to a degree. An overflow from the aeration tanks or even the septic tank would not be treated. Furthermore, we assume that the previous discharge was not overland. An overflow of the treatment system would be likely to flow overland, thereby presenting a serious health hazard.

In the absence of adequate storage, other contingencies could include the provision of a backup pump (diesel) or evidence of a contract with a local contractor that they could remove the effluent by tanker within a specified time of a failure of the system.

In accordance with the provisions of the Resource Management Act 1991, the ARC will defer the processing of this application until the information specified above is provided.

Yours faithfully



Julian Roberts

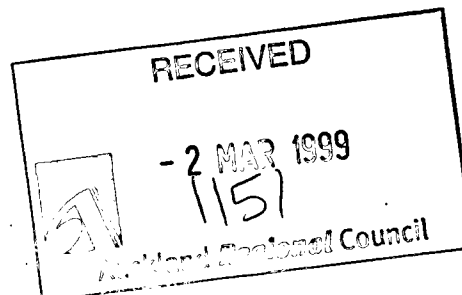
Pollution Control Officer

FAX MESSAGE

(1)

From SANDSPIT MOTOR CAMP.
1534 SANDSPIT ROAD
R.D. 2 WARKWORTH.

P/fax 09425 8610.



To JULIAN ROBERTS.
A.R.C.

Fax 09 366 2155.

Dear Julian.

Re your letter of 1st March 1999.

1. Wastewater treatment.

a) The changes to existing plumbing were made as per Ashbys recommendations on 2nd Dec 1998. At the request of Ross Winterburn a sample of the discharge was taken immediately before and five days after the alterations. This showed dramatic improvements in the quality of the samples. i.e.

	before	→	after.
BOD	110.0	→	21.0
Enter mE.	14000	→	2300
MPN faec.	300000	→	500
MPN Pres.	> 1600000	→	5000
SS.	236	→	29.5

SANDSPIT MOTORCAMP (2)

- b) In view of the above improvement in test results, the installation of a Biotube filter was deferred. It was felt that as disposal onto land would not require a stringent standards as directly into the estuary, an extra filter would not be warranted.
- c) The accumulation of grease is not a problem. When Colin Ashby did his inspection of the plant, I mentioned in passing that the float switch failed once due to accumulation of solids on the float, and the installation of a grease trap was a suggestion to prevent this happening again. This has only ever happened once in my four years of owning the camp and now that I am aware of it, I check the float switch for accumulation of build-up during my periodic inspection of the plant. There has been none since that one time and no evidence of grease in the wet well. The kitchen waste is a small part of the whole treatment operation.
- d) I don't recall the recommendation to install a sand filter in Colin Ashby's report. Please fax me the relevant portion of the report as I have no copy of it. (I sent my only copy to you)

2. Waste Water Disposal

You say in your letter that there is no information on the irrigation field! The engineering report includes a detailed section.

SANDSPIT MOTOR CAMP

(3)

Regarding the irrigation field, including plans, calculations, measurements, and photographs done by Colin Ashby. What additional information do you need?

Bore analysis was not done as I assume it was felt that it was over such a large area and well above any ground water.

Also the main loading was in January-February when evaporation is high. Usage is low in the winter months (especially during wet weather when people don't camp anyway.) I believe Colin Ashby took this into account when making his recommendations.

Could you please advise who I should approach to do the bore analysis you require.

3. Contingency measures.

During periods of low usage, the wet well would have enough extra capacity to hold over for 24 hours. In addition the storage tank prior to pumping to the field provides a buffer as well. However during peak usage this would not cope for very long.

As the flow from the overflow would be going into a large mangrove area and not directly to the sea, would this not be acceptable as an emergency contingency? It has been taking the full outflow from the system for the last 30 years.

I hope this answers some of your queries. Please feel free to visit the camp if you wish to view the disposal area first hand. There is always somebody here.

Encl. watercare results. | Regards Brian Morrison

WaterCare

services limited

Page: 1

Distribution List

COPY TO 1: BRIAN MORRISON

2: FILE/11S

Watercare Services Ltd

Laboratory Services Section

Wastewater Treatment Plant

Island Road

Mangere, Auckland, New Zealand

Phone: (09) 2562 822

Facsimile: (09) 2751 550

SANDSPIT MOTOR CAMP 0331

1334 SANDSPIT RD

RD2 WARKWORTH

ATTENTION: BRIAN MORRISON

Batch Number: 98/12020

SAMPLING/NO

Received..... 02/12/98 16:43

Sample No	Date	Description	Testcode	Identification	Units
01	02/12/98	SANDSPIT MOTOR CAMP DISCHARGE	BOD	Biochemical oxygen demand (CBOD ₅)	mg/L O
			Enter-mE	Enterococci	/100ml
			MPN-faec	Faecal coliforms by MPN	/100ml
			MPN-Pres	Presumptive coliforms by MPN	/100ml
			SS	Suspended solids	mg/L

Sample No.	01
BOD	110.0
Enter-mE	14000
MPN-faec	300000
MPN-Pres	>1600000
SS	236.

Sampling/Yes:= As per Laboratory Services sampling manual.

Sampling/No := Results are reported on an as received basis.

This report may not be reproduced except in full.

Methodology: 18th-1992, 19th-1995 editions APHA AWWA unless specified.

Section Head: H. Fitzgerald Date: 14/12/98

..... END OF REPORT : 1 PAGE

WaterCare

services limited

Page: 1

Distribution List

COPY TO 1: BRIAN MORRISON

2: FILE/115

Watercare Services Ltd

Laboratory Services Section

Wastewater Treatment Plant

Island Road

Mangere, Auckland, New Zealand

Phone: (09) 2562 822

Facsimile: (09) 2751 550

SANDSPIT MOTOR CAMP Q331

1334 SANDSPIT RD

RD2 MARKWORTH

ATTENTION: BRIAN MORRISON

Batch Number: 98/12186

Received....: 07/12/98 11:00

SAMPLING/NO

Sample No	Date	Description	Testcode	Identification	Units
01	07/12/98 2nd	SANDSPIT MOTOR CAMP DISCHARGE	800	Biochemical oxygen demand (CB005)	mg/L O
			Enter-mE	Enterococci	/100ml
			MPN-faec	Faecal coliforms by MPN	/100ml
			MPN-Pres	Presumptive coliforms by MPN	/100ml
			SS	Suspended solids	mg/L

Sample No.	01
BOD	21.0
Enter-mE	2300
MPN-faec	500
MPN-Pres	5000
SS	29.5

Sampling/Yes:= As per Laboratory Services sampling manual.

Sampling/No := Results are reported on an as received basis.

This report may not be reproduced except in full.

Methodology: 18th-1992, 19th-1995 editions APHA AWWA unless specified.

Section Head: J. Fitzgerald Date: 17/12/98

----- END OF REPORT : 1 PAGE -----

From Regional Water Board

Sample Received: _____ Number of Samples: _____

Copy To: C. Hatton, Principal Officer, Water Quality Section.

[illegible]

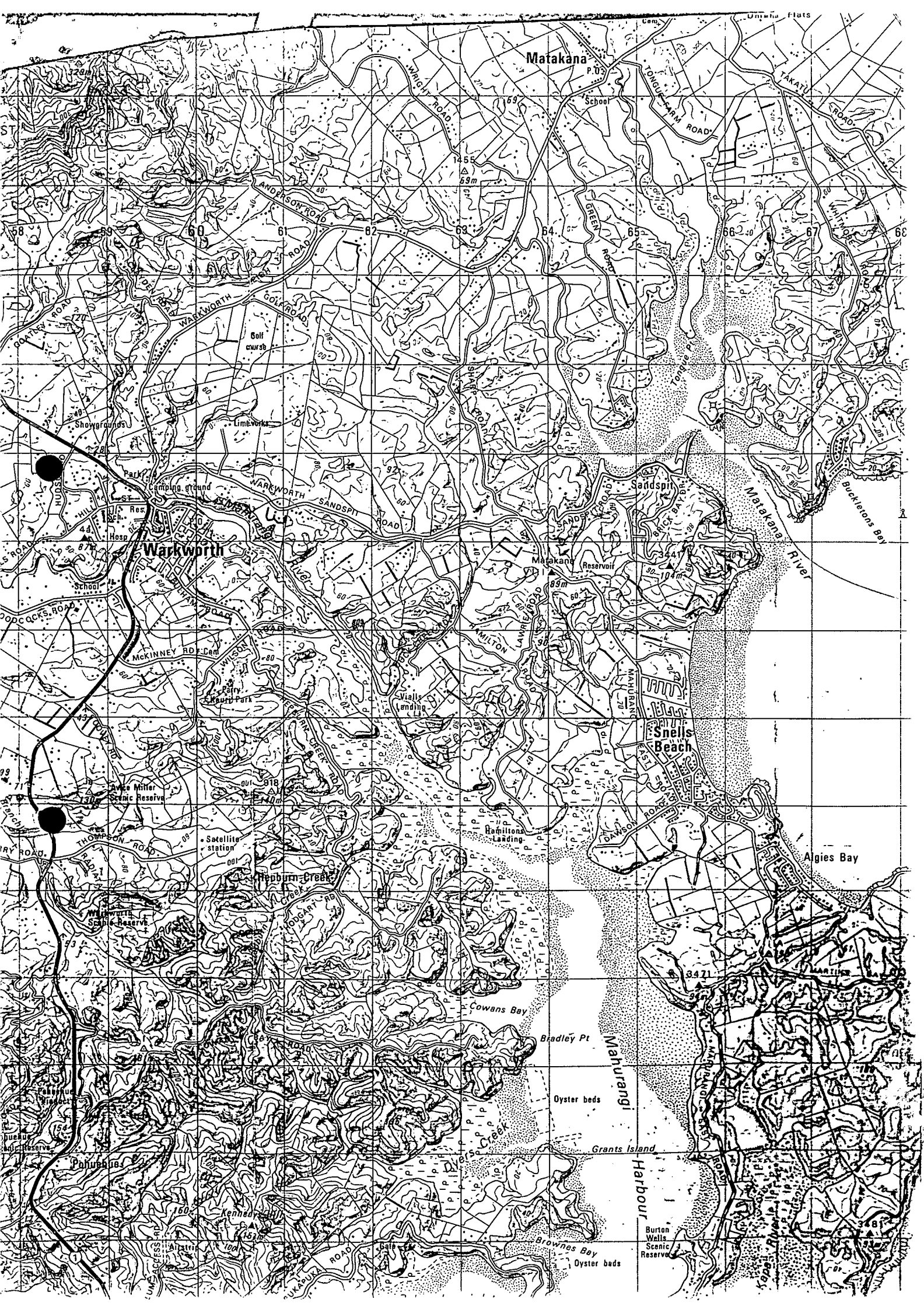
AUCKLAND REGIONAL WATER BOARD FIELD SHEET

SURVEY OR LOCATION IDENTIFIER: _____	
DATE: _____	SAMPLED BY: _____ CENTRE No. _____ CONSENT No. _____

FIELD OBSERVATIONS		WEATHER RECENTLY		Last 24 hours		Last 7 days	
SAMPLE/SITE DESCRIPTION							
BOTTLE/SAMPLE No.							
TIME							
WEATHER		Appearance:					
(Beaufort scale)		Precipitation:					
WIND		Speed:					
(Beaufort scale)		Direction:					
WAVE HEIGHT (m)							
GAUGE HEIGHT (m)							
FLOW (estimated/measured)							
SAMPLE DEPTH							
COLOUR							
CLARITY							
ODOUR							
TEMPERATURE (°C)							
pH (Paper/meter)							
D.O. (ppm)							
SALINITY (‰)							
CONDUCTIVITY ()							
SECCHI DEPTH (m)							

[illegible]

SAMPLING DIAGRAM/SITE PLAN



FILE



Auckland **Regional** Council

BellSouth Centre
21 Pitt Street
Private Bag 92 012
Auckland
New Zealand

1 March 1999

DX CP 28 008 Pitt St
tel 64 9 379 4420
fax 64 9 366 2155

Mr Brian Morrison
1334 Sandspit Road
RD2
Warkworth

File Ref: 7835

Dear Sir

RE: REQUEST FOR ADDITIONAL INFORMATION - DISCHARGE PERMIT 7835

Thank you for forwarding a copy of the engineer's report for the Sandspit Motor Camp wastewater treatment and disposal system. I will ensure the report is returned to you.

We have reviewed the information, and under section 92 of the Resource Management Act 1991 request that additional information be provided in support of this application. The specific information is detailed below, and is required to enable the ARC to fully assess the appropriateness of the proposed disposal option, and the effects of the activity on the environment.

1. Wastewater Treatment

The report prepared by Colin Ashby Consulting Ltd makes a number of recommendations including:

- a) Make changes to the existing plumbing arrangement of the wastewater treatment system to avoid "short circuiting" of the system by untreated effluent.
- b) Installation of a "Biotube" filter on the outlet of the septic tank;
- c) The installation of a grease trap upstream of the wet well;
- d) The installation of a sand filter.

No information has been provided to indicate which, if any, of these recommendations have been implemented. Could you therefore please clarify this issue, and where appropriate provide updated plans of the system reflecting the changes.

2. Wastewater Disposal

The application proposes to change the method of disposal from discharging directly to the estuary to dripper irrigation to land above the disposal field. This proposed change is

entirely appropriate, and the ARC supports this approach. However, a number of aspects of the proposed disposal option require further clarification.

No information has been provided with regard to the soil type at the disposal field, or the proximity to groundwater. Therefore, the ARC requests that you undertake bore analysis of the site, and provide results of this geotechnical analysis to the ARC.

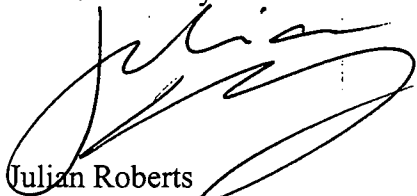
No information has been provided for the sizing of the proposed irrigation field. This factor is critical to the effective disposal of the wastewater. Therefore, could you please provide full design calculations for the size of the proposed irrigation field, including loading rates based on the bore logs discussed above.

3. Contingency Measures

The ARC's design criteria generally recommend that at least 24 hours storage contingency be provided for any systems operating with a pump. In this case it is not clear what, if any, contingency is available for this system. Could you please therefore clarify what contingency is available in the event of a pump failure.

In accordance with the provisions of the Resource Management Act the ARC will defer the processing of this application until the additional information has been provided. Should you wish to discuss any of the matter discussed above please do not hesitate to contact me on 366 2000 ext. 8460.

Yours faithfully



Julian Roberts
Pollution Control Officer

Approved
E. J. Gray
11/3/99



Auckland **Regional** Council

BellSouth Centre
21 Pitt Street
Private Bag 92 012
Auckland
New Zealand

25 February 1999

FILE

DX CP 28 008 Pitt St
tel 64 9 379 4420
fax 64 9 366 2155

Sandspit Motor Camp
1334 Sandspit Road
RD2
Warkworth

File Ref: 7835

Attention: Brian Morrison

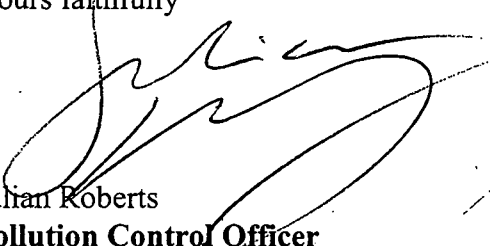
Dear Sir

RE: EXTENSION OF TIME DISCHARGE PERMIT NO. 7835

Section 37 of the Resource Management Act 1991 allows the Auckland Regional Council to extend, by not more than double, a time period specified in the Act, in relation to the processing of consent applications. Accordingly, the Auckland Regional Council has extended the time period within which it is required to notify Brian and Vanessa Morrison of its decision regarding its application for a consent to discharge contaminants at Sandspit Motor Camp.

The date by which the decision will be advised is now 25 March 1999. The time limit has been extended to allow the ARC to further assess the information provided in relation to the change in disposal option for wastewater at the site.

Yours faithfully


Julian Roberts
Pollution Control Officer

Approved
E. T. Young
25/2/99