

STAFF REPORT

TO: Environment & Planning Subcommittee
Commissioner Hearing

FROM: Daryl Henehan- Consent Planner, Natural Resources
Leif Pigott - Co-ordinator, Natural Resource Consents

REFERENCE: RM090876

SUBJECT: **SUSTAINABLE VENTURES LTD - REPORT REP10-05-12** - Report prepared for hearing of 12, 13 and 14 May 2010

1. INTRODUCTION

1.1 Preamble

This report has been prepared pursuant to section 42A of the Resource Management Act 1991, for the purpose of advising the Environment & Planning Subcommittee on matters relating to the application for resource consent made to Tasman District Council by SUSTAINABLE VENTURES LTD. The application seeks to authorise the discharge of up to 14.615 cubic metres (m³) per day of wastewater to land. The wastewater discharge relates to the proposed subdivision and development of the current Pakawau campground site – a development proposal that is described and assessed in the detail in accompanying reports.

1.2 Application site

Address: 1112 Collingwood-Puoponga Road, Pakawau, Golden Bay
Legal description: Part Section 11 Square 15, all land contained in Certificate of Title NL 96/197 (Limited to Parcels)
Zoning: Residential
Areas: Special Domestic Wastewater Disposal Area

1.3 Information assessed in this report

Reports and correspondence

The following documents were made available by the applicants and are assessed in this report:

- Resource Consent Application for Pakawau Village. 20 Unit Comprehensive Residential Development prepared by Staig and Smith Limited, referenced 8927 and dated December 2009

- Appendix 4 of that document: Sustainable Ventures Ltd. Pakawau Village Beach Resort On-Site Wastewater System Design, Stormwater and Water Supply Assessment, prepared by Waste Solutions Ltd., referenced 130217 and dated 11 December 2009.
- Submissions

In preparation of this report I have drawn particularly on two industry standard documents relating to the design of wastewater systems:

- Australian / New Zealand Standard On-site domestic-wastewater management, 1547:2000
- Auckland Regional Council Technical Publication No. 58 (AW Ormiston and RE Floyd) On-site Wastewater Systems: Design and Management Manual (Third edition, 2004)

1.4 Applicant's proposal

1.4.1 Summary

The following information has been drawn from the documents listed above and summarises my understanding of the applicant's proposals regarding wastewater treatment and discharge. Some discussion is provided here, but the bulk of the assessment can be found in Section 5 of this report.

The proposed development will comprise 20 units of varying size (Table 1). In addition, the existing shop, manager's apartment, and cottage will be retained from the campground. The wastewater design flow is listed in tables 1 and 2. The total design flow is 14,615 litres per day.

Table 1: Wastewater flows from each unit

Unit number	Quantity	No. Bedrooms	Max. Occupancy	Flow Allowance (L/person/day)	Design flow (litres/day)
A2, B3,B4, C3 and C4	5	1	2	180	1,800
A1, A4, A5, A6,B1, B2, 10 B6, C1,C6 and D2		2	4	145	5,800
A3, B5, C2, C5 and D1	5	3	5	145	3,625
Manager flat	1	2	4	180	720
Cottage	1	2	4	180	720
Total					12,665

Note: Wastewater in the two and three bed units is proposed to be generated by fixtures designed for water reduction including reduced flush 6/3 litre toilets, shower-flow restrictors, aerator faucets and water-conserving automatic washing machines.

Table 2: Wastewater flows from the shop

Customers	Flow allocation/person	Design flow (litres/day)
130	15	1,950

The applicant proposes to install a recirculating packed bed reactor treatment system. This is discussed in detail in Section 1.4.2.

The applicant's site and soil assessment suggests that the soil conditions on the site consist of ~100mm of top soil overlying moderately coarse sand. For wastewater design purposes the soil type is classified as Category 1, exhibiting rapid drainage characteristics. A disposal system has been proposed consisting of pressure-compensating dripper lines laid within drainage coil, laid within sub-surface trenches. The design loading rate for this system is 50 mm per day (i.e. 50 litres of wastewater per square metre per day), to be discharged by 328 m linear metres of trenches of 900mm base width (292 square metres of disposal area).

The land application area lies entirely within the subject site, but there is insufficient space to provide 100% reserve area, as suggested by the permitted activity rule 36.1.5. The proposal provides a reserve area in excess of 50% in case of the need for expansion of the land application area, or in the case of replacement of part or all of the land application area.

1.4.2 Advanced Packed Bed Reactor

The applicant proposes to install an Advanced Packed Bed Reactor (PBR) system to treat all the wastewater generated on the site. An PBR is basically a secondary treatment system that uses a packed bed to aerate the wastewater coming from the initial septic tank.

The effluent is passed through a primary chamber to settle out the solids. The effluent then trickles through and between the textile sheets. In this moist, oxygen-rich (aerobic) environment, naturally occurring micro-organisms remove impurities from the effluent. After re-circulating several times, the effluent is dosed to the dispersal area.

Table 3: Advantages and disadvantages of the Advanced Packed Bed Reactor System

Advantages	Disadvantages
Textile filter beds produce a high quality effluent.	Media may need replacing after several years of use
Low energy requirements.	Regular maintenance is required
Stable and work well for intermittent usage.	

1.4.3 Land Application Area

The applicant is proposing a land application area design in which trenches are constructed of approximately 900 mm width (Figure 1). The design is unusual, as it is a hybrid between a traditional trench system for septic tanks and a dripper field that is commonly used with domestic secondary treatment systems. The trenches consist of pressure compensating dripper line laid within a filter coil pipe, which itself is set within a gravel trench.

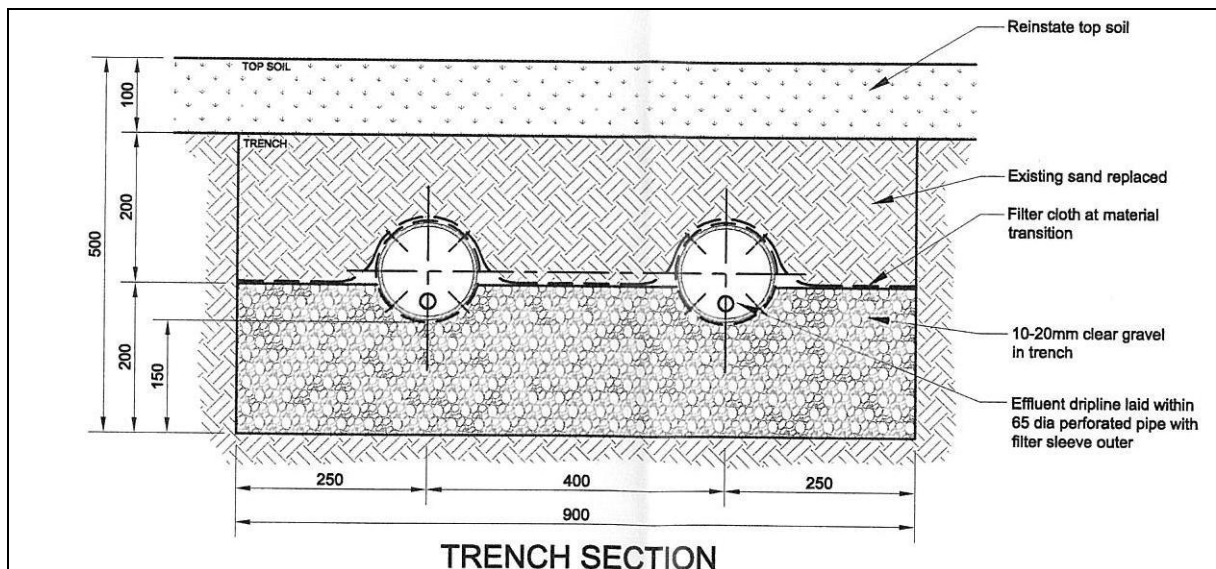


Figure 1: a representative cross section of the trenches

This design has advantages over both traditional trench design and dripper field design, as it provides for even distribution of effluent and also allows for the easy servicing and replacement of individual dripper lines, without the need for excavation. There is also the advantage that the trench system takes the weight of the surrounding land off the dripper lines and therefore allows for some concurrent landuse activities on the disposal field.

The proposed trench dispersal area is 292 m² consisting of 328 lineal metres of trenching. The applicant notes that the adopted arrangement is subject to final design and that whilst the preferred distribution method noted in the report is dripline irrigation, the use of conventional low pressure pipe will also be considered. If dripline is used wastewater will be emitted at 1.6 litres per hour from drippers spaced 0.5 metres apart. If low pressure pipe is used wastewater would be emitted from 3 mm holes drilled every metre.

It is proposed to locate the land application area on the seaward side of the units. The distance from the trench to the toe of the rock wall is between 14 to 20 metres. Any erosion of the coastline will reduce this setback but is discussed in detail in the report for consent RM090878. The erosion figures estimated by Jim Dahm (see RM090878) may result in the land application area being in the sea. The wastewater application makes the assumption that the site will be protected from coastal erosion.

1.4.4 Building Act

It should be noted that as the applicant is not a network utility operator, they will be required to apply for Building Consent prior to the construction as per the Building Act 2004.

2. SUBMISSIONS AND WRITTEN APPROVALS

2.1 Introduction

The application was notified on 30 January 2010. A total of 86 submissions were received, of which 43 were in support, eight were neutral and 35 were in opposition.

There were a number of submissions which made ambiguous comments on wastewater matters. It is difficult to respond to these submissions on an individual basis. It is hoped that the concerns of these submitters are addressed by the following comments on the more detailed submissions, and by the assessment provided in Section 5.

Some submitters also commented on the performance of the existing wastewater system servicing the current campground. That system has a history of poor performance. Whilst these comments are welcome they are not strictly relevant to the proposal being assessed here. The system being proposed is quite different to the current system.

The content of submissions relating to wastewater are summarised below.

2.2 Submissions Raising Wastewater Matters

Submitter	Reasons
Submissions in support	
(3) N Howse 116 Brunton Cres Thames	Prefers one main wastewater system to separate systems
(13) D Mann PO Box 58 Collingwood	Concerned about water supply and sewage disposal but I have not read the application
(29) G & K Ross Collingwood-Puponga Highway Pakawau	Benefits community and environment Condition – to monitor wastewater discharge permit not exceeded
(58) B Wallace Victory Marketing Ltd 811 Main Rd Pakawau	If granted impose conditions as required by MSQP (submitter 61) & GBMFC (submitter 57)
(74) C Neesen & R Gould 1085 Collingwood-Puponga Highway Pakawau	Concerned that the wastewater design is sufficient for the site and it lacks a 100% reserve area. Would like previously discussed wastewater monitoring recommended by Dr Mike Durand, including monitoring of faecals and increased monitoring frequency of Xmas. Would also like the wastewater plant sizing increased to 15,800 litres per day
Neutral submissions	
(28) Friends of Golden Bay C/- D Mead PO Box 274 Takaka	Concern re adequacy of waste disposal system given that this is a small site. The Council needs to assure itself that the proposed system will work in this sandy environment.
(49) Sanford Ltd. PO Box 13 Havelock Marlborough	Marine farming interests in the area concerned about wastewater contamination. Want conditions imposed re wastewater monitoring and maintenance. Monitoring program to pick up small changes in the receiving marine environment Also a detailed contingency plan that identifies actions in the event of failure or water quality thresholds exceeded
(57) B Wallace Golden Bay Marine Farming	Concerns wastewater management and reverse sensitivity issues, condition recognising existence of existing marine farms

Consortium (GBMFC) Victory Marketing Ltd 811 Main Rd Pakawau	and potential of future establishment of marine farms. Want a bond to ensure compliance with discharge conditions. Want faecal monitoring and extra testing over the xmas period Notification of any failure of wastewater treatment plant Insurance to be carried by Sustainable Ventures in favour of GBMFC for any losses due to closures due to breaches of discharge conditions.
(61) Marlborough Shellfish Quality Programme MSQP PO Box 767 Blenheim	Wastewater issues, approve with conditions that eliminate or manage the potential risk of pollution Weekly Xmas monitoring is needed and there is a lab in Nelson that is only closed over the statutory holidays Monitoring to include BOD, TSS Faecal coliforms pH and temp monitoring Bond to ensure compliance with discharge standards Notification system to allow marine farms to close if there is a system failure
(71) B White PO Box Collingwood	Various aspects wants concerns addressed before consent is granted
Submissions in opposition	
(22) L Scurr 9 Boyle St Clifton Takaka	Effluent disposal so close to coastal marine area
(23) R Darney 158 Carter Rd, Upper Kaituna Collingwood	Wastewater will be an issue
(37) E Morris 25 Tukuru Camp Rd Takaka	Sewerage Global warming and sea wall will need to be paid for by owners
(38) M Jones 1236 Collingwood-Puponga Highway Pakawau	Wastewater proposal is better than the current situation. Concerned about the fragile nature of the receiving environment. Go to a smaller number of units and compost toilets
(39) T Hodgson PO Box 1053 Nelson	Owns a property in Pakawau, wants character retained, fears development caters to an exclusive market and is not sustainable Reduce number of dwellings. Ensure biological uses of water and wastewater. Construct wetlands for grey water and install composting toilets
(41) F Wilson RD 1 Collingwood	Density of building, out of character, destruction of local business/campground, concerns about the amount of water required for the water supply and sewerage disposal, increased pressure on resources.
(55) P Searle & G Redshaw 1114 Collingwood-Puponga Highway Pakawau	Owner has struggled to upkeep the sewerage system.
(56) Marine Farming Association Inc. C/- Gascoigne Wicks Lawyers PO Box 2 Blenheim	Intensification of residential development create a reverse sensitivity conflict with marine farming, condition required re discharge of contaminants to prevent the discharge of contaminates into the coastal marine area.
(82) J Newport, 22 Pakawau Bush Rd	Concerns over the wastewater
(83) P Fullerton, 239 Patons Rock Rd. Takaka	The proposed Innoflow wastewater system proved unreliable

2.3 Key Issues Raised by the Submissions

1. General concern about the sewage disposal on this site.
2. Specific concern about the ability of the packaged wastewater treatment plant to deliver the required level of treatment

3. The land application area is very close to the coast and there is a risk of sea level rise
4. Protection of the coastal water quality due to the marine farms that are offshore.

3. STATUTORY FRAMEWORK

3.1 Tasman Resource Management Plan (TRMP)

A brief overview is given here of the relevant parts of the TRMP: relevant definitions and applicable policies, objectives and rules, with a short interpretation of each.

3.1.1 Relevant Definitions

The definition of domestic wastewater is provided and discussed briefly here, as there may be varying interpretations of what constitutes domestic wastewater.

Domestic wastewater, whilst the term suggests it is generated by dwellings only, can be generated from a range of sources. Usually domestic wastewater includes toilet, bathroom, laundry and kitchen wastewater only. TP58 considers domestic wastewater to be generated by dwellings and other “institutions” such as schools, residential accommodation facilities, and some commercial and public facilities. Therefore domestic wastewater can be either purely “domestic” (i.e. from a dwelling) or “of a domestic nature” (i.e. consisting of wastewater from bathrooms, toilets, laundries and kitchens, whilst not necessarily being from a dwelling per se).

According to Chapter 2 of the TRMP, domestic wastewater means “any wastewater from a residential activity and includes wastewater from toilets, greywater, a mixture of wastewater from toilets and greywater, and wastewater of similar character from other premises” (emphasis added).

Indeed, Council has previously assessed resource consents for wastewater discharges against the relevant rules for “domestic” wastewater, even if those discharges are not generated by dwellings. The key words in the definition are “of similar character”. In the case of the application being assessed here, the nature of the proposed development and the type of wastewater that will be generated is consistent with this definition; therefore the relevant policies, objectives and rules in the TRMP are those that address specifically domestic wastewater issues.

The volume of wastewater proposed to be discharged means that that wastewater discharge in isolation is a Discretionary Activity and consent is required.

3.1.2 Special Domestic Wastewater Disposal Area (SDWDA)

Tasman District has several SDWDAs gazetted in areas where there is, or where zoning anticipates, residential style development but where wastewater reticulation is absent. In these areas discharges of domestic wastewater must meet the criteria of Rule 36.1.5 to be permitted. This rule is reproduced below.

“The discharge of domestic wastewater into land from an on-site wastewater treatment disposal field in a Special Domestic Wastewater Disposal Area commencing after 19 September 1998 is a permitted activity that may be undertaken without a resource consent if it complies with the following conditions:

- (a) The volume of effluent discharged is not more than a weekly averaged flow of 2,000 litres per day.
- (aa) Any discharge first commencing after 20 December 2003 is not within the Wastewater Management Area.
- (b) There is no discharge or run-off of effluent into surface water.
- (c) The disposal field is located not less than:
 - (i) 20 metres away from any surface water body, or the coastal marine area;
 - (ii) 20 metres of any bore for domestic water supply;
 - (iii) 1.5 metres of any adjoining property.
- (d) The discharge does not create an offensive or objectionable odour discernible beyond the property boundary.
- (e) An access point to allow sampling of the effluent being discharged to the disposal field must be provided with any on-site wastewater disposal system installed after 19 September 1998.
- (f) The quality of the effluent being discharged into the disposal field does not exceed the following standards:
 - BOD 20 milligrams per litre
 - Suspended Solids 30 milligrams per litre
 - Faecal Coliforms 100 faecal coliforms per 100 millilitres
- (g) The effluent is discharged via a dose-loading system.
- (h) The plant and any associated machinery is maintained by an appropriately competent person experienced in the operation and maintenance of such plant or machinery and must be according to any service contract supplied by the manufacturer, and such information to show how this condition is being met must be provided as requested by the Council.”

3.1.3 Permitted Baseline

A subdivision consent (RM090834) to undertake an eleven lot subdivision has been granted for this site. This consent could result in 10 residential lots that will each be able to discharge domestic wastewater as allowed in Permitted Activity Rule 36.1.5 of the TRMP.

3.1.4 Status of the Application

The proposed discharge does not meet the criteria for a Permitted Activity. There are no applicable Controlled or Restricted Discretionary Rules so the status of the activity is Discretionary, subject to rule 36.1.16 of the TRMP:

Except as specified by Rule 36.1.16A [regarding wastewater discharges in the Wastewater Management Area], any discharge to land that does not comply with the conditions for a permitted activity or the standards and terms for a controlled activity is a discretionary activity.

However, as the consent is being bundled with the other consents associated with this proposal, and the Landuse consent is a Non-Complying Activity, this consent is also being processed as a Non-Complying Activity.

3.1.5 TRMP Objectives and Policies

Having established that the proposed discharge is of wastewater of a domestic nature, and that, as far as the TRMP is concerned, this is a discharge of domestic wastewater to land as a Non-Complying Activity, the relevant policies and objectives of the plan need to be considered.

Objective 33.4.0 states that the desired situation regarding on-site wastewater discharges in Tasman is “on-site disposal of domestic waste-water, which avoids, remedies or mitigates adverse effects on groundwater or surface water quality, habitats, human health and amenity values.”

The relevant policies are 33.4.2, 33.4.2A, 33.4.2B and 33.4.4 and these are reproduced below.

33.4.2

To ensure that the adverse effects, particularly the cumulative adverse effects, of on-site disposal of domestic wastewater on water quality and aquatic habitats, including coastal water, and on human health or amenity in the Wastewater Management Area are avoided, remedied or mitigated by:

- (a) controlling the use of on-site systems in areas where there are significant limitations to sustainable on-site disposal of domestic wastewater including:
 - (i) low or very low permeability clay soils;
 - (ii) rapidly draining coastal soils;
 - (iii) areas of high groundwater tables;
 - (iv) steeply sloping sites, especially on south facing slopes;
 - (v) unstable terrain;
 - (vii) proximity to surface water bodies;
 - (vi) high density of existing and new on-site systems and the cumulative impact of such discharges in terrain that has significant limitations to on-site disposal;
- (b) requiring comprehensive site and soil assessments to identify any site limitations;
- (c) requiring a high level of performance for design, construction, installation, operation and maintenance for new on-site disposal systems;
- (d) ensuring adequate buffers between disposal fields, water bodies, and the coast, especially Waimea and Mapua Inlets;
- (e) reducing the risk to human health arising from pathogens in the wastewater entering into water;
- (f) ensuring the net Nitrogen losses from land in the Wastewater Management Area to be subdivided do not result in adverse effects on aquatic habitats as a result of discharges of domestic wastewater;
- (g) ensuring stormwater management accounts for potential effects on on-site disposal fields;
- (h) ensuring that the potential adverse effects, especially cumulative effects of further residential development, are taken into account in considering any application to subdivide land in the Wastewater Management Area.

33.4.2A

To require regular programmed maintenance of on-site wastewater treatment and disposal systems to minimise risk of system failure and reduce risk of adverse environmental effects.

33.4.2B

To encourage consideration of wastewater treatment systems that service a cluster of households (subject to any site limitations) to:

- (a) take advantage of opportunities for high technology advanced wastewater treatment solutions at cluster scales;
- (b) reduce risks of system failure and cumulative adverse effects of single on-site systems;
- (c) enable Council to develop effective and cost efficient systems for monitoring on-site wastewater systems.

33.4.2C

To ensure that legal, practical, financial and enforceable responsibility is established for the operation and maintenance of any on-site wastewater treatment and disposal system, especially where such systems service a cluster of dwellings, taking into account both day-to-day operation and maintenance of such systems as well as provision for depreciation and replacement of equipment and of systems.

33.4.4

To avoid, remedy or mitigate the adverse effects of discharges of domestic wastewater, including cumulative effects, particularly those in the Special Domestic Wastewater Disposal Areas.

3.2 Resource Management Act 1991

The status of the activity under consideration here is Non-Complying. In such a case the Committee may grant or decline the application pursuant to Section 104B and 104D of the Act and, if consent is granted, conditions may be imposed pursuant to Section 108.

In making a decision on a resource consent application for a Non-Complying Activity, the Committee is required to first consider the matters set out in Section 104(1) of the Act, in addition to the matters set out in Section 7. Primacy is given to Part 2 of the Act, “the purpose and principles of sustainable management of natural and physical resources.”

Any decision should therefore be based, subject to Part 2 of the Act, on:

- The actual and potential effects on the environment of allowing the activity;
- Any relevant provisions of national or regional policy statements;
- Relevant objectives, policies, rules or other provisions of a plan or proposed plan; and
- Any other matters the Committee considers relevant and reasonably necessary to determine the application.

The provision of Section 104(1)(a), which states that “any actual and potential effects on the environment of allowing the activity,” can be qualified by the permitted baseline concept in section 104(2), which states:

“When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.”

Section 104 D provides for particular restrictions for a Non-Complying Activity as follows:

Despite any decision made for the purpose of section 95A(2)(a) in relation to adverse effects, a consent authority may grant a resource consent for a non-complying activity only if it is satisfied that either -

- (a) the adverse effects of the activity on the environment will be minor; or
- (b) the application is for an activity that will not be contrary to the objectives and policies of—
 - (i) the relevant plan, if there is a plan but no proposed plan in respect of the activity; or
 - (ii) the relevant proposed plan, if there is a proposed plan but no relevant plan in respect of the activity; or
 - (iii) both the relevant plan and the relevant proposed plan, if there is both a plan and a proposed plan in respect of the activity.

A comparison between the proposed activity and the permitted baseline on the subject site is relevant to the assessment and is made in Section 5.5.1.

The purpose and principle of the Act is to promote the sustainable management of natural and physical resources. The Act defines sustainable management as:

“Managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people, and communities to provide for their social, economic and cultural well-being and for their health and safety while:

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations;
- (b) Safeguarding the life-supporting capacity of air, water, soil and ecosystems;
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment”.

The “Section 104 matters” are to be considered subject to Part 2 of the Act. This includes the purpose and principles in Section 5 of the Act, and other matters to be recognised and provided for in Section 6, or had regard to in Section 7, or taken into account in Section 8 of the Act.

In addition Sections 105 and 107 also provide for matters relevant and particular restrictions that apply to certain applications and certain discharge permits.

Section 105 of the RMA requires the Council to have regard to:

- (a) The nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
- (b) the Applicant's reasons for making the proposed choice; and
- (c) any possible alternative methods of discharge, including discharge into any other receiving environment.

Under Section 107 of the RMA Council can not grant a discharge permit for an activity that would contravene the following:

(1) ...a consent authority shall not grant a discharge permit ... to do something that would otherwise contravene section 15 or section 15A allowing—

- (a) the discharge of a contaminant or water into water; or
 - (b) a discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water;
- or

if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

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

These matters are addressed in Section 5 of this report.

4. PRINCIPAL ISSUES

In accordance with the above discussions, the principal issues to be addressed when determining whether to decline, or grant with conditions, this application for resource consent, are the following:

- The potential or actual adverse effects of the discharge on the Environment & Part 2 matters; and
- The extent to which the effects of the proposed activity are consistent with the policies and objectives of the TRMP – in particular, policies 33.4.2, 33.4.2A, 33.4.2B and 33.4.4
- S104 D tests
- The location of the land application area and risk of coastal erosion

5. ASSESSMENT OF ACTUAL AND POTENTIAL EFFECTS

5.1 Background to the Proposed Activity

Section 1.4 of this report lists the information upon which this report is based, which provides details of the proposed wastewater system design and an assessment of environmental effects.

5.2 Consideration of Effects in the Application

The Auckland Regional Council's publication TP58 is regarded as one of the industry standards and provided more details than AS/NZS1547:2000 or the TRMP. TP58 suggests a series of matters that should be given particular regard to when designing on site wastewater systems (Table 4). The extent to which these matters have been covered in the application for resource consent, and whether or not the associated environmental effect is considered by Council to be more than minor is indicated in Table 4.

Table 4: Matters to be given regard to when designing an on site wastewater system, whether these matters have been considered in the application and the consequential potential for adverse effects on the environment.

Matter	Considered?	Adverse effect more than minor?	Comment
Conservative approach at design stage	Y/N	N	The wastewater plant is a standard design.
Robust treatment system	Y	N	Packed bed plants are some of the more robust secondary treatment plants.
High level of treatment	Y	N	Trials of the proposed plants show both TSS and BOD are treated to less than 15/15 ppm.
Mitigation measures to protect against failure	N	Y/C	The maintenance contract and the 24 hours storage should reduce the risk of failure and minimise any resultant adverse effect.
Conservative hydraulic loading rates	N	N	The loading rate is that specified in AS/NZS1547:2000.
Measures to ensure even distribution of wastewater disposal	Y	N	The distribution system has been designed to give even distribution and reduce the risk of bio films clogging the trench.
Protection of land disposal area with stormwater cut off drains	N	N	The land disposal area is relatively high and should not need protection from stormwater
Description of the soil types and categories on the property	Y	N	Test pits were dug and they correspond to the soil profiles seen along the eroding beach.
Description of the land application area	Y	N	The land application area is specified on the site plan.
Separation from surface water	Y	N	The separation between the land application area and the toe of existing rock wall is about 15 metres. TRMP specifies 20 metres to

			MHWS. This is currently met.
Separation from groundwater	Y	N	The separation is greater than the required 600mm.
Separation from surface water bores	N	Y/N	The closest bore is greater than 20 metres away and is upgradient of the land application area.
Determination of potential flood risk	N	N/A	There is no significant flood risk to the site
Provision for reserve allocation	N	Y/N	Only about 50% of the reserve area has been allocated. Given the soil type the current field should be able to be renovated if required.
Provisions to discourage access	N	N	The trenches place the wastewater 300mm below the surface. There should be no surface expression of wastewater given the sandy soil.
Odour effects	Y/N	N	A well maintained wastewater treatment plant should not produce any significant odour. The high level of secondary treatment going to trenches should result in no noticeable odour.
System management plan	N/C	N	A management plan is required in the recommended conditions of consent
System maintenance contract	N/C	N	A maintenance contract is required as condition of consent
Education of system users	N/C	N	Management plan should include education of owners.

Notes:

Y – Yes ; N – No

C – Not addressed in the application, but to be addressed by consent conditions, which should ensure that effects are no more than minor;

* These matters are not always discussed explicitly at resource consent application stage. They are dependent to a large degree on the particular make and model of wastewater system to be installed. Many manufacturers' systems comprise alarms, power back-up and other systems to prevent failure and associated environmental effects.

5.3 Assessment: Discussion of Key Potential Environmental Effects

The key potential environmental effects associated with domestic wastewater discharges on the proposed allotments are as follows:

- Impact on surface water or coastal water quality
- Impact on groundwater quality
- Impact on soils
- Impact on amenity values

Adverse impacts on surface water, groundwater and soils themselves can be avoided through appropriate design and site assessment. Aside from the exact make and model of the wastewater system itself, one of the most important aspects of wastewater design to be considered in detail is the soil into which wastewater is to be discharged. Wastewater receives 'treatment' by bacteria in the soil following its discharge from the wastewater system. The discharge should occur at a rate within

the hydraulic capacity of the soil (i.e. at rate at which the soil can physically absorb and transmit the water). If the discharge is maintained below this rate then typically the soils remain aerobic (air spaces are present within the soil), so the water is treated by aerobic bacteria. If the rate of discharge is too high then these air spaces may be filled (the soil becomes saturated). Under these conditions the anaerobic bacteria multiply in the soil and these typically emit an offensive odour. Furthermore, some of the discharged wastewater may reach the surface. Neither of these outcomes are intended or desirable.

It is accepted that the land application area will work like an intermittently loaded sand filter. These are known to be quite robust and provide high levels of treatment, as noted within the application:

“Studies have shown 99.99% virus reduction in just 0.6m depth of filter sand. In Pakawau’s case the depth of unsaturated sands through which the effluent will pass will be at least 4 to 5 times this depth, meaning that the same bacterial virus removal processes will be repeated many times as the effluent passes down through the underlying sands to the groundwater table. Thus, after the passage of effluent through the underlying sands, bacteria and virus removal will be achieved to near undetectable levels in the receiving groundwater.”

The applicant’s report has demonstrated that there is enough unsaturated soil depth available between the land application system and groundwater for the renovation of wastewater (i.e. treatment by bacteria in the soil) to be achieved.

The wastewater system is considered to be suitable for the site, and in particular, the treated wastewater will be discharged to land at an appropriate rate for the soil type. These key design parameters have been met in the applicant’s wastewater design report.

Adverse impacts on surface water quality should be avoided because the wastewater system has been properly designed and maintenance schedules should be enforced, should consent be granted. The land application area is not proposed to be located closer than 20 metres from MHWS, and it is appropriately sized for the soil type and the proposed discharge. The field is about 15 metres from the toe of the rock wall and this may become MHWS with coastal erosion.

The horizontal distance is required to allow time to spot and fix any surface expressions of wastewater before it enters the sea via overland flow. Most of the treatment of the wastewater occurs in the unsaturated sands directly below the wastewater trenches.

The applicants report has assumed that there will be no significant coastal erosion and the land application area will be protected by the proposed rock wall.

A monitoring bore has been included as part of the conditions between the land application field and the sea. This bore will be sampled for faecal contamination, if high levels are detected an action plan will be developed and implemented by the Consent Holder.

In summary, the writer’s view is that the proposed wastewater system is appropriate for the site, the design flow volume is suitable for the system’s intended use, and the

design irrigation rate is suitable for the proposed volume of water and the soil types present assuming no significant coastal erosion. Therefore, it is not expected that there be any adverse effect on the soils, surface water or groundwater that could be considered more than minor.

5.3.1 Matters Raised in Submissions

With particular regard to matters raised in submissions, the following points are made.

The per capita flow figures and total flow calculations provided by the applicant are correct and are consistent with the flow figures in the AS/NZS1547:2000, which presents the industry standard reference document for wastewater system design, and which the Council uses to audit system designs.

Particular concern has been raised with regards to the reliability of the proposed Packed Bed Reactor plant. It is assumed this was raised due to the reported problems at the Totaranui Camping Ground. The applicant has provided a detailed response to this concern, which I will only summarise here.

It is stated that investigations into the poor performance of the Totaranui system identified that toxic cleaning chemicals and known instances of chemical toilet dumping were seriously affecting the biology of the treatment process. Steps were taken to address this issue, however an additional fault occurred in a valve in the treatment system, which was "particularly unusual". This has lead Innoflow to make design changes to the system to prevent further occurrences of this problem.

It is considered important that these problems are not representative of the systems performance elsewhere and that if they occur they can be addressed through regular maintenance and monitoring. It is noted that the applicant proposes to enter into a monitoring program separate of any required under Resource Consent conditions for the first two years.

It should also be noted in this regard that, as discussed in detail in Section 5.5.1, the volume of wastewater proposed to be generated and discharged at the site is similar to that expected by the permitted baseline test. That is, the volume under assessment here is similar to that which the Council could reasonably expect from residential development (the site is zoned residential) with dwellings serviced by permitted on-site wastewater systems.

Faecal contamination of coastal waters is considered unlikely and is only a reasonable possibility in the event of a significant system malfunction, such as a burst supply line. As discussed in Section 5.3, a significant amount of treatment of the wastewater and removal of bacteria occurs in the soil. The wastewater will be treated to a secondary standard prior to being discharged to land, therefore bacteria and viruses should be removed as the wastewater moves through the soil, reaching very low concentrations before the wastewater reaches groundwater and / or coastal water.

However, it is noted that Council test results (Figure 1) show that there is already some faecal contamination in the bathing beach survey (taken in about 0.5 metres of water). Possible sources of this contamination include on-site wastewater systems

servicing baches in the area, and dairy effluent discharges. With regard to the baches, many in this area are of considerable age and may have wastewater systems that are of a very low technology and discharge wastewater that is very poor in quality. This view is to some extent a supposition and would need to be confirmed by assessment of wastewater systems in the area. Building consent information would provide useful information on the age and type of wastewater systems servicing baches, but it is considered unlikely that many of those systems treat and discharge wastewater to the quality as high as that proposed by the applicant.

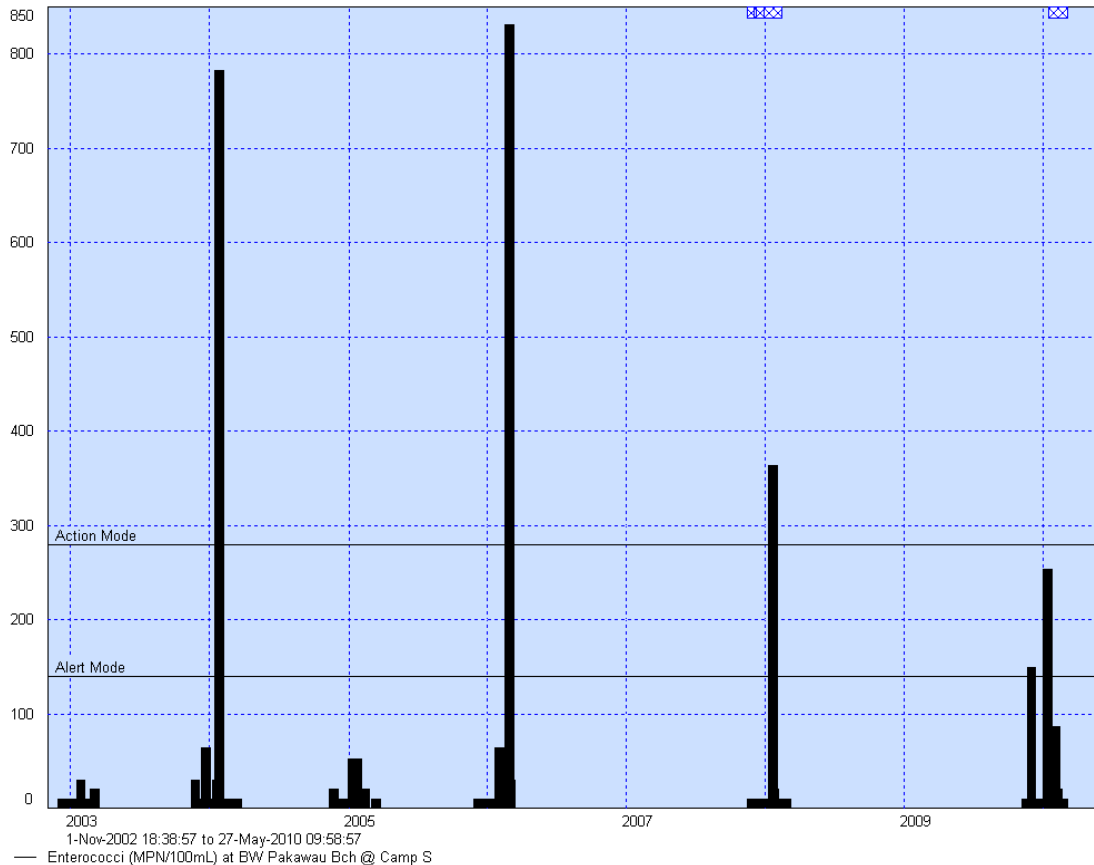


Figure 1: Enterococci values measured at Pakawau Beach (source: Tasman District Council)

Two reports have been written about groundwater contamination of bore water in this area. The first, “A survey of sources and water quality of the residential water supply and wastewater/ sewage disposal of coastal settlements in Golden Bay” dated March 2005 by Natural Resources Engineering Department of Civil Engineering, University of Canterbury. The second, “Groundwater quality of Coastal Settlements. Golden Bay- EP07/06/02”, dated 20 June 2007 by Glen Stevens- Resource Scientist (water and land) Tasman District Council. These reports found some degree of bacterial contamination in the water of 10 bores that were sampled in Pakawau.

Regarding dairy effluent discharges, the TRMP has rules for dairy effluent discharges to land (which may enter water with surface run-off) and discharges to watercourses via treatment ponds. I am not aware of the details of consented or permitted effluent discharges in the immediate area of Pakawau, but elsewhere in Golden Bay Council has demonstrated non-compliance with consent conditions and successfully

prosecuted dairy farmers for unauthorised discharges that would contain faecal matter.

With regard to the need for proper maintenance and monitoring of the system and the discharge, consent conditions to that effect are proposed here, should consent be granted. However, some outstanding matters and additional points are:

1. There has been little consideration of the effects of system failure, and of measures to be put in place to prevent this, in the application documents. Submitters raised questions over the effect of a system failure and this would need to be adequately addressed, should consent be granted.
2. Separation distance from the bore has not been considered in the application, but the land application area is greater than 20 metres from, and “downstream” of, the closest bore.
3. The provision for reserve allocation is about 50% of the required land application area
4. A system management plan, service contract and educational materials for users have not been provided as part of the application; these are important for long term performance of the system.
5. To maintain the 15 metre separation distance between the land application area and the Coastal Marine Area, the land application area may need to be moved back with coastal erosion.
6. Monitoring of the groundwater contamination of faecal material.

5.4 Assessment Against Part 2 matters

5.4.1 Section 5 – Purpose

Under section 104(1) the consent authority must consider applications ‘subject to Part 2’ of the RMA. The purpose of the RMA is to “... promote the sustainable management of natural and physical resources.” (Section 5(1)).

If it is seen that an activity can be undertaken such that the life-supporting capacity of land is safe-guarded, and adverse effects are adequately mitigated in accordance with the purpose of the RMA, then this proposal could be seen as consistent with this aspect of Section 5.

5.4.2 Section 6 – Matters of National Importance

Sections 6 (a) to 6 (d) will not be affected by the discharge of contaminants from this activity.

5.4.3 Section 7 – Other Matters

The Council is required to have particular regard to the matters set out in Section 7 of the RMA. Matters relevant to this application include:

- “(b) the efficient use and development of natural and physical resources;
- (c) the maintenance and enhancement of amenity values;
- (d) intrinsic values of ecosystems; [and]
- (f) maintenance and enhancement of the quality of the environment.”

The proper functioning of the proposed system should not lead to the generation of odours, surface ponding of wastewater, or other effects that would reduce amenity values. However, the presence of the wastewater system on the site and the discharge to land on the site arguably would not enhance amenity values.

The ecosystem where the wastewater system is proposed to be placed, and therefore the land to which the wastewater is proposed to be discharged, has little intrinsic value. However, the discharge is proposed to occur adjacent to an ecosystem of high value. The prospect of off-site adverse effects on ecosystems is of significantly more importance than the effect on the subject site itself.

The discharge described in the application will not enhance the quality of the environment. However, as discussed above, the quality and performance of the existing wastewater system on the site are poor. In this regard, the proposed system, when considered in isolation, could represent an improvement on the current situation

5.4.4 Section 8 – Principles of the Treaty of Waitangi

Section 8 of the Act shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi). The applicant has consulted with Iwi and has been granted authority by the Historic Places Trust (2007/93). Greater detail is provided in the report for the land disturbance consent RM090843.

These principles underpin all relevant Plans and Policy Statements, which provide more specific guidance for assessing this application.

5.5 Assessment Against Relevant Section 104 Matters

Section 104 states the relevant matters to which the Council must have regard when considering applications. Aside from Part 2 matters (addressed above) and the relevant provisions of the regional plan (addressed below), the remaining relevant aspect of Section 104 is (2). This provides for the ‘permitted baseline’ and states that “when forming an opinion for the purposes of subsection (1)(a) [actual and potential effects on the environment], a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.”

The relevant rule in the TRMP is Permitted Activity Rule 36.1.5, which permits the discharge to land of up to 2,000 litres of wastewater per day subject to other standard criteria (see Section 3.1 of this report). One such criterion includes the quality of the discharged wastewater meeting the following standards:

- BOD: 20 milligrams per litre
- Suspended Solids: 30 milligrams per litre
- Faecal Coliforms: 100 faecal coliforms per 100 millilitres

This standard anticipates a wastewater system that utilises 'secondary treatment' such as an aeration, vermiculture, or a packed bed reactor type system. The faecal coliform standard requires micro-filtration or treatment with UV or disinfectant, but this standard has not always been enforced by the Council (tertiary treatment). Each of these treatments has advantages and disadvantages.

The use of chlorine can result in potential cumulative impacts of chlorination by-products on the receiving soils and in the water. The adverse effects of the chlorine are likely to be greater than the wastewater given the treatment depth of sand above the groundwater level (as discussed in Section 5.3).

TP58 discusses the following advantages and disadvantages of UV, which are listed in Table 5 below.

Table 5: advantages and disadvantages of UV treatment of wastewater (TP58, page 108)

Advantages of UV	Disadvantages of UV
It is effective at inactivating most viruses, spores and cysts.	Low doses may not effectively inactivate some viruses, spores and cysts.
It is a physical process rather than a chemical disinfectant, which eliminates the need to generate, handle, transport or store toxic or hazardous chemicals,	Microorganisms can sometimes repair and reverse the destructive effects of UV through mechanisms of photoreactivation (with light) or dark repair (in the absence of light).
There is no residue produced that can be harmful to the environment or humans.	Preventative maintenance is critical to control fouling of the tubes and maintain effectiveness.
It is user friendly for operators.	Turbidity and total suspended solids (TSS) in the wastewater can render UV disinfection ineffective.
It has a shorter contact time than other disinfectants, (in the order of 20 to 30 seconds with low pressure lamps).	UV disinfection (particularly using low pressure lamps) is not as effective on effluent with TSS levels above 30mg/L.
It requires less space than other methods	It is not as cost effective as chlorination but costs become comparative when chlorination is used and chlorine handling costs are considered.

Ozone is more effective than chlorine, the disadvantage being that it is very unstable and must be generated on site. It is therefore expensive and the effectiveness of the ozone disinfection can not be measured immediately. There is no residual action.

In the absence of these tertiary treatment options, the proposed wastewater treatment system should reduce the level of faecal coliforms by about 99% (TP58, page 97). As stated by the applicant, the bacteria and viruses should be removed by treatment that the wastewater receives in the soil once it is discharged. Given the depth of sand present above groundwater in this location, it is considered that this an appropriate solution. This assumes that there is no movement in the MHWS to the toe of the rock wall.

5.5.1 Permitted Baseline Assessment

With regard to wastewater discharges at the site, the permitted baseline test must therefore consider the character (principally volume and quality) of wastewater that could reasonably be discharged at the site as a Permitted Activity. The site has a subdivision consent to allow 10 residential lots (RM090834).

In this instance the permitted baseline is 2,000 litres of secondary treated wastewater being discharged per day from each lot. Thus, the theoretical maximum permitted discharge is 20m³ per day from the 10 lots.

The applicant's proposal is to discharge up to 14,615 litres of wastewater per day. Therefore, the permitted volume of wastewater that could be discharged at the subject site, were it to become a residential development, is about 73% of the above permitted baseline.

As a footnote to this discussion on wastewater volumes, it is worth considering the likely volume of wastewater discharge against the permitted baseline. In the case of ten dwellings on the subject site, assuming full occupancy of four-bedroom houses on each lot, with standard fixtures and on bore water supply (assuming therefore 180 litres per person per day, at 6 persons), according to the AS/NZ Standards, the volume of wastewater discharged would be 1,080 litres per day per lot, or approximately half the permitted volume. This equals 10,800 litres per day for the whole of the subject site, which is approximately 74% of the discharge the applicant seeks to authorise.

It is worth stressing that the volume of wastewater proposed to be discharged is not the only criterion for comparison against the relevant permitted activity rules. The quality of the wastewater is an additional and important factor. The permitted thresholds for wastewater quality in the SDWDA are:

- BOD: 20 milligrams per litre
- Suspended Solids: 30 milligrams per litre
- Faecal Coliforms: 100 faecal coliforms per 100 millilitres

Data from field testing of proprietary on-site domestic wastewater treatment and disposal systems indicate that these thresholds are not always met. Amongst other factors, the quality and frequency of maintenance work and the awareness of homeowners of the technology and its limitations, can determine the quality of the wastewater discharge to a large degree.

The two treatment systems proposed by the applicant are the Oasis Texass system and the Innoflow Advantex system. The company websites list the treatment standards achieved by both systems. For the Oasis Texass system, average test figures indicate effluent is produced at levels better than 15 mg/L for both BOD₅ and suspended solids (source: <http://www.oasisclearwater.co.nz/texass3.html>).

The Innoflow Advantex system has been shown to consistently produce effluent at levels better than 10 mg/l for BOD₅ and suspended solids (based on a product summary found at <http://www.orengo.com/pdfs/aho-atx-perf-1.pdf>). The New Zealand trials of the system in Rotorua (using a smaller version than the system

proposed here) produced an average BOD₅ of 2 mg/l and TSS of 3 mg/l under idealised conditions.

In the case of a single wastewater treatment and disposal system, as proposed here, there is arguably greater chance of high quality and frequent maintenance being undertaken, so these standards are arguably more likely to be upheld than they would be in the case of an individual residential development.

I do not consider the adverse environmental impact of the proposed discharge to be greater than that which might reasonably occur as a permitted activity, given future residential development of the site that is anticipated by the TRMP.

5.6 Section 104 D Assessment

The wastewater consent is deemed to be non complying due to bundling with the landuse where the site coverage is greater than 35%. Section 104 D states a consent authority may grant a resource consent for a Non-Complying activity only if it is satisfied that either the adverse effects of the activity on the environment will be minor; or the application is for an activity that will not be contrary to the objectives and policies of the plan or proposed plan.

Given the volume and quality of wastewater proposed to be discharged at the site and all other things being equal, I do not consider the adverse environmental impact of the proposed discharge to be greater than that which might reasonably occur as a permitted activity, given future residential development of the site that is anticipated by the TRMP. The effects of the activity should be no more than minor.

The relevant policies and objectives of the TRMP were reproduced in Section 3.1 of this report. Despite a small number of matters on which the Committee may wish to seek clarification, I consider that the applicant's proposal broadly meets these objectives and policies.

Thus consent may be granted for this activity as the tests in 104D are met.

6. RECOMMENDATION

6.1 Summary

Section 104 of the RMA lists the matters that the consent authority shall have regard to when considering a consent application. Section 104B states that a consent authority may grant or refuse a consent for a non-complying activity, and may impose conditions under section 108.

Based on my assessment of the application I consider that the scale of the proposed discharge is similar to that permitted by 10 residential dwellings.

The land application area will need to be protected from erosion. If the distance between sea and land application area is reduced significantly, the risk of contaminating coastal waters will increase. Thus, the land application area needs to be 20 metres from the toe of the rock wall.

The proposed well maintained treatment system should not cause adverse effect on the groundwater that are minor and the adverse effects on the coastal water quality should be less than minor.

6.2 Duration and Lapse Date

Should consent be granted, it is recommended that consent be granted for no more than 20 years in accordance with the expected lifetime of the proposed wastewater system. This also allows for the risks posed by sea level rise and the corresponding erosion of land seaward of the land application area.

Recommend a 10 year lapse date for this consent. The wastewater discharge only occurs once people move in to the dwellings.

6.3 Proposed Recommended Conditions

Should the Committee determine that the granting of consent is appropriate, this should be subject to the conditions

7. RECOMMENDED CONDITIONS

Discharge Restrictions

1. The discharge shall be from a wastewater system designed and installed in accordance with documents provided in application for resource consent RM090876, in particular:
 - Resource Consent Application for Pakawau Village. 20 Unit Comprehensive Residential Development prepared by Staig and Smith Limited, referenced 8927 and dated December 2009.
 - Appendix 4 of that document: Sustainable Ventures Ltd. Pakawau Village Beach Resort On-Site Wastewater System Design, Stormwater and Water Supply Assessment, prepared by Waste Solutions Ltd., referenced 130217 and dated 11 December 2009.

Where inconsistencies are present between those documents and the conditions of this resource consent, the conditions shall prevail.

2. The maximum rate of discharge shall not exceed 14.615 cubic metres per day. The discharge shall contain only treated wastewater which is of a domestic nature. For the purposes of this condition, wastewater which is of a "domestic nature" includes wastewater from toilets, urinals, kitchens, showers, washbasins, baths, and laundries but does not include water from spa pools.
3. The treated wastewater entering the land application areas, based on the results of any single sample collected from the sampling point required to be installed in accordance with Condition 23, shall comply at all times with the following limits:

Determinand	Maximum allowable concentration
5 day biochemical oxygen demand	20 grams per cubic metre

(BOD5)	
Total suspended solids	30 grams per cubic metre

Land Application System

4. The maximum loading rate at which the wastewater is applied to land shall not exceed 50 millimetres per day (50 litres per square metre of trench per day).
5. All wastewater shall be discharged to land by way of not less than 325 m of trench at least 900 mm in width.
6. The applicant shall maintain a separation distance of at least 14 metres between the land application area and MHWS.
7. Trenches shall be laid level.
8. The land application area shall be located as shown in Plan A, in Appendix 1 below. If the area shown of Plan A does not meet the separation in Condition 6 a new plan shall be submitted to Council's Co-ordinator Compliance Monitoring for approval and this shall supersede the attached Plan A.
9. Notwithstanding Condition 8, in the event that the total area required to adequately dispose of the wastewater is shown to be greater than that calculated in the application, the Consent Holder shall make additional land available for wastewater disposal.
10. The land application areas shall not be used for:
 - (a) roading, whether sealed or unsealed;
 - (b) hardstand areas;
 - (c) erection of buildings or any non-wastewater systems structures; or
 - (d) stock grazing.
11. The Consent Holder shall mark each land application area by any means that ensures the extent of them is identifiable on the ground surface.
12. There shall be no surface ponding or surface run-off of any contaminants from any of the land application areas as a result of the exercise of this consent.

Collection, Treatment and Disposal Systems

13. Except where inconsistent with the conditions of this consent, the construction and installation of the wastewater collection system, treatment plant and land application system shall be carried out in accordance with information submitted with the application for resource consent RM090876 and under the supervision of a person who is suitably qualified and experienced in wastewater treatment and disposal systems.
14. The person supervising the construction and installation of the wastewater collection system, treatment plant and land application system shall provide a written certificate or producer statement to the Council's Co-ordinator

Compliance Monitoring prior to the exercise of this resource consent. This certificate or statement shall include sufficient information to enable the Council to determine compliance with Conditions 4–10 (inclusive), 12, and 23. In addition, the certificate or statement shall also confirm the following:

- (a) that the wastewater system, including the collection system, treatment plant and the land application areas, is capable of treating the design flows and that it has been designed generally in accordance with standard engineering practice;
 - (b) that all components of the wastewater system, including the collection system, treatment plant and the land application areas, have been inspected and installed in accordance with the manufacturer's specifications and standard engineering practice;
 - (c) that the components used in the wastewater system, including the collection system, treatment plant and the land application areas, are in sound condition for continued use for the term of this resource consent, or are listed in the Operations and Management Plan (required by Condition 16) for periodic replacement;
15. Prior to the exercise of this consent, the Consent Holder shall submit a set of final "as-built" plans to the Council's Co-ordinator Compliance Monitoring that shows the location of all components of the wastewater collection, treatment, and land application system. For the purpose of this condition, the Consent Holder shall ensure that the "as-built" plans are drawn to scale and provide sufficient detail for a Council officer to locate all structures identified on the plans.

Wastewater System Operation and Maintenance

16. A chartered professional engineer or suitably qualified person experienced in wastewater engineering shall prepare an "Operations and Management Plan" for the wastewater treatment and disposal system. This plan shall be prepared in accordance with the conditions of this resource consent and shall contain, but not be limited to, the following:
- (a) an inspection programme to verify the correct functioning of the wastewater treatment and land application systems including not less than monthly inspections of the wastewater treatment plant and disposal areas;
 - (b) a schedule for the daily, weekly, monthly and annual operational requirements including requirements of compliance monitoring of consent conditions;
 - (c) a schedule of maintenance requirements for the pumps, tanks, recirculation tanks, treated wastewater holding tank, flow meters and drains;
 - (d) a schedule of maintenance requirements for the management of vegetation on the land application area(s);

- (e) a contingency plan specifying the actions to be taken in the event of failure of any component of the system, in the event of flooding of the land application area and subsequent use of the emergency storage tanks, and any non-compliance with the conditions of this resource consent;
 - (f) details of how the wastewater disposal system will be managed;
 - (g) emergency contact details (24 hour availability) for the Service Provider and Consent Holder; and
 - (h) monitoring of the land application areas shall include visual ground inspections to identify above ground and surface flows of wastewater and methods to remedy such flows should any be identified.
17. A copy of the “Operations and Management Plan” required by Condition 16 shall be submitted to the Council’s Co-ordinator Compliance Monitoring for approval prior to exercising this consent. Any changes to this plan shall be in accordance with the conditions of this consent and submitted to the Council’s Co-ordinator Compliance Monitoring prior to them taking effect.
18. The Consent Holder shall enter into, and maintain in force, a written maintenance contract with an suitably qualified and experienced wastewater treatment plant operator suitably trained in wastewater treatment plant operation by the system designer, and approved by the Council’s Co-ordinator Compliance Monitoring for the ongoing maintenance of the pumps and tanks, and the treatment and land application systems. The maintenance contract shall require the operator to perform maintenance functions and duties specified in the “Operations and Management Plan” required to be prepared by Condition 16. A signed copy of this contract, including full contact details for the Service Provider, shall be forwarded to the Council’s Co-ordinator Compliance Monitoring, prior to exercising this consent. Any changes to this maintenance contract must be in accordance with the conditions of this consent and submitted in writing to Council’s Co-ordinator Compliance Monitoring prior to them taking effect.

In addition, the Consent Holder shall, every six months from the date of first exercising this consent, provide the Council’s Co-ordinator Compliance Monitoring with a copy of a written report that details the maintenance that has been undertaken on the wastewater treatment and disposal system during the previous six month period in accordance with the requirements of the Operations and Management Plan.

Advice Note:

For compliance purposes, a suitably qualified and experienced person would be either a person employed and trained by the manufacturer of the treatment and disposal system, or someone who can provide evidence of satisfactory qualifications and experience in maintaining such wastewater treatment and disposal systems.

19. The collection and treatment tanks that form part of the wastewater treatment plant shall be inspected at least every three months. Where appropriate, all tanks shall as a minimum be cleaned out once the combined depth of the

sludge and scum in any tank occupies half of the tank's volume. Material collected from the desludging of tanks shall be removed from site for disposal at a facility authorised to receive such material.

Contingency Measures

20. An audible and visual alarm system shall be installed and operated that is capable of warning of any failure within the treatment or disposal systems (i.e., pump failure, mechanical blockage, and/or high wastewater levels).

This warning system shall be configured to activate an audible and visual alarm system located adjacent to the treatment plant or other prominent place on the site for the treatment plant. The details of the alarm shall be included in the "Operations and Management Plan" required by Condition 16 and shall achieve as a minimum the following:

- (a) effective notification of the operators of any alarm;
- (b) in the event of any alarm activating, the alarm shall continue to operate and until the condition has been remedied and cleared by the operator. The audible and visual alarm system shall be installed and operated on all grinder pumps and tanks and, as a minimum, this alarm shall be activated by a high level switch.

The Consent Holder shall maintain clearly visible signage adjacent to all external alarm panels at the plant to provide a 24 hour contact number in the event of an alarm being activated.

21. The Consent Holder shall ensure that the treatment plant (excluding the emergency storage tanks) is designed and maintained so that wastewater can be retained within the treatment system above the alarm level without overflow for a period of at least 24 hours, based on average dry weather flows and in accordance with the provisions in the "Operations and Management Plan". All pumps in the treatment and land application system that are essential for the continuous processing, treatment, and disposal of the wastewater shall include duty and standby units.
22. Should power disruption result in the emergency storage capacity being exceeded, the Consent Holder shall ensure that the wastewater is removed from the storage tank at that time for the purpose of maintaining capacity. Wastewater shall be disposed of to a facility that is authorised to accept such wastes. The relevant details of how this will be achieved shall be incorporated in the "Operations and Management Plan" required to be prepared in accordance with Condition 16.

Monitoring and Reporting

23. A sampling point to allow collection of a sample of the treated wastewater shall be provided at a point located directly after the final pump-out chamber and before the point where the wastewater discharges to the land application area. Details of the location of this sampling point shall be forwarded to the Council's Co-ordinator Compliance Monitoring prior to the exercise of this consent.

24. A sample of the treated wastewater shall be collected from the sampling point required to be installed in accordance with Condition 23. Samples shall be analysed for five day biochemical oxygen demand (BOD5) and total suspended solids. The frequency of sampling shall be as follows:
- (a) for the first 12 months following treatment plant start up, two samples shall be collected at approximately six monthly intervals when the plant is discharging to the land application area;
 - (b) samples shall be collected at least weekly over the period 20 December to 10 January during the period described in (a) above;
 - (c) following the first 12 months, samples shall be collected at least annually, with the weekly samples being collected between 20 December and 10 January provided the contaminant limits specified in Condition 3 are always met. Should any of these limits not be met, the sampling frequency shall be increased to monthly sampling, including the frequency specified in (b) above, until full compliance with the contaminant limits of Condition 3 has been achieved over a four month period.
24. The Consent Holder shall sample total faecal coliforms from a bore situated half way between the land application area and the rock wall and be take at the same time as required in Condition 24. If the level of total faecal coliforms count is greater than 100 faecal coloforms per 100ml in two samples or greater than 400 faecal coloforms per 100ml in any sample the Consent Holder shall develop an action plan to be submitted to Council's Co-ordinator Compliance Monitoring.
25. All sampling referred to in this consent shall be carried out by a suitably qualified person approved by the Council's Co-ordinator Compliance Monitoring, using standard sampling methodologies and equipment and shall be transported to the laboratory under chain of custody. Where temperature and pH are required, these shall be measured in the field using standard methods and calibrated meters. The detection limits specified in Appendix 2 (Applicable Detection Limits, attached) shall apply to analyses that are undertaken by the laboratory. The samples shall be analysed using standard methodology by an IANZ accredited laboratory. The analytical results shall be forwarded to the Council's Co-ordinator Compliance Monitoring within 10 working days of the results being received from the laboratory.
26. The Consent Holder shall install and maintain at all times a calibrated flow meter, with an accuracy of $\pm 5\%$, on the outlet of the wastewater treatment system to measure the quantities of wastewater discharged to the land application areas.
27. The flow meter required to be installed in accordance with Condition 26 shall be read manually or electronically at the same time daily. Copies of these records shall be forwarded to the Council's Co-ordinator Compliance Monitoring quarterly and also upon written request.
28. Any exceedance of the authorised discharge volume (refer Condition 2) shall be reported to the Council's Co-ordinator Compliance Monitoring in writing within

three days of the reading. This report must include any explanation for the non-compliance and an assessment of the likely effects of the functioning of the system and the receiving environment.

29. The Consent Holder or its authorised agent shall notify Council's Co-ordinator Compliance Monitoring of any wastewater discharge to land or water from the treatment plant that is not authorised by this consent in writing as soon as practicable (but no more than 24 hours) after the discharge commenced.

General Conditions

30. The wastewater treatment system shall be located, and the surrounding area maintained, so that vehicular access for maintenance is readily available at all times.
31. The Council may, in the period 1 November to 1 March each year, review any or all of the conditions of the consent pursuant to Section 128 of the Resource Management Act 1991 for all or any of the following purposes:
 - (a) to deal with any adverse effect on the environment which may arise from the exercise of the consent that was not foreseen at the time of granting of the consent, and which is therefore more appropriate to deal with at a later stage; and/or
 - (b) to require the Consent Holder to adopt the best practical option to remove or reduce any adverse effects on the environment resulting from the discharge; and/or
 - (c) reviewing the contaminant limits, loading rates and/or discharge volumes and flow rates of this consent if it is appropriate to do so; and/or
 - (d) reviewing the frequency of sampling, flow monitoring and/or number of determinands analysed if the results indicate that this is required and/or appropriate.

Duration of Consent

32. This consent expires 20 years after the date of granting.

ADVICE NOTES

1. This resource consent only authorises the activity described above. Any matters or activities not referred to in this consent or covered by the conditions must either: 1) comply with all the criteria of a relevant permitted activity rule in the Tasman Resource Management Plan (TRMP); 2) be allowed by the Resource Management Act; or 3) be authorised by a separate resource consent.
2. The Consent Holder shall meet the requirements of Council with regard to all Building and Health Bylaws, Regulations and Acts. In particular the applicant shall apply for a building consent prior to commencing the construction of the wastewater system as per the Building Act 2004.

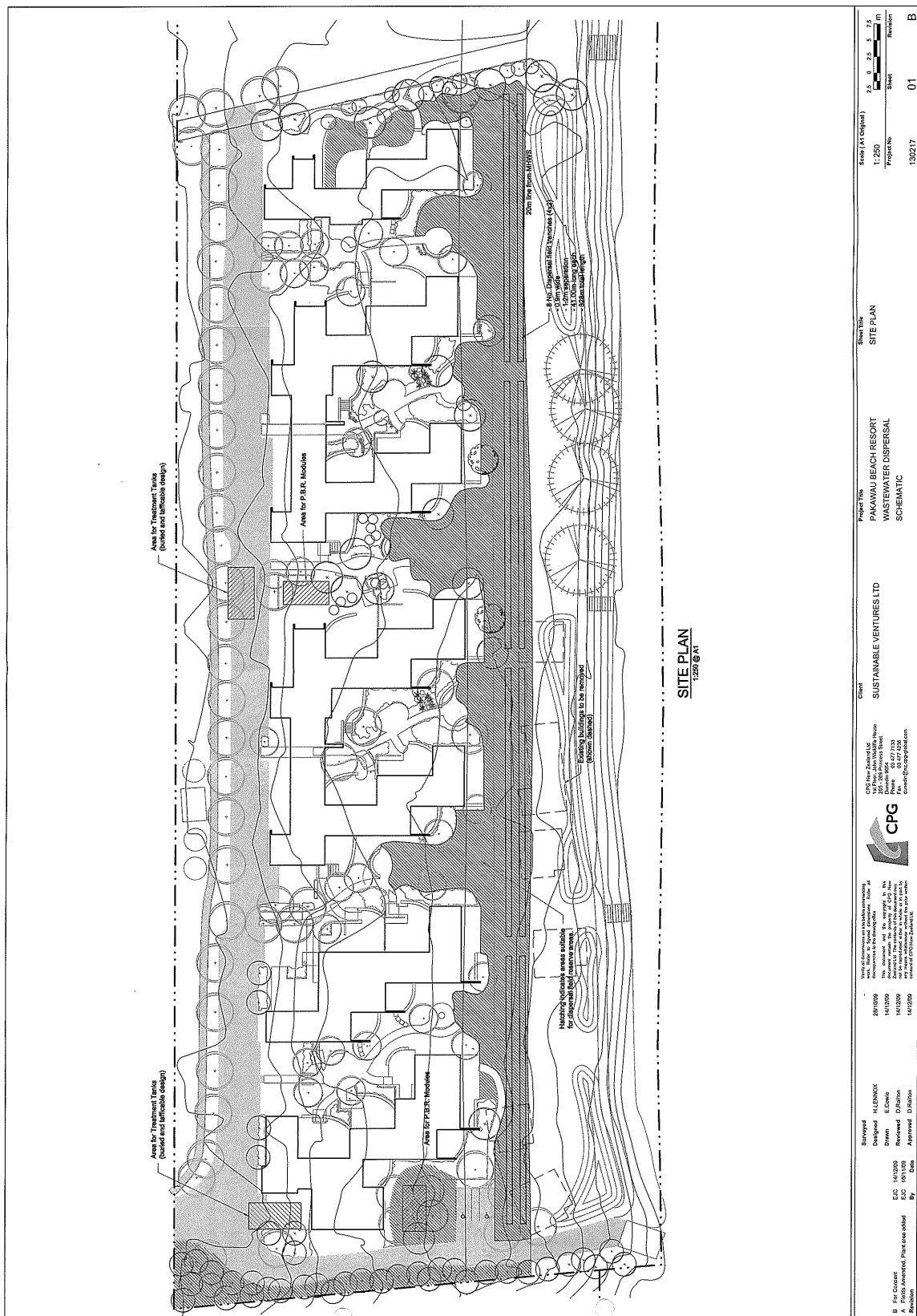
3. All reporting required by Council shall be made in the first instance to the Council's Co-ordinator Compliance Monitoring.
4. The Consent Holder is advised that compliance with operating guidelines provided by the wastewater system manufacturer and system designer is recommended to reduce the likelihood of malfunction of the treatment or disposal system and a possible breach of consent conditions.
5. If the site becomes part of an urban drainage area identified by Council when future reticulation is available, the Consent Holder will be required to provide connection from the treatment system to the sewer line.
6. Council draws your attention to the provisions of the Historic Places Act 1993 that require you in the event of discovering an archaeological find (e.g., shell, midden, hangi or ovens, garden soils, pit, depressions, occupation evidence, burials, taonga) to cease works immediately, and tangata whenua, the Tasman District Council and the New Zealand Historic Places Trust shall be notified within 24 hours. Works may recommence with the written approval of the Council's Environment & Planning Manager, and the New Zealand Historic Places Trust.



Daryl Henehan
Consent Planner - Natural Resources

Leif Pigott
Co-ordinator- Natural Resource Consents

Plan A: Sustainable Ventures Ltd., Location of Wastewater Disposal Areas



**APPENDIX 2
APPLICABLE DETECTION LIMITS**

Parameter	Detection Limits ¹	Units
Biochemical oxygen demand	2	g/m ³
Total Suspended Solids	3	g/m ³
Total faecal coliforms	10	MPN or cfu/100 mL

Notes:

1. These detection limits apply unless other limits are approved in writing by the Coordinator Compliance Monitoring.