



## STAFF REPORT

**TO:** Environment & Planning Subcommittee  
**FROM:** Natasha Lewis, Consent Planner  
**REFERENCE:** RM030632  
**SUBJECT:** **CBH LTD – REPORT EP05/11/16** - Report prepared for 28 November 2005 Hearing

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### PURPOSE FOR REPORT

This staff report has been prepared by the Council's Consent Planner, Discharges in relation to the application for discharge consent RM050727 sought by CBH Limited, associated with the subdivision and residential development previously authorised under RM030632. A change of conditions to RM030632 has been sought in conjunction with this application for resource consent but has been covered by a separate report prepared by Mark Morris.

### 1. APPLICATION BRIEF

#### Proposal

The application is for a discharge to land consent.

The applicant has sought consent to discharge up to 90 cubic metres of tertiary treated domestic wastewater to land by drip irrigation from a residential development located on a 50 hectare on Maisey Road

#### Location and Legal Description

The property is located on Maisey Road at Appleby, and is bounded by Greenacres Road and Redwood Valley Stream in the south and east, and the Coastal Highway in the north. The site on which it is proposed wastewater will be disposed on is described as Lot 2 DP 6766 and is 40.4433 hectares in area.

#### Notification and Submissions

The applications relating to the application to discharge domestic wastewater and the change of conditions sought to the existing subdivision consent RM030632 were publically notified 10/09/2005, 12 submissions were received. All 12 submissions made reference to the application to discharge domestic wastewater so the parts of the submissions of relevance to this application have been summarized below. Those parts of the submissions of relevance to the application to vary the existing resource consent for the subdivision and residential development have been dealt with separately by Mark Morris in his report.

1. Grant Broderick and Clare Maisey

- Concerned about noise of sewage pumps.
- Concerned about seepage onto their property as drippers are on the surface.
- Requested testing to prove that there will be no seepage of sewage onto their property, they are closer than the Redwood Valley Stream.

2. Neil McCliskie

- Disposal area does not meet proposed new Rural 3 rules as would require 1000 square metres per lot primary plus 100% reserve area.
- No allowance made for rainfall affects in event of pump failure.
- No drain from bund downslope of irrigation area.
- No details of management by residents association.
- Requested increase disposal area, incorporate bund or similar, include provision for wet weather failure, provide management plan, ensure drippers are run parallel to contours.

3. David Richards

- Method of assuming evaporation or consumption by vegetation is flawed. Area has been randomly tested but may have greater permeability and therefore could affect groundwater system.
- Effluent will find its way into stream catchment, risk of affecting downstream groundwater if disposal system fails.
- Private management emphasis on economics which could compromise efficiency.
- Subdivision should be piped to Bells Island at cost to developers, onsite treatment of this size and concentration should be avoided.

4. Redwood Valley Rural Water Supply, C/- David Richards

- Containment method likely to fail, leachate could contaminate Redwood Valley Stream. Contamination could then infiltrate to aquifer and affect Redwood Valley Water Scheme. Many residents rely on this water for their households.
- Management of system should not be private, waste from this subdivision should be treated at Bells Island.
- Dispersal field not sufficient for the amount of waste and soil type that exists, risk of contamination to stream is great.

5. Gail Catherine Linford Mason

- No detail of wastewater treatment to be installed, until detail is known how can anyone ensure it works.
- Main concerns are smell and suitable safeguards in place of major problem.
- Support Moseley submission.

6. Heatherdale Orchards Ltd

- Oppose placement of wastewater discharge on clay slopes above Redwood Valley Stream, risk of contamination to Redwood Valley Stream.
- Requests impose safety measures to prevent run-off into stream.

7. Colin Garnett

- Any wastewater scheme should be owned by the Council as the original Variation stated.
- Discharge rate of 2.0 millimetres is too high for saturate Moutere clay soils to cope with in wetter months of the year.
- Irrigating waste onto ground in "urban" environment needs to be revisited, nuisance factors could make it less desirable to live.
- Before dwellings are constructed, should have all services in place but developer should meet all costs.
- Requests that services are owned by Council and all costs are fully met by developer.
- Requests that if discharge permit is to be granted, then the maximum rate of discharge should be such that no overland flow of discharge water will occur in the wettest of conditions likely to be encountered at the site.

8. Nelson Marlborough District Health Board

- No details of system have been provided. Applicant has proposed minimum performance levels, it is acknowledged that there are a number of systems that can meet these effluent standards. The provision of UV treatment is supported.
- Additional effluent storage is required, covered storage is recommended.
- Cut-off drains required, need regular inspections. Provision of 50% reserve area supported.
- Recommend that dripper lines are covered with 50 mm soil, bark or similar alternative.
- Appropriate management plan must be present, must include contingency plan.
- Treatment and disposal facilities shall be remotely monitored on a continuous basis and appropriately alarmed.
- Should connect to Council sewerage if it becomes available.
- Monitoring required.
- 10 year term of consent recommended.

9. JA and P Johnston Family Trust

- Question ability of soils and trees to absorb all the liquid wastes, there are times when the ground has been very wet and runoff from hillside to stream is then considerable.
- Springs are common in the area and never appear twice in same location but are always found after heavy rains.
- Entry of wastewater into the Redwood Stream will have a detrimental effect for any downstream users which must be given due consideration.

#### 10. BW and HC Moseley

- Insufficient detail in application, current application should not be progressed until full specific detail of what is proposed is available and submitters should have at least 20 working days.
- Prefer CBH install pipeline to Bells Island.
- Main concern is smell and will not be happy unless guarantee of no smell, also concerned about potential for contamination of creek below filtration area.
- If either smell or contamination occurs, time limits and fines should be imposed. In addition a bond should be imposed to prevent money problems holding up any work required.
- Requested independent verification that regular maintenance is carried out, there is no smell, and there is no stream contamination. Should be TDC responsibility but work paid by body corporate.
- System needed to cover emergencies, a storage facility should be required to hold effluent or ability to tanker the waste away.
- Soil test bores of insufficient depth.

#### **Comments from Opus letter which formed part of the Moseley submission.**

- Assessment of suitability of any system would be facilitated by the provision of greater detail about the operation of the proposed plant and, quite importantly, documented evidence of how the proposed system has been successfully implemented at other sites.
- Application should provide information regarding tree types to be planted in disposal field and any maintenance required.
- Assessment of effects has not taken into account potential adverse effects on groundwater in the area of the proposed wastewater system. Presence or absence and groundwater use not discussed.
- Potential effects on air quality have not been considered, no mention of whether the system incorporates any mitigation measures to minimise creation of odours.
- No assessment of amount of noise or any mitigation measures to minimise noise effects has been provided.
- Unclear who the consent holder will be and who will be responsible for compliance with conditions of consent.
- Recommended monthly inspections of disposal area by maintenance contractor to ensure no ponding and monthly inspection of treatment system by consent holders maintenance contractor to ensure it is operating correctly and annual inspection of treatment system by treatment plant installers.
- Recommended that records of this monitoring programme should be forwarded on a quarterly basis to the consenting Council.
- Further information should be requested.

#### 11. R A and B L Gardner

- Oppose the placement of wastewater discharge on the clay slopes above the Redwood Valley Scheme.
- Risk of contamination of Redwood Valley Stream.

- Recommend impose safety measures to prevent run-off into stream and more stringent conditions on the design and performance of the wastewater system.

12. James and Trudy Van Workum

- Support large disposal area.
- Support no conflict between stormwater and wastewater disposal.
- Recommends inclusion of planning for all additional dwellings on adjacent land having wastewater treated within proposed area.

No submission was received from the Department of Conservation or from local iwi on this application.

**Further Information**

The original consent application to discharge domestic wastewater associated with the subdivision and residential development RM030632 was received 30 June 2003 (RM030655). Further information was requested on this application 11 July 2003, but the application was withdrawn 10 December 2004 due the Council's proposed wastewater servicing of the Coastal Tasman Area. Following an interim decision abandoning this proposal a new application to discharge domestic wastewater was submitted to Council. The applicant was asked to address all items raised in the requested for further information on their previous consent application in their new application.

Following the close of submissions the applicant provided clarification and comment on some matters raised in submissions in a letter dated 1 November 2005. This information was posted to submitters along with Annexure E and F of the original application which had been excluded from the copies of the application distributed with the notification of the application. Further information was provided by the applicant on 8 November 2005 following a request from Council to address concerns raised regarding potential odour issues and lack of detail of proposed treatment methodology. The information received by Council was posted to submitters 9 November 2005.

**2. STATUTORY CONSIDERATIONS**

The Resource Management Act, 1991

In accordance with Section 15 (1) of the Resource Management Act, 1991, no person may discharge any 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 unless the discharge is expressly allowed by a rule of a regional plan, a resource consent, or regulations. Section 15 (2) of the RMA prohibits any person from discharging contaminants into or onto land from any place in a manner that contravenes a rule in a regional plan or proposed regional plan unless that discharge is expressly allowed by resource consent or allowed by Section 20 (certain existing lawful activities).

Section 104 of the Resource Management Act, 1991, requires Council to consider a number of factors when assessing an application for resource consent including:

- (a) Actual and potential environmental effects of allowing the activity; and
- (b) The nature of the discharge and the sensitivity of the proposed receiving environment to adverse effects and the applicants reasons for making the proposed choice; and
- (c) Relevant rules and policies of applicable plans and policy statements; and
- (d) Any possible alternative methods of the discharge, including a discharge into another receiving environment; and
- (e) Whether affected party approval is required/has been obtained; and
- (f) Part II of the Resource Management Act, Purpose and Principles.

Section 107 of the RMA requires that, other than in exceptional circumstances or for a temporary discharge, any discharge of a contaminant onto or into land in circumstances which may result in that contaminant entering water, should after reasonable mixing with the receiving waters meet the following standards:

- (a) no conspicuous oil or grease films, scums, foams or floatable or suspended materials;
- (b) no conspicuous change in colour or visual clarity;
- (c) no objectionable odour from the discharge;
- (d) no significant adverse effects on aquatic life.

In considering an application for resource consent the Council must ensure that if granted, the proposal is consistent with the purposes and principles set out in Part II of the Act. The principles of Part II of the Resource Management Act, 1991, underpin all relevant Plan and Policy Statements, which provide more specific guidance for assessing this application.

Application for resource consent has been sought in accordance with Section 15 of the Resource Management Act, 1991, (RMA) because the proposed discharge of domestic wastewater is a discretionary activity under the proposed Regional Plan. As defined in Section 105 of the RMA, when considering a consent application to do something that would contravene section 15 or section 15B the consent authority must in addition to the matters in section 104 (1) have regard to the nature of the discharge and the sensitivity of the receiving environment to adverse effects and the applications reasons for the proposed choice and any possible alternative methods of discharge, including discharge into any other receiving environment.

#### Tasman Regional Policy Statement

The Regional Policy Statement is a strategic tool to promote sustainable resource management of natural and physical resources in the Tasman District. The policy statement sets out general objectives for achieving this goal and identifies significant issues in this region. Contaminant discharges, land and freshwater resources are all identified as a significant issues to this region within the Policy Statement. There are a number of policies that are of direct relevance to this proposal, these are listed below:

- Policy 7.4 The Council will:
1. preserve the natural character of wetlands, rivers and lakes, and
  2. protect and enhance or support the protection and enhancement of natural, recreational, cultural, intrinsic, and instream features and values of wetlands, rivers (including karst rivers) and lakes, in particular those that are of international, national or regional significance. In relation to all significant wetlands, rivers, and lakes, the risk adverse effects on their natural, recreational, cultural, intrinsic or instream values shall be relevant to achieving such protection or enhancement.
- Policy 10.1 Council will classify significant water bodies for which water quality is to be maintained and enhanced for specific purposes.
- Policy 10.4 Council will avoid, remedy, or mitigate adverse effects of the disposal of solid or liquid waste contaminants, by seeking land disposal of such wastes where it is the best practicable option.

#### Transitional Plan

The discharge of septic tank waste was covered by the General Authorisations of the Transitional Plan, authorising the discharge of waste from any domestic septic tank treating domestic sewage into ground in circumstances which may not result in the waste entering natural water, thus was considered a permitted activity. Numerical limits to the volume of waste were not included in the restrictions of the authorisation but specific reference to the discharge of waste from a domestic septic tank was made. Therefore this authorisation would not cover the discharge from a community scheme as proposed in this application. An activity not covered by these General Authorisations would have been considered a discretionary activity.

#### Proposed Tasman Resource Management Plan

The Proposed Tasman Resource Management Plan (proposed TRMP) contains more detailed policies and objectives based on the issues identified in the Regional Policy Statement and sets out specific rules for various types of contaminant discharges.

There are a number of policies contained in the proposed TRMP of relevance to this proposal. These include:

- Policy 5.1.3A To ensure that the characteristics, including size, soil type and topography of each lot of any proposed subdivision or built development are suitable for sustainable on-site treatment of domestic waste in unreticulated areas, particularly in areas where higher risks of adverse effects from on-site disposal of domestic wastewater exist.
- Policy 33.1.1 To recognise and provide for the uses and values of water through a system of classification that establishes the water quality standards required to protect the water quality needs of those uses and values.

Policy 33.1.5 To ensure that existing water quality is not degraded after reasonable mixing as a result of any discharge of contaminants into water and to take into account certain criteria outlined in the Plan when determining what constitutes reasonable mixing.

Policy 33.1.6 To take into account the following factors in determining the significance of actual or likely adverse effects on the receiving water of or from contaminant discharges:

- (a) Any water classification given in any schedule to Chapter 36 or water conservation order.
- (b) Existing water quality of the receiving water.
- (c) The significance or sensitivity of the aquatic life or ecosystem.
- (d) The extent of the water body adversely affected.
- (e) The magnitude, time of year, frequency and duration of the adverse effect(s), including any cumulative effects as a result of the discharge.
- (f) The range and intensity of uses and values of the water body.
- (g) The conflicts between uses and values of the water body.
- (h) The nature of the risks of adverse effect(s).
- (i) Any relevant national or international water quality guidelines or standards, or water conservation order.

Policy 33.1.10 To promote and encourage discharge of waste to land or constructed wetlands in preference to water where:

- (a) Discharge to land or constructed wetlands has less actual or potential adverse environmental effects than discharge to water;
- (b) Land disposal system design and operation is such that the adverse effects on the environment, including soil and surface and groundwater quality are avoided, remedied or mitigated; and
- (c) The discharge to land is the best practicable option.

Policy 33.4.1 To ensure householders are aware of potential adverse effects that may be created by discharges from on-site wastewater disposal systems, and methods of avoiding, remedying or mitigating them.



Policy 33.4.2 To avoid the adverse effects, including cumulative effects, of on-site disposal of domestic wastewater in the Rural 3 and Rural 3A zones and nearby areas through a requirement for connection to Council provided reticulated wastewater systems and careful evaluation of any transitional on-site systems.

Policy 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.

The discharge of domestic wastewater to land is a permitted activity in most parts of the region (excluding the Coastal Tasman Area affected by Variation 32) provided compliance with a number of associated conditions (Rules 36.1.4 and 36.1.5). Any discharge of domestic wastewater within the Coastal Tasman Area (the area affected by Variation 32 including Rural 3, Rural 3A and the Services Contribution Areas) requires a discharge consent as it is specifically excluded from the permitted activity rules. Chapter 37 sets out the information requirements and Schedule 36.1D of the proposed TRMP sets out the criteria to be taken into account when assessing applications for resource consents and in imposing conditions.

Affected Rules 36.1.4 (aa) and 36.1.5 (aa) of proposed TRMP

#### **Variation 46**

At the time of writing this report, the proposed Tasman Resource Management Plan had not been varied to incorporate decisions made as a result of submissions on Variation 32 and the related proposed Variation 46. Currently, the discharge of domestic wastewater at the subject site is a discretionary activity but on-site disposal is intended to be an interim decision until wastewater reticulation is provided by Council. However, Council have released an interim decision abandoning the proposal to provide reticulated sewerage to the area and have released a draft variation to the proposed TRMP ("Variation 46") intended to provide the regulatory framework for managing on-site wastewater disposal in this area in the long term. The writer is aware that the final decisions on Variation 32 and Variation 46 are intended to be publically notified on Saturday 26<sup>th</sup> of November, prior to the hearing of this application. So although the draft of Variation 46 does not yet have any legal status comment has been provided in this report (in Section 3 Assessment) regarding the draft requirements because the writer considered this was useful and necessary given the likely status of this Variation at the time of hearing this application. This Variation indicates Council's intended direction for managing on-site wastewater disposal in these areas and concerns and issues that have been identified.

### **3. ASSESSMENT**

In accordance with Section 104 and 105 of the Resource Management Act, 1991, Council must consider the actual and potential effects on the environment of allowing the activity to occur, having regard to any relevant objectives, policies, rules (outlined in Section 4 of this report above) and consider any other matters relevant and reasonably necessary to determine the application.

## Assessment of Environmental Effects

Pursuant to section 104 1 (a) of the Resource Management Act, 1991, an assessment of any actual and potential effects on the environment of allowing the activity to occur follows.

### Receiving Environment

The Assessment of Actual or Potential Effects on the Environment (Section 3.0 of Annexure A provided with the application for resource consent) provided little specific detail but rather referenced two appended reports, one by Connell Wagner (Annexure D) and one by Cawthron Institute (Annexure E of application). The applicant proposed that *“the environmental risks associated with this discharge consent are considered to be minimal”* (Section 4.3 Annexure A of application). Some detail of the receiving environment was provided in Annexure D while additional comment on surface water was provided in Annexure E.

The receiving environment represents the final step in any wastewater treatment and disposal process and is critical in determining the extent and degree of actual and potential adverse effects. An area of 6.8 hectares of land within the previously authorised subdivision and residential development has been nominated for possible wastewater disposal. This area was identified in the original application for discharge consent RM030655 and through the hearing of the subdivision consent application RM030632. The proposed disposal area is dissected by a walking track connecting the subdivision to the Redwood Stream as approved by resource consent RM030632. Soils at the disposal site were classified in the soil assessment provided with the application as a Category 6 soil (in accordance with the NZ Standard for Onsite Wastewater Management ASNZS 1547:2000<sup>1</sup>), this is comparable with assessments undertaken of the general vicinity as part of Council’s Coastal Tasman Area study. The applicant acknowledged that on-site disposal in the Moutere clays is limited by the long term disposal rate and therefore a conservative design is required.

The land of the proposed disposal area is described by the applicant’s wastewater consultant as of moderate slope varying between 20-30% and of a largely rectangular shape. Beyond the proposed disposal area, land slopes steeply down towards the Redwood Valley Stream. The Redwood Valley stream flows through a small rural catchment into O’Conner Creek approximately 0.6 kilometres from the disposal area and discharges into the Waimea Inlet approximately 1.7 kilometres further to the north east. Annexure E provided some detail of existing nutrient levels in this stream and potential nutrient enrichment effects and concluded that the nutrient input to the stream from the proposed wastewater discharge should be minimal except during periods of heavy rainfall when direct runoff may occur. The report proposed that the expected level of nutrient enrichment would not be likely to result in further degradation of the existing ecosystem values however monitoring was advised. Considerable concern was raised in submissions regarding potential contamination of Redwood Valley Stream as a result of the proposed discharge so further mitigation measures to reduce the likelihood of surface runoff and for ongoing monitoring have been recommended by this report. Surface water classification for the Redwood Valley Stream is not yet available in the proposed TRMP.

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<sup>1</sup> Australia New Zealand Standard for Onsite Wastewater Management ASNZS 1547:2000

Little discussion of potential effects on groundwater was provided with the application, this issue was raised as a point of concern by a number of submitters including downstream water users. Further comments provided by the applicant in their letter dated 1 November 2005 stated that the “potential for the proposed on site wastewater scheme to cause some contamination of downstream domestic or community water supplies is considered to be extremely unlikely”. The applicant holds consent for two deep groundwater bores on the site (approximately 250 metres in depth). These bores are to provide irrigation water and potable water to the subdivision. Appropriate setback distances from these bores is required, this and their depth minimises risk to the deep groundwater. The nearest bore to the site in addition to these, is a deep bore located approximately 600 metres from the site at the Redwood Valley Hall and is a TDC monitoring bore. The Soil Evaluation by MWH of the Coastal Tasman Area for the Rural 3 study identified that groundwater levels in the hill areas tend to vary from 6 metres to 20 metres below the surface, with groundwater stored in the Moutere Gravel Formation in thin lenses but with no aquifer at shallow depths.

Survey's of freshwater and coastal water in the region generally show compliance with recommended guidelines for swimming and in-water recreation, although occasional breaches have occurred anecdotally attributed in part to discharges of domestic wastewater. The coastal waters of the Coastal Tasman Area are regionally significant and this is reflected in the Regional Plan and associated Planning Maps, with areas between Mapua, Ruby Bay and Kina with classifications from Class FAE (management for aquatic ecosystems, fisheries and fish spawning), Class SG (management for shellfish gathering) and Class CR (management for contact recreation).

### **Characteristics of the discharge**

#### Composition of the Wastewater

The characteristics of wastewater influence the type and level of treatment required. The number of chemical compounds found in wastewater (even only from domestic sources) is almost limitless but given the sole domestic inputs proposed, it can be assumed that the wastewater will reflect that generally expected from domestic dwellings. The parameters of concern are likely to be suspended solids, biochemical oxygen demand, nitrogen (including ammonical nitrogen), phosphorus, sodium, and a variety of pathogens including bacteria, viruses, fungi, and eggs of parasites.

#### Expected Wastewater Volumes

Consent has been sought to discharge up to 90, 000 litres of domestic wastewater to land from the proposed subdivision and residential development authorised by RM030632. The wastewater design parameters provided in the Connell Wagner report Annexure D were designed to accommodate in excess of 5 persons per lot at a wastewater discharge rate of 200 litres per person per day. The proposed total discharge volume clearly exceeded these design parameters for the 61 new dwellings authorised at the site proposed in the application (i.e. 200 litres per person and 5 persons per lot = 61, 000 litres for 61 lots), this inconsistency was not explained in the application. However, consent was sought to “establish an onsite wastewater treatment and disposal system for the approved Rural 3 subdivision” so design flows should only reflect potential discharge volumes from this subdivision.

Auckland Regional Council's Technical Publication 58<sup>2</sup> recommends a wastewater flow allowance for upmarket/luxury households of 220 litres per person and recommends that for a four bedroom house (as proposed in the application) design flows should accommodate six persons. Utilising these design parameters the total wastewater flow for the 61 lot residential development would equate to 80, 520 litres per day. ASNZS1547:2000 recommends a wastewater flow allowance for upmarket houses of 220 litres per person and an allowance of six-seven persons for a four bedroom dwelling, thus equating to up to 93, 940 litres per day. The draft provisions for On-site Wastewater Management in the CTA recommend a default design flow calculation of 200 litres per person per day for a 10 person household in the absence of specific information about the proposed dwellings, however, an allowance for a lower maximum amount for cluster developments has been suggested for consideration because of the buffering effects of clusters on wastewater generation. Provided a flow metre is installed, maintained and monitored on the proposed discharge the volume sought by this consent can be accurately assessed during the staging of this subdivision to ensure that design flows are sufficiently conservative to accommodate actual flows once dwellings are constructed.

#### Collection, Reticulation and Treatment Systems

The applicant proposed that sewer reticulation would be in accordance with TDC's Engineering Standards and Policies 2004 and NZS 4404:2004. Conceptual information was provided in the Connell Wagner Drawing SK05 submitted with the application for consent indicating that wastewater would be gravity fed from the proposed dwellings to one of four pump stations from where wastewater would be pumped to the centralised treatment plant on Lot 2. No consent was sought to discharge wastewater from the reticulation network or pump stations so the collection network must be entirely contained. Emergency works provisions of Section 330 of the Resource Management Act would not apply to a privately managed wastewater system (not public work or network utility operator) so any unauthorised discharge of wastewater would be liable to enforcement action.

The applicant intends to construct and operate a communal, on-site wastewater treatment plant that is capable of treating wastewater to a secondary (and later tertiary) standard before disposal to land. The treatment plant is proposed to be located on the same allotment as the disposal area, requiring all wastewater to be pumped to this site for treatment prior to disposal. Rather than provide specific details of treatment methodology the applicant focused on minimum performance levels claiming that "a number of existing package treatment plants are able to meet or exceed these requirements and all have successful operating histories" (Annexure D Page 4). Considerable concern was raised in submissions (including Mosely, Nelson Marlborough District Health Board and Mason) regarding the lack of detail of treatment methodology provided in the application and additional information was requested by Council following the close of submissions.

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<sup>2</sup> Auckland Regional Council Technical Publication 58, On Site Wastewater Systems: Design and Management Manual. Third Edition 2004.

In the applicants response to the request for further information four potential treatment processes were discussed; Rotating Biological Contactors, Attached Growth Media, Membrane Bio-Reactor and Sequencing Batch Reactor. At the time of writing this report the applicant had not provided certainty as to which treatment methodology would be adopted so a brief assessment of each of the proposed methods is provided below;

### **Rotating Biological Contactors (RBC)**

RBC's combine suspended-growth and attached growth bioprocesses, circular plastic disks are mounted on a common shaft and rotated. The shaft can be submerged or located just above the tank containing the wastewater to be treated. Typically these disks are constructed of inert material such as polystyrene or polyvinyl chloride and micro-organisms will attach to the disks. These micro-organisms are responsible for treatment of wastewater and are exposed to air and oxygen during rotation (Buchanan and Seabloom, 2004<sup>3</sup>). As the thickness of the biomass of micro-organisms attached to the disks increases, some of the excess biomass will be sheared off; this is kept in suspension by the rotation of the disks. Crities and Tchobanoglous (1998<sup>4</sup>) report that a number of small package plants have been developed using RBC disks, however, the writer is not aware of any such systems located in this region and no examples were provided with the application. It is worth noting that primary settling tanks are required and to attain secondary wastewater quality standards secondary clarifiers would be necessary used in conjunction with the RBC. Organic loading is the primary design parameter for the RBC process and careful consideration of sulphide production is required to reduce potential odour generation from such treatment plants. In addition the applicant identified in their fax dated 8 November 2005 that the mechanical parts associated with the rotating shaft can be problematic and performance difficulties can be encountered and its use has been restricted through recommended conditions of consent.

### **Attached Growth Media (AGM)**

AGM's provide an inert material for micro-organisms to attached, as wastewater flows through the media, the fine suspended, colloidal and dissolved organic solids are absorbed by the biological film. The inert material may comprise of beds of randomly packed plastic modules, sheets of corrugated plastic or hanging strips of durable material. The arrangement and composition of the material will vary depending on the brand and model of commercial product selected (TP58, 2004). Wastewater and dissolved oxygen are brought into contact with the micro-organisms either by pumping liquid past media or by moving the media through the liquid. Oxygen is provided by injecting air and/or by circulating water to the air-liquid interface, excessive growth with slough off and settle in the base of the chamber form where it should be removed (Buchanan and Seabloom, 2004). Treatment is achieved by a community of micro-organisms.

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<sup>3</sup> Buchanan, P.E. and Seabloom, R.W. November 2004. *Aerobic Treatment of Wastewater and Aerobic Treatment Units.*

<sup>4</sup> Crites, R. and Tchobanoglous, G. 1998. *Small and Decentralised Wastewater Management Systems,* McGraw-Hill.

Operational problems including potential odours can be encountered but can be minimised by appropriate design (not overloading the filters) and proper attention to airflow in design. Sloughing of the bio film and difficulties in denitrification are additional potential problems identified by the applicant. The writer is aware of subdivisions of a similar size in other parts of the country where this technology has been used to treat wastewater.

### **Membrane Bio-Reactor (MBR)**

The MBR system is described by the applicant as “a high tech modular process that utilises suspended growth in conjunction with a membrane to filter the effluent”. Particulate matter is removed from the liquid by filtration, this includes dissolved constituents. The membrane acts as a selective barrier and can be made from a number of different organic and inorganic materials. The use of membrane technology in some parts of the world has increased dramatically in recent years and is expected to continue (Crities and Tchobanoglous,1998) but is not yet common in this country. The writer is aware of two membrane systems recently installed in this country, one as part of the current Environment Waikato wastewater study and a second to treat domestic wastewater from Fonterra’s Clandeboye milk factory. Both are fairly recent installations although the manufacturer reports that results are promising. The applicant has referenced the potential treatment ability of a membrane system in their recent letter, however, the high mechanical complexity (and subsequent replacement costs) and relatively new nature of the technology is also acknowledged.

### **Sequencing Batch Reactor (SBR)**

The SBR utilises flow equalization, aeration, clarification and biomass wasting processes sequentially in the same tank. Most SBR’s require the system to be closed off during treatment so commonly two reactors, operating in parallel will be required. Micro-organisms are subject to periods of high and low oxygen levels and to high a low food availability so the population become very efficient at treating the wastewater. The SBR can provide denitification conditions without any additional processes as required in technologies discussed above. The US EPA (1992<sup>5</sup>) reports that these processes are particularly applicable to small communities because of easy installation, simple operation, lower maintenance and higher energy efficiency. However, the applicant identifies problems due to the operational complexities, reliance on mechanical equipment and possible requirement for additional treatment to achieve proposed wastewater standards.

The applicant has proposed that the wastewater treatment plant (to be selected from those listed above) would produce a wastewater quality of biochemical oxygen demand 10 milligrams per litre and total suspended solids of 10 milligrams per litre, faecal coliforms of 100 faecal coliforms per 100 millilitres and total nitrogen of 25 grams per cubic metre. TP58 and the Ministry for the Environment’s Sustainable Wastewater Management Handbook<sup>6</sup> indicates that it is possible to achieve proposed standards can be achieved through high level treatment.

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<sup>5</sup> USEPA 1992. Summary Report: Small community water and wastewater treatment. Office of Water, Washington DC.

<sup>6</sup> Ministry for the Environment. 2003.Sustainable Wastewater Management A handbook for smaller communities. Wellington.

Tertiary treatment was proposed prior to disposal by ultra violet radiation but design specifications were not provided. The germicidal properties of the radiation emitted from ultraviolet light sources can be an effective bactericide and viricide for wastewater, with minimal or no formation of toxic compounds (NZ Land Treatment Collective, 2000<sup>7</sup>) associated with the use of chlorine or other chemical disinfecting agents. Generally, Council have required tertiary treatment for larger domestic wastewater discharges, particularly where concerns with site limitations and the receiving environment exist. The requirement for UV treatment was supported by the District Health Board in their submission.

Nitrogen levels in the discharge and potential effects have been discussed in the application, in particular in Annexure E from Cawthorn Institute. Cawthorn identified at the loading rate proposed in the application nitrogen application rates would equate to approximately 150 kilograms per hectare per year. This is less than the maximum nitrogen application rate applicable for discharges of dairy effluent but is considerably greater than historical and existing nitrogen application rates in the Coastal Tasman Area. Some concerns regarding potential effects of nitrogen loading rates from on-site discharges of domestic wastewater in the Coastal Tasman Area were raised in the draft variation, however, insufficient information is currently available to provide conclusive recommendations for nitrogen reduction. Given the size of the subdivision, the proximity to the Redwood Valley Stream and the eventual discharge to the Waimea Inlet control on nitrogen reduction within the treatment plant was considered necessary.

#### Disposal / Irrigation System

Properly designed land treatment of wastewater avoids surface or groundwater pollution which may occur if wastewater is discharged directly into rivers, groundwater lakes or the sea. Land treatment therefore allows for conservation of natural water resources, or extends the range of uses of the water resource and as a result is generally the socially and culturally preferred method of discharge of wastewater. Surface drip irrigation was initially proposed by the applicant, however, this has since been amended to covered drip irrigation following concerns raised in submissions. Drip irrigation provides a number of advantages because it takes advantage of the evapotranspiration potential (thus reducing the amount of wastewater requiring absorption) and can be located on a range of sites.

The rate at which wastewater moves through the soil determines how much wastewater can be applied without causing ponding and surface runoff. Loading rates are critical, particularly on poorly draining soils such as the Moutere Clay soils found at this site. The applicant proposed a maximum loading rate of 2 millimetres per day at peak wastewater production. This loading rate reflects ASNZS1547:2000 recommendations for Category 6 soils, TP58 recommends an maximum loading rate of 2 millimetres or less for such poorly draining soils this is consistent with recommendations for the draft wastewater variation for the Coastal Tasman Area.

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<sup>7</sup> New Zealand Land Treatment Collective, 2000. Guidelines for the Utilisation of Sewage Effluent onto Land. Forest Research, Rotorua.

ASNZS1547:2000 warns that to “enable utilisation of such soils (Category 5&6 soils) for on-site wastewater disposal alternative systems, special design requirements and distribution techniques and/or soil modification procedures will be necessary”. The Standard requires that if the permeability testing indicates an infiltration rate of less than 0.06 millimetres per day then a full water balance of the disposal area (including effective rainfall, runoff, evapotranspiration should be used. Test pits 3A and 4A indicated infiltration rates of less than 0.06 millimetres per day so a full water balance should be provided. Water balance comments were provided in Section 2.3.2 of the Connell Wagner report however, a full water balance in accordance with Section 4.2C3 of AZNZZS1547:2000 should be provided by the applicant to support the comments provided in their application.

Soil permeability testing provided by the applicant indicate an infiltration rate of one millimetre per day at worst, coupled with an evaporation rate of 1 millimetre per day the applicant has proposed the 2 millimetre application rate. These are higher than expected by Council, however, Council’s Resource Scientist Joseph Thomas commented that these rates are within the same magnitude. Although the limiting hydraulic properties of the Moutere Clay soils are well recognised (as was clear through submissions received on this application), little is known about the ability of these soils to cope with long term applications of highly treated domestic wastewater. Most existing and historical systems in these areas have relied on traditional treatment methodologies. If consent is to be granted, regular monitoring and assessment of the application rate will be required and has been specifically addressed through a recommended review condition attached to this report.

Variation 46 (yet to be formally notified) will discourage wastewater disposal on south facing slopes of 15 degrees slope or greater due to the inherent risks, in addition AZNZZS1547 states that surface irrigation is unsuitable for slopes greater than 6%. The applicant initially proposed surface irrigation of wastewater (a point noted by several submitters), however, it is noted that the suite of conditions offered by the applicant which accompanied the recent letter dated 1 November 2005 a 50 millimetre cover of soil, bark or an appropriate alternative was proposed. A surface water cut-off drain to divert stormwater flows from the disposal area was proposed, the importance of such measures is raised in ASNZZS1547:2000 for steeply sloping sites. Although the Standard notes that drip irrigation enables utilisation of low infiltration rates over a large area to prevent surface runoff, it also notes that the risk of producing off-site impacts increases with slope gradient. The application notes that future sites for supplementary disposal are available below the housing areas on north facing slopes of the subdivision but no further consideration of these areas was provided in subsequent parts of the application. These areas would be considered more desirable for wastewater disposal than the subject site due to their north facing aspect and gentler topography and may need to be considered if appropriate setbacks within the proposed disposal area are to be met. However, no assessment of the receiving environment or potential effects of utilising these areas has been provided with the application.



Given the poorly draining nature of soils at the site, surface flow of wastewater is considered a more likely pathway for movement, or through shallow seeps. A 20 metre setback from watercourses was proposed by the applicant and has been required in the recommended conditions to reduce potential effects on surface water bodies as a result of the discharge. The south facing aspect of the proposed wastewater disposal area will hinder evapotranspiration rates, particularly in winter, the gentler sloping north facing slopes in other parts of the subdivision would have been more conducive to effective evapotranspiration. In order to meet conditions of consent volunteered and recommended, additional area for reserve wastewater disposal will be required and this area must be marked on a site plan to be provided by the applicant at the hearing (or prior).

Council's Resource Scientist, Water and Special Projects noted that the risk to deep groundwater from the proposal was low but suggested ongoing monitoring of the Redwood Valley Stream to assess surface and shallow impacts. This has been recommended in the conditions attached to this report. Effects on shallow groundwater can be minimised by effective treatment of wastewater and appropriate disposal. The potential for localised seeps down slope of the disposal area was identified in submissions and should form part of the monitoring requirements of any consent should it be granted.

### **Contingency Measures**

The applicant sought to address contingency measure through volunteered conditions of consent requiring remote monitoring of the wastewater system, the preparation of an Operations Plan and 24 hour storage volume within the wastewater treatment plant. The applicant proposed that wastewater would be trucked from the site if the wastewater system was to seriously malfunction, in addition extra storage within pump stations was proposed although not specified. Compliance with Council's Engineering Standards requires a minimum of four hours on-site emergency storage (Section 4.21.2) for pumping stations, however, given the location of the proposed pumping stations, private ownership and distance from a Council treatment facility additional storage is recommended.

Recommended conditions of consent require the provision of a bond as a stop gap measure to deal with emergency work if necessary, however, it would be undesirable for Council to have to utilise this bond. Instead any non-compliance with consent conditions should be rectified immediately by the consent holder and enforced by Council's Compliance team through abatement notices, infringement fines or other enforcement tools where necessary. Additional recommended measures include duty and standby units for all key mechanical systems.

## **Monitoring and Maintenance**

The applicant proposed that wastewater quality would be monitored weekly for the first month of operation, then two weekly for the first two months, then monthly for the following nine months and following the first 12 months of sampling monitoring frequency was proposed to be reduced to at least six samples each year. Monitoring of the Redwood Valley Stream was proposed four times per year. The frequency of sampling proposed by the applicant has been slightly increased in recommended conditions given concerns raised in submissions and contaminant limits and receiving environment standards have been recommended. Flow monitoring was proposed by the applicant.

Adequate maintenance is critical to the performance of any wastewater treatment system, particularly one of this scale. A comprehensive Operations and Management Plan must be required to ensure effective maintenance of the wastewater collection, treatment and disposal systems. Each of the technology options proposed in the application and discussed in this report have specific maintenance requirements.

## **Odour**

Wastewater treatment plants commonly discharge to air in the form of an odour and aerosols. The odour associated with fresh, aerobic domestic wastewater is often likened to kerosene or freshly turned earth, contrastingly, aged anaerobic wastewater is considerably more offensive with the characteristic rotten egg odour of hydrogen sulphide (Davis and Cornwell, 1991)<sup>8</sup>. The applicant has proposed that the treatment plant may include a biofilters to treat air from the tank thereby minimising potential odour generation. The applicant has not sought consent to discharge contaminants (namely odour) to air associated with the wastewater treatment plant as they have proposed that the treatment system will be a closed system and compliance with the provisions of permitted activity Rule 36.3.2 was proposed, in particular the discharge may not create any offensive or objectionable odour beyond the property boundary. Odour concerns were raised by a number of submitters, particularly given the lack of detail provided on the proposed treatment methodology. Without an application to discharge contaminants to air, specific conditions cannot be imposed with respect to this activity. However, compliance with permitted activity provisions has been proposed and should consent be granted should be carefully monitored by Council on an on-going basis.

## **Noise**

Concern was raised by some submitters regarding potential noise generation from the operation of the treatment plant. Consent has not been sought to breach noise standards applicable for the zone as compliance with permitted activity provisions for Rural 1 and Rural 3 zones was proposed.

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<sup>8</sup> Davis M and Cornwell D, 1991. Introduction to Environmental Engineering, Second Edition, McGraw-Hill.

## **Assessment of Alternatives**

As outlined earlier in this report, four treatment methodologies have been identified in the application and at the time of writing clarification had not been provided to narrow down these options. A brief assessment of the advantages and disadvantages of these treatment options was provided in the most recent correspondence from CBH Ltd dated 8 November 2005. The applicant proposed land based dispersal of wastewater as opposed to a discharge to water because this "is generally the preferred system of effluent disposal for Regional Councils".

Little discussion of alternative disposal sites was provided despite the significant limitations (slope, aspect, proximity to watercourses and soil type) of the proposed area. The applicant noted that future sites for supplementary disposal of wastewater are available below housing areas on the north facing slopes of the subdivision. These areas are likely to be less constrained for wastewater disposal and should be protected by way of consent notice to ensure they are available for use in the future if necessary. These areas are required to satisfy reserve requirements of recommended conditions. Should these areas be required to be used in the future a variation to any discharge permit granted at this time (or a new consent) would be necessary. Consent has not been sought to discharge to these areas at this time so their use as a primary field cannot be considered. If a variation or new consent application was received to utilise these areas a thorough assessment of effects and potentially affected persons would be required as the discharge would be to a different catchment than is being considered here. Given the allotment size previously authorised by subdivision consent, on lot disposal of wastewater is not feasible.

Several submitters (including David Richards, Redwood Valley Rural Water Supply, and Mosely) requested that the wastewater from the subdivision and residential development be piped to Bells Island as proposed with the application for subdivision consent. This option has not been considered further by the applicant since the hearing of their subdivision consent application when the interim decision to abandon wastewater servicing of the Coastal Tasman Area was released. It is expected that by the time of hearing this application, Council will have released their final decisions on Variation 32 and the subsequent Variation 46 providing submitters with further clarification on these issues.

## **Permitted Baseline Test**

Recent Environment Court and Court of Appeal cases have established the principle of "permitted baseline test" as a way of assessing whether the effects are more than minor. Under this principle the proposal is compared to what could be done as a permitted activity under the relevant Plan. Following Variation 32 in December 2003 ALL new discharges of domestic wastewater in the Coastal Tasman Area (including this site) require a specific discharge consent so there are no permitted activity rules for discharges of domestic wastewater that are relevant here. In other parts of the region, the discharge of domestic wastewater is a permitted activity up to a weekly average flow of 2000 litres per day provided compliance with the conditions of the relevant permitted activity rules.

Unreticulated residential zones in areas which exhibit soil and/or geology limitations are classified as Special Domestic Wastewater Disposal Areas and must comply with strict wastewater quality limits and monitoring requirements.

#### **4. RESOURCE CONSENT HOLDER**

The application submitted to Council was in the name of CBH Ltd whom is also the current land owner and holder of the resource consent to undertake the subdivision and residential development on the site (RM030632). If the Committee is of the mind to grant consent then it should be granted to CBH Ltd, although it is acknowledged that the applicant intends to create a Residents Association to hold and manage the consent in the long term. This management approach is still relatively untested in our region although two recently approved subdivisions (by Carter Holt Harvey) within the Coastal Tasman Area have utilised similar approaches, but these are not yet operative. Opinions from other parts of the country where these approaches are more common differ considerably. If Council were to grant consent they would need to be confident that a robust and binding arrangement was developed so that the owners of each lot and their successors in title were jointly liable for all management and maintenance functions of the wastewater system.

#### **5. TERM OF CONSENT**

The applicant has sought a 20 year term for their discharge permit, 35 years is the maximum possible term allowable for a discharge permit in accordance with 123 of the Resource Management Act, 1991. If the Committee were to grant consent a fifteen year term of consent is considered more appropriate given the lack of detail provided in the application and uncertainties which exist. It is acknowledged that the applicant could provide additional information regarding treatment methodologies, contingency measures and disposal areas which could enable the writer to reconsider this recommendation.

#### **6. CONCLUSIONS AND RECOMMENDATIONS:**

- The assessment of this application has been hindered by a lack of detail and clarity on the proposed treatment methodologies and limited information about the receiving environment. Robust and detailed conditions of consent will be required to ensure that the discharge is adequately controlled and potential adverse effects are minimised, recommended conditions are attached to this report.
- Policy and objectives of the relevant planning documents are clear that a discharge to land is preferable where it is the most practicable option and adverse effects would be less than a direct discharge to water, however, careful design consideration is required. It is considered that proposed discharge is capable of meeting the provisions of the Resource Management Act, 1991, the proposed Tasman Resource Management Plan and the Tasman Regional Policy Statement provided the wastewater treatment system is installed, operated and maintained as proposed in the application and in accordance with the recommended conditions of this consent.

Note: This application has been assessed against objectives, policies and rules within the proposed Tasman Resource Management Plan at the time of writing of this report, it is likely that the relevant parts of the proposed TRMP are to be varied (by proposed Variation 46) prior to the hearing of this application.

### Suggested Conditions:

If the Committee should decide to grant consent, I recommend that the following conditions be imposed to minimise potential adverse effects of the discharge. Some changes to those conditions volunteered by the applicant in their letter dated 1 November 2005 have been recommended, main changes are identified by red italics.

## DISCHARGE PERMIT (RM050727) – DISCHARGE DOMESTIC WASTEWATER

### Site and Discharge Details

- |                            |   |
|----------------------------|---|
| 1. Physical Address:       | Greenacres Road, Redwood Valley   |
| Legal Description:         | Lot 2 DP 6766   |
| Valuation Number:          | 1938080000  |
| Map Reference of Property: | East 2517536 North 5989725  |
| Receiving Environment:     | Land  |
| Maximum Discharge Volume:  | 90, 000 litres per day  |
| Maximum Discharge Rate:    | 2 millimetres per day   |
| Discharge Characteristics: | Tertiary treated domestic wastewater from residential development authorised by Resource Consent RM030632. ( <i>Specific to this proposal</i> ) |

### Discharge Restrictions

- The maximum daily discharge volume shall not exceed 90, 000 litres.
- The discharge shall only contain treated domestic wastewater from 61 dwellings authorised by RM030632, no industrial or tradewaste shall be included.
- The maximum loading rate at which the wastewater is applied to land shall not exceed 2 millimetres per day (2 litres per square metre per day).

### Advice Note:

For a daily discharge volume of 90, 000 litres per day the primary disposal area will need to be at least 4.5 hectares, with an additional 4.5 hectare suitable reserve area. (*addition of advice note for clarity*)

- The treated wastewater entering the disposal field, as measured at the sampling point required to be installed by Condition ~~3027~~, shall comply at all times with the following limits:
  - Carbonaceous biochemical oxygen demand (cBOD<sub>5</sub>) ~~20-10~~ grams per cubic metre;
  - Total suspended solids ~~30-10~~ grams per cubic metre; and
  - Faecal coliforms ~~1,000~~ faecal coliforms per 100 millilitres; and
  - Total nitrogen 25 grams per cubic metre.

6. The discharge shall not cause any of the following effects on the receiving waters (ground or surface waters) beyond the boundary of Lot ~~900-2~~ on which the discharge occurs:
  - i) The production of any conspicuous oil or grease film, scums or foams, or floatable or suspended material; or
  - ii) Any conspicuous change in the colour or visual clarity; or
  - iii) Any emission of objectionable odour; or
  - iv) Any significant adverse effects on aquatic life.

### **Collection, Reticulation and Treatment Systems**

7. The Consent Holder shall submit a detailed "Wastewater Treatment and Disposal Design Report", prepared by a person who is suitably experienced in designing wastewater treatment and disposal systems, to the Council's Manager, Environment and Planning prior to the construction of the collection, treatment or disposal systems. This report shall provide evidence of how design requirements imposed by this consent of the treatment and disposal systems of this consent shall be met and shall include, but not be limited to, the following information:
  - (i) certification that the selected disposal areas are of suitable topography and soil type and are suitable for the loading rates proposed and sufficiently stable for wastewater disposal; and
  - (ii) the location and dimensions of disposal areas (including reserve areas), including setbacks from neighbouring properties, watercourses and domestic bores, depth of unsaturated soils beneath dripper lines and avoidance of slopes greater than 15 degrees; and
  - (iii) details of how the disposal system will be operated and criteria to be used to determine the timing, period and rate of application. The criteria shall be based on, amongst other things, climatic data, soil moisture status, and groundwater levels within the disposal areas.
  - (iv) details regarding management of vegetation at the disposal area for the duration of consent; and
  - (v) the measures proposed to minimise stormwater infiltration and inflow into the disposal field; and
  - (vi) the proposed method of wastewater treatment including specific design details and evidence of how the contaminant limits required by Condition 5 will be complied with on a consistent basis; and
  - (vii) the location of the wastewater treatment plant.
8. The construction and installation of the wastewater treatment plant and disposal system shall be carried out in accordance with information submitted with the application for resource consent RM050727 and under the supervision of a person who is suitably qualified and experienced in wastewater treatment and disposal systems.

The person supervising the construction and installation of the 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 10-17 (inclusive) and shall also confirm the following:

- (i) that the wastewater system (including the collection system, treatment plant and the disposal area) is capable of treating the design flows and that it has been designed generally in accordance with standard engineering practice, AS/NZ Standard 1547:2000 for On-Site Domestic Wastewater Management; and
  - (ii) that all components of the wastewater system (including the treatment plant and the disposal area) have been inspected and installed in accordance with standard engineering practice, the manufacturer's specifications; and
  - (iii) that the components used in the facility are in sound condition for continued use for the term of this resource consent.
9. The consent holder shall submit a set of final "as-built" plans to the Council's Co-ordinator, Compliance Monitoring which show the siting of all components of the wastewater treatment and disposal 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 monitoring officer to locate all structures identified on the plans.
10. All wastewater shall be treated prior to disposal using a primary treatment process, followed by a secondary treatment process (Attached Growth Media, Membrane Bio-Reactor or Sequencing Batch Reactor), and ultra-violet tertiary treatment process to ensure the wastewater meets the standards specified in Condition 5.

The wastewater shall receive a minimum level of UV disinfection, defined as the 10 minute average received UV light dose, of 45 milli-Watt seconds per square centimetre (mWs/cm<sup>2</sup>) prior to the discharge leaving the treatment plant and being disposed to land. The UV disinfection system shall include an automatic self cleaning mechanism.

**Advice Note:** The treatment plant shall be designed such that it is able to be configured for nitrogen removal should it be required to meet conditions of consent.

**Advice Note:** The Consent Holder has proposed that an ultra violet light disinfection system will be used to provide tertiary treatment of wastewater. The specific design of the disinfection system has yet to be determined, but it is expected that the Consent Holder will provide sufficient technical information to the Council for it to be confident that the required viral reduction can be consistently achieved. For clarification, if monitoring of the treatment system shows that the minimum ultraviolet dose has not been met, then the Council may undertake additional microbiological sampling to verify compliance with Condition 5 (iii).

11. The Consent Holder shall include in the "Wastewater Treatment and Design Report" required by Condition 7, two copies of a monitoring methodology that is proposed to be used to continuously measure the effectiveness of the disinfection system required to be installed in accordance with Condition 10. This monitoring methodology shall be designed to provide sufficient data to allow the Council to confirm that the wastewater has always received the prescribed minimum level of disinfection. The approved monitoring methodology shall be incorporated into the "Operation and Management Plan" required by Condition 2218.

#### **Disposal / Land Application System**

12. The disposal areas shall be located in accordance with the conditions of this consent and as specified in the application for discharge consent ~~RM050286~~RM050727. Where specifications differ, the conditions of this consent shall be adopted.
13. All wastewater shall be discharged to ground by way of pressure compensating dripper lines (s) laid parallel to the contours of the site. The consent holder shall, at all times, ensure that the dripper lines used for the disposal of wastewater are located within a planted area and have no less than a 50 mm cover of soil, bark or an appropriate alternative. (modified)
14. The wastewater disposal area shall be fenced to prevent access by stock or unauthorised persons and shall be clearly labelled in at least two visible places with visible warning signs which read "Wastewater Disposal Area – Avoid Contact" or equivalent. The details of such signage shall be submitted to Council's Co-ordinator Compliance Monitoring, prior to the exercise of this consent. (inserted)

**Advice Note:** The Consent Holder is advised to discuss the signage proposal for the wastewater disposal area with the local Medical Officer of Health before submitting them to Council for approval. (inserted)

15. The disposal areas (including reserve areas) shall not be located on slopes averaging greater than 15 degrees over a 10m length and shall not be located within:
  - i) 20 metres of any surface water body; and
  - ii) 20 metres of any bore for domestic water supply; and
  - iii) 10 metres of any adjoining property; and
  - iv) 600 millimetre separation from dripper line to seasonal water table.



16. Subsurface cut-off trenches shall be constructed up slope of the disposal areas to divert, as far as is practicable, stormwater away from the disposal areas. These trenches shall be backfilled with sawdust or similar carbon material to a depth of at least 300 millimetres. (altered)

~~17. The pinus radiata present within the actual disposal area shall remain in place for the exercise of this consent unless the field is rotated and a new disposal field is prepared. The wastewater disposal area shall be fenced to prevent access by stock or unauthorised persons and shall be clearly labelled in at least two clearly visible places with clearly visible warning signs which read "Wastewater Disposal Area - Avoid Contact" or equivalent. The details of such signage shall be discussed with the local Medical Officer of Health and submitted for approval by the Council's Co-ordinator, Compliance Monitoring, prior to the exercising of this consent.~~

A suitable wastewater disposal reserve area ~~equivalent to not less than 100 % the size of the primary disposal area (3 hectares)~~ equivalent to not less than 100% the size of the primary disposal area (4.5 hectares) shall be kept available for future use for wastewater disposal. This reserve area shall remain undeveloped and shall be located within the boundaries of the subdivision authorised by RM030632 and owned by the Consent Holder. (altered)

**Advice Note:** The Consent Holder is reminded that although this consent prescribes the provision of a wastewater disposal reserve area, the use of this area for wastewater disposal is not covered by this consent and a new consent or variation to this consent would be required to allow this to occur. (addition)

### Wastewater System Operation and Maintenance (the format of this section has been altered)

~~18. The Consent Holder shall ensure that the wastewater treatment and disposal system is maintained by a suitably qualified person(s) who has proven experience in maintaining such systems. The Consent Holder shall, prior to the exercise of this consent, provide to Council, in writing, the name and contact details (mailing address and telephone number) of the suitably qualified and experienced person(s) who is responsible for the maintenance of the wastewater treatment and disposal system.~~

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~~As a minimum, the maintenance shall be in accordance with the "Operations and Management Plan" required by Condition 22. In the event that this responsibility is transferred to a new person(s), the Consent Holder shall immediately advise the Council of the name and contact details of this new person.~~

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~~In addition, the Consent Holder shall ensure that the suitably qualified and experienced person(s) who is responsible for the maintenance of the wastewater treatment and disposal system forwards to the Council every three months a copy of a written report that details the maintenance that has been undertaken on the wastewater treatment and disposal system during the previous three month period.~~

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**Advice Note:**

For compliance purposes, a "suitably qualified person who has proven experience in maintaining such systems" would be either a person employed or trained by the manufacturer of the treatment and disposal system, or someone who can provide evidence of satisfactory experience in maintaining such wastewater treatment and disposal systems. A Chartered Professional engineer or suitably qualified consultant 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:

- i) An inspection programme to verify the correct functioning of the wastewater treatment and disposal systems including not less than monthly inspections of the wastewater treatment plant and disposal field; and
  - ii) A schedule for the daily, weekly, monthly and annual operational requirements including monitoring requirements of consent conditions; and
  - iii) A schedule of maintenance requirements for the pumps, septic tanks, recirculation tanks, treated effluent holding tank, flow meters and stormwater control drains; and
  - iv) A schedule of maintenance requirements for the management of vegetation on the wastewater ground disposal area; and
  - v) A contingency plan specifying the actions to be taken in the event of failure of any component of the system and any non-compliance with the conditions of this resource consent; and
  - vi) Details of how the ground disposal system will be managed; and
  - vii) Emergency contact details (24 hour availability) for Service Provider and Consent Holder shall be provided.
19. A copy of the "Operations and Management plan" required by Condition 19 shall be submitted to the Council's Environment & Planning Manager for approval prior to the exercising of 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.
20. The consent holder shall enter into, and maintain in force, a written maintenance contract with an experienced wastewater treatment plant operator suitably trained in wastewater treatment plant operation by the system designer, approved by the Council's Environment & Planning Manager for the ongoing maintenance of the treatment and disposal systems and control of the remote monitoring system as required by Condition 23. This contract shall require the operator to perform maintenance functions and duties specified in the Operations and Management Plan and required by Condition 18. A signed copy of this contract including full contact details for the service provider shall be forwarded to the Consent Authority, prior to the exercising of this consent.

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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 provide the Council 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 three month period in accordance with the requirements of the Operations and Management Plan, every three months from the date of exercising of this consent.

**Advice Note:** For compliance purposes, a suitably qualified 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 experience in maintaining such wastewater treatment and disposal systems.

~~20. The Consent Holder shall install and operate a remote monitoring system whereby all tanks and pumps of the wastewater collection, reticulation, treatment and disposal system are monitored on a continuous basis. The alarm systems shall be installed to operate in the event of any pump failure or any other form of mechanical failure within each interceptor tank and within the central treatment plant (including the tertiary treatment system required by Condition 5). These alarms shall be configured to be remotely monitored by the wastewater treatment plant operator for all systems and to activate an audible and visual alarm system located adjacent to the treatment plant or other prominent place on the site for the central treatment plant. The details of the alarm and monitoring systems shall be included in the "Operations and Management Plan" required by Condition 22.~~

~~21. The consent holder shall enter into, and maintain in force, a written maintenance contract with an experienced wastewater treatment plant operator trained in wastewater treatment plant operation by the system designer, approved by the Council's Environment & Planning Manager for the ongoing maintenance of the treatment and disposal systems and control of the remote monitoring system as required by Condition 27. This contract shall require the operator to perform maintenance functions and duties specified in the Management Plan and required by conditions of this consent. A signed copy of this contract including full contact details for the service provider shall be forwarded to the Consent Authority, prior to the exercising of this consent. Any changes to this maintenance contract must be in accordance with the conditions of this consent and approved in writing by the Council's Co-Ordinator, Compliance Monitoring prior to them taking effect~~

~~22. A Chartered Professional engineer or suitably qualified consultant experienced in wastewater engineering shall prepare an "Operations 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:~~

- ~~i) An inspection programme to verify the correct functioning of the wastewater and disposal systems.~~

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- ~~ii) A schedule for the daily, weekly, monthly and annual operational requirements including monitoring requirements of consent conditions;~~
- ~~iii) A schedule of maintenance requirements for the pumps, septic tanks, recirculation tanks, treated effluent holding tank, flow meters and stormwater control drains.~~
- ~~iv) A schedule of maintenance requirements for the management of vegetation on the wastewater ground disposal area.~~

~~25.v) A contingency plan specifying the actions to be taken in the event of failure of any component of the system and any non-compliance with the conditions of this resource consent~~

- vi) Details of how the ground disposal system will be managed.
- ~~v) Details of how the ground disposal system will be managed.~~
- ~~vii) Emergency contact details (24 hour availability) for Service Provider and Manager of the Body Corporate shall be provided.~~

23. ~~A copy of the management plan required by Condition 22 shall be submitted to the Council's Environment & Planning Manager for approval prior to the exercising of this consent. Any changes to this plan shall be in accordance with the conditions of this consent and approved in writing by the Council's Environment & Planning Manager prior to them taking effect.~~

24. The collection and treatment tanks shall be inspected not less than once every three months. All tanks shall 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.

25. The Consent Holder shall submit an "Asset Management Plan" for the wastewater collection, treatment and disposal system for approval by Council's Environment & Planning Manager prior to the exercise of this consent. This plan shall be prepared by a suitably experienced person and shall detail financial asset management requirements (including depreciation considerations) of the wastewater collection, reticulation, treatment and disposal systems for the duration of the consent. Any changes to this plan shall be in accordance with the conditions of this consent and submitted to the Council's Environment & Planning Manager prior to them taking effect.

**Advice Note:** MfE's Sustainable Wastewater Management, a handbook for smaller communities Section 11.2 would be a useful reference point in preparing this plan.

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**Contingency Measures (this section has been altered)**

26. A telemetered 24 hour remote advance warning system shall be installed and operated that is capable of warning of any failure within the collection, treatment or disposal systems~~system failure~~ (i.e. pump failure, mechanical blockage or UV disinfection system failure). This warning system shall be configured to be remotely monitored by the wastewater treatment plant operator for all systems and to activate an audible and visual alarm system located adjacent to the treatment plant or other prominent place on the site for the central treatment plant. The details of the alarm and monitoring systems shall be included in the "Operations and Management Plan" required by Condition 18. ~~The remote monitor and management system shall be operated to~~ and shall achieve as a minimum the following:

- i) Notify operators of any alarm; and
- ii) Monitor and record daily flow readings from all water meters (or pump station pump hours); and
- iii) Store and transmit daily reports to the operator of the discharge volume meter reading and system status from each site; and
- iv) In the event of any alarm activating, the remote monitor and management system shall immediately notify the maintenance operator and shall continue notifying the operator until the condition has been remedied and cleared by the operator.

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.

27. The Consent Holder shall ensure that the treatment plant 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 wet weather flow and in accordance with the provisions in the "Operations and Management Plan".

28. The Consent Holder shall ensure that all pump stations associated with reticulation, collection and treatment systems have a minimum 8 hour on site, sealed emergency storage, based on the average wet weather flow. All mechanical components of the reticulation, treatment and disposal system shall include duty and standby units. **(inserted)**

29. Should power disruption result in the 24 hour storage capacity at the treatment plant being utilised to 80% capacity, 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 18~~22~~.

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## Monitoring

30. A sampling point to allow collection 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 disposal field. 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.

~~31.~~ A sample of the treated wastewater shall be collected from the sampling point required to be installed in accordance with Condition ~~27~~30. Samples shall be analysed for five day carbonaceous biochemical oxygen demand (cBOD<sub>5</sub>), total suspended solids, total faecal coliforms, total nitrogen, pH, temperature, the parameters set out in the table below. The frequency of sampling shall be as follows:

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- i) For the first four months following plant start up, samples shall be collected weekly when the plant is discharging to the disposal field for first two months and then two weekly for the two months following;
- ii) For the following eight months samples shall be collected monthly;
- iii) Following the first 12 months samples shall be collected at least every two months (a total of at least six samples a year) provided compliance with the contaminant limits specified in Condition 5. Should these limits not be met, the sampling frequency required in ii) above shall be continued until of compliance with the Contaminant limits of Condition 5 has been achieved over an 8 month period. (frequency modified)

32. Prior to the exercise of this consent the Consent Holder or their authorised agent shall collect at least two water samples from the Redwood Valley Stream as it runs below the proposed disposal site, as marked Site 1 and 2 on Appendix 1 (Figure 2 Annexure E Cawthorn Report). The location shall be fixed by Global Positioning System (GPS) and submitted to the Council's Co-Ordinator, Compliance Monitoring prior to sampling. Thereafter the consent holder or their authorised agent shall collect samples from the same sites four times per year when wastewater is being discharged to the disposal field. Samples shall be collected at no closer interval of one month between sampling. These samples shall be analysed to determine the presence and concentration of the following determinands:

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- Faecal coliforms
- E coli
- Total Kjeldahl Nitrogen
- Total ammonia nitrogen (total ammonia)
- Dissolved inorganic nitrogen
- Nitrate/nitrogen
- Nitrite/nitrogen
- Total phosphorous
- Dissolved reactive phosphorous

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33. The discharge shall not cause contaminant levels at the downstream site identified by Condition 29 to exceed the following values;

- Dissolved Inorganic Nitrogen <0.444 g/m3
- Total Nitrogen <0.614 g/m3
- Dissolved reactive phosphorus <0.01 g.m3
- Total phosphorus <0.033 g/m3

**Advice Note:** These values are consistent with Nutrient water quality guidelines (ANZECC 2000) for the protection of river ecosystem health.

34. 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. The detection limits specified in Appendix 2 (Applicable Detection Limits) shall apply. 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.

#### Reporting

35. The Consent Holder shall measure the wastewater exiting the wastewater treatment plant determined by an appropriately installed and calibrated flow meter capable of measuring to an accuracy of plus or minus 5%. The meter should be installed in accordance with the manufacturer's specifications and shall be operated and maintained so that it is able to be used to record the discharge volume.

36. The flow meter required to be installed in accordance with Condition 32 shall be read manually or electronically at the same time daily whenever the system is discharging to the disposal area. Copies of these records along with the lot number of each lot discharging to the treatment plant shall be forwarded to the Council's Co-Ordinator Compliance Monitoring quarterly in the Quarterly Monitoring Report required by Condition 38, within one month following the end of the three month period ending 31 March, 30 June, 30 September and 31 December each year.

37. Any exceedance of the permitted discharge volume shall be reported to the Council's Co-Ordinator Compliance Monitoring in writing within one week 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. This data shall be securely stored electronically for at least two years.

38. The consent holder shall log all complaints received relating to the exercise of this consent and shall maintain a register of complaints including the following information; Date and time of the complaint; nature of the complaint; name address and telephone number of the complainant if available; details of discharge at time of alleged problem; and any remedial action taken to rectify problem or mitigation proposed to prevent future complaints.

39. The consent holder shall report all complaints to the Council's Co-Ordinator Compliance Monitoring in writing within 48 hours of receipt and the log shall be made available to the Council upon request.
40. The consent holder or their authorised agent shall notify Council's Co-Ordinator Compliance Monitoring of any wastewater discharge to ground or water from the treatment plant or sewage reticulation system which is not authorised by this consent in writing as soon as practicable (but no more than 24 hours) after the discharge commenced.
41. The consent holder shall present a Quarterly Monitoring Report every three months for the duration of the consent to the Council's Co-Ordinator Compliance Monitoring, reviewing the performance of the treatment and disposal system and shall include the following:
  - Actual monitoring results for monitoring undertaken in accordance with Conditions 28, 29 and 30 above, for the past quarter and compliance with discharge limits specified in Condition 5 and Condition 6;
  - An interpretation of monitoring results and an outline of any trends in changes in discharge volume, wastewater discharge quality and quality of the receiving waters. It shall also identify any actual and potential effects on the receiving environment identified since the previous report to the Council;
  - A summary of any difficulties that have arisen with the plant operation and/or public complaints received and any remedial actions taken as a result during the previous period.

**Bond** (inserted)

42. ]The Consent holder shall provide Council with a bond prior to the exercise of this consent to the sum of \$61, 000. Should the bond need to be utilised to undertake emergency works a replacement sum shall be provided within two months.

**Advice Note:** This is a privately managed wastewater system, any maintenance or requirement to rectify a breach of consent is the responsibility of the Consent Holder (or authorised agent), Council has no responsibilities in the ongoing management of this system. The bond is only intended to provide Council with some security in an emergency that requires immediate work and the Consent Holder has failed to act appropriately.

**General Conditions**

43. The wastewater treatment system shall be located, and the surrounding area maintained, so that vehicular access for maintenance is readily available at all times



44. The Council may, in the period 31 May to 31 August 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:
- i) 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
  - ii) 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
  - iii) 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
  - iv) reviewing the frequency of sampling, flow monitoring and/or number of determinants analysed if the results indicate that this is required and/or appropriate.
45. Pursuant to Sections 35 and 36 of the Resource Management Act, 1991, the permit holder shall meet the reasonable costs associated with the monitoring and administration of this permit. Costs can be minimised by consistently complying with the conditions of this consent and thereby reducing the frequency of Council visits. This will include auditing of the Consent Holders monitoring programme and monitoring results presented to Council.
46. The Consent Holder shall administer the responsibilities and obligations of all persons who own lots connected to the wastewater treatment and disposal system, to comply with the conditions of this consent. The Consent Holder shall ultimately hold responsibility for ensuring that the owners of properties within the development:
- i) Are connected and discharge to the reticulation and central treatment system whenever the respective dwellings first become occupied, and
  - ii) Are aware of and comply with the rules associated with the connection, including restrictions on the discharge of toxic substances.

**Lapsing of Consent (Section 125) and Duration of Consent (Section 123)**

47. The consent will lapse 10 years after the commencement of the consent and is granted for a period of fifteen years.

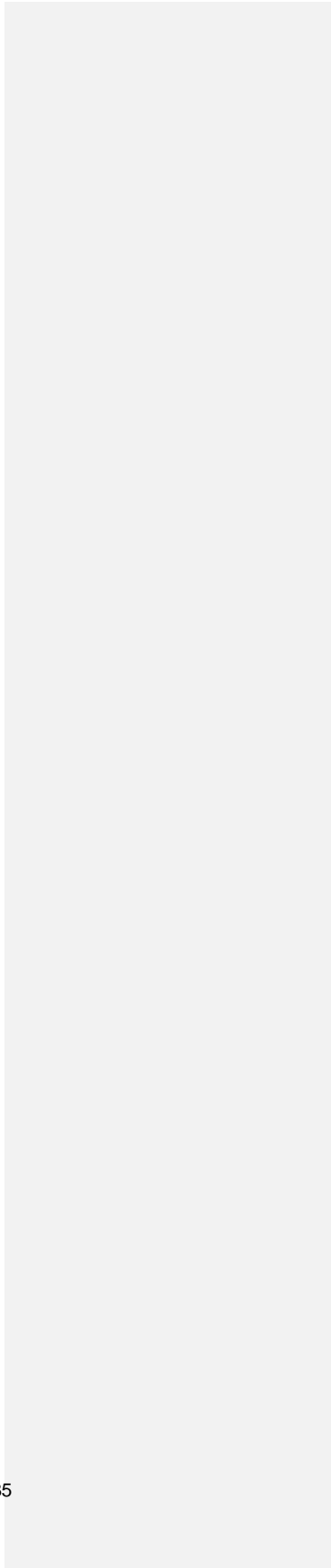
**ADVICE NOTES:**

1. Any matters not referred to in this application for resource consent or are otherwise covered in the consent conditions must comply with the proposed Tasman Resource Management Plan and/or the Resource Management Act, 1991.

2. The Consent Holder is reminded with regards to Advice Note 1, the discharge may not create an offensive or objectionable odour beyond the property boundary and all associated excavation work must comply with the permitted activity requirements of the Tasman Resource Management Plan unless authorised by resource consent.
3. The Consent Holder shall meet the requirements of Council with regard to all Building and Health Bylaws, Regulations and Acts. Building Consent will be required for the installation of any part of the wastewater treatment and disposal system.
4. Access by the Council or its officers or agents to the property is reserved pursuant to Section 332 of the Resource Management Act.
5. All reporting required by Council shall be made in the first instance to the Council's Co-Ordinator Compliance Monitoring.
6. 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.
7. The Consent Holder is recommended to prohibit the installation of garbage grinders to all dwellings within the development as it is well recognised that such fixtures are likely to affect the level of contaminants in the wastewater and create problems in complying with the wastewater quality limits imposed by this consent.
8. 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 dwellings or on-site treatment system to the sewer line.
9. 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.

Natasha Lewis  
**Consent Planner**

**Appendix 1**  
**RM050727 Monitoring Points**



**Appendix 2**  
**Applicable Detection Limits**

Parameter	Detection Limits	Units
pH	NA <sup>2</sup>	-
Dissolved Oxygen	NA	g/m <sup>3</sup>
Temperature	NA	°C
Conductivity	NA	mS/m
Carbonaceous biochemical oxygen demand	2	g/m <sup>3</sup>
Total Suspended Solids	3	g/m <sup>3</sup>
Escherichia coli (E coli)	10	MPN or cfu/100 mL
Total faecal coliforms	10	MPN or cfu/100 mL
Total Kjeldahl Nitrogen	0.02	gN/m <sup>3</sup>
Total ammoniacal-N	0.1	gN/m <sup>3</sup>
Nitrate-nitrogen	0.01	gN/m <sup>3</sup>
Nitrite-nitrogen	0.01	gN/m <sup>3</sup>
Total Phosphorus	0.01	gP/m <sup>3</sup>
Dissolved Reactive Phosphorus	0.01	gP/m <sup>3</sup>

**Notes:**

1. These detection limits apply unless other limits are approved in writing by the Manager.
2. NA = Not applicable.