KERRIGAN ENGINEERS LTD

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Job 4396

3 October 2023

Marlborough District Council
P O Box 443
Blenheim

ATTENTION : Resource Management Administration Officer

7305 State Highway 1 - Ward – Ian Hammond – Flaxbourne Motels – Report for the Renewal of Resource Consent U080536.2M for Onsite Waste Disposal

In response to your letter to Mr Hammond of Flaxbourne Motels dated 8 February 2023, Mr Hammond has engaged our services to assess and report the engineering issues to renew the Resource Consent for a Discharge Permit (to land) for onsite waste water disposal at the above subject location.

We understand the primary objective of this renewal process is to identify and rectify any significant operational deficiencies in the existing system, ensuring compliance with assessed environmental impacts. To facilitate this, the Council has provided a guideline in the form of a Warrant of Fitness (WOF) Checklist (attached as "Attachment 8: Outline of WOF Checklist").

In this assessment, we will provide details into various aspects of the site, usage, septic treatment system, and land application system, followed by our conclusions and recommendations.

Site and Usage:

The property under consideration, legally described as Section 1, Blk X town of Ward, property number 182174, is situated at 7305 State Highway 1 in Ward.

The onsite waste disposal system serves the Flaxbourne motel and management residence. The water supply for the location is reticulated.

Historically, the system was designed to accommodate a peak occupancy of 6 motel units, 5 tent sites, 4 camper sites, and a 3-bedroom house, all equipped with standard water-saving fixtures. Additionally, provisions were made for guest camper vans, considering their 120-litre septic waste capacity.

Based on MDC guidelines, the design allowance is:

- 3-bedroom house: 870 litres per day
- 6 motel units: 2160 litres per day
- 5 tent sites: 1950 litres per day
- 4 camper sites: 1040 litres per day
- Provision for camper waste (120 liters per camper): 480 litres per day
- This totals 6500 litres per day.

Mr Hammond has indicated that the original proposal included provisions to serve tent sites and campervans, and although an amenity block has been constructed to accommodate this, the additional usage has not been commercially viable thus far.

Recent water meter records for the year 22/23 indicate an average usage of approximately 1.44m³/day, suggesting that the waste disposal receiving bed might be underutilized and in good condition.

The discharge bed's location is flat grass pasture, exposed to prevailing northwesterly winds. There are no natural waterways within proximity of the disposal area, and we do not anticipate groundwater within 600mm of the lowest point of the disposal bed system.

Septic Treatment system:

Before the original Resource Consent there was a 9000 litre septic tank. To accommodate the proposed additional loading a 4500 litre tank was added, resulting in a total storage volume of 13,000 litres. The combined volume ensures adequate scum and sludge storage for extended periods between cleanouts.

Both tanks appear to be functioning well, with no signs of ground leakage or irregular pump operations. Recent cleaning and maintenance have confirmed their proper operation.

However the pump system requires a high level float with an audible and visual alarm to be located in a prominent position to warn of any faults.

Land Application System

The bed location, situated east of the motel and campground area and enclosed by fencing, features topsoil overlying highly structured loam silts. These soils fall under category 3, with a design loading rate of 15mm/day per AS/NZS 1547:2012, consistent with the original resource consent assessment.

The bed's construction generally aligns with the original building consent design, comprising 480m² of gravel bed, divided into four equal sectors (4 off 6mx20m) each receiving waste through a sequencing valve during pump operations. With the design loading rate of 15mm/day the bed area provides capacity of 7200 litres / day which exceed the anticipated design allowance of 6500litres/ day.

During our inspection on July 5, 2023, we found the soil to be clean and in good condition, without any signs of septic overload. The pump and sequencing valve operations were consistent with expected performance, with good flow from each of the furthest outlet points.

Conclusion & Recommendation

In summary, our assessment of the historical onsite waste disposal reveals the following key points:

- The construction aligns with the original Resource Consent and Building Consent applications.
- Although the proposed amenity block has been constructed commercial pressures mean the tent and camper option has not been realized to date and hence the system has been underutilized throughout the past consented period.
- Ground conditions and location favour proper waste disposal.
- The provided septic storage volume of 13,000 litres is adequate, and recent maintenance confirms functionality.
- the pump system requires a high level float with an audible and visual alarm to be located in a prominent position to warn of any faults.
- The land application system operates as expected, with no signs of overload.

Limitations of the Report:

This report has been prepared solely for the benefit for Mr Ian Hammond with respect to our understanding of the request. The reliance by other parties on the information or opinions contained in the report shall, without our prior review and agreement in writing, be at such parties' sole risk.

This report is based on our interpretation of our visual examination and limited soil tests only and does not preclude the possibility of differing soil properties and/or other relevant physical features being present between the test locations or hidden from view.

Opinions and judgments expressed herein are based on our understanding and interpretation of current regulatory standards, and should not be construed as legal opinions. Where opinions or judgments are to be relied on they should be independently verified with appropriate legal advice.

I trust the above information satisfies.

Yours sincerely

Graham Kerrigan
MIPENZ(Civil & Structural) CPEng IntPE (NZ)
Enclosed:

- Attachment 8 – Outline WOF Checklist
- Loading Certificate
- Statement of Environmental Effect – Schedule 4

Attachment 8: Outline WOF Checklist

Performance and Design Inspection Checklist	Notes
• Property details (owner; location; lot size)	• Confirm occupancy matches system design criteria
• Inspection details (inspector; last pumpout and/or service)	• Confirm results of last inspection report • Check when septic tank last pumped out • Confirm when service check last carried out on treatment unit
• Walkover inspection (treatment tank/unit; land application area/system; environmental conditions)	• A "sniff, look and probe" inspection to locate system and check for any on-site and off-site effects from past operation.
• Treatment unit (type)	• Primary or secondary treatment unit (noting specific treatment processes)
• Sludge/scum monitoring and pumpout of septic tank • Inspection of tank conditions	• Pumpout of septic tank will enable detailed inspection of the treatment unit internal surfaces and partitions (if any)
• Secondary treatment unit condition and performance	• Inspection of hardware and electrical equipment • Treatment performance will require inspection of effluent quality sampling records, or undertaking sampling checks (one daily sample per week over a four week period) • Check service contract inspection reports
• Distribution system (type; operational condition)	• Open up end of trenches and check if effluent reaching full design surfaces • Check distribution effectiveness of pump dosed systems. • Check irrigation lines for uniform distribution (no wet spots or dry spots)
• Land application system (type; configuration; Sketch Plan)	• Check as-built records
• Land application system (condition)	• Open up trenches and examine clogging layers
• Treatment and land application system design check	• Examine original design report • Undertake soil investigation and confirm Soil Category and that DLR or DIR matches design sizing
• Environmental performance review (on-site/off-site effects; quality checks on groundwater, soil and vegetation)	• Extent of check dependant on evidence of poor performance and/or maintenance creating potential for off-property effects.
Recommendations:	• **Indicate need for remedial works.** • **Indicate requirements for upgrade to match current and future duty (occupancy and water use).**

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WASTE WATER LOADING CERTIFICATE
Primary Treatment & LPED Discharge to Bed

DATE	**:**	**OCTOBER 2023**
PROJECT TITLE	**:**	**IAN HAMMOND- FLAXBOURNE MOTEL ONSITE WASTE DISPOSAL – RESOURCE CONSENT RENEWAL U080536**
LOCATION	**:**	**7305 STATE HIGHWAY 1 - WARD**
JOB NO	**:**	**4396**

As set out in NZS1547:2012 the Loading certificate sets out the design criteria and the limitations associated with use of the system through comments on:

I. **The system**

II. **summary of design criteria**
Items: I , and II are noted above in the design report.

III. **Allowable variation from design flows** (peak loading events) – The bed construction has loading of 7200 litres per day, this design usage should not be exceeded.

IV. **Consequence of changes in loading** (due to varying wastewater characteristics) – The septic tank system relies on natural biological processes to break down wastes. These processes include the growth of bacteria in the tank and discharge areas. These feed on the organic matter of the wastes to break them down to inorganic matter. Do not put anything in the system that cannot be readily broken down in a biological fashion (ie rags, garbage grinder waste, pads etc) or hinder the bacterial action (ie overuse of disinfectants, cleaners, bleaches and whiteners etc).

V. **Consequence of overloading the system** – given the system is a natural biological process of breaking down the waste a number of consequences can occur throughout the system as a result of overloading. The major problem will be continuous overloading of the discharge bed; the buildup of biomass to the outlets of the discharge pipe work can block them and negate the operation. The overload of the discharge area may result in saturation and surface seepage to the area. If this happens immediate action is required to address and remedy the problem. The discharge area is designed to contain all the waste and no surface seepage is

acceptable. We recommend the owner engage experienced contractors to investigate the problem.

VI. **Consequence of under loading the system** - given the system is a natural biological process the lack of use will cause a reduction of beneficial bacteria, although this will build up with time with reuse there will be a period when potential smells could emanate from the system.

VII. **Consequence of lack of operation, maintenance, and monitoring attention** – given the system is a natural biological process a number of consequences can occur throughout the system as a result of poor maintenance.

The settling of solids in the tank means that it must be emptied about every 3- 5 years relative to the usage.

The outlet filter within the tank should be removed and washed clear of debris every 6 months for continued operation. The tank and filter should be checked on a regular basis.

The discharge bed includes access ports at each end of the line. These enable access to the line flush any latent debris from the pipe system.

We recommend that the owner engage experienced maintenance operators to carry out any maintenance works.

VIII. **Any other relevant considerations** related to the use of the system.

Septic waste contains bacterial diseases and viruses etc that can be very harmful, or even pathogenic, so it is very important the system is fully contained and operational for the full break down of wastes.

Most of the harmful matter in waste can survive, and can be transmitted though water. Extra precautions should be exercised where there is potential of waste to enter any water system.

The discharge area should be configured to minimize the ingress of rainwater, surface runoff or subsurface water to the bed. Ensure that no site development works compromise this configuration.

RESULTS OF RISK MANAGEMENT PROCESS

There are no significant site factors at this location that warrant additional risk management assessment beyond the inherent assessment achieved with good design and management processes via the NZS/AS 1547:2012 Standard.

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WASTE WATER – RMA – ENVIRONMENT EFFECT – SCHEDULE 4
Primary Treatment & LPED Discharge to Bed

DATE	**:**	**OCTOBER 2023**
PROJECT TITLE	**:**	**IAN HAMMOND- FLAXBOURNE MOTEL ONSITE WASTE DISPOSAL – RESOURCE CONSENT RENEWAL U080536**
LOCATION	**:**	**7305 STATE HIGHWAY 1 - WARD**
JOB NO	**:**	**4396**

RMA - ENVIRONNMENTAL EFFECTS – SCHEDULE 4

So long as the continued use of the system follows the recommendations and considerations of the Renewal of Resource Consent report, and NZS/AS 1547:2012, and the MDC Guidelines for onsite waste disposal, we consider there will only be acceptable environmental effects.

To reinforce the above statement following is comment with respect to the Resource Management Act 1991 - Section 88, Schedule 4 : item B1 & B2.

B.1 Information required in assessment of environmental effects

(1) An assessment of the activity's effects on the environment must include the following information:

(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:

Based on our assessment that the current system performance exceeds the usage requirements we consider that per the original consent there should not be any adverse effects on the environment.

(b) An assessment of the actual or potential effect on the environment of the activity:

Comment: The herein assessment of the renewal of the resource consent for on site waste water treatment and disposal complies with the requirements of NZS 1547:2012 and the MDC Warrant of Fitness checklist. Given the purpose of the standard is "to provide the requirements for treatment units and their land application systems to achieve sustainable and effective onsite domestic wastewater management to protect public health and the environment." we conclude that there should not be any significant adverse effect on the

environment from the activity so long as the operation continues to perform per the design intention.

(c) If the activity includes the use of hazardous substances and installations, an assessment of any risks to the environment that are likely to arise from such use: *not applicable*

(d) If the activity includes the discharge of any contaminant, a description of—

(i) The nature of the discharge and the sensitivity of the receiving environment to adverse effects; and

(ii) Any possible alternative methods of discharge, including discharge into any other receiving environment:

Not applicable

(e) A description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:

Comment: Both the primary treatment tank and the discharge locations are well away from any sensitive areas and both are conservative in capacity. Also it is unlikely that waste could track any distance without evapotranspiration take up by the vegetation or identification of a problem. Hence we consider that any failings of the system should be readily evident to enable earliest remedial actions before any environmental impact.

(f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted: *none applicable*

(g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved: *none applicable*

(h) if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group). *None applicable.*

(2) A requirement to include information in the assessment of environmental effects is subject to the provisions of any policy statement or plan. *No provision noted*

(3) To avoid doubt, sub clause (1)(f) obliges an applicant to report as to the persons identified as being affected by the proposal, but does not—

(a) oblige the applicant to consult any person; or

(b) create any ground for expecting that the applicant will consult any person.

Not applicable

B.2 Matters that must be addressed by assessment of environmental effects

(1) An assessment of the activity's effects on the environment must address the following matters:

(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:

(b) any physical effect on the locality, including any landscape and visual effects:

(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:

(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:

(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:

(f) Any risk to the neighbourhood, the wider community, or the environment through natural hazards or the use of hazardous substances or hazardous installations.

(2) The requirement to address a matter in the assessment of environmental effects is subject to the provisions of any policy statement or plan.

Comment: The herein assessment of the renewal of the resource consent for On-site waste water treatment and disposal has followed requirements of NZS 1547:2012. Given the purpose of the standard is "to provide the requirements for treatment units and their land application systems to achieve sustainable and effective onsite domestic wastewater management to protect public health and the environment." we conclude that there should not be any significant adverse effect on the environment from the activity so long as the operation continues to perform per the design intention.

BC 071714
P/N 533411

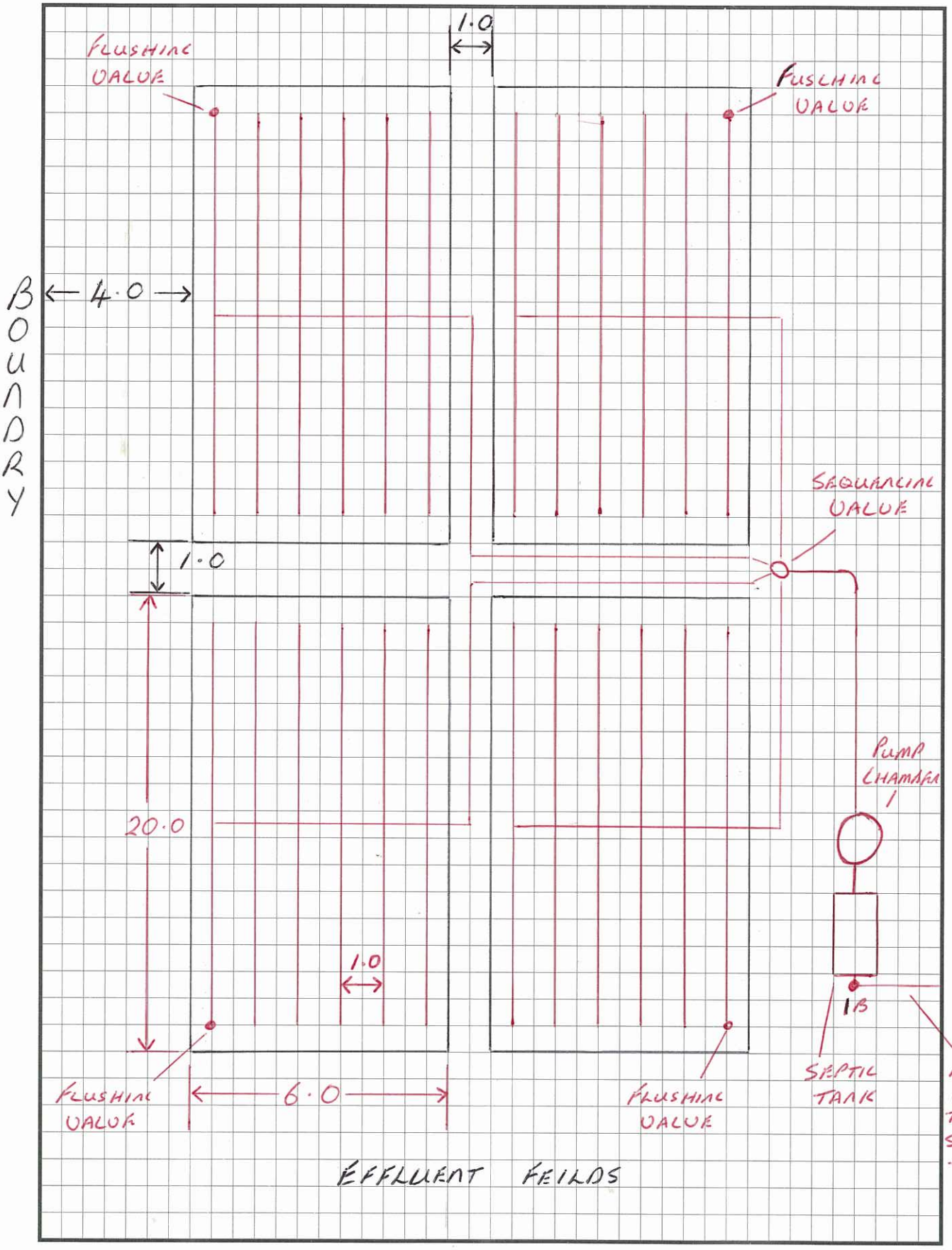
Office Use Only

PLAN VERIFICATION

Date of Inspection: .....

Inspector's Name: .....

Inspector's Signature: Kerrig



As Laid Plan For Building Consent Number BC .....

Owner Name

A 1 MOTELS

PROJECT LOCATION

Street Number / Rural ID: ..... **Address:** .....

Locality: WARD

PLUMBER AND DRAINLAYER DETAILS

Plumber: ..... **Registration Number:** .....

Drainlayer: CRAFAR - CROUCH ..... **Registration Number:** .....

Draw plan in ballpoint on graph section.

1. If drawing in colour use these:

   Sewer - red

   Stormwater - green

   Water - blue

Use these abbreviations:	
SS - Sanitary Sewer	IY - Inspection Y Junction
SW - Stormwater	IP - Inspection Pipe
GT - Gully Trap	AAV - Air Admittance Valve
TV - Terminal Vent	DP - Downpipe
BV - Back Vent	MH - Manhole
PV - Pan Vent	IC - Inspection Chamber
IB - Inspection Bend	BUS - Bubble Up Sump
	C - Cover

Plan is to show:

2. All drains in correct position relative to building and boundaries. Grade to be indicated.
3. All vents, gully traps and downpipes.
4. The road frontage.
5. Depth of drains at connection points and key points such as top end, bottom end, and inspections.
6. All foul water and stormwater drains.
7. All inspections opening points accurately dimensioned with at least two measurements.
8. All buildings and boundaries.
9. External main water lines and the source of supply.
10. North pointer or arrow.

Please refer to example on previous page as a guide to requirements.