Our Ref.: 23061
15 September, 2023

Dave & Dean Paynter
By email PDF to: dave@mahanaridge.nz

Dear Dave & Dean

RENEWAL OF RESOURCE CONSENT – DISCHARGE TO LAND, 192 ELAINE BAY ROAD, ELAINE BAY.

Introduction

As requested and per our agreement dated 18 August 2023 we have assessed the existing on-site wastewater system on the above property (*legally described as Lot 18 DP 5635*). Marlborough District Council's resource consent U081182 refers. We understand that this consent is due to expire on 1 March 2024. In its email dated 2 August 2023 Council requires that an application to renew a discharge consent must be accompanied by a report from an accredited person.

We note that it is not actually possible to 'renew' a discharge consent. In effect, a new consent is being sought and therefore all of the information required to accompany a new consent must be provided. This letter is intended to provide the required technical assessment in support of the application. The application itself is to be made by others.

Background

The residential property consists of a section of 1247 m^2 which is developed with two small timber framed dwellings of essentially identical construction. The houses date from the 1960s. They are served by a single wastewater treatment system. The houses are arranged on different levels on the site, and gravel driveways provide parking and vehicle access. There are small areas of lawn and garden below the lower house and adjacent to the upper one.

The current wastewater system was installed in 2009 under BC082036. We understand that the property was originally assessed for treatment and dispersal of domestic wastewater by Nelson Consulting Engineers Ltd (NCE) in its report ref. 08226 dated 17 November 2008. In that report NCE identified a suitable Land Application Area (LAA) made up of three separate areas totalling 438 m^2 and made recommendations around the type of treatment system that would suit the site requirements. NCE recommended an Advantex AX20, however the final installation utilised an Oasis TEXASS Series 2000 unit which has a larger design throughput. For context, a copy of NCE's site layout plan ref. 08226 dated 27 January 2009 is attached.

The system was installed by Oldfields Ltd and a Code Compliance Certificate for BC082036 was issued on 29 May 2009. We note that the original septic tank was not reused and a new unit was installed instead.

Inspection

We inspected the installation on 17 August 2023 at which point it had been fully operational for around 14 years. We understand that the system has been annually sampled by Findlater Construction Ltd and the samples tested by Hills Laboratories Ltd. with the results being

forwarded to Council. From our discussions with the landowner, we understand that all test results have met the specified requirements of:

- $BOD_5 \leq 20$ g/m^3, and;
- TSS ≤ 30 g/m^3.

Our inspection did not reveal any areas of concern with the wastewater system itself. We did not observe any evidence of seepage or wet ground nor did we detect any unpleasant odours. A few of the scour valves were a little hard to locate in the undergrowth and we recommend that these be cleared out and marked with a stake to enable them to be found easily for flushing. We also reviewed some photographs of the installation works.

Our overall impression was that the system was in good order and the original installation had been of a generally high standard. The consistent test results also lend weight to this conclusion.

Regulatory Context

In the intervening period since construction, the relevant design document AS/NZS 1547:2012 has been introduced, superseding the original AS/NZS 1547:2000 under which the original assessment was made. As part of the application, Council requires:

- A review that compares the design criteria under the old AS/NZS 1547:2000 Standards for on-site domestic wastewater management with the current AS/NZS 1547:2012 Standards for this site.
- A risk management review of the site.
- An Assessment of Environmental Effects (AEE).
- An assessment of the activity against the Rules, and Objectives and Policies in the Proposed Marlborough Environment Plan.

1) Standards Review & Comparison

The original assessment based on AS/NZS 1547:2000 resulted in a Category 3 classification for the near-surface soils in the proposed Land Application Areas. Our assessment and testing of soils exposed in the existing cut batter above the upper house indicates an identical result under the current Standard.

NCE used 145 l/person/day as the design throughput (*Standard water reduction fixtures – mains water*). It also employed a conservative use projection of ten persons for peak load calculations. This resulted in a design throughput of 1450 l/day. Under the current Standard, the design throughput in similar circumstances increases to 165 l/day, however the Standard also allows for a smaller figure to be used if experience demonstrates lower flows. In this case, there is good evidence that the actual flows do not exceed the capacity of the installed and operational system.

The original Design Irrigation Rate (DIR) used by NCE was 3.5 mm/day. The current Standard allows 4 mm/day in Category 3 soils and requires burial of the dripper lines in 150-250 mm of topsoil. This has been achieved on the subject property. This increase in recommended DIR provides a 14% increase in conservatism in the design.

NCE's design report was silent on the need for, or sizing of a reserve area. Under AS/NZS 1547:2000 a 100% reserve area is normally required, but reduction or even elimination of the reserve area is permissible in certain circumstances. The current version

of the Standard similarly allows for elimination of a reserve area, where approved by the local authority. On this property, there is insufficient space for a reserve area. Consequently the treatment system has been specified to provide a level of resilience and robustness to reduce the likelihood of a reserve ever having to be used.

The original design report recommends reduction of the boundary dispersal setback from 4 m to 2 m where no adverse effect is likely. However Council's current wastewater design rules allow 2 m setback where the discharge is of secondary treated effluent. We did not observe any evidence cross-boundary effects as a result of the discharge on the subject property. However, we have not been provided with an as-built drawing of the wastewater dripper field and so it is impossible to state with certainty exactly what the boundary setback actually is.

2) Risk Management

The key change between the 2000 and 2012 editions of AS/NZS 1547 was the introduction of risk management around on-site wastewater management systems. Appendix A of AS/NZS 1547:2012 provides a long list of potential risk items and possible management strategies. In this case, the design risks have been proven to be well managed (*the system has worked well and tested consistently for over a decade*) and the significant risks that remain are those associated with on-going maintenance and management of the treatment package plant and dripper field itself. We note that the system is inspected and tested at annual intervals but that neither house is occupied full time. Many of the issues associated with on-site wastewater disposal in the Marlborough Sounds relate to intermittent usage patterns and lack of maintenance. It appears that although the property is left empty for periods, this does not appear to have adversely affected the functioning of the system, which was specifically selected on the basis of its suitability for intermittent loading.

This system has been well-tested and in our view represents a low risk of significant harm to the receiving environment. The Oasis treatment system is well-proven and the dripper field shows no evidence of malfunction or adverse environmental effects. We are not aware of any problems with the installation.

3) Assessment of Environmental Effects

An assessment of environmental effects (AEE) was not included in NCE's original design assessment report. We have not reviewed the original application for discharge consent which presumably would have contained an AEE.

We therefore provide an AEE here, which addresses the relevant design and performance criteria:

The discharge of secondary treated wastewater to land on this property is likely to have the following effects:

- Impacts on groundwater and surface water quality, soil structure and vegetation – From evidence gathered during our inspection, we consider that this impact is minor;
- Localised wetting of the near-surface soils in the dispersal areas – Despite a careful search of the areas known to be underlain by the dripper fields, we did not observe any evidence of saturated soil at the surface. However, we acknowledge that soils are likely to be wetter at shallow depths;
- In the event of failure or other problems, has the potential to affect public health and the amenity value of the land – This remains the highest risk to the site, but is managed by

regular inspection and testing. Like many baches in the Sounds, neither dwelling is occupied full time, however we understand that they are visited at generally frequent intervals. There is therefore a risk that a problem develops immediately after a period of occupancy, which could potentially result in an unauthorised discharge, but would be less likely to continue for a long period. The design of the system is such that there is a buffer volume available which can cope with a moderate excess flow. We consider that it is unlikely that a new problem would develop spontaneously when nobody is staying, that would result in anything other than a discharge of clean water;

- Increased levels of organic matter, nutrients and microorganisms to the subsoil and groundwater – Soil effects noted on site but not deemed to be detrimental. Groundwater is unlikely to be affected due to depth to water table and the impermeability of the deeper soils. Evapotranspiration potential on the site is considered to be high, as noted in the original NCE design report.

We consider that if the system continues to be operated as it has been for the last 14 years, the ongoing risk of adverse effects to the receiving environment is low.

4) Assessment of the activity against the Rules, and Objectives and Policies in the Proposed Marlborough Environment Plan (PMEP)

Under Objective 16.3 of the PMEP, various policies propose to control the discharge of treated domestic wastewater to land. Our assessment of the activity against these policies (*currently contained in the Appeals version of the PMEP*) is given in Table 1 below:

Table 1: Assessment of the System

Policy	Title	Assessment
16.3.1	Ensure that wastewater management systems are designed, located and installed to effectively treat and/or contain the contaminants present in wastewater.	The installed system and test results achieve the desired outcome.
16.3.2	Require discharge permits for the discharge of contaminants onto or into land where there are significant environmental constraints to effective wastewater management.	The current application for consent achieves the desired outcome.
16.3.3	Approve discharge permit applications to discharge contaminants onto or into land where as relevant to the discharge: (a) the discharge is within the ability of the land to treat and/or contain contaminants present in the liquid waste, taking into account: (i) the rate of discharge (including variability in the rate of discharge); (ii) the nature and concentration of contaminants within the liquid waste; (iii) the hydraulic properties of the soil within the land application area and any relevant physical, chemical or biological soil properties; (iv) any other discharge of contaminants to the same land or to land in close proximity to the discharge; (b) the discharge does not adversely affect the drinking water quality of groundwater adjacent to or down gradient of the discharge, either alone or in combination with any other discharge;	a) i-iv incl.) By inspection on site – complies. b) Not applicable on this site c) By inspection on site and regular and ongoing maintenance – complies. d) Reticulation not available on this property. e) No evidence of instability noted in the LAA. f) Complies. g) Complies.

	(c) the land application area is located and managed such that the discharge of contaminants directly, or via overland flow to any surface waterbody or coastal water is avoided; (d) it is inappropriate (due to the potential impact on the performance of treatment plants and associated infrastructure) or impracticable to discharge the liquid waste into a reticulated sewerage system; (e) the discharge will not initiate instability or make existing instability worse; (f) the treatment unit and land application area are accessible for servicing; and (g) the application demonstrates that the best practicable option is utilised.	
16.3.4	When considering discharge permit applications to discharge contaminants onto or into land, have regard to, as relevant to the discharge: (a) the extent of treatment prior to discharge; (b) the location of the land application area and the sensitivity of the receiving environment; (c) the method of distribution to and within the land application area following treatment; (d) alternative options for managing the contaminants, including discharge to an alternative location or to a reticulated community sewerage system; (e) the need for reserve land application areas; (f) site constraints, including geology, topography, slope, climate and presence of waterbodies or structures; (g) relevant guidelines and standards; and (h) potential cumulative effects.	a) Treatment of effluent to accepted Secondary standards consistently achieved and verified by independent laboratory testing. b) The LAA is appropriately located as assessed by NCE in 2008. c) The dripperfield as installed uses accepted industry standard hardware. d) Not available on this site. e) The property is very constrained and provision of an appropriate reserve area is not possible. This has been acknowledged by MDC in its issuance of the original discharge consent U081182. f) The LAA is appropriately sited and sized given the site constraints. g) The system was designed in accordance with AS/NZS 1547:2000, which was current at the time. We have assessed it against the 2012 edition and found it complies in all significant respects. h) We did not observe any evidence of detrimental cumulative effects.
16.3.5	When considering discharge permit applications to discharge contaminants onto or into land, recognise and provide for the cultural values of Marlborough's tangata whenua iwi.	No places of significance to tangata whenua are identified on this site.
16.3.6	Avoid the use of soak pits for the disposal of contaminants in liquid waste	Complies
16.3.7	Promote good practice in the use of wastewater management systems.	As noted above, this system has been well operated and maintained since installation.
16.3.8	Monitor the operational performance of existing wastewater management systems and require poorly performing systems to be upgraded to or replaced with	The system is well maintained and does not require an upgrade.

	systems that effectively treat and contain all wastewater to the discharge site.	
16.3.9	Encourage artificial wetlands as a means of managing the discharge of contaminants.	Wetlands are not a practical proposition on this site due to insufficient land area.

Resource Management Considerations

We consider that the wastewater system as installed is satisfactory and is being operated and maintained in an appropriate manner. We recommend that Council grant a new resource consent (*discharge to land*) for the maximum possible term. From an engineering perspective, we see no reason to vary the existing conditions of the consent, or modify the installed system in any way.

Applicability

This report has been prepared solely for the use and benefit of Dave & Dean Paynter, their professional advisers and Marlborough District Council in relation to the specific project described. No liability is accepted in respect of its use for any other purpose or by any other person or entity. Data or opinions contained in it may not be used in other contexts, by other parties or for any other purpose without our prior review and agreement.

Please refer any further enquiries or correspondence to Andrew Palmer.

Yours sincerely

Andrew Palmer
Principal

Attachment: NCE Site Plan 08226 showing approximate layout of existing system

E:\Terra Firma\Dropbox\Data\Projects\23061 Elaine Bay 192\07 Reports and Correspondence\Reporting\2023-09-15 23061 Elaine Bay 192 Wastewater renewal of RC letter FIN.docx
15 September 2023

EXISTING SOAKAGE PIT (0.5m x 20m) TO BE FULLY EXCAVATED AND FILLED WITH CLEAN FILL.

INSTALL AIR VALVE AT HIGHEST POINT IN BOX

EXISTING DRIVEWAY FROM ELAINE BAY ROAD TO BE REMOVED AND RE-INSTATED AS LANDSCAPED GARDEN WITH DISPOSAL FIELD.

NETAFIM RAM DRIP LINES LAID AT 1.0M CENTRES ALONG CONTOURS OF SLOPING GROUND. EMBED 100MM INTO TOPSOIL & COVER FIELDS WITH 75MM MIN OF MULCH OR EMBED 150MM INTO TOPSOIL & RE-PLANT GRASSED AREAS.

SPA

GENTLY SLOPING GRASS AND GARDEN AREAS

10°

10°

146m2

PT-1

MATURE SHRUBS PLANTED ON BATTER

40°

32°

30°

GARAGE

SHED

LOWER DWELLING

TP-2

PT-2

98m2

LEVEL GRASS YARD AREA

2m

128m2

66m2

18° - 20°

NEAR LEVEL GRASS YARD AREA

32 MM GREEN LINE MANIFOLDS

NEW INDEX VALVE FOR TWO DISPOSAL FIELDS

EXISTING SEPTIC TANK TO USED AS UPSTREAM FILTER

INSTALL AIR VALVE AT HIGHEST POINT IN BOX

MODERATELY SLOPING GRASS AREA

APPROXIMATE POSITION OF RIDGELINE

POWER LINE

UPPER DWELLING

18° - 20°

INNOFLOW TECHNOLOGIES LTD - ADVANTEX AX20 FILTER (SERVING BOTH DWELLINGS)

LEVEL GRASS YARD AREA

FLUSHING VALVES WITH 150x150 PVC VALVE BOX

EXISTING UNCONTROLLED ROOF STORMWATER OUTFLOW TO BE RETICULATED

N

LEGEND

- TOP OF CUT BATTER
- BOUNDARY
- STORMWATER SIDE DRAIN
- SUBSOIL DRAIN
- PT–2 — PERMEABILITY TEST LOCATION
- TP–2 — TESPIT LOCATION
- 10° — SLOPE ANGLE
- EXISTING GRAVEL DRIVEWAY AND PARKING AREAS
- DESIGNATED WASTEWATER DISPOSAL AREAS – (BURIED 150mm, FLUSHABLE, DOSED, DRIP IRRIGATION LINES: TOTAL AREA 438m2)

0 — 20m

BASEMAP REF: Ensurv Survey & Engineering Solutions

Nelson Consulting Engineers Ltd
CIVIL - GEOTECHNICAL - STRUCTURAL

140 Collingwood Street
Nelson

Phone 03 5394145
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DAVE PAYNTER

ENGINEERING DETAILED DESIGN

ON-SITE WASTEWATER DISPOSAL SYSTEM
192 ELAINE BAY ROAD, MARLBOROUGH SOUNDS

File Name	Detailed Wastewater Design Dave Paynter 27 Jan 09			Scale (A3)	Job No
				1:200	08226
				Stamp	Sheet No
				CONCEPT	01 OF 01
Rev	Comment	Date	Int	Date	Revision
				27 JAN 09	
Designed by JH	Drawn by JE	Approved by			

13 September 2023

To whom it may concern

Re: Oasis Wastewater system located at 192 Elaine Bay Road

An inspection and service were carried out by me on 21 August 2023 of the Oasis wastewater system. The inspection entailed removing and cleaning of the strainers and ensuring the high-level alarm and float switch are in good working condition. The outlet filter on the septic was cleaned and the inlet to the septic for the sewer was checked to ensure no blockages. The crust in the primary chamber was found to be 90mm and the sludge 150mm. The dripper lines were tested and cleaned at the flush valves and found to be in good working condition. The service report is attached.

A sample of wastewater was collected and analysed by Hills Laboratories; the results of the analysis are enclosed.

An annual service and analysis of the wastewater is required to ensure proper functioning of the wastewater system.

Yours sincerely

Mike Inch
Certifying Plumber / Drainlayer
Email: drainproplumbingnz@gmail.com
Tel: 0276456201

SERVICE MAINTENANCE REPORT

DrainPro Plumbing

OWNER	MR. PAYNTER			HOME	YES	NO
ADDRESS	192 ELAINE BAY Rd, ELAINE BAY, MARBOROUGH SOUNDS					
PHONE				CALL FIRST	YES	NO
COUNCIL	MDC			TANK TYPE	OASIS	
ELECTRICAL						
ALARMS TESTED		WATER	YES	NO	AIR	YES	NO
ELEC BLOWER BOS CHECKED AND CLEANED						YES	NO
LID SECURED						YES	NO
AIR BLOWER							
ROTARY VANES				VANE REPLACEMENT		YES	NO
TEMPERATURE						OKAY	HIGH
NOISE LEVEL						OKAY	HIGH
FILTERS CLEANED (1X EXTERNAL 2X INTERNAL)						YES	NO
COMMENTS							
SEPTIC CHAMBER							
BIOTUBE/ZABEL FILTER CLEANED						YES	NO
ACCUMULATION				SLUDGE	LOW	MED	HIGH
				CRUST	LOW	MED	HIGH
INLET & JUNCTION CLEAR						YES	NO
COMMENTS							
AIR & SLUDGE RETURN SYSTEMS							
ODOR						YES	NO
AERATION						GOOD	POOR
AIR DIFFUSER CHECKED						YES	N/A
CLARIFICATION CHAMBER						GOOD	POOR
SLUDGE RETURN TO PRIMARY CLEAR AND ADJUSTED						YES	NO
SLUDGE ACCUMLATION						HIGH	LOW
COMMENTS							
IRRIGATION CHAMBER							
CLEAN IRRIAGTION CHAMBER						YES	NO
TURBIDITY						MG/LITER	
IRRIGATION PUMP OPERATION PRESSURE					GOOD	FAIR	POOR
COMMENTS							
IRRIGATION DISPOSAL SYSTEM							
CONDITION		OK		INACCESSABLE		REPLACE/REPAIR	
IRRIGATION LATERALS			OK		CLEANED	REPLACE/REPAIR	
~~ARKAL FILTER~~				OK	REPLACED	CLEANED	
WATER METER READING							
LID COVERS SECURED						YES	NO
FIELD CONDITION	TIDY		PONDING/RUNOFF		PLANTED	BARK/MULCH COVER	
PRIMARY CHAMBER NEEDS DESLUDGING						YES	NO
COMMENTS							
OVERALL COMMENTS	SYSTEM IN GOOD WORKING ORDER						
TECHNICIAN NAME	M. IVEN		**SIGNATURE**			**DATE**	21/8/23

R J Hill Laboratories Limited
101C Waterloo Road
Hornby
Christchurch 8042 New Zealand

0508 HILL LAB (44 555 22)
+64 7 858 2000
mail@hill-labs.co.nz
www.hill-labs.co.nz

Certificate of Analysis

Client:	DrainPro Plumbing Limited	**Lab No:**	3347099	SPv1
Contact:	Mike Inch C/- DrainPro Plumbing Limited 20 Arrow Street Wakefield 7025	**Date Received:**	22-Aug-2023	
		Date Reported:	28-Aug-2023	
		Quote No:	123765	
		Order No:		
		Client Reference:	Dave Paynter	
		Add. Client Ref:	Elaine Bay	
		Submitted By:	Mike Inch	

Sample Type: Aqueous

Sample Name:		Paynter 21-Aug-2023 7:50 am
Lab Number:		3347099.1
Total Suspended Solids	g/m^3	5
Total Biochemical Oxygen Demand ($TBOD_5$)	$g\ O_2/m^3$	4

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous

Test	Method Description	Default Detection Limit	Sample No
Total Suspended Solids	Filtration using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2540 D (modified) 23rd ed. 2017.	3 g/m^3	1
Total Biochemical Oxygen Demand ($TBOD_5$)	Incubation 5 days, DO meter, no nitrification inhibitor added, seeded. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 5210 B (modified) 23rd ed. 2017.	2 $g\ O_2/m^3$	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 24-Aug-2023 and 28-Aug-2023. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Xiaozheng (Nadia) Ni BAppSc
Senior Laboratory Technician - Chemistry