Onsite Wastewater Report (TP58)

Kenneth and Valerie Fife
15 Karuhiruhi Road
Oue
Far North District
Lot 1 DP 121288

Written by: Martin O'Brien
Reviewed by: Nicola O'Brien

Rev: A
Date: 19th April 2023
Job No: 2865

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Executive Summary

Lot 1 DP 121288 is a 3,990m², established residential property located at 15 Karuhiruhi Road, Oue. The owners of this property also own the neighbouring southern property, Lot 2 DP 121288. Currently the wastewater from the dwelling on Lot 1 is piped to the wastewater system and field on Lot 2. It is proposed that a new aeration treatment system with dripper line be installed within the boundaries (1.5m minimum from boundaries) of Lot 1.

A secondary treatment system is recommended due to category 6, clay soils with slow draining characteristics. Surface laid lines are recommended due to limited topsoil not suitable for burying lines. The surface laid lines are to be extensively planted with water loving plants that tolerate heavy clay soils.

Recommendations:

- Secondary treatment with surface laid dripper lines is recommended.
- Effluent will be disposed of via a robust secondary treatment system which complies with the New Zealand Building Code. The system is to have a high output quality of: BOD5 equal to or less than 20g/m³ and TSS equal or less than 30g/m³, in line with NZS1546.3:2008 and the New Zealand Building Code.
- The proposed wastewater disposal field shall consist of approximately 360m of surface laid dripper line spaced at 1m. 360m² area in total. Dripper lines are to be surface laid, on level ground, and planted with water loving plants. The plant species chosen should tolerate heavy clay soils. The dripper line should be firmly fixed to the surface and covered by at least 100mm layer of mulch or leaf litter. The field is to be planted immediately following install as it works via evapotranspiration by the plants.
- There is adequate area to support a 100% reserve wastewater disposal field.
- The owner is to obtain a maintenance agreement from the manufacturer on purchase of the system. Aeration treatment systems should have an annual maintenance agreement with the supplier as stated in Far North District Council bylaw 2805.2. This ensures the system operates efficiently and is serviced regularly.
- Correct use and maintenance of the wastewater system is required for it to work effectively and minimise environmental impacts.

1.0 Introduction

1.1 Scope

An on-site effluent disposal investigation, to obtain building consent, has been undertaken in accordance with TP58 On-site Wastewater Systems: Design and Management Manuel Third Edition (2004), Regional Plan for Northland (2019) and the Far North District Plan (2009). Based on site characteristics including groundwater and surface water setbacks and soil type an onsite wastewater treatment system and land application method are recommended. A wastewater design is provided based on aforementioned documents and site characteristics.

1.2 Proposal

A secondary treatment system with surface laid dripper lines will service an existing 4-bedroom dwelling.

1.3 Site Visit

The site investigation was undertaken on 3rd April 2023 and comprised of a visual assessment of the proposed wastewater disposal field and the surrounding area. A 50mm borehole to a depth of 1200mm was taken to acquire soil samples for examination and to establish groundwater depth. USDA feel method was used to determine soil texture, soil structure and soil category. The test location is indicated on the attached Site Plan, Section 7.

1.4 Desk Study

A desk study of available information and site characteristics was undertaken. The following sources were reviewed, TP58 (2004), Regional Plan for Northland (2019), Section C.6.1.3, Far North District Plan, Section 12.7.6.1.2, 12.7.6.1.4(b), Far North and Northland Regional Council Maps, Waipoua-Aranga Soil Map and Certificate of Title.

2.0 Site Description & Evaluation

2.1 Site Description

Lot 1 DP 121288 is located off 15 Karuhiruhi Road, Oue, Hokianga and is zoned Rural Production in the Far North District Plan. Access to the property is gained via Karuhiruhi Road, a metal road, which runs along the eastern boundary. Karuhiruhi Road is to the north of State Highway 12.

Lot 1 is a 3,990m², roughly square shaped, established residential property. Northland Regional Council (NRC), Far North District Council (FNDC) and the Certificate of Title diagram do not accurately show the location of property boundaries. This was confirmed via email by Donaldsons Surveyors and Planners, Kerikeri. An image from Donaldsons is attached in Section 2.2. showing surveyed property boundaries. The NRC Map is also attached to show the location of Lot 1 DP 121288 and the surrounding area.

The dwelling, shed and associated amenities are located to the south of the property. This area slopes slightly. Pasture used for grazing is located to the north of the dwelling. The topography becomes moderate to the north.

The proposed wastewater disposal field is to be located on elevated, exposed, slightly sloping, waxing divergent hillside to the east of the dwelling, and shed. The hillside slopes to the northwest, west and southwest. Refer to Photograph 1 showing the proposed location. The corrugated iron shown in the photograph is to be removed.

Following installation, the field is not to be grazed, driven on or built over.

No surface water bodies were noted in the near vicinity of the proposed wastewater disposal field and reserve (30m radius) meeting the 15m separation distance required by the Regional Plan for Northland (2019), Section C.6.1.3, Table 9 and the more conservative 30m separation distance from certain water bodies outlined in the Far North District Plan, Section 12.7.6.1.4(b).

No mapped wetlands are noted on Biodiversity Wetlands Maps, in the near vicinity of the property.

The wastewater disposal field is to be situated a minimum of 5m from any existing or future intermittent stormwater flow path downslope of the field as per the Regional Plan for Northland (2019), Section C.6.1.3, Table 9. No existing flow paths were noted in the near vicinity of the proposed field.

A 1.5m setback from boundaries and buildings is required as per TP58, (2004), Table 5.2. Refer to TP58, (2004), Table 5.2, The Regional Plan for Northland, (2019), Section C.6.1.3 and the Far North District Plan, Section 12.7.6.1.2, 12.7.6.1.4(b) for all wastewater setback requirements.

The Site Plan, Section 7 shows the location of the proposed field and reserve along with setback requirements.

According to Northland Regional Council Hazard maps the property is not identified as being in a flood area.

Photograph 1: Showing the approximate location of the proposed wastewater disposal field on slightly sloping grassed hillside. Corrugated iron to be removed.

2.2 Northland Regional Council Property Map

Drawing by Donaldsons Surveyors, Kerikeri showing actual boundaries of Lot 1 DP 121288 and Lot 2 DP 121288.

2.3 Groundwater

The Regional Plan for Northland (2019), Section C.6.1.3, Table 9 requires a 600mm separation distance of secondary treated wastewater from groundwater. TP58 (2004), Table 5.2 recommends a more conservative separation distance of 900mm in category 6 soils.

Groundwater was not intercepted during the 1200mm borehole taken during Autumn, 3rd April 2023.

No freshwater bores were noted on NRC Water Resources map in the near vicinity of the proposed wastewater disposal field meeting the 20m setback from a freshwater bore required by the Regional Plan for Northland (2019), Section C.6.1.3, Table 9.

2.4 Soil Profile

Waipoua-Aranga soil Map, Geological Map Reference Number: NZMS 290 Sheet O 04/05 describes the soils as Omanaia clay loam (ON) with well to moderately well drained soils of the rolling and hilly land + Omanaia clay loam with coarse structured subsoil (One) with imperfectly to very poorly drained soils of the rolling and hilly land.

The borehole showed soils, in the area of the wastewater disposal field, to be category 6, silty clay with slow draining characteristics. Refer to Photograph 2 and the Borehole Log, Section 8 showing soil layers.

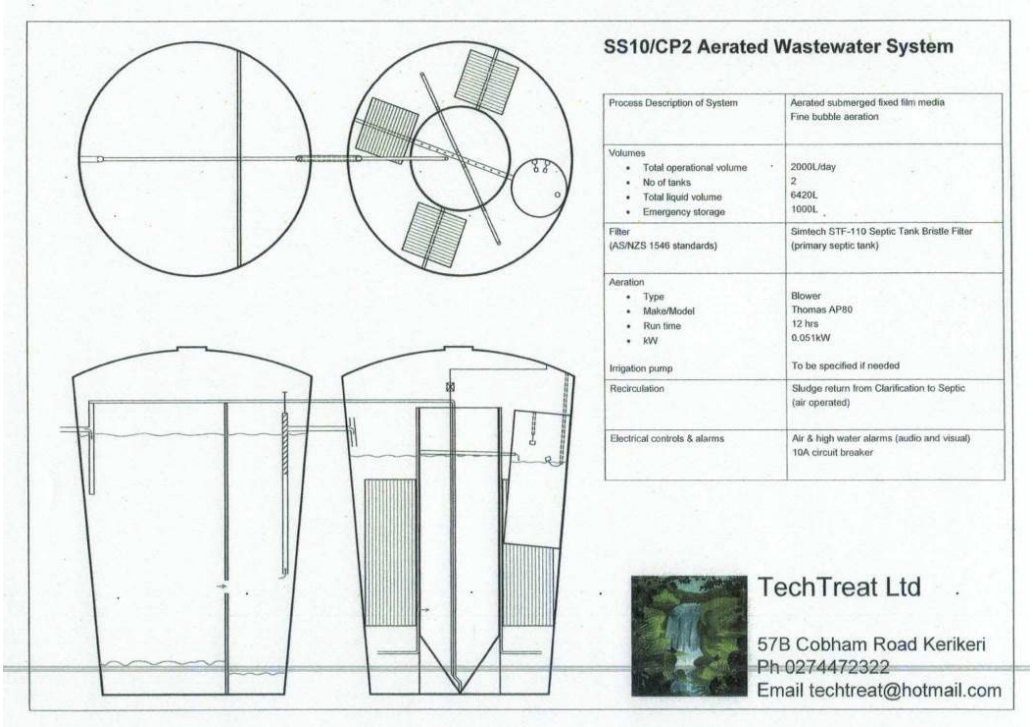
Photograph 2: Borehole showing 100mm of category 5, slightly moist, brown, clayey topsoil followed by category 6, slightly moist, brownish orange friable clay to a depth of 600mm. From 600-1200mm soils were orange clay.

3.0 On-site Effluent Disposal

3.1 System Requirements

Effluent will be disposed of via a robust secondary treatment system which complies with the New Zealand Building Code. The system is to have a high output quality of: BOD5 equal or less than 20g/m³ and TSS equal or less than 30g/m³, in line with NZS1546.3:2008 and the New Zealand Building Code. The system is to have emergency storage and be fitted with an alarm to protect against system failure.

Proposed system: Tech Treat SS10/ CP2 Wastewater Treatment System.



The owner is to obtain a maintenance agreement from the manufacturer on purchase of the system. Aeration treatment systems should have an annual maintenance agreement with the supplier as stated in the Far North District Council bylaw 2805.2. This ensures the system operates efficiently and is serviced regularly.

The system is to be installed by a registered installer to manufacturer's instructions. It is imperative that a maintenance contract be obtained at the point of installation to avoid problems with the system. Installation and maintenance notes can be found at the back of this report, Section 9 and 10.

3.2 Proposed Effluent Disposal Field

Wastewater calculations as follows:

Potential occupancy of the dwelling x litres per person per day / loading rate = area of wastewater disposal field

6 x 180 litres / 3 = 360m²

180 litres of wastewater produced per person per day with tank water is allocated, in line with TP58 (2004), Table 6.2, p.52. A loading rate of 3 is assigned due to category 6 soils as per TP58 (2004), Table 9.2, p.150.

The proposed effluent field shall consist of approximately 360m length of surface laid dripper line spaced at 1m in a 360m² area. Killing the grass prior to install will assist with ease of installation and future weeds. Dripper lines are to be surface laid on level ground and planted with water loving, heavy clay tolerant plants. A list of water loving plants is provided in Section 10.3. Guidance from a plant nursery on species suitable for wastewater and heavy clay soils is advised. It is essential that the field is planted immediately following install. The field is to be covered by a minimum 100mm layer of mulch. Refer to the Site Plan, Section 7.

The wastewater disposal field should not be grazed, driven on or built over. These activities can result in damage to and failure of the effluent field.

Installation and maintenance notes can be found at the back of this report, Section 9 and 10, as a guide to the upkeep of the system and field.

3.3 Reserve Area

A 100% reserve wastewater disposal area is specified, greater than the minimum 30% required by the Regional Plan for Northland, 2019, C.6.1.3, 9b. The purpose of the reserve is to provide additional area for wastewater disposal, for example in the event of failure of the original field or future expansion of the proposed development. The reserve area must be protected from any development that would prevent its use in the future.

The reserve area proposed is on a slope greater than 10 degrees. If the reserve is used for wastewater disposal in the future, and surface laid lines are proposed, a 10m planted buffer zone would be required as per the Northland Regional Plan, 2019, C.6.1.3, 6d. The area does not currently need to be planted.

3.4 Stormwater Management

The property does not benefit from a connection to the town main water supply. Stormwater from the roof of the dwelling and sleepout is collected in water tanks. The overflow from the tanks is to be directed well away from the proposed wastewater disposal field.

The proposed wastewater disposal field is located on the top of and side of a waxing divergent hill. The hill slopes to the northwest, west and southwest. This area slopes slightly. A cut off drain is not required due to minimal upslope catchment.

A drain along Karuhiruhi Road assists with diverting stormwater away from the property.

4.0 Council Requirements for new Building Consents

4.1 Smoke Alarms

Smoke alarms shall be installed in accordance with the New Zealand Building Code Clause F7 Section 3.0. Smoke alarms shall be installed on or near the ceiling in every sleeping space or within 3m of every sleeping space door. Refer to Section 12 for Section 3 of the Building Code detailing smoke alarm regulations. This is a requirement by the Far North District Council for all new Building Consents.

4.2 Earthworks

The proposed works will comply with Earthworks EW-S3 Accidental Discovery Protocol and Earthworks EW-S5 Erosion and Sediment Control – Auckland Council Guideline Document GD005 GD05 Erosion and Sediment Control. Pdf (aucklanddesignmanula.co.nz).

4.3 Hazardous Activities and Industries List (HAIL)

A Preliminary Site Investigation report is not available for Lot 1 DP 121288.

5.0 Summary

A secondary treatment system with surface laid dripper lines is recommended due to category 6, clay soils with minimal topsoil. The system, field and reserve are to be within the boundaries (setback a minimum of 1.5m) of Lot 1 DP 121288.

Setback distances including setbacks from surface water, intermittent stormwater flow paths and groundwater have been achieved.

Plant species chosen for the wastewater field should tolerate wastewater and heavy clay.

6.0 TP58 3rd Edition, Appendix E

PART A: Owners Details

1. **Applicant Details:**

Applicant Name:	Kenneth and Valerie Fife
Company Name:	
Property Owner Name:	Kenneth and Valerie Fife
Nature of Applicant	Owners

2. Consultant / Site Evaluator Details:

Consultant/Agent Name	O'Brien Design Consulting Ltd	
Site Evaluator Name	Martin O'Brien	
Postal Address	O'Brien Design Consulting Ltd	
	153B Kerikeri Inlet Road	
	Kerikeri	
Contact Details	Phone	09 407 5208
	Mobile	027 444 6115
Name of Contact Person	Martin O'Brien	
E-mail Address	martin@obrienconsulting.co.nz	
Website	www.obriendesignconsulting.co.nz	

3. Are there any previous existing discharge consents relating to this proposal or other waste discharge on this site?

No

4. List any other consent in relation to this proposal site and indicate whether or not they have been applied for or granted?

None

PART B: Property Details

1. Property for which this application relates:

Physical Address of Property	15 Karuhiruhi Road		
	Oue		
Territorial Local Authority	Far North District Council		
Regional Council	Northland Regional Council		
Legal Status of Activity	Permitted: √	Controlled:	Discretionary:
Relevant Regional Rule(s) (Note 1)			
Total Property Area (m^2)	3,990m^2		

2. Legal description of land (as shown on Certificate of Title)

Lot No.	Lot 1	DP No.	DP 121288	CT No.	NA70B/879
Other:					

Please ensure copy of Certificate of Title is attached

PART C: Site Assessment - Surface Evaluation

Has a relevant property history study been conducted?

Please Tick	No	√	Yes	

If yes, please specify the findings of the history study, and if not please specify why this was not considered necessary.

1. Has a Slope Stability Assessment been carried out on the property?

Please tick	No	√	Yes	

If No, state why?

The slope in the area of the proposed wastewater disposal field is slight at <5° and showed no signs of slippage or instability.

If Yes, please give details of report (and if possible, please attach report): fill out if you said yes	
Author:	
Company/Agency:	
Date of Report:	
Brief Description of Report Findings: -	

2. Site Characteristics:

Provide descriptive details below:
Performance of Adjacent Systems:
Unconfirmed.
Estimated Rainfall and Seasonal Variation:
Information available from **N.I.W.A MET RESEARCH**
Northland = 112.6mm average per month during 1981-2010
Vegetation / Tree Cover:
Grass.
Slope Shape: (Please provide diagrams)
Waxing divergent.
Slope Angle:
<5°
Surface Water Drainage Characteristics:
Refer to Section 2.1 and 3.4.
Flooding Potential: YES/NO
No mapped flooding shown on NRC Maps.
Surface Water Separation:
Refer to Section 2.1 and the Site Plan, Section 7.

3. Site Geology

Omanaia clay loam ON with well to moderately well drained soils of the rolling and hilly land + Omanaia clay loam with coarse structured subsoil (One) with imperfectly to very poorly drained soils of the rolling and hilly land.

Geological Map Reference Number	Waipoua-Aranga soil map, NZMS 290 Sheet O 04/05

4. What Aspect(s) does the proposed disposal system face?

North		West	√
Northwest	√	Southwest	√
Northeast		Southeast	
East		South	

5. Site clearances

Separation Distance from	Treatment Plant Separation Distance (m)	Disposal Field Separation Distance (m)
Boundaries	*1.5m minimum*	*1.5m minimum*
Surface water	*15m minimum*	*15m minimum*
Stormwater flow path e.g. drain	*5m minimum*	*5m minimum*
Groundwater	-	*0.9m minimum*
Stands of trees/shrubs	*Outside tree canopy*	*Outside or within tree canopy*
Wells & potable water bores	*20m minimum*	*20m minimum*
Lakes, rivers, wetland & the coastline	*30m minimum*	*30m minimum*
Buildings	*3m minimum*	*1.5m minimum*
Flood area	*Ensure sealed unit no setback*	*Outside the 100yr ARI flood event*
Other:		

PART D: Site Assessment - Subsoil Investigation

1. Please identify the soil profile determination method:

Borehole	Hand Augured	1200mm	No of Boreholes	1
Other:	USDA feel method to determine soil texture and soil structure.			

Soil Report attached?

Please Tick	Yes	√	No	

2. Was fill material intercepted during the subsoil investigation?

Please Tick	Yes		No	√

If yes, please specify the effect of the fill on wastewater disposal

3. Percolation Testing (mandatory and site specific for trenches in soil type 4 to 7)

Not required				
Test Report Attached?	Yes		No	√

4. Are surface water interception/diversion drains required?

Please tick	Yes		No	√
A cut off drain is not required due to minimal upslope catchment.				

4a. Are subsurface drains required?

Please tick	Yes		No	√

5. Please state the depth of the seasonal water table:

Winter	>1200mm
Spring	>1200mm
Summer	>1200mm
Autumn	>1200mm

Measured		Estimated	√
Measured		Estimated	√
Measured		Estimated	√
Measured	√	Estimated	

6. Are there any potential storm water <u>short circuit paths</u>?

Please Tick	Yes		No	√

7. Based on results of subsoil investigation above, please indicate the disposal field soil category

Is Topsoil Present?	Yes	If so, Topsoil Depth?	100mm
Soil Category	**Description**	**Drainage**	**Tick One**
1	Gravel, coarse sand	Rapid draining	
2	Coarse to medium sand	Free draining	
3	Medium-fine & loamy sand	Good drainage	
4	Sandy loam, loam & silt loam	Moderate drainage	
5	Sandy clay-loam, clay loam & silty clay-loam	Moderate to slow drainage	
6	Sandy clay, non-swelling clay & silty clay	Slow draining	√
7	Swelling clay, grey clay, hardpan	Poorly or non-draining	

Reasons for placing in stated category

The borehole log showed 100mm of category 5, slightly moist, brown, clayey topsoil followed by category 6, slightly moist, brownish orange clay to a depth of 600mm. From 600-1200mm soils were orange clay.

PART E: Discharge Details

1. Water supply source for the property:

Rainwater (roof collection)	√
Bore/well	
Public supply	

2. Calculate the maximum daily volume of wastewater to be discharged, unless accurate water meter readings are available (Refer TP58 Table 6.1 and 6.2)

Number of Bedrooms	4		(Dwelling)
Design Occupancy	6		(Potential number of people)
Per capita Wastewater Production	180		(Litres per person per day)
Other - specify			
Total Daily Wastewater Production	1080		(Litres per day)

3. Do any special conditions apply regarding water saving devices?

a) Full Water Conservation Devices?	Yes		No	√	(Please tick)
b) Water Recycling - what %?	0%				(Please tick)

If you have answered yes, please state what conditions apply and include the estimated reduction in water usage:

4. Is Daily Wastewater Discharge Volume more than 2000 litres:

Please tick	Yes		No	√

Note if answer to the above is yes, an N.R.C wastewater discharge permit may be required

PART G: Secondary and Tertiary Treatment

1. Please indicate the type of additional treatment, if any, proposed to be installed in the system:

Secondary Treatment			
Home aeration plant	√	Refer to Section 9.2	
Tertiary Treatment			
Ultraviolet disinfection			
Other		Specify	

PART H: Land Disposal Method

1. Please indicate the proposed loading method:

Gravity	
Dosing Siphon	
Pump	√

2. High water level alarm to be installed in pump chambers

Please tick	Yes	√	No	
If not to be installed, explain why:				

3. If a pump is being used, please provide the following information:

Total Design Head	32	(m)
Pump Chamber Volume	150	(Litres)
Emergency Storage Volume	1000	(Litres)

4. Please identify the type(s) of land disposal method proposed for this site:

Surface Dripper Irrigation	√
Sub-surface Dripper Irrigation	
Mound with Dripper Irrigation	

As Per Attached Plan

5. Please identify the loading rate you propose for the option selected in Part H, Section 4 above, stating the reasons for selecting this loading rate:

Loading Rate	3		(Litres/m²/day)
Disposal Area	Design (m²)	360	For driplines spaced at 1m
	Reserve (m²)	360	For driplines spaced at 1m

Explanation *(Refer TP58 Sections 9 and 10)*

Loading rate for category 6 soils taken from TP58 (2004), Table 9.2, p.150.

6. What is the available reserve wastewater disposal area
(Refer TP58 Table 5.3)

Reserve Disposal Area (m²)	360	For dripper lines spaced at 1m
Percentage of Disposal Area (%)	100%	

7. Please provide a detailed description of the design and dimensions of the disposal field and attach a detailed plan of the field relative to the property site:

Description and Dimensions of Disposal Field:

Refer to Proposed Wastewater Disposal Field, Section 3.2 and the Site Plan, Section 7.					
Plan Attached?	Yes	√	No		(Please tick)

PART I: Maintenance & Management

(Refer TP58 Section 12.2)

1. Has a maintenance agreement been made with the treatment and disposal system suppliers?

Please tick	Yes		No	√

The owner is to obtain a maintenance agreement from the manufacturer on purchase of the system. Aeration
treatment systems should have an annual maintenance agreement with the supplier as stated in Far North District
Council bylaw 2805.2. This ensures the system operates efficiently and is serviced regularly.
Client to enter into agreement with chosen system supplier as per FNDC bylaw

PART J: Assessment of Environmental Effects

1. Is an assessment of environmental effects (AEE) included with application?
(Refer to TP58 Section 5. Ensure all issues concerning potential effects addressed)

Please tick	Yes	√	No	

PART K: Is Your Application Complete?

1. In order to provide a complete application have you remembered to:

Fully Complete this Assessment Form	√
Include a *Location Plan* and *Site Plan* (with Scale Bars)	√
Attach an Assessment of Environmental Effects (AEE)	√

2. Declaration

I hereby certify that, to the best of knowledge and belief, the information given in this application is true and complete.

Name: Martin O'Brien	Signature	
Position: Director	Date	19th April 2023

Note:

Any alteration to the site plan or design after approval will result in noncompliance.

Building consent must be approved before work commences.

N

10m Buffer zone if required for reserve in the future

360m² (100%) Reserve area greater than 10°

1.5m

1.5m Setback from boundary

1.5m

1.5m Setback from building

Existing shed

Driveway

Existing dwelling (4-Bedroom)

BH1

360m² Wastewater disposal field (Surface laid dripperline): 360m Length approx of dripperline with emitters at no greater than 400mm centres with flow rate of 1.6l/hr at 1000mm spacing's. Dripper lines are to be firmly fixed to surface & planted with water loving plants. Lines are to be covered by a minimum of 100mm of mulch.

Power cable to proposed AWT from mains distribution board

Aeration treatment system, refer to TP58 for manufacturer

30mm Alkathene pipe, TBC with manufacturers installation instructions

Karuhiruhi Road, Oue

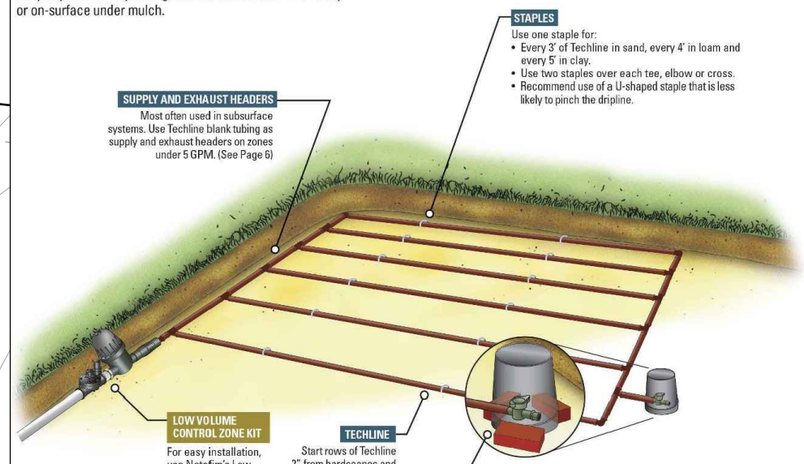
Open drain

Legend

- Open drain / cut off drain
- Power cable
- Sewer: 100mm Ø pipe, gradient 1:60
- Alkathene pipe
- Setback line
- Wastewater disposal field
- Reserve area

SUBSURFACE/SURFACE DESIGN LAYOUT

For use with Techline® dripline designs.
Bury driplines evenly throughout the zone from 4" to 6" deep or on-surface under mulch.



NOTES

- Contour lines at 1m increments, sourced from NRC .
- All drainage to comply with AS/NZS3500 & NZBC G13/AS1. All drainage is diagrammatical, drainlayer to determine on site drainage layout and provide asbuilt plan when complete.
- Length of dripper lines to be no more than 100m between feed points.
- Dripper lines to follow contour lines
- Dripper lines to be setback:
  - 1.5m from buildings
  - 1.5m from property boundaries
  - 5m from any intermittent storm water flow path such as a drain or overland flow path down slope of the field
- Smoke alarms are to be installed in accordance with the New Zealand Building Code Clause F7 Section 3.0:
- Smoke alarms shall be installed on or near the ceiling in every sleeping space or within 3m of every sleeping space door.
- Refer to the report outlining Section 3 of the Building Code, detailing smoke alarm regulations.
- The works which are being proposed will comply with Earthworks EW-S3 Accidental Discovery Protocol and Earthworks EW-S5 Erosion and Sediment Control - Auckland Council Guideline Document GD005 GD05 Erosion and Sediment Control.pdf (aucklanddesignmanual.co.nz)

O'BRIEN DESIGN CONSULTING
T 09 407 5208 | martin@obrienconsulting.co.nz

Project Title
Kenneth & Valerie Fife
15 Karuhiruhi Road
Oue, SH12
Hokianga
Lot 1 DP 121288

Sheet Title
Wastewater Site Plan

Drawn 12 April 2023

Project No 2865

Rev A

Sheet A01

Scale (A3 Original) 1: 250

2.5 1.25 0 2.5 5 m

8.0 Borehole Log

O'BRIEN DESIGN CONSULTING

BOREHOLE LOG 1

Client	Kenneth and Valerie Fife	**Job No.**	2865
Project	Installation of onsite wastewater	**Date Drilled**	3/04/2023
Site Address	15 Karuhiruhi Road, Oue	**Drilled By**	Martin O'Brien
Legal Description	Lot 1 DP 121288	**Drill Method**	50mm hand auger

Depth mm	GWL	Soil Map Reference	Graphic Log	Field Description	Soil Category
100	Groundwater not intercepted	Omanaia clay loam (ON) + Omanaia clay loam with coarse structured subsoil (One)		Slightly moist brown clayey topsoil	5
200					
300				Slightly moist brownish orange CLAY	6
400					
500					
600					
700				Slightly moist orange CLAY	6
800					
900					
1000					
1100					
1200					
1300				EOB	
1400					
1500					
1600					
1700					
1800					
1900					
2000					
2100					

Graphic Log Legend

Fill | Topsoil | Gravel | Sand | Clay | Silt

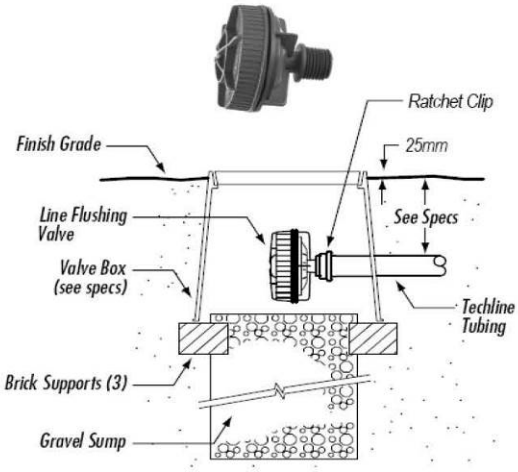
The subsurface data described above has been determined at this specific borehole location and will not identify any variations away from this location. The data is for the determination of soil type for wastewater disposal applications only and is not to be used for geotechnical purposes.

9.0 On Site Wastewater Installation Guide for the Installer

TECHLINE AS™ DESIGN GUIDE

LINE FLUSHING VALVES:
Line Flushing Valves are used to provide a cleansing action in the dripperline each time the zone is turned on.

- When a zone is turned on, the flush valve begins dumping water into a sump *(valve box)*.
- The dumping of water *(additional flow)* allows the velocity of water inside the dripperline to increase momentarily helping to clean the inside walls of the tubing and drip inlet filters.
- This action moves sediment out of the zone and into the sump.

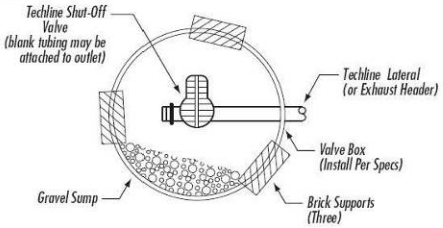


AUTOMATIC LINE FLUSHING VALVE:

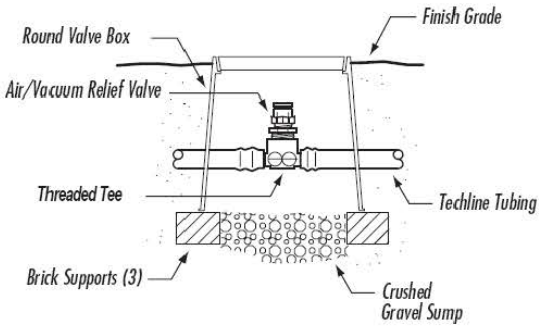
- Place one Automatic Line Flushing Valve at the furthest point in the drip system.
- For GRID layouts this will typically be in the collecting manifold. On flat sites the Automatic Line Flushing Valve can be installed in the middle of the collecting manifold however in sloping sites the flushing manifolds should be installed at the lowest end.
- For LITE layouts the Automatic Line Flushing Valve will be installed at the midpoint of the tubing layout.
- Use one Automatic Line Flushing Valve for each 45L/M of zone flow.
- All Automatic Line Flushing Valves should be installed in a valve box with a gravel sump adequate to drain approximately 4 litres of water.
- Automatic Line Flushing Valve requires a minimum pressure of 70kPa (7m) to shut off completely.

MANUAL FLUSHING VALVE:

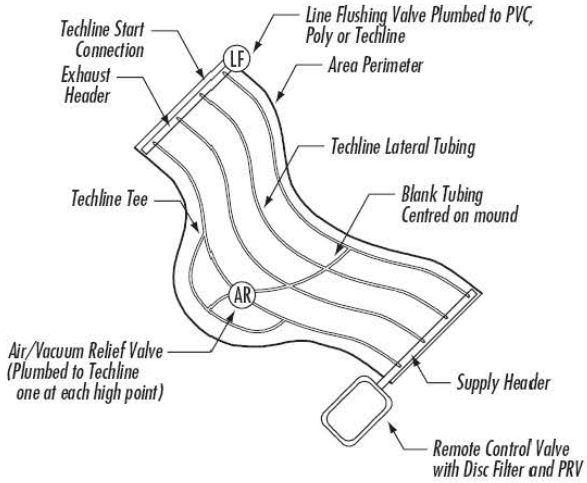
- Allows for manual flushing of lines during system start-up and during season.
- Manual Flushing Valves should be located at each end of the collecting manifold in a GRID system.
- Manual Flushing Valve should be located at the midpoint of a LITE layout.
- Allow 1 second per metre of dripperline & poly pipe in the zone for as a general guide for an adequate flush time.



AIR/VACUUM RELIEF VALVES:
Air/Vacuum relief valve freely allows air into a zone after shut down. It also ensures a vacuum within non Anti Siphon dripperline system doesn't suck debris or dirt back in to the dripperline. It also provides a means of releasing air from the dripperline when the zone is turned on, eliminating air pockets and speeding up the dripperline operation.



- Install Air/Vacuum Relief Valve at the highest point in the drip system.
- Install one Air/Vacuum Relief Valve for every 40L/M of zone flow.
- Ensure that all of the rows of Dripperline can take advantage of the Air/Vacuum Relief Valve; install it/them along a lateral that runs perpendicular to the dripperline laterals. This may be a collecting manifold, or a special lateral connecting all rows of dripperline, such as going over a mound.

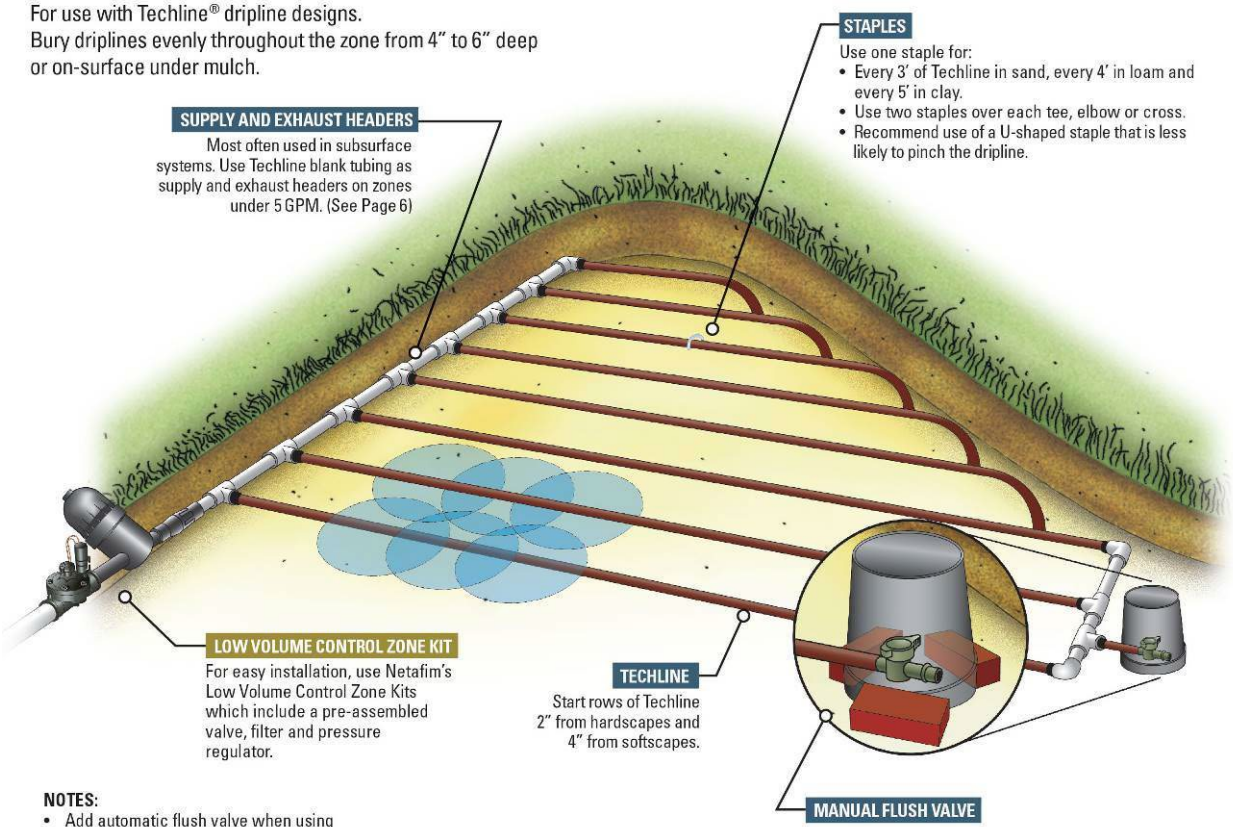


- All Air/Vacuum Relief Valves should be installed in a valve box with a gravel sump. This will ensure that the only clean air will enter the drip system.

Note: Larger Air Release valves are available for large projects.

SUBSURFACE/SURFACE DESIGN LAYOUT

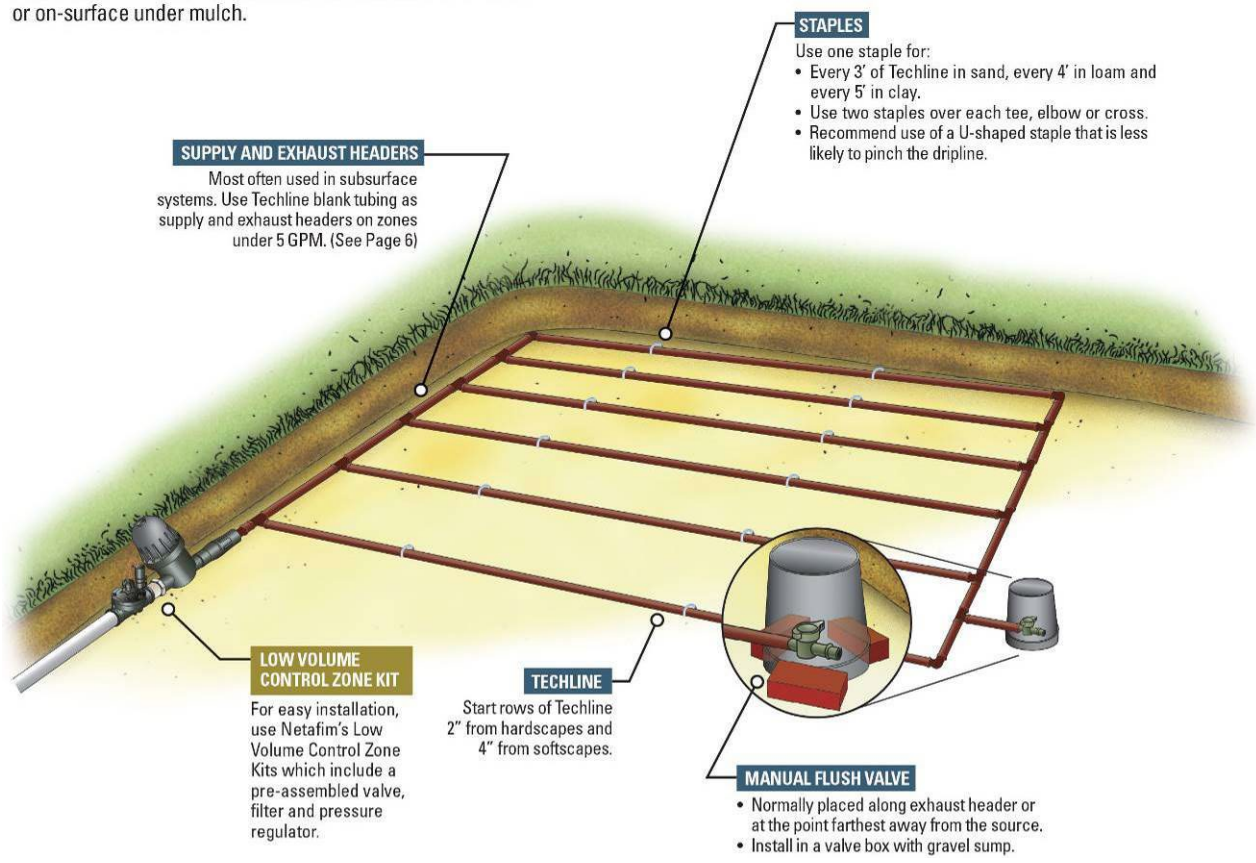
For use with Techline® dripline designs.
Bury driplines evenly throughout the zone from 4" to 6" deep or on-surface under mulch.



NOTES:
- Add automatic flush valve when using Techline DL or RW.
- Add air relief valve at the highest point in the system when using Techline DL or RW.

SUBSURFACE/SURFACE DESIGN LAYOUT

For use with Techline® dripline designs.
Bury driplines evenly throughout the zone from 4" to 6" deep or on-surface under mulch.



10.0 On Site Wastewater Maintenance for the Owner

10.1 Why regular maintenance

Septic tanks and on-site wastewater treatment systems need regular maintenance to work properly. The impact on the environment is minimal if your system is well-maintained.

Owners are legally responsible for maintaining their on-site wastewater treatment system.

There are health risks for you, your family and your community from poorly maintained wastewater treatment systems. Poor maintenance of treatment systems can cause sewage effluent to rise to the surface or effluent to enter the groundwater system. People and animals can fall sick by coming into contact with raw sewage or by drinking contaminated groundwater.

The life of your system depends on how much effluent is discharged each day and other factors such as rainfall and general clogging of pores in the ground. The greatest impact is how you maintain your system and what you put down it.

Components of your system

- Wastewater treatment unit – generally a septic tank or aerated treatment system.
- A land application system – generally trenches, or low-pressure surface or subsurface irrigation drip lines.

Do:

- Use biodegradable, low phosphate household cleaners and laundry powders or liquid.
- Use body washes and shower gels, instead of soap, (or non-petroleum based products).
- Use the water and suds saver cycles on your dishwasher and washing machine (if fitted) and put a water saver device on your shower.
- Fix any leaking pipes and toilet systems.
- Clean septic tank outlets and filter when required (usually every 6 months).
- Follow the service and maintenance requirements of your system.
- Scrape all dishes to remove food material before washing.
- Keep all possible solids out of the system.
- Inspect tank annually for sludge and scum levels.
- The tank should be pumped out approximately every 3–5 years. Have tank pumped out when:
    - the top of the floating scum is 75mm or less from the bottom of the outlet
    - sludge has built up to within 250mm of the bottom of the outlet

Don't:

- Use soap-based washing powders that do not biodegrade.
- Install a waste master disposal in your sink.
- Dispose of eggshells, coffee grounds or tea bags. Compost food scraps or put in rubbish.
- Dispose of strong bleaches, chlorine compounds, antiseptics or disinfectants, medicines or disposable nappies, sanitary napkins/pads or condoms into drains.
- Allow fat to be poured down the sink.
- Put petrol, oil, flammable/explosive substances, trade waste or chemicals down the drain.
- Empty a spa or swimming pool into the system.

Signs of trouble

The system is not working correctly if:

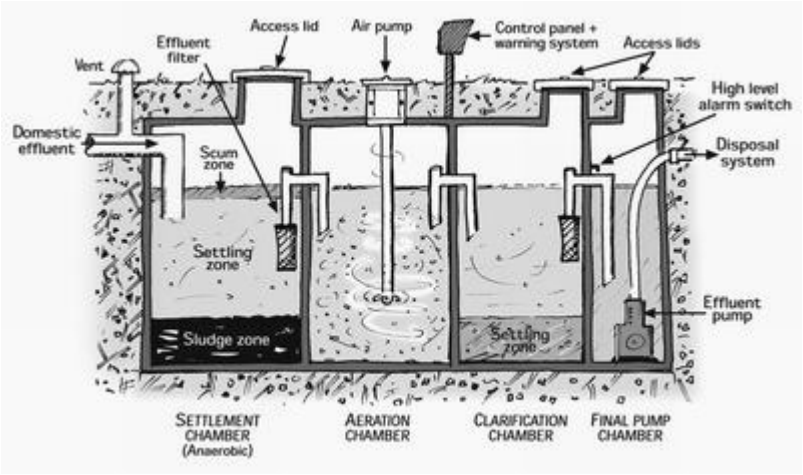
- There is a foul smell around tank or land application area.
- The tank, gully trap or tank mushroom is overflowing.
- The ground around the tank is soggy.
- Sinks/basins/toilets are emptying slowly or making gurgling noises when emptying
- The grass is unusually dark green over the land application area.

10.2 Northland Regional Council Public Information

Aerated Wastewater Treatment Systems

The term 'Aerated Wastewater Treatment Systems (AWTS)' covers a range of types of onsite treatment systems that provide additional treatment to septic tank effluent. Their mechanical pumps require regular maintenance and a continuous power supply.

In general, an AWTS has three parts which may be housed in a single unit or split into more than one unit (see diagram below). This is a generalised diagram of an AWTS. Different brands will differ in design.



The three main processes that take place in an AWTS are:

Settlement and anaerobic treatment

This takes place in a chamber or tank, and the process is identical to what happens in a septic tank. Solids within the effluent settle and are broken down by anaerobic bacteria (bacteria that live without oxygen).

Aerated treatment

The effluent then enters a second chamber where aerobic bacteria (bacteria that require oxygen to live) break down the solids further and reduce the number of harmful bugs within the effluent. This normally happens by either passing the effluent over, or through, a material that contains aerobic bacteria or by pumping air directly into the effluent. In some AWTS, a combination of both methods may be used.

Final settlement (clarification)

After the aeration treatment, the effluent is allowed to settle before being pumped to a disposal system. An AWTS removes a greater amount of solids from the effluent than a septic tank does therefore problems within the disposal system caused by clogging are less likely. The additional treatment within the aerobic chamber should result in effluent that has fewer harmful bugs and nutrients, so it is less harmful to the environment. The installation of an AWTS is particularly useful in areas where there is a high groundwater table or surface water that needs protection or where there are poorly draining soils.

Effluent disposal

Effluent from an AWTS is commonly disposed of through dripper irrigation lines, which are flexible pipes with small pressure-compensating drippers installed along their length. The drippers should be self-flushing which helps prevent them becoming clogged. There should also be "flushing valves" at the end of each line for maintenance purposes.

Dripper lines are to be surface laid on level ground and planted with water loving plants. Lines are to be covered with 100mm minimum of mulch.

It is recommended that the wastewater disposal area be clearly marked or fenced to minimise the risk to human health and reduce the possibility of damage to the system. The disposal field should not be used to graze animals, be driven on or built over. Buried dripper line should be planted with grass only. Do not plant shrubs and trees over buried dripper lines as the roots can damage the lines.

Surface water cut-off drains

If your disposal system is located on a slope a surface water cut-off drain will usually be installed above the effluent disposal system to prevent stormwater runoff from the slope entering the disposal area. All surface water cut-off drains need to be maintained to make sure they work properly. This may include removing excess grass or plant growth from the drains and making sure there are no other obstructions to prevent the free flow of water.

Prior to winter, it is a good idea to give all surface water cut-off drains a quick visual check and to carry out any required maintenance as soon as possible. If a surface water cut-off drain is not working properly, the excess stormwater entering the disposal area will cause failure of the disposal system and result in effluent flowing down the slope.

10.3 Recommended Plants

Water loving native plants are recommended by the NRC for the disposal field.

Native shrubs, trees and ground covers

Kiokio (fern)
Blechnum novaezelandiae

Putaputaweta
Carpodetus serratus

Sand coprosma (ground cover)
Coprosma acerosa

Mingimingi
C. propinqua

Taupata
C.repens

Cabbage tree (fast)
Cordyline australis

Karaka (large tree)
Corynocarpus laevigatus

Tree fuchsia
Fuchsia excorticata

Koromiko, hebe
Hebe stricta

Houhere, lacebark (fast)
Hoheria populnea

Pukatea (large tree)
Laurelia novae-zelandiae

Manuka
Leptospermum scoparium

Kawakawa
Macropiper excelsum

Grass-like plants

Oioi, jointed rush
Apodasmia similis

Rengarenga, rock lily
Arthropodium cirratum

Rautahi, tussock sedge
Carex geminata

Purei, pukio, tussock sedge
Carex secta

Toetoe *
Cotaderia fulvida

Umbrella sedge
Cyperus ustulatus

Turutu, NZ blueberry
Dianella nigra

Pepepe, toetoe tuhara
Machaerina sinclarii

Harakeke, flax (fast)
Phormium tenax

* Do not use invasive exotic pampas grasses

11.0 NZ Building Code, Clause F7, Smoke Alarms, Section 3

DOMESTIC SMOKE ALARMS

Scope

Smoke alarms shall be installed in every household unit of risk groups SH and SM where a Type 4 or Type 7 alarm system is not required by Acceptable Solutions C/AS1 to C/AS7.

The other paragraphs of this Acceptable Solution do not apply to the installation of domestic smoke alarms. Paragraphs 3.1 to 3.4 stand alone and only detail the requirements for domestic smoke alarms within household units.

Type 1 – Domestic Smoke Alarm System

A Type 1 system is based on one or more domestic type smoke alarms with integral alerting devices. Coverage shall be limited to selected parts of a single firecell, subject to Paragraphs 3.3 and 3.4.

Smoke alarms shall be manufactured to at least one of: AS 3786, ISO 12239 or BS EN 14604. 3.2.3 The smoke alarms shall be either hard wired or battery powered and are not required to be interconnected. In addition, they shall provide a hush facility, being a button that silences the alarm for a minimum duration of 60 seconds.

Comment: A hush facility is a button on the smoke alarm which silences the alarm for a limited time after activation. This allows the cause of a nuisance alarm to be cleared without having to remove the battery to silence the smoke alarm.

Smoke alarms shall have an alarm test facility easily reached by the building occupants. This facility may be located on the smoke alarms.

Location of Smoke Alarms

Smoke alarms shall be located as follows: a) In multi-storey units, there shall be at least one smoke alarm on each level within the household unit. b) On levels containing the sleeping spaces, the smoke alarms shall be located either: i) In every sleeping space, or ii) Within 3.0 m of every sleeping space door. In this case, the smoke alarms must be audible to sleeping occupants on the other side of the closed doors. c) In all cases, so that the sound pressure level complies with that specified in NZS 4514.

Comment: Smoke alarms also need to be located so that an alarm is given before the escape route from any bedroom becomes blocked by smoke. This includes those parts of escape routes on other floors. Although not required by this Acceptable Solution, the interconnection of individual smoke alarms should be considered if audibility is a problem.

Smoke alarms shall be installed on or near the ceiling. The placement shall be in accordance with NZS 4514. Comment: NZS 4514 gives instructions for the physical location of smoke alarms. Smoke alarms need to be situated on (or near) the ceiling for optimum detection of smoke in a fire situation. Following manufacturer's instructions is important to ensure smoke alarms are physically mounted correctly. This information is usually device specific.

Maintenance

Smoke alarms shall be maintained in accordance with the maintenance requirements of NZS 4514.

12.0 Limitations

1. It is imperative that this report be read in full before installation commences. O'Brien Design Consulting Ltd. is to be contacted if there are any variations in subsoil or site conditions from those described in this report. Site conditions may change from the date of the site visit.

2. O'Brien Design Consulting Ltd. is to be contacted if for any reason installation of the onsite wastewater system cannot be achieved to the design set out in this document. In this event O'Brien Design Consulting Ltd. reserves the right to revise this document. Should at any time the design be altered, O'Brien Design Consulting Ltd. are to be contacted for written approval before installation commences.

3. Our responsibility for this report is limited to the property owner named in Part A of this document. We disclaim all responsibility and will accept no liability to any other person unless that party has obtained the written consent of O'Brien Design Consulting Ltd. O'Brien. Design Consulting Ltd reserves the right to qualify or amend any opinion expressed in this report in dealing with any other party. It is not to be relied upon for any other purpose without reference to O'Brien Design Consulting Ltd.

4. Any alteration to the site plan or design will result in noncompliance.

5. The wastewater disposal field is designed according to the number of bedrooms, potential occupancy and wastewater volumes produced, as outlined in this report. Any increase in the number of bedrooms, potential occupancy or wastewater volumes produced may result in failure of the field. O'Brien Design consulting take no liability for wastewater volumes produced exceeding that stated in Part E, number 2.

6. Recommendations and opinions in this report are based on data obtained from the investigations and site observations. The nature and continuity of subsoil conditions and groundwater at locations other than the investigation bores and test areas are inferred and it should be appreciated that actual conditions could vary over the site.

7. This report does not investigate or give recommendations on ground bearing capacity for foundations or slope stability. A geotechnical report may be required. This is the responsibility of the homeowner.

8. Following payment to the FNDC your Building Consent documentation will be emailed to you. It is the responsibility of the homeowner/builder to engage a registered drainlayer to install the system and field. The homeowner/builder is responsible for ensuring a printed copy of the issued Building Consent documentation is onsite at every inspection. Plans must be printed in colour and be at least A3 size. The installation is to be inspected by a FNDC inspector or similar suitably qualified person.

9. Following completion of the project it is the homeowner's responsibility to apply for Code of Compliance. The system manufacturer and drainlayer should assist you in applying for Code of Compliance. You will need to fill out a Code of Compliance Form as provided in the following link: https://www.fndc.govt.nz/Our-Services/Building-Consents/Building-forms-and-guides/Code-Compliance-Certificate-Form-6. You will also need an As Build diagram from the drainlayer showing installation and a commissioning statement and electrical certificate from the manufacturer.

10. The homeowner is responsible for the everyday upkeep of the system and field. Information is provided in the NRC Public Information section of this report. Further information is to be supplied by the manufacturer.

11. It is the responsibility of the owner to provide the Far North District Council with a maintenance agreement for the installed system. The maintenance of onsite wastewater systems should be sustained to reduce the risk of system failure.

12. Any questions arising from the above or during construction, please call O'Brien Design Consulting Ltd.

13.0 Producer Statement

DESIGN: ON-SITE EFFLUENT DISPOSAL SYSTEMS (TP58)

ISSUED BY: Martin O'Brien……(approved qualified design professional)

TO: Kenneth and Valerie Fife ……(owners)

TO BE SUPPLIED TO: Far North District Council

PROPERTY LOCATION: 15 Karuhiruhi Road, Oue, Lot 1 DP 121288

TO PROVIDE: Design an on-site effluent disposal system in accordance with Technical Paper 58 and provide a schedule to the owner for the systems maintenance.

THE DESIGN: Has been in accordance with G13 (Foul Water) G14 (Industrial Liquid Waste) B2 (durability 15 years) of the Building Regulations 1992.

As an independent approved design professional covered by a current policy of Professional Indemnity Insurance (Design) to a minimum value of $200,000.00, I BELIEVE ON REASONABLE GROUNDS that subject to:
(1) The site verification of the soil types.
(2) All proprietary products met the performance requirements.

Construction monitoring required: ☐

The proposed design will meet the relevant provisions of the Building Code and 8.15 of The Far North District Council Engineering Standards.

……(Signature of approved design professional)
Licence Building Practitioner - Design 2, MA, BA with Hons (Professional qualifications)
BP103567……(Licence Number or professional Registration number)

Address: 153B Kerikeri Inlet Road, Kerikeri
Phone Number: 09 407 5208, 027 407 5208
Date: 19th April 2023

Note: This form is to accompany every application for a Building Consent incorporating a T.P.58. Approval as a design professional is at Councils discretion.