

Applicant Information Form 1a Notified or Non-notified Process



Department of
Conservation
Te Papa Atawhai

New Zealand Government

Is this the right application form for me?

This **Applicant Information Form 1a** – Notified or Non-notified Process must be completed for **the following longer term applications** (i.e. not one-off applications):

- Grazing
- Land use: Tenanted and/or using existing DOC facility/structure
- Land use: Use of public conservation land for private commercial facility/structure
- Guiding/Tourism/Recreation: Watercraft activities
- Filming
- Sports events
- Marine reserves application form 11a: Structure in a marine reserve

For other activities use the specific activity application forms that combine applicant and activity information or book a pre-application meeting.

How do I complete this applicant information form?

- Complete all sections of this **applicant information form**.
- In addition, you must complete the **activity application form/s** that you wish to undertake.
- DOC encourages electronic applications (e.g. typed Word document), rather than handwritten applications. Electronic applications are easier to read and less likely to be returned to you for clarification.
- If you need extra space, attach or include extra documents and label them according to the relevant section. Record all attachments in the table at the back of the application information form section **F Attachments**.

How do I submit my application?

Email the following to permissions@doc.govt.nz:

- **Completed applicant information form 1a**
- **Completed activity application form**
- Any other relevant attachments.

If I need help, where do I get more information?

- Check the [DOC webpage for the activity you are applying](https://www.doc.govt.nz/get-involved/apply-for-permits/apply-for-a-permit/)¹ for.

¹ <https://www.doc.govt.nz/get-involved/apply-for-permits/apply-for-a-permit/>

- Arrange a pre-application meeting (either face to face or over the phone) by contacting the [Department of Conservation Office](#)² closest to where the activity is proposed. You can use [DOC maps](#)³ to identify which District Office you should contact. Or arrange a meeting with any of our [four offices that process concessions](#)⁴ – choose the one closest to where the activity is proposed.
- If your application covers multiple districts, contact the office nearest most of the locations you are applying for, or nearest to locations you have a specific question about.

What happens next?

Once your application forms are received, your application will be assessed by DOC. If your application is complete, DOC will begin processing.

If your application is incomplete it will be returned to you for more information.

Why does DOC ask for this information?

The questions in this application information form and the activity application form/s are designed to cover the requirements set out in conservation legislation. Your answers allow us to assess:

- Your most up-to-date details so that DOC can contact you about your application.
- Your qualifications, resources, skills and experience to adequately conduct the activity on public conservation land.
- Your creditworthiness will help determine whether DOC should extend credit to you and set up a DOC customer accounts receivable credit account for cost recovery. To make this assessment DOC will supply your information to a credit checking agency.

Note:

- Personal information will be managed by DOC confidentially. For further information check [DOC's privacy and security statements](#)⁵.
- Information collected by DOC will be supplied to a debt collection agency in the event of non-payment of payable fees.

What fees will I pay?

You may be required to pay a **processing fee** for this application regardless of whether your application is granted or not. You may request an estimate of the processing fees for your application. If you request an estimate, DOC may require you to pay the reasonable costs of the estimate prior to it being prepared. DOC will not process your application until the estimate has been provided to you. In addition, if you are granted a guiding concession on public conservation land you may be required to pay annual **activity and management fees**. These fees are listed on the [DOC webpage for the activity you are applying](#)⁶ for.

DOC will invoice your processing fees after your application has been considered. If your application is large or complex, DOC may undertake billing at intervals periodically during processing until a decision is made. If you withdraw your application DOC will invoice you for the costs incurred up to the point of your withdrawal.

² www.doc.govt.nz/footer-links/contact-us/office-by-name/

³ <http://maps.doc.govt.nz/mapviewer/index.html?viewer=docmaps>

⁴ <https://www.doc.govt.nz/get-involved/apply-for-permits/contacts>

⁵ <https://www.doc.govt.nz/footer-links/privacy-and-security/>

⁶ <https://www.doc.govt.nz/get-involved/apply-for-permits/apply-for-a-permit/>

Your application will set up a credit account with DOC. See the checklist at the end of the form for the terms and conditions you need to accept for a DOC credit account.

Will my application be publicly notified?

Your application will be publicly notified if:

- It is a license with a term of more than 10 years.
- It is a lease.
- After having regard to the effects of the activity, DOC considers it appropriate to do so.

Public notification will increase the time and cost of processing of your application.

What does DOC require if my application is approved?

If your application is approved DOC requires:

- **Insurance** to indemnify the Minister of Conservation against any claims or liabilities arising from your actions. The level of insurance cover will depend on the activity.
- A copy of your **safety plan** audited by an external expert (e.g. Health and Safety in Employment (Adventure Activity) Regulations 2011 audit or a DOC listed organisation). See the [Safety Plan](#)⁷ information on the DOC website for further information.

Note: DOC/Minister can vary the concession if the information on which the concession was granted contained material inaccuracies. DOC may also recover any costs incurred.

⁷ <https://www.doc.govt.nz/get-involved/apply-for-permits/managing-your-concession/safety-plans/>

A. Applicant details

| | | |
|----------------------------------|--|--|
| Legal status of applicant (tick) | <input checked="" type="checkbox"/> Individual (Go to ①) | |
| | <input type="checkbox"/> Registered company (Go to ②) | <input checked="" type="checkbox"/> Trust (Go to ②) |
| | <input type="checkbox"/> Incorporated society (Go to ②) | <input type="checkbox"/> Other e.g. Educational institutes (Go to ②) |

| | | | | | | |
|---|--|------------|--------------|------------|----------|------|
| ① | Applicant name (individual) | | | [REDACTED] | | |
| | Phone | | Mobile phone | | | |
| | Email | [REDACTED] | | | | |
| | Physical address | [REDACTED] | | | Postcode | 8022 |
| | Postal address (if different from above) | | | | Postcode | |

| | | | | | |
|---|---|--|--|--|--|
| ② | Applicant name (full name of registered company, trust, incorporated society or other) | | Canterbury Trustees (2006) Limited | | |
| | Trading name (if different from applicant name) | | | | |
| | NZBN if applicable (to apply go to: https://www.nzbn.govt.nz) | 9429034445396 | Company, trust or incorporated society registration number | Company number 1723800 | |
| | Registered office of company or incorporated society (if applicable) | | | | |
| | Company phone | 03 379 7835 | Company website | harmans.co.nz | |
| | Contact person and role | | | | |
| | Phone | | Mobile phone | | |
| | Email | legal@harmans.co.nz | | | |
| | Postal address | PO Box 1496, Christchurch | Postcode | 8140 | |
| | Street address (if different from postal address) | Level 2, 79-81 Cashel Street | Postcode | 8011 | |

B. Pre-application meeting

Have you had a pre-application meeting or spoken to someone in DOC?

| | |
|-----|-------------------------------------|
| No | <input checked="" type="checkbox"/> |
| Yes | <input type="checkbox"/> |

- If yes record the:

| | |
|---|--|
| Date of DOC pre-application meeting | |
| Name of DOC staff member | |
| Name of person who had the pre-application meeting with DOC | |

C. Activity applied for

Tick the **activity application form** applicable to the activity you wish to undertake on public conservation land. Complete the applicant information form and the activity application form and email them with any attachments to permissions@doc.govt.nz

| ACTIVITY APPLICATION FORM* | FORM NO. | TICK |
|--|----------|-------------------------------------|
| Grazing | 2a | <input type="checkbox"/> |
| Land use: Tenanted and/or using existing DOC facility/structure | 3a | <input type="checkbox"/> |
| Land use: Use of public conservation land for private/commercial facility/structure | 3b | <input checked="" type="checkbox"/> |
| Guiding/Tourism/Recreation: Watercraft activities | 4b | <input type="checkbox"/> |
| Filming | 5a | <input type="checkbox"/> |
| Sporting Events | 6a | <input type="checkbox"/> |
| Marine reserves application form: Structure in a marine reserve | 11a | <input type="checkbox"/> |
| Other activities (not covered in the above forms or in the new activity application forms that combine applicant and activity information) | 7a | <input type="checkbox"/> |

Note: If the activity is not in this list check the activity on the DOC website to find the correct application form or book a pre-application meeting. Application forms that combine applicant and activity information on the DOC website include:

- [Aircraft activities](https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/aircraft-activities/)⁸
- [Easements](https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/access-easements/)⁹
- [Land based guiding](https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/land-based-guided-activities/)¹⁰

⁸ <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/aircraft-activities/>

⁹ <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/access-easements/>

¹⁰ <https://www.doc.govt.nz/get-involved/apply-for-permits/business-or-activity/land-based-guided-activities/>

D. Are you applying for anything else?

Are you submitting any other application forms in relation to this application?

| | |
|-----|-------------------------------------|
| No | <input checked="" type="checkbox"/> |
| Yes | <input type="checkbox"/> |

- If yes, state which application forms:

E. Background experience of applicant

Provide relevant information relating to your ability to carry out the proposed activity (e.g. details of previous concessions, membership of professional organisations, and relevant qualifications).

The applicant has owned the property and occupied the site for some time. The building on the foreshore reserve already has a lease, but not a suitable wastewater system. It is proposed to install a secondary treatment unit to treat the wastewater to a high enough standard that it can be irrigated into the bush within the applicants property with dripperline.

The only part of the wastewater system in the foreshore reserve is the tank and pump line, as part of the works and excavator is required to work in the foreshore reserve to allow installation.

F. Attachments

Attachments should *only* be used if there is:

- Not enough space on the form to finish your answer
- You have additional information that supports your answer
- You wish to make an additional request of DOC regarding the application.

Label each document clearly and complete the table below.

| Section of the application form the attachment relates to | Document title | Document format (e.g. Word, PDF, Excel, jpg etc.) | Description of attachment |
|---|--------------------------|---|---------------------------|
| <u>Correct example ✓</u> D | Locations | PDF | Trust Deed. |
| <u>Incorrect example X</u> Table | Doc1 | Word | Table |
| C | 2776 - Wastewater Report | PDF | Onsite Wastewater Report |
| | | | |
| | | | |
| | | | |

G. Checklist

| Application checklist | Tick |
|---|-------------------------------------|
| I have completed all sections of this applicant information form relevant to my application and understand that the form will be returned to me if it is incomplete. | <input checked="" type="checkbox"/> |
| I certify that the information provided in this applicant information form, and any attached additional forms is, to the best of my knowledge, true and correct. | <input checked="" type="checkbox"/> |
| I have completed the activity application form . | <input checked="" type="checkbox"/> |
| I have appropriately labelled all attachments and completed section F Attachments . | <input checked="" type="checkbox"/> |
| I will email permissions@doc.govt.nz my: <ul style="list-style-type: none"> • Completed applicant information form • Completed activity application form/s • Any other attachments. | <input checked="" type="checkbox"/> |

H. Terms and conditions for a credit account with the Department of Conservation

| | |
|--|-------------------------------------|
| Have you held an account with the Department of Conservation before? | Tick |
| No | <input type="checkbox"/> |
| Yes | <input checked="" type="checkbox"/> |
| If 'yes' under what name | |
| Does your organisation require a purchase order number for invoicing purposes? | |
| If yes, please provide the number here: | |

All invoices related to this Permission will be coded to this purchase order number unless otherwise advised. It is the applicant's responsibility to advise the Department if the purchase order needs to change through the lifetime of the Permission.

In ticking this checklist and placing your name below you are acknowledging that you have read and agreed to the terms and conditions for an account with the Department of Conservation

| Terms and conditions | Tick | | |
|--|--|------|--------------|
| I/We agree that the Department of Conservation can provide my/our details to the Department's Credit Checking Agency to enable it to conduct a full credit check. | <input checked="" type="checkbox"/> | | |
| I/We agree that any change which affects the trading address, legal entity, structure of management or control of the applicant's company (as detailed in this application) will be notified in writing to the Department of Conservation within 7 days of that change becoming effective. | <input checked="" type="checkbox"/> | | |
| I/We agree to notify the Department of Conservation of any disputed charges within 14 days of the date of the invoice. | <input checked="" type="checkbox"/> | | |
| I/We agree to fully pay the Department of Conservation for any invoice received on or before the due date. | <input checked="" type="checkbox"/> | | |
| I/We agree to pay all costs incurred (including interest, legal costs and debt recovery fees) to recover any money owing on this account. | <input checked="" type="checkbox"/> | | |
| I/We agree that the credit account provided by the Department of Conservation may be withdrawn by the Department of Conservation, if any terms and conditions (as above) of the credit account are not met. | <input checked="" type="checkbox"/> | | |
| I/We agree that the Department of Conservation can provide my details to the Department's Debt Collection Agency in the event of non-payment of payable fees. | <input checked="" type="checkbox"/> | | |
| Typed applicant name/s | <div> of Seng Limited on behalf of the Allots and Calverts</div> | Date | 10 July 2025 |

| | | | |
|------------------------------------|--|------|--|
| For Departmental use | | | |
| Credit check completed | | | |
| Comments: | | | |
| Signed | | Name | |
| Approved (Tier 4 manager or above) | | Name | |



The Department recommends that you contact the Department of Conservation Office closest to where the activity is proposed to discuss the application prior to completing the application forms. Please provide all information requested in as much detail as possible. Applicants will be advised if further information is required before this application can be processed by the Department.

This form is to be used when the proposed activity is the building or use of any private or commercial facility or structure on public conservation land managed by the Department of Conservation. Examples may include lease of land to erect an information centre; authorisation to erect a weather station; or construct or lease a private/commercial campground or lodge. This form is to be completed in conjunction with either Applicant Information Form 1a (longer term concession) or Applicant Information Form 1b (one-off concession) as appropriate.

Please complete this application form, attach Form 1a or Form 1b, and any other applicable forms and information and send to permissions@doc.govt.nz. The Department will process the application and issue a concession if it is satisfied that the application meets all the requirements for granting a concession under the Conservation Act 1987.

If you require extra space for answering please attach and label according to the relevant section.

A. Description of Activity

Please describe the proposed activity in detail – where the site is located, please use NZTM GPS coordinates where possible, what you intend to use the building for, whether you intend to make any changes to the infrastructure.

Please include the name and status of the public conservation land, the size of the area for which you are applying and why this area has been chosen.

If necessary, attach further information including a map, a detailed site plan and drawings of proposal and label Attachment 3b:A.

It is proposed to upgrade the wastewater system on the property in Tahuahua Bay (Blackwood Bay). The upgrade requires the installation of a secondary treatment tank within the foreshore reserve Latitude -41.207026, Longitude 174.09036

B. Alternative sites considered

If your application is to **build, extend or add** to any permanent or temporary structures or facilities on public conservation land, please provide the following details:

- Could this structure or facility be reasonably located outside public conservation land? Provide details of other sites/areas considered.
- Could any potential adverse effects be significantly less (and/or different) in another conservation area or another part of the conservation area to which the application relates? Give details/reasons

We have investigated many different options, however we need gravity from the existing building on the foreshore reserve.

C. Larger area

Is the size of the area you are applying for **larger** than the structure/facility

YES / **NO**

If **yes**, please detail the size difference in the box below, and answer the following 3 questions, if **no** please go on to the next section:

Is this necessary for safety or security purposes?

YES / NO

Is this necessary as an integral part of the activity?

YES / NO

Is this essential to carrying on the activity?

YES / NO

If the answer to any of the above is yes, please provide details and attach supporting evidence if necessary and label Attachment 3b:C.

D. Exclusive possession

Do you believe you need **exclusive possession** of the public conservation land on which your structure/building is located, ie no one else can use the land during your use of it?

YES / **NO**

(Exclusive occupation requires a lease which requires public notification of the application)

If **yes**, please answer the following 3 questions, if no please go to the next section:

Is exclusive possession necessary to protect public safety?

YES / NO

Is exclusive possession necessary to protect physical security of the activity?

YES / NO

Is exclusive possession necessary for the competent operation of the activity?

YES / NO

If the answer to any of the above is yes, please provide details and attach supporting evidence if necessary and label Attachment 3b:D.

E. Technical Specifications (for telecommunications sites only)

Frequencies on which the equipment is to operate

N/A

Power to be used (transmitter output)

Polarisation of the signal

Type of antennae

The likely portion of a 24 hour period that transmitting will occur

Heaviest period of use

F. Term

Please detail the length of the term sought (i.e. number of years or months) and why.

Note: An application for a concession for a period over 10 years must be publicly notified, an application for a concession up to 10 years will not be publicly notified unless the adverse effects of the activity are such that it is required, or if an exclusive interest in the land is required.

10 Years

G. Bulk fuel storage

Under the Hazardous Substances and New Organisms Act 1996 (HSNO Act) 'Bulk fuel storage' is considered to be any single container, stationary or mobile, used or unused, that has a capacity in excess of 250 litres of Class 3 fuel types. This includes petrol, diesel, aviation gasoline, kerosene and Jet A1. For more information on Hazardous Substances, go to:

<http://www.business.govt.nz/worksafe/information-guidance/legal-framework/hsno-act-1996>

Do you intend to store fuel in bulk on the land as part of the activity?

YES ☒ NO

If you have answered yes, then please provide full details of how and where you intend to store the fuel, and label any attachments including plans, maps and/or photographs as Attachment 3b:G. If your concession application is approved you will be required to provide a copy of your HSNO compliance certification to the Department before you begin the activity.

H. Environmental Impact Assessment

This section is one of the most important factors that will determine the Department's decision on the application. Please answer in detail.

In column 1 please list all the locations of your proposal, please use NZTM GPS coordinates where possible. In column 2 list any special features of the environment or the recreation values of that area. Then in column 3 list any effects (positive or adverse) that your activity may have on the values or features in column 2. In column 4 list the ways you intend to mitigate, remedy or avoid any adverse effects noted in column 3. Please add extra information or supporting evidence as necessary and label Attachment 3b:H.

Refer to Steps 1 and 2 in your Guide to Environmental Impact Assessment to help you fill in this section.

| Location on public conservation land | Special feature or value | Potential effects of your activity on the feature or value (positive or adverse) | Methods to remedy, mitigate or avoid any adverse effects identified |
|--|---|--|---|
| EG: Tararua Forest Park | Northern rata - threatened species | Damage to the plants by construction | Brief construction and maintenance staff of the location and importance of the species; clearly tape off areas with the species to avoid damage |
| Tahuahua (Blackwood) Bay Totaranui (Queen Charlotte Sound) | We are unaware of and special feature or value of this area of land | The area in which the tank is proposed is largely grassed, there is only young regenerating native bush. | Care will be taken to ensure a minimal amount of vegetation clearance is undertaken. |
| | | An excavator is required to excavate the hole in which the wastewater tank will be installed in. The excavator will be delivered by barge and the excavator will track over the foreshore. | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

I. Other

Is there any further information you wish to supply in support of your application? Please attach if necessary and label Attachment 3a:I.

Please find attached our wastewater report and a drawing showing the areas of proposed work

Onsite Wastewater Report

Client:

Allott & Calvert

Located at:

Section 2 Sec 8 Block 1 Arapawa SD
Blackwood Bay

Date: 25 February 2025

Ref: 2776

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Appendix B – Soil Properties

Appendix C – Wastewater Design Calculations

Appendix D – Loading Certificate

Appendix E – Setback Distance Assessment

Appendix F – Risk Assessment

Appendix G – Supplementary Information

Appendix H – Owners Guidance Manual

1. Executive Summary

- 1.1. Allott Calvert Family Trust and Pohutakawa Trust are proposing to upgrade their wastewater system to replace the existing system on Section 2 Sec 8 Block 1 Arapawa SD, Tahuahua Bay, Blackwood Bay.
- 1.2. The Trusts have requested an appraisal of the new on-site wastewater management system.
- 1.3. Our assessment has determined the best practical onsite wastewater management system solution for a 5-bedroom, 10-person building occupancy should comprise of:
 - A secondary treatment unit
 - Dripper line, totaling a minimum of 589m² area.
- 1.4. Installation is to be in accordance with the requirements and recommendations of AS/NZS 1547:2012.
- 1.5. The recommendations above cannot be taken in isolation and must be read with respect to the balance of this report and the context of the proposed development at the site.

2. Introduction

- 2.1. Allott Calvert Family Trust and Pohutakawa Trust are proposing to upgrade their wastewater system to replace the existing system on Section 2 Sec 8 Block 1 Arapawa SD, Tahuahua Bay, Blackwood Bay.
- 2.2. The Trusts have requested an appraisal of the new on-site wastewater management system.
- 2.3. The property is located on the western side of Blackwood Bay and is approximately 8km northeast of Waikawa.
- 2.4. The property is legally described as Section 2 Sec 8 Block 1 Arapawa SD, Tahuahua Bay, Blackwood Bay, with an area of approximately 0.5843 ha.
- 2.5. The property is developed with an existing dwelling on the foreshore and one up slope with septic tank and trench associated infrastructure, including a wastewater system.

- 2.6. All site features are shown on the site plan provided in Appendix A

3. Site & Soil Evaluation

- 3.1. One hand auger test hole was undertaken in the general area of the proposed wastewater field. The test hole locations are shown on the site plan provided in Appendix A. The tests were conducted to determine the soil type and soil category.
- 3.2. Based on the soil assessment carried out, an average drainage category of 4 has been adopted. Logs of the representative soil properties are provided in Appendix B.
- 3.3. Groundwater was not encountered within the subsurface investigation, and it is anticipated groundwater is more than 2.0m below ground level.
- 3.4. The site is exposed to both wind and sun.

4. System Design

- 4.1. An assessment of the best practical option has determined that secondary treatment unit coupled with a dripper line land application is appropriate for the site conditions and constraints. Existing wastewater field will be decommissioned accordingly.
- 4.2. The secondary treatment system must achieve the following treatment levels:
- Ninety per cent of samples shall have a BOD5 less than or equal to 20 g/m³ with no samples greater than 30 g/m³
 - Ninety per cent of samples shall have a TSS less than or equal to 30 g/m³ with no samples greater than 45 g/m³
- 4.3. Any system that has been tested and meets the above standard is satisfactory, such systems include (but are not limited to) Oasis Clearwater Series 2000, Hynds Advanced Lifestyle, Airtech 9000, InnoFlow, AdvanTex AX20, Biorock, Eloy and Klaro. These systems are common throughout Marlborough and have been independently tested to prove their compliance with the above standard. The system needs to be checked to confirm it can treat a daily load of 1650 litres/day.
- 4.4. The existing dwelling has an existing solar power system, the client may wish to power the proposed dwelling and associated wastewater treatment system with a similar alternative power

system. It is the client's responsibility to ensure the solar system (if used) can provide power to the wastewater system at all times to allow the system to adequately treat the wastewater.

4.5. A wastewater design sheet is provided in Appendix C with the design calculation based on the following criteria for the proposed wastewater system.

- 10-person permanent occupancy
- Loading of 1650 litres/day (165 litres / person / day)
- Stream supply
- Soil Category 4
- Design loading rate of 2.8 mm/day
- Standard water reduction plumbing fixtures installed

4.6. Standard water reduction fixtures are to be installed in accordance with Appendix note 2, in Table H3 of AS/NZS1547:2012 to assist in minimising water usage, such fixtures are standard in modern homes and include:

- Dual flush water closets, shower-flow restrictors, aerator faucets (taps) and water-conserving automatic washing machines.

4.7. Based on the criteria above, the minimum total area of the application field is 589m².

4.8. An indicative field layout is shown on the site layout drawing attached in Appendix A. The dripper lines are pinned to the surface and covered in naturally occurring mulch. The area is infrequently accessed therefore we do not consider fencing required.

4.9. Access to the site is available by boat for maintenance and servicing of the system.

5. Alternative Systems

5.1. Alternative systems have been considered; the reasons why dismissed are listed below:

5.2. Primary treatment (septic tank) – Not suitable for dripper line (clogging) and considered not a suitable level of treatment given the Marlborough Sounds environment and the massive and poor permeability of the soil.

- 5.3. Trenches, Beds, ETS & Mound Field - Considered not suitable given the massive and poor permeability of the soil and the amount of vegetation clearance and excavation required.

6. Assessment of Environmental Effects

- 6.1. An onsite wastewater system is required as there is no reticulation in the area.
- 6.2. Due to the following reasons, I do not envisage the wastewater becoming an environmental risk:
- Relatively remote location
 - Secondary treatment
 - Low application rate
 - The environmental buffering capacity of land
- 6.3. The proposed wastewater treatment system generally complies with AS/NZS 1547:2012 and the Council Guidelines.
- 6.4. Public health risks from an underperforming on-site system in this location would come from unlikely contamination of the surface water.
- 6.5. The disposal area has been designed specifically to accommodate wastewater where the soil is of lower permeability.
- 6.6. The slopes in the Marlborough Sounds where dripper lines are recommended are typically areas with slopes vegetated in dense regenerating native bush and slopes exceed 30% (17°). Dripper line installation is usually used in these locations as the other land application methods prescribed in AS/NZS1547:2012 are not practical.

The receiving environment is isolated from human contact, is set back from surface water ways and the Marlborough sounds and is well vegetated. In our opinion the wastewater is not a risk to public health and do not consider disinfection of wastewater is required for the following reasons.

- The locations of these systems are typically remote
- Not easily accessible by people
- Not in water supply catchments

- Not in close proximity to the sea

Burying the dripper lines 150mm as specified in AS/NZS1547:2012 is not practical on this site. The technique of mulch over the drippers has been used for around 20 years in the Marlborough Sounds with no apparent issues (refer to the reasons above). Extensive amounts of organic matter (rotting leaves, bark etc) cover the dripperline within a short period of time (see photo below). This can be accelerated by the owner covering the drippeline with naturally occurring mulch.



The reduction in DIR in accordance with AS/NZS1547:2012, Table M2 recommends slopes in excess of 72% (35°) are designed by suitably qualified and experienced persons (we consider ourselves to be such a person). We consider a reduction of 20% in the DIR are required for the slope.

- 6.7. The proposed wastewater irrigation is less than the summer evaporation. The irrigation will help encourage vegetation growth, the root system and shading effect will reduce cracking in the clay soil.
- 6.8. There are suitable offsets from water courses, buildings, boundaries and the foreshore. The environmental buffering capacity of land is sufficient to treat the wastewater to a suitable standard to avoid risk to public health. Coliform numbers, the indicators used to measure the various pathogens present in sewage effluent are not considered to be a concern. Bacterial, (and viral etc), numbers are reduced linearly with passage of effluent through mid-range textured soils. The proposed field assists in the effectiveness of this by reducing the quantity of effluent required to be treated by the soil in a single location. This will also provide a greater safety margin for accommodation of any fluctuations in discharge that may not be able to be accommodated or adequately treated by the soil. It is generally accepted that a path length of 0.3 – 0.4m is sufficient

to reduce bacterial numbers to insignificant levels in normal soils i.e. soils that are of a mid-range texture, not too sandy or too clayey, and not saturated all the time. The topsoil soil on the property falls into this mid-range soil category. It is therefore my opinion that no significant adverse effect on the environment.

6.9. In the unlikely event of the system failure the effects will be less than minor, it is likely the wastewater will saturate the slope. There will be an unpleasant odour and saturated unusable areas. The effects will be easily identifiable, inhibit the applicant's use of the land and be generally unpleasant. The owner will want to address the failure and repair / install a new wastewater system. The property is relatively large and there is a reserve area available to relocate the field should the field fail. The land in the location of the field predominately falls towards the foreshore. Probable infiltration into the topsoil before reaching this feature as well as the environmental buffering capacity of the land between the field and the surface feature will produce very minor effects.

6.10. Regular maintenance and inspection by the owner / owner's contractor will ensure the onsite wastewater system is operating to a suitable standard.

7. Recommendations / Conclusions

7.1. The new onsite wastewater management system should comprise of a secondary treatment unit. The treated effluent is to be discharged to a dripper line field of at least 589m² in size.

7.2. It is confirmed that there is sufficient area available for the adequate treatment and application of domestic effluent provided that the conditions and recommendations specified in this report are implemented.

7.3. The following setbacks are recommended:

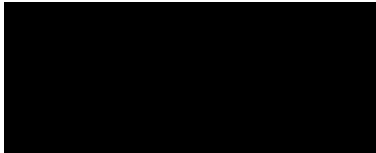
| Feature | Min. Setback |
|----------------------|--------------|
| Buildings | 10m |
| Surface water | 20m |
| Boundary (Typical) | 2m |
| Boundary (Downslope) | 20m |

7.4. Regular maintenance is required on any onsite wastewater treatment system to ensure the system operates properly. Maintenance is the responsibility of the owner.

8. Limitations

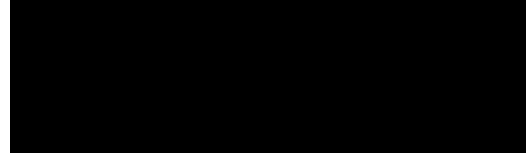
- 8.1. This report is valid for five years from the date of issue and covers the onsite wastewater treatment for the accommodation of up to 10 people for Allott Calvert Family Trust and Pohutakawa Trust on Section 2 sec 8 block 1 Arapawa SD, Tahuahua Bay, Blackwood Bay. Any other areas are outside the scope of this report.
- 8.2. This report relies on the regular maintenance by a recognised maintenance contractor and regular inspection maintenance of the wastewater system and disposal field by the owner.

Report prepared by



Engineering Cadet

Report reviewed and approved by



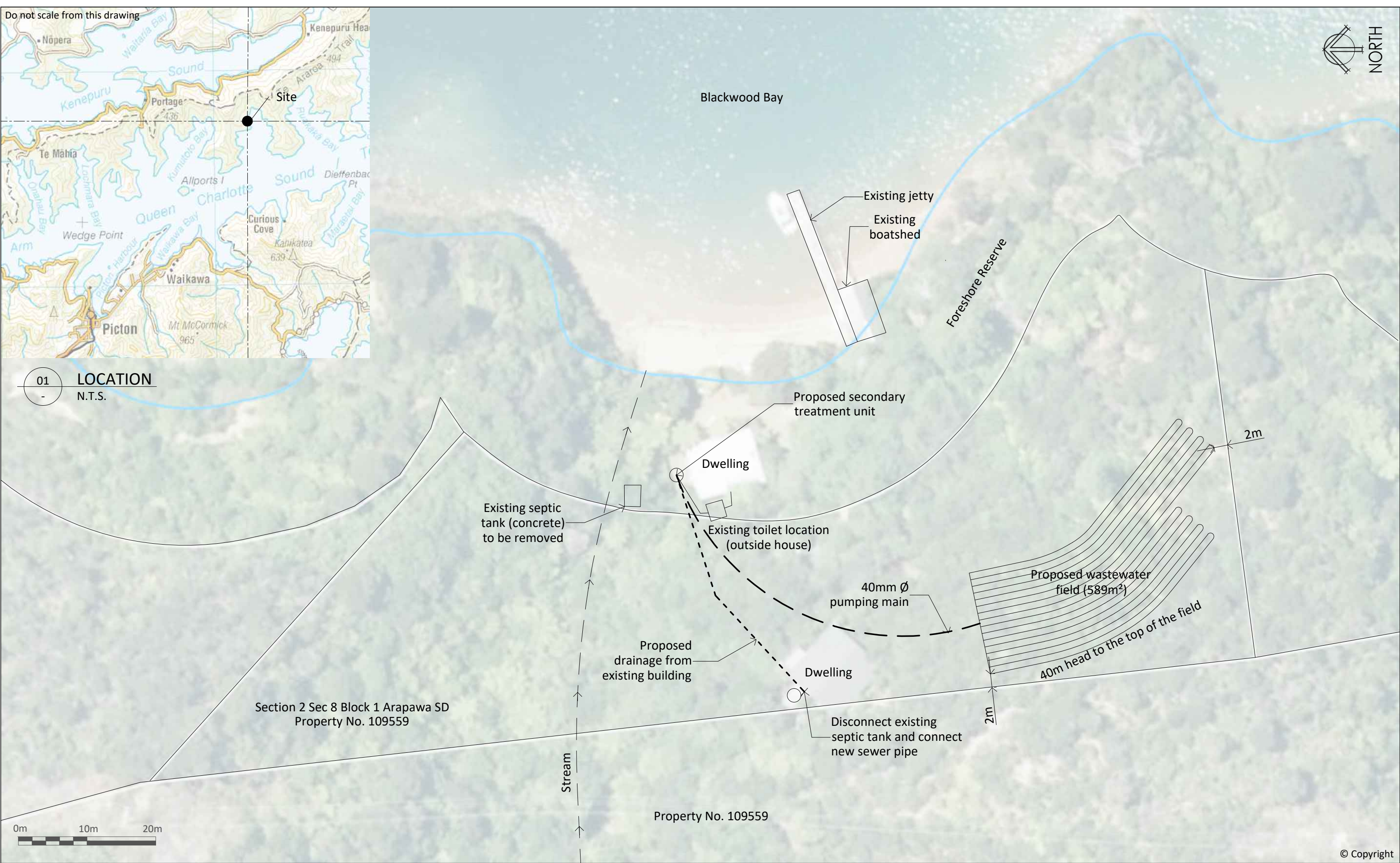
Chartered Professional Engineer
CPEng, CMEngNZ, BEngTech(civil), NZCE(civil)

13 March 2025

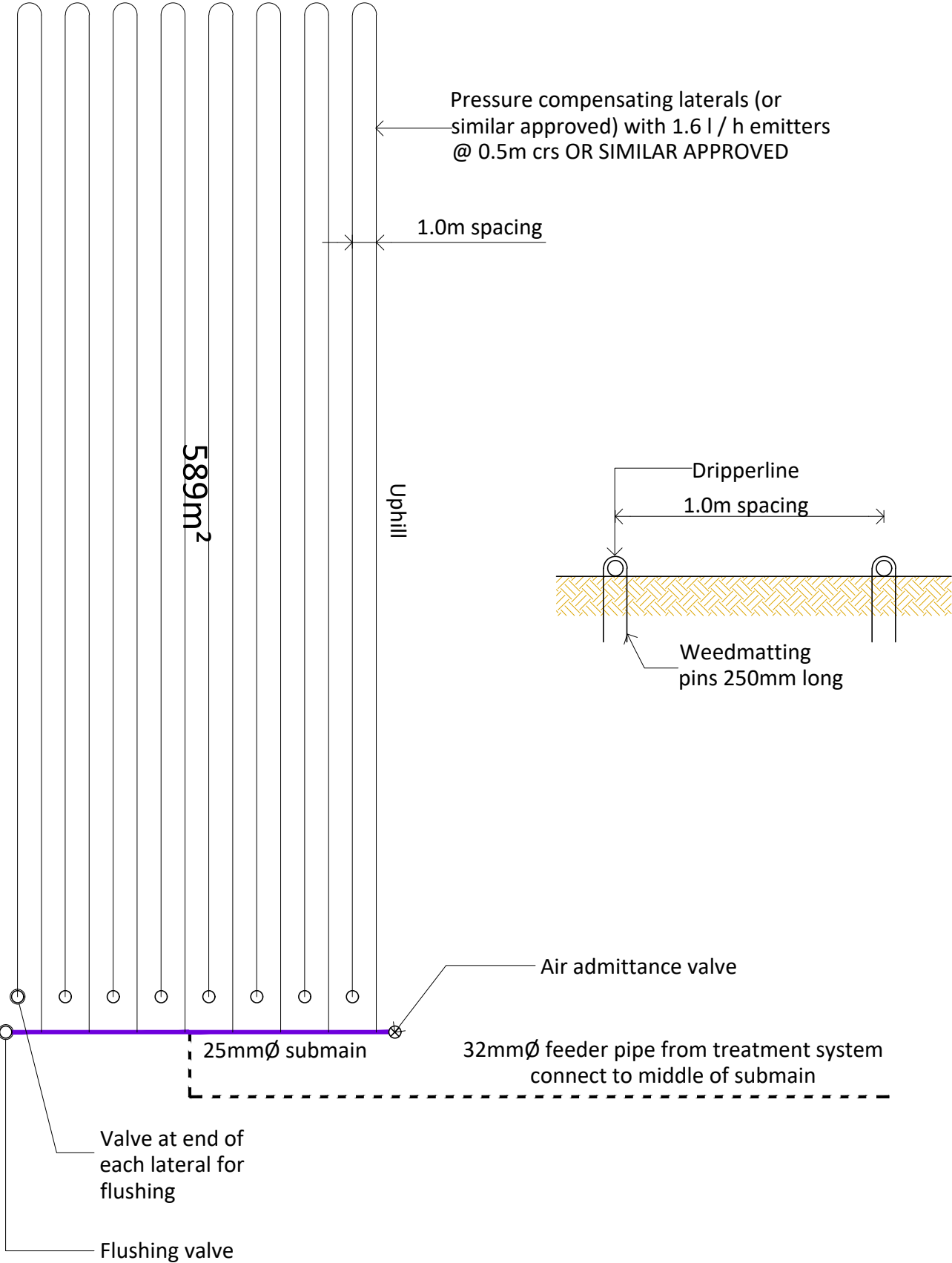
9. References

- 9.1. NZS 1547:2012 On-site Domestic Wastewater Management.
- 9.2. Marlborough District Council, Marlborough Sounds Resource Management Plan
- 9.3. Marlborough District Council, Marlborough Environment Plan
- 9.4. Marlborough District Council Guidelines for New On-site Wastewater Management Systems, July 2005.
- 9.5. Marlborough District Council Smart Maps (GIS mapping).
- 9.6. Begg, J.G. and Johnston, M.R. (compilers) 2000. New Zealand Geological Map 10: Geology of the Wellington area, 1:250,000.
- 9.7. Guideline for the Field Classification and Description of Soils and Rock for Engineering Purposes NZ Geotechnical Society Inc. December. 2005.

Appendix A – Site Plan & Field Details



| | | | | | | | | |
|--|--|-----|------|---------|----------------------|-------------------|----------------------|----------|
| <div><div>seng</div><div>ENGINEERING CONSULTANCY</div></div> <div>P 03 577 5604 E info@seng.co.nz</div> <div>W www.seng.co.nz P.O Box 707, Blenheim 7240</div> | PROJECT WASTEWATER SYSTEM UPGRADE BLACKWOOD BAY FOR ALLOTT CALVERT FAMILY TRUST | | | | DRAWING SITE PLAN | | | |
| | ISSUE | REV | DATE | DETAILS | SCALE (A3) 1:500 | DATE 05 FEB 25 | DWG No. 2776 - 01 | REV 0 |



NOTE: INDICATIVE LAYOUT - PLUMBER / DRAINLAYER TO CONFIRM

Appendix B – Soil Properties

Site & Soil Evaluation Form

Client: Allott & Calvert Job Number: 2776 Logged By: XXXXXXXXXX

Address: Blackwood Bay

Date of Inspection: 25th February 2025 Surface Conditions: Moist

Slope: 20 degrees typically at test locations Ground Cover: Regenerative Native Bush

Surface Notes: Well vegetated, a lot of organics Water Table Depth: >2.0m

AUG1

| Layer | Lower Depth (mm) | Horizon | Moisture Conditions | Colour | Field Texture | Course Fragments (%) | Structure | Dispersive | Sample Taken | Consistency | Soil Category |
|-------|------------------|---------|---------------------|-----------------------|---------------|----------------------|-----------|------------|--------------|-------------|---------------|
| 1 | 300 | A | Dry | Light yellowish brown | Topsoil | 0% | Weak | No | N | Weak | 3 |
| 2 | 700 | B | Dry | Light yellowish brown | Sandy Loam | 50% | Moderate | No | Y | Weak | 4 |

AUG2

| Layer | Lower Depth (mm) | Horizon | Moisture Conditions | Colour | Field Texture | Course Fragments (%) | Structure | Dispersive | Sample Taken | Consistency | Soil Category |
|-------|------------------|---------|---------------------|-----------------------|---------------|----------------------|-----------|------------|--------------|-------------|---------------|
| 1 | 300 | A | Dry | Light yellowish brown | Topsoil | 0% | Weak | No | N | Weak | 3 |

AUG3

| Layer | Lower Depth (mm) | Horizon | Moisture Conditions | Colour | Field Texture | Course Fragments (%) | Structure | Dispersive | Sample Taken | Consistency | Soil Category |
|-------|------------------|---------|---------------------|-----------------------|---------------|----------------------|-----------|------------|--------------|-------------|---------------|
| 1 | 300 | A | Dry | Light yellowish brown | Topsoil | 0% | Weak | No | N | Weak | 3 |

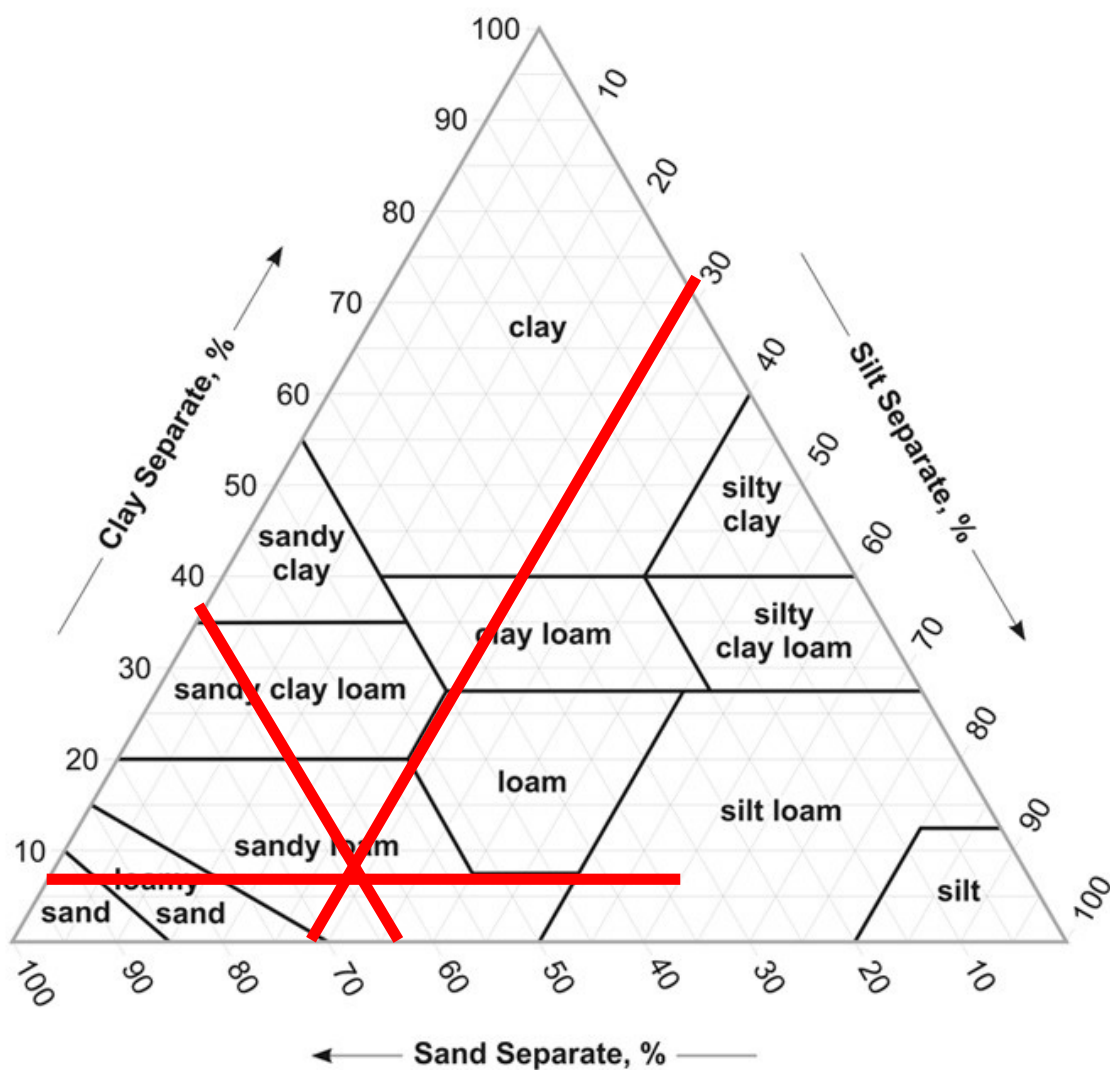
Moisture – Dry, moist, very moist, saturated. **Structure** – Massive, single grained, weak, moderate, strong. **Strength** -. **Stickiness** - Non, slightly, moderately, very

Soil Analysis

| | | | | | |
|------------------|---------------------------|--------------|----------|--|--------------|
| Project: | Wastewater system upgrade | | | seng ENGINEERING CONSULTANCY P (03) 577 5604 W www.seng.co.nz E info@seng.co.nz P.O Box 707, Blenheim 7240 | |
| Client: | Allot & Others | | | | |
| Location: | Blackwood Bay | | | | |
| Ref: | 2776 | Date: | 25/02/25 | | Page: |

100
90
80
70
60
50
40
30
20
10
0

| | | | | | | |
|-----------|---------------------------|-------|----------|-------|--------|---|
| Project: | Wastewater System upgrade | | | | | <div><div>seng</div><div>ENGINEERING CONSULTANCY</div></div> |
| Client: | Allott & Calvert | | | | | |
| Location: | Blackwood Bay | | | | | |
| Ref: | 2776 | Date: | 13/03/25 | Page: | 1 of 1 | <div><div>P (03) 577 5604 E info@seng.co.nz</div><div>W www.seng.co.nz P.O Box 707, Blenheim 7240</div></div> |



Sand faction 64%
 Silt faction 28.5%
 Clay faction 7%
 Sandy loam

Appendix C – Wastewater Design Calculations

| | | | | | | |
|------------------|---------------------------|--------------|----------|--------------|--------|--|
| Project: | Wastewater system upgrade | | | | | <div><div>seng</div><div>ENGINEERING CONSULTANCY</div></div> <div><div>P (03) 577 5604 E info@seng.co.nz</div><div>W www.seng.co.nz P.O Box 707, Blenheim 7240</div></div> |
| Client: | Allott & Calvert | | | | | |
| Location: | Blackwood Bay | | | | | |
| Ref: | 2776 | Date: | 25/02/25 | Page: | 1 of 1 | |

Wastewater Design Calculations

In accordance with AS/NZS 1547:2012 & The Marlborough District Council Guidelines 2005

Loading

Bedrooms: **5**

Occupancy: **10** Persons

Water Supply: **2** Stream Supply ▼

Household Plumbing: **2** Standard Water Reduction F ▼

Flow Allowance: **165** litres/day/ person

DRAINAGE CONTROLS:

No need for surface water collector / cut-off drains

RESERVE AREA

Reserve area available for extensions is 100% of the design area:

RESTRICTIONS

Boundaries, buildings & foreshore

Design

Disposal Field Type **4** Irrigation ▼

Soil Type: Clay Loam - Massive ▼

Soil Category: **4**

Loading Rate: **3.5** mm/day

Calculations

DAILY FLOW: **1650** L/day

SLOPE REDUCTION: **20%**

LOADING RATE: **2.8** mm/day

AREA REQUIRED: **589** m²

Appendix D – Loading Certificate

| | | | | | |
|------------------|---------------------------|--------------|----------|--------------|--------|
| Project: | Wastewater Sytem Uprgrade | | | | |
| Client: | Allott & Calvert | | | | |
| Location: | Blackwood Bay | | | | |
| Ref: | 2776 | Date: | 25/02/25 | Page: | 1 of 1 |

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Wastewater - Loading Certificate

System Capacity

The system is designed for a 10 person permanent occupancy with a combined load of 1650 litres per day. The new wastewater system will cater for the existing dwellings and the existing wastewater disposal field will be decommissioned.

Summary of Design Criteria

The discharge is by dripper line irrigation and has been sized based on an application rate of 2.8mm/day.

Reserve Area

The reserve area is required to provide a factor of safety should the proposed wastewater field fail. It is important to maintain a suitable area as reserve area should it be required.

Plumbing Fixtures

The design of the wastewater system is based on standard water reduction plumbing fixtures.

Concequences of Overloading The System

The system will manage brief, short term overloading, however prolonged overloading will lead to the failure of the wastewater field and likely replacement.

Concequences of Damaging Use, Lack of Monitoring, Maintenance and Servicing

The system will require regular maintenance.

The wastewater from the house should not contain anything other than human waste, toilet paper and food material such as may go down a kitchen sink drain.

It is recommended that natural soaps, detergents, , plumbing fixture cleaners, drain cleaners and disinfectants are used.

Bleaches and harsh chemicals are not recommended.

Prohibited discharge to the system:

- Oil/grease from a deep frier (for example).
- Stormwater
- Petrol, oil or other flammable/explosive substances
- Garden / garage chemicals (e.g. pesticides, paint cleaners, photographic chemicals, motor oil or trade waste).

Appendix E – Setback Distance Assessment

| | | | | | | |
|------------------|---------------------------|--------------|----------|--------------|--------|--|
| Project: | Wastewater Sytem Uprgrade | | | | | <div><div>seng</div><div>ENGINEERING CONSULTANCY</div></div> <div><div><div>P (03) 577 5604</div><div>E info@seng.co.nz</div></div><div><div>W www.seng.co.nz</div><div>P.O Box 707, Blenheim 7240</div></div></div> |
| Client: | Allott & Calvert | | | | | |
| Location: | Blackwood Bay | | | | | |
| Ref: | 2776 | Date: | 25/02/25 | Page: | 1 of 1 | |

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Wastewater Setback Distance Assessment

| Item | Site/system feature | Constraint Scale | | Sensitive Features | Score |
|------|--|--|---|--|-------|
| | | Lower (1) | Higher (10) | | |
| A | Microbial quality of effluent | Effluent quality consistently producing ≤ 10 cfu/100 mL E. coli (secondary treated effluent + disinfection) | Effluent quality consistently producing ≥ 106 cfu/100 mL E. coli (primary treated effluent) | Groundwater and surface pollution hazard, public health hazard | 3 |
| B | Surface water | Category 1 to 3 soils (see Note 5) no surface water down gradient within >100 m, low rainfall area | Category 4 to 6 soils, permanent surface water <50m down gradient, high rainfall area, high resource / enviro value | Surface water pollution hazard for low permeable soils, low lying or poorly draining areas | 8 |
| C | Groundwater | Category 5 and 6 soils, low resource / environmental value | Category 1 and 2 soils, gravel aquifers, high resource / environmental value | Groundwater pollution hazard | 5 |
| D | Slope | 0-6% (surface effluent application), 0 - 10% (subsurface effluent application) | > 10% (surface effluent application), > 30% subsurface effluent application | Off-site export of effluent, erosion | 8 |
| E | Position of land application area in landscape | Downgradient of surface water, property boundary, recreational area | Upgradient of surface water, property boundary, recreational area | Surface water pollution hazard, off-site export of effluent | 8 |
| F | Drainage | Category 1 and 2 soils, gently sloping area | Category 6 soils, sites, visible seepage, moisture tolerant vegetation, low lying area | Groundwater pollution hazard | 6 |
| G | Flood potential | Above 1 in 20 year flood contour | Below 1 in 20 year flood contour | Off-site export of effluent, system failure, mechanical faults | 1 |
| H | Geology and soils | Category 3 and 4 soils, low porous regolith, deep, uniform soils | Category 1 and 6 soils, fractured rock, gravel aquifers, highly porous regolith | Groundwater pollution hazard for porous regolith and permeable soils | 3 |
| I | Landform | Hill crests, convex side slopes, and plains | Drainage plains and incise channels | Groundwater pollution hazard, resurfacing hazard | 3 |
| J | Application method | Drip irrigation or subsurface application of effluent | Surface/above ground application of effluent | Off-site export of effluent, surface water pollution | 2 |

| Site feature | Setback Distance | Average Score From Table Above | Guideline Setback Requirement | Achieved Setback |
|----------------------------|---------------------|--------------------------------|-------------------------------|------------------|
| Property boundary | 1.5m - 50m | 4.3 | 23m | 2.1m |
| Buildings / houses | 2m - >6m | 4.3 | 4m | 20m |
| Surface water | 15m - 100m | 5.1 | 59m | 45m |
| Bore, well | 15m - 50m | 3.3 | N/A | N/A |
| Recreational areas | 3m - 15m | 4.3 | 8m | 20m |
| In ground water tank | 4m - 15m | 4.3 | N/A | N/A |
| Retaining wall / cut slope | 3m | 4.0 | 3.0m | 20m |
| Groundwater | 0.6m - ≥ 1.5 m | 3.7 | 0.9m | >2m |
| Hardpan or bedrock | 0.6m - ≥ 1.5 m | 7.0 | 1.2m | 2m |

Appendix F – Risk Assessment

Risk Assessment

The New Zealand Standard for On-Site Domestic Wastewater management AS/NZS 1547:2012 is a risk based standard.

Risk matrix

| | | | | | | |
|-------------|---|---|---|---|---|---|
| Likelihood | 5 | | | | | |
| | 4 | | | | | |
| | 3 | | | | | |
| | 2 | | | | | |
| | 1 | | | | | |
| | | 1 | 2 | 3 | 4 | 5 |
| Consequence | | | | | | |

We provide the following information in accordance with Appendix A of AS/NZS 1547:2012

| Cause | Factors that increase likelihood | Comments | |
|--|---|--|--|
| Wastewater system hydraulic failure | Excess solids discharged Inadequate hydraulic design of treatment plant or land application system | Filter is installed at outlet to prevent clogging of the dipper lines. System and filter are to be serviced every 12 months as a minimum. | |
| Biological failure from power outage causing cessation of pumps and aerators | Remote or poorly serviced power areas Faulty wiring | Grid power supply is in close proximity to the property. The system will be able to be accessed for maintenance. | |
| Wastewater biological failure from washout of bacteria | Inadequate hydraulic design | System is adequately sized for bacteria to function correctly. | |
| Soil system failure in dispersive soils | Clay | No dispersive soils were encountered within our soil testing. | |
| Marginal soil conditions | Poor draining medium to heavy clays Inadequate topsoil Inadequate vegetation South facing, poor exposure to sunlight Non-conservative design loading rate for the soil type | There is sufficient topsoil depth, there is no impact on the wastewater field from stormwater. The system is secondary treatment with dose loading of the dripper lines. The system is adequately designed and has good exposure to sunlight. | |

| | | | |
|--|--|---|--|
| Site constraints | Small lot size Steep slopes | Large site with steep gradients. Good area for discharge with reserve areas available. System is specifically designed for the site conditions and restraints. | |
| High rainfall or torrential downpours | Inappropriate type of land application system Stormwater ingress/ ponding Poor draining soils Inadequate topsoil and assimilation capacity | System is specifically designed for the site conditions and restraints with good soil drainage and suitable topsoil layer. | |
| Salinisation | High groundwater table | Ground water was not identified during site testing and is anticipated to be greater than 2m below ground level. | |
| Highly permeable soils or soils with preferential pathways | High groundwater table Permeable gravel soils Fissures in clay soils Inadequate design of land application system | The soils are not highly permeable | |
| Clogged outlet filter | Inadequate servicing of outlet filters | Regular servicing of filters is required | |
| Pipe blockage | Discharge of inappropriate material to household sewer | System care and maintenance by the homeowner, a guidance document has been provided. | |
| Sludge and scum solids fill tank and overflow to the soakage field | Irregular pumpout Inadequately sized septic tank Occupancy/ hydraulic flows/ biochemical oxygen demand of wastewater flow exceed initial design limits | System care and maintenance by the homeowner, a guidance document has been provided. System is adequately designed & sized for it to function correctly. | |
| Biological failure from chemical poisoning | Insufficient knowledge of suitable chemicals for use in house | Systems are affected from chemicals and medicines consumed by the users. A guidance document has been provided. Pumpout tank when identified | |

| | | | |
|--|---|--|--|
| Build-up of excessive solids to land application area | High organic loading Food waste disposal units Insufficient settling of solids | Filter is Installed at the outlet Regular servicing of outlet filter | |
| Uneven distribution system/broken/damaged distribution lines | Traffic over land application area | Large site with application area away from the main developed area. The application area is unlikely to be trafficked. | |
| Operation/maintenance | No maintenance Lack of early detection of operational problems Unreliable treatment and disinfection | All onsite wastewater systems require maintenance. A guidance document has been provided. | |
| Property owner | Inappropriate types/volumes of waste discharged Lack of appreciation of consequences of lack of system maintenance and importance of maintenance contract | Property owner provided with a guidance document A loading certificate has been provided. | |

Appendix G – Supplementary Information

Applicant Name: Allott & Calvert

INFORMATION TO SUPPORT AN APPLICATION for Domestic Wastewater Permits (mandatory information)

This additional application form is required to be provided to supplement the Resource Consent Application Form.

This form does not include any information necessary to support a Land Use Consent application that may also be required in association with your discharge permit, e.g. land disturbance, land use, building dispensations.

Please complete all sections that apply.

1. Background Information

- Do you hold active resource consent for any other activities at the site? ☐ Yes ☒ No
 If yes, please provide details of the existing consent(s) (e.g. U151000):
- Has the property been granted a resource consent to discharge wastewater to land which has lapsed or expired? ☐ Yes ☒ No
 If yes, please provide details of these consent(s) (e.g. U151000):
- Is there an existing domestic wastewater discharge at the property? ☒ Yes ☐ No
 If yes, will the existing wastewater system be decommissioned? ☒ Yes ☐ No

Note: Is there a Consent Notice on the Certificate of Title that restricts discharge on this site?

2. Design Standard

- Is your design compliant with the design recommendation of AS/NZS1547:2012? ☒ Yes ☐ No

3. Site and Soil Evaluation

2(a) Topography

- Please state the gradient of the slope at the site of your land application system.

Slope: ☐ <10% ☐ 10-20% ☐ 20-30% ☒ >30%

2(b) Soil

- What are the soil and subsoil types at the location of the land application system (e.g. gravels, sands, sandy loams, loams, clay loams, light clay, medium to heavy clay, etc)?

Silty Clay Loam

.....

 (continue on a separate sheet if necessary)

2(c) Groundwater

- What is the depth of the groundwater table? 2000(mm) Summer ☒ Estimated ☐ Measured
2000(mm) Winter ☒ Estimated ☐ Measured
- Were any iron stains or signs of mottling observed in the test holes? ☐ Yes ☒ No
 If yes, at what depth below ground level? (mm)

2(d) Surface Water

- Please state the location of the nearest surface waterbodies to your land application system:

Note: The term surface waterbody includes coastal waters, rivers, streams, springs, drains, artificial watercourses, wetlands and coastal waters. Note this includes watercourses that flow intermittently.

- Name of surface waterbody (if one exists): Blackwood Bay
.....
- Distance and direction from land application system: 59m
.....

2(e) Drinking Water Supplies

- Where is the drinking water for the property sourced (e.g. public supply, private well, rainwater tank):

Roof or stream supply
.....

If provided by a well, please state the well number and the distance and direction from the land application system:

- Where is the closest groundwater bore to take domestic water from your land application system? Please state the well number, distance and direction from your land application system?

N/A
.....

- Is the land application system within a ground water protection zone of a private, group or community drinking water well? ☐ Yes ☒ No

4. Design

3(a) Occupancy Rate

- For a residential dwelling, please state the number of habitable rooms: 5

Note: Habitable rooms in a dwelling calculation = 2 persons per room.

Habitable rooms should be bedrooms, rumpus rooms, offices, sleepouts, etc.

3(b) Design of Treatment System

- What level of treatment is proposed? ☐ Primary ☒ Secondary ☐ Tertiary

3(c) Discharge Type

☒ Domestic ☐ Communal ☐ Commercial ☐ Industrial ☐ Municipal

3(d) Wastewater Design

- Name of system: Any approved system noted in section
.....

4.3 of this Onsite Wastewater Report

3(e) Discharge Volume

- 1650 (litres per day)
.....

3(f) Application Rate

- 2.8 (mm per day)
.....

3(g) Disposal Area

- 589 (m² total) (trench length - metres)

3(h) Discharge Loading

☐ Gravity ☒ Dose Loaded

3(i) Discharge Measurement

- 2.8 mm (estimated) (measured)

3(j) Discharge Method

☐ Trench ☐ Bed ☐ Mound ☐ Low Pressure ☒ Dripper Line

Other disposal method:

3(k) Discharge Treatment

Primary ☐ septic tank

Secondary ☒ aerated wastewater system ☐ biolytix ☐ filter membrane

☐ packed bed ☐ other

Tertiary ☐ chlorination ☐ ozone ☐ ultra violet ☐ other

Appendix H – Owners Guidance Manual

Understanding and taking care of your On-site Wastewater Management System (OWMS) for Domestic Wastewaters



The safe management of the wastewater discharging from your dwelling is your responsibility. Because of its complex and somewhat unpredictable contaminant composition (compared to say clean water), it is one of the most difficult and risky materials to handle, convey and process. It is aggressive on mechanical components, and pipe systems can be very prone to blockages. Therefore, for any wastewater management service to be effective and sustainable, you do need to ensure that it is competently and regularly serviced.

1 IN A NUTSHELL

Property owners should fully inform themselves about the on-site wastewater management system on their property and its operation and maintenance. They should have available a copy of the operation, maintenance, and monitoring guidelines and the loading certificate for the system.

The property owner should ensure that maintenance carried out on the system is certified by the contractor. The maintenance should be in accordance with the schedules in the operation, maintenance, and monitoring guidelines prepared for the system by the designer and with the regulatory authority requirements.

The property owners should keep records of the maintenance carried out for the past 10 years. Property owners should also ensure that details and requirements for operation, maintenance, and monitoring (including plans, design reports, loading certificate, equipment brochures, and so on) are retained on the property and are readily accessible to the occupier.

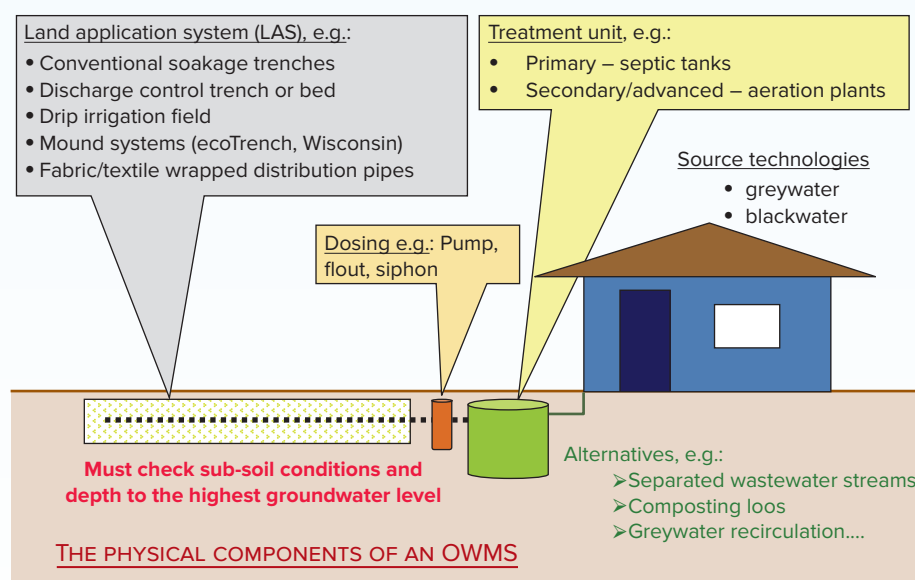
Absentee property owners should ensure that occupiers are similarly informed.

AS/NZS1547:2012. Section 3.8

This brochure has been written to firstly assist owners of an on-site wastewater management service to better understand the physical design of their system and, secondly, to understand the need and the procedures for operation and maintenance of the system. It is assumed owners will require their system to provide sanitation that is safe, low risk and convenient.

2 COMPONENTS OF AN OWMS?

An OWMS comprises a number key physical components and involves several different people as service providers (practitioners). The physical components are the wastewater source technologies (e.g. showers, baths, toilets, sinks, washing machine), the treatment unit, the dosing device and the land application system (LAS). The key practitioners normally include site assessors and designers, the technology providers, the installers, the regulators and their advisors, and the servicing technicians. Achieving sustainable and effective on-site wastewater management requires high quality technologies and competent and responsible practitioners.



3 STANDARDS, RULES AND REGULATIONS

On-site wastewater management services are required to meet best practice engineering standards and council rules to mitigate the risks to humans, stock and the environment.

3.1 LOCAL RULES AND REGULATION

Regional councils administer rules under the RMA while territorial councils administer rules under the Building Act. Both will refer to the Health Act.

| Standard | Title | Purpose of the Standard |
|--------------------|---|---|
| AS/NZS 1547:2012 | <i>On-site domestic wastewater management</i> | <i>...to provide the requirements for treatment units and their land application systems to achieve sustainable and effective on-site domestic wastewater management, to protect public health and the environment.</i> |
| AS/NZS 1546.1:2008 | <i>On-site domestic wastewater treatment units Part 1: Septic tanks</i> | <i>...to specify performance requirements and performance criteria for septic tanks, to specify technical means of compliance and to provide test specifications that will enable septic tanks to be manufactured to comply with the performance requirements and performance criteria.</i> |
| AS/NZS 1546.2:2008 | <i>On-site domestic wastewater treatment units. Part 2: Waterless composting toilets</i> | <i>...specifies the performance requirements and performance criteria that a waterless composting toilet shall achieve.</i> |
| AS/NZS 1546.3:2008 | <i>On-site domestic wastewater treatment units Part 3: Aerated wastewater treatment systems</i> | <i>...specifies the function, performance requirements, design requirements, operation and maintenance requirements, and installation requirements for aerated wastewater treatment systems.</i> |

Your installed OWMS will have, or should have, been approved by a territorial authority. If it was not approved as a Permitted Activity then is likely a Resource Consent was granted by your local regional council. Check the requirements (conditions) of these documents in terms of your responsibilities as owner and operator.

3.2 STANDARDS

There are several standards that apply to New Zealand conditions. These have been listed and briefly described in the table above. While it is considered best practice for system and component designers, technology suppliers, installers and servicing technicians to adhere to these standards, the legal requirements to do so are only valid if referred to as a requirement under the Building Code or local body rules and regulations. Note that it is not uncommon for local body rules to require conformity to sections only of a Standard, rather than all requirements in a particular Standard.

3.3 REQUESTING EVIDENCE OF CONFORMITY

As owner of an OWMS, you have the right to request, from your provider, clear independent evidence that your system complies with the above standards, rules and regulations. Be sure to request the details. For example, a supplier may state that their technology conforms to a particular standard, but it may only be in relation to specific clauses within that standard.

ON-SITE EFFLUENT TREATMENT NATIONAL TESTING PROGRAMME (OSET NTP)



(Refer section 5.2)

This programme is a joint venture between Water New Zealand, Rotorua Lakes Council and Bay of Plenty Regional Council. The programme tests the effectiveness of On-site Wastewater Management Systems.

4 THE NATURE OF DOMESTIC WASTEWATER

Domestic wastewater is a messy, unpleasant, hazardous and complex medium. The bulk of it is water, but it also includes faecal matter, urine, infectious organisms (pathogens), fats, oils, greases, hair, lint, dirt, soap suds, cleaning agents, residual pharmaceuticals, a range of organic matter, and a whole variety of material people shouldn't flush down the drain and toilet bowl. Therefore, a system designed to treat and safely manage this very complex material is assigned a very challenging task.

Health and Safety

- All domestic wastewater is a health risk, even after it has been treated by a septic tank, or a more sophisticated treatment plant.
- All precautions must be taken to avoid skin contact, inhalation and ingestion of both treated and untreated wastewater.
- Wear gloves and protective clothing when working on your wastewater system.
- Never enter a wastewater tank – toxic gases in the tank can kill in minutes.
- Never smoke around or near wastewater tank openings due to the risk of explosive and flammable gas leaks.
- Keep your appliances, tools and electrical lights away from the septic tank and water, or wet ground, near the system. These may generate sparks which could ignite gases, and may also result in electrocution.
- Keep your tank manholes locked or heavy enough to prevent children from opening them.
- Any surface ponding on or around the treatment plant, pipe work and land application fields is to be regarded as hazardous.

We commonly define two categories of domestic wastewater:

- **Blackwater** refers to wastewater from flush toilets and urinals
- **Greywater** refers to wastewater from sinks (including kitchen sinks), tubs, baths, showers and laundry.

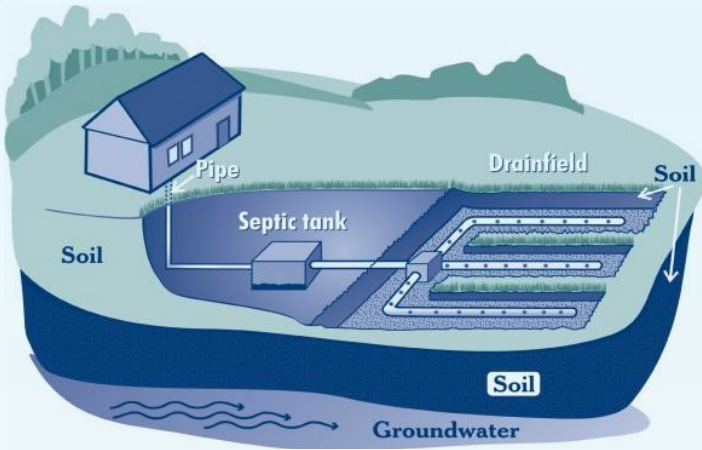
Domestic wastewater does NOT (or should not) include stormwater; that is water runoff from roofs, paved and non-paved outdoor surfaces.



5 WHAT TYPE OF SYSTEM IS INSTALLED ON YOUR PROPERTY?

You are likely to have one of four types of systems on your property:

- an old, unknown septic tank system about which you have no or very little information
- an older style septic tank and soakage trench or soak hole system
- a new modern single or multi-chamber septic tank and land application system (such as dosed trenches, a sand bed or a mound)
- a new secondary or advanced treatment unit (such as an aerobic treatment plant, sand filter, or packed bed reactor) plus drip irrigation land application system.



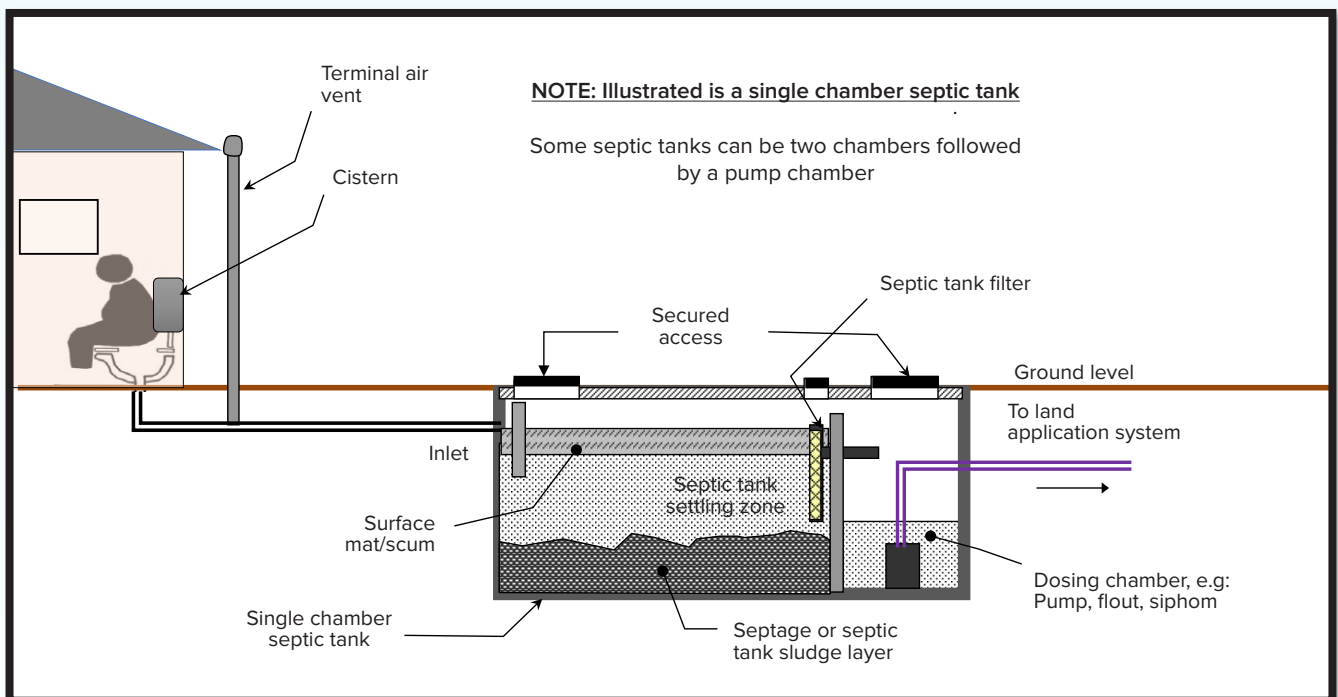
Older style septic tank and soakage trench system



Modern septic tank, sand filter and drip irrigation field

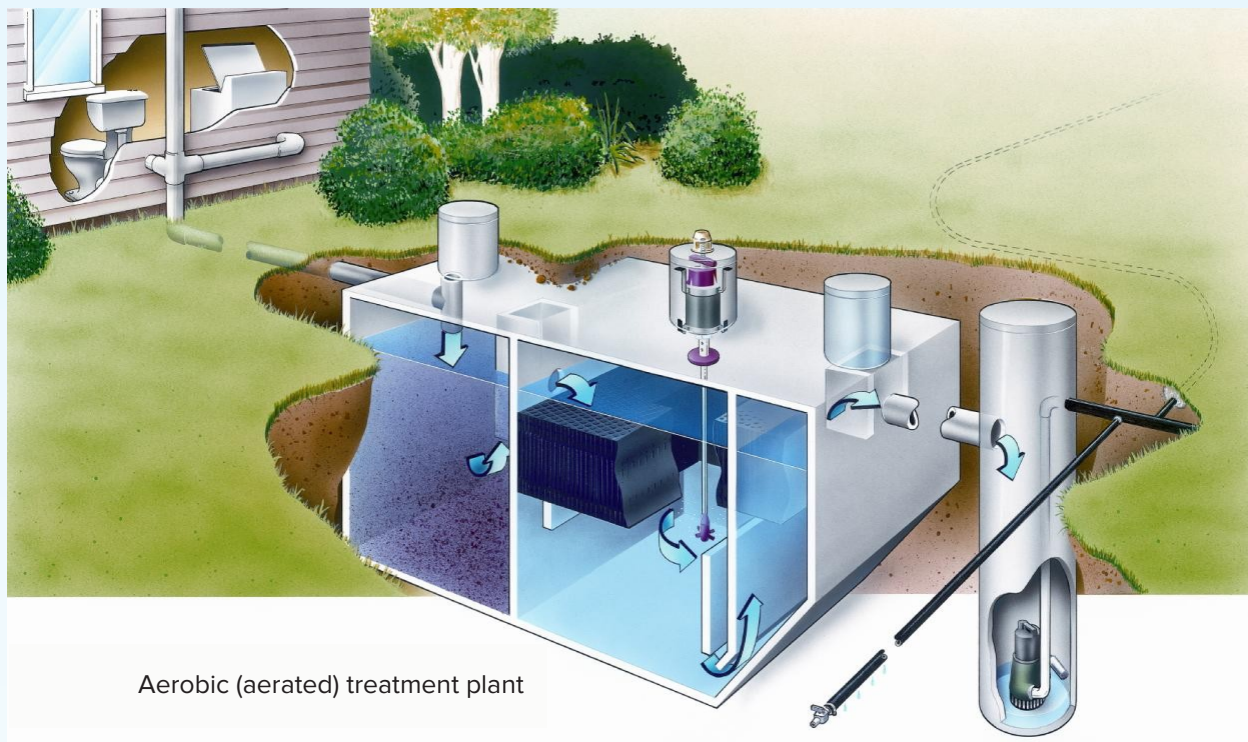
5.1 THE SEPTIC TANK

The septic tank is the simplest and most basic wastewater treatment unit. The level of “treatment” achieved by septic tanks (whether single or multiple chamber), described as primary treatment, is minimal. It removes most fats/greases and larger gross solids through floatation, settling and crude filtering, but most other risk contaminants (pathogens and nutrients) remain in the discharge from the septic tank (effluent). Land application systems (LAS) receiving this primary effluent must be designed to cope with this low quality effluent. Higher quality effluent is produced by the higher technology secondary and advanced treatment package plants.



5.2 SECONDARY AND ADVANCED TREATMENT PLANTS

Secondary and advanced treatment plants employ more complex treatment processing and technologies. There are many different types of secondary treatment processes and designs and more than 60 different brands available on the New Zealand market. A secondary treatment package plant commonly involves several chambers, some with aerators, contact media, balanced activated biomass recirculation and physical filtering. Because the effluent from a secondary treatment unit is higher quality (than from a septic tank) this enables us to pump it through irrigation drip lines without blocking the emitters. However, as discussed in more detail later, irrigation drip lines, as with all wastewater distribution pipe systems, require regular flushing.



Aerobic (aerated) treatment plant

There are other ways of achieving secondary effluent quality, such as sand and sphagnum peat beds, and biofilm filtering chamber trenches, vermiculture beds and constructed wetlands, all requiring specialised and qualified design. In some situations, an even higher level of treatment, known as advanced treatment, may be required, especially when it is necessary to disinfect the treated effluent using UV lamps.

There is an independent testing facility based in Rotorua that has been set up to independently certify commercial secondary and advanced treatment plants. This facility is known as the On-site Effluent Treatment (OSET) National Testing Programme (NTP). Set up by Water New Zealand, this facility undertakes performance testing of ex-factory on-site wastewater treatment units.

OSET NTP does not certify the OWMS. It provides certification of the treatment plant only. OSET NTP certifying services have recently been reviewed and will be more closely aligned to the recently released certification standard, AS1546.3:2017. This will provide a more comprehensive certification to include not only effluent quality performance and energy consumption at the manufacturer rated daily flow, but also evaluate the treatment system's resilience under stress loading, component durability and structural integrity, and support documentation for the treatment unit, such as manuals for installers, homeowners and servicing technicians.

All commercial treatment units tested at OSET NTP since 2007 can be viewed at www.waternz.org.nz/OSETresults and a copy of the one page Performance Certificate can be downloaded. If your treatment unit has OSET certification, you may wish to request a copy of the full report from the manufacturer.

5.3 DOSING SYSTEMS AND DISTRIBUTERS

Older OWMS with septic tanks did not dose load to the land application system (LAS). Instead, the effluent from the septic would simply overflow into the LAS when there was a wastewater input to the septic tank. This was called “trickle loading”. Today trickle loading is discouraged for most soakage fields, as it can result in soakage failure due to gradual buildup of anaerobic biofilm within the soakage field (sometimes referred to as “progressive failure”). However, it is to be noted that there is a proprietary system currently available on the New Zealand market called Advanced Enviro-Septic (AES) system that is designed for trickle loading.

The common dose loading systems include:

- pump dosing; pump selection and chamber design are site specific
- gravity dosing
 - o flouts
 - o siphons.



Submersible wastewater sump pump



Flout



Siphon

With trickle loaded or dose loaded systems it is sometimes necessary to distribute the effluent from the treatment plant to different sectors of the land application system. A common technique for distributing trickle loaded or dosed septic tank effluent is a distribution box, as illustrated below. An alternative to the distribution box, that can only be used for a pump dosed field, is the sequencing valve (also referred to as an indexing valve). Sequencing valves require pressure to operate and automatically switch the flow to a different outlet port, in sequence, each time the pump activates.



Distrubtion box



Sequencing valve

5.4 LAND APPLICATION SYSTEMS (LAS)

Common practice in the early days was to treat the household wastewater in a septic tank with the effluent then trickle loading to a soak hole (also called boulder pit). Many of these older systems remain. However, in poorly draining soils, soak pits commonly became blocked and failed, while in free draining soils (gravels and sandy soils) ground water was at high risk of being contaminated. **Therefore, in most regions throughout New Zealand, soak holes and boulder pits are now no longer permitted.**

There are a range of different types of land application systems commonly installed. These include soakage trenches, sand beds, mounded systems (ETA/ETS beds, ecoTrench, Wisconsin mounds), low pressure effluent distribution irrigation, (LPED irrigation) fields (for septic tank effluent), and pressure compensating drip irrigation (PCDI) fields (for secondary effluent). For older systems, with no record of design detail, it is often very difficult to know the details of the installed LAS, which is probably well hidden under established vegetation.

The type and specifications of the most appropriate LAS for a particular site will depend on the site specific conditions such as, for example, available land area and slopes, access, soil types and seasonal soil saturation risks, surface and subsurface drainage characteristics, depth to groundwater, risks to drinking water supplies (surface and subsurface), any site contamination issues, required setbacks from boundaries, development densities, flooding risks, proximity to protected and sensitive ecosystems, cultural, community and heritage sites.

6 IDENTIFYING YOUR SYSTEM'S DETAILS

Some of the earlier systems had separate grease traps for the kitchen wastewater. Others had separate management systems for each of the grey and blackwater streams.

You may be able to find an air vent or “mushroom” somewhere on your property. Your wastewater treatment tank is likely to be close to this. A give-away sign for land application systems can be notably vigorous and contrasting green grass and vegetative growth.

If design details are not available in your own home file, then this information may be available at one or more of the following sources:

- the company that installed the system and/or provided the technologies
- check for details on your property file at your local district or city council office and regional council.

Whatever system is installed on your property, it is important that you understand the capabilities of the system. These are best identified and summarised in a loading certificate (refer to note 1). The loading certificate will enable you to understand the limitations or constraints of your system so that the right sort and frequency of maintenance can be carried out. If there is not an existing loading certificate or other documentation, it may be advisable to engage an experienced and suitably qualified technician to inspect your system and provide you with the necessary documentation (refer to Section 8.3, and appendix A).

Note 1: Loading Certificate

This should set out the following information:

- a) system type (obtained from the as-built details provided by the designer/installer)
- b) system capacity (number of persons and daily flow volume)
- c) summary of design criteria
- d) the location of and use of the ‘reserve area’
- e) use of water efficient fittings, fixtures and appliances
- f) allowable variation from design flows (peak loading events)
- g) consequences of changes in loading (due to varying wastewater characteristics)
- h) consequences of overloading the system
- i) consequences of underloading the system
- j) consequences of lack of operation, maintenance and monitoring attention; and
- k) any other relevant considerations related to use of the system.

Ref: AS/NZS 1547:2012, Section 7.4.2.

7 SYSTEM FAILURE - THE NEED FOR SERVICING

A failed or failing wastewater system is not only a serious health risk to occupants of the property and members of the public using the site, but also possibly neighbours. Furthermore, failure can cause nuisance odours and ponding and limitation to, or loss of, the amenity service.

There are those property owners who regard the wastewater service as a necessary but nuisance expense that, once installed, can be forgotten about and not require regular servicing. They may also be careless and irresponsible about what they allow to be flushed or drained into the OWMS. They can become quite annoyed when it fails and costs a lot of money to fix.

There are few, if any, OWMS that don't require regular servicing, even the simple septic tanks systems.

Our advice is that property owners not only accept that a reliable and enduring system needs to be designed for the specific conditions, but the owner should understand what should and shouldn't be flushed into the wastewater system. They should also take care of the land application system and ensure the complete system (treatment unit and land application system) is regularly serviced by a competent and qualified servicing technician. It is likely to be cheaper overall to pay for regular servicing than allow it to fail and face a major cost to fix or replace the failed system.



Failed soakage field



Drip lines must be regularly flushed to prevent biofilm build-up and blockage



Excessive filter clogging due to poor treatment plant performance

Note 2: A living system

All on-site wastewater management systems (the treatment tanks and the receiving soils) are living systems that rely on micro and macro-organisms to break down and stabilise the contaminants contained in the wastewaters from your dwelling. These organisms include very large numbers (millions) of bacteria, actinomycetes, protozoa, nematodes, mites, fungi, worms and many other wastewater and soil organisms. It is critical that the wastewater does not contain persistent quantities of substances that are toxic to these organisms. If it does, the OWMS will fail.

Refer to advice on what should and shouldn't be flushed into the OWMS.

7.1 SIGNS THAT YOUR ON-SITE WASTE WATER SYSTEM IS FAILING

Your system may be failing if, for example:

- a foul, rotten-egg smell is noticed around your septic tank or land application area
- your tank overflows, perhaps through the vent
- the land around your treatment tanks and land application system is ponding, soggy and odorous
- the filter(s) are blocking up too frequently
- your drains and toilets are running slowly or overflow
- there is a gurgling noise when the bath plug is pulled
- there is overflowing at the gully trap or tank mushroom
- power consumption is high
- an alarm is activated.

There are many factors that can cause failure of your system. Some common examples are listed below.

- The soils in the soak pit or soakage trench have become completely blocked.
- There is a filter in the system that is partly or completely blocked and needs to be cleaned.
- Toxic products have been flushed into the treatment plant (refer to Note 2).
- Your primary chamber contains too much sludge and scum – have your tank pumped out; often referred to as desludging.
- The system is not being serviced either competently or regularly enough.
- The system is not being flushed in accordance with recommendations (see Note 3).
- The treatment plant is not fit for purpose. For example:
 - o its treatment capacity is too small for the load
 - o the treatment plant components are not durable or appropriate for wastewater
 - o it is the wrong type of treatment plant for the type of land application system installed
 - o the components (pump, filter, aerator, chamber design/ capacity) are substandard.
- Components, such as the distribution box, sequencing valves, vacuum/air valves, have become blocked or mechanically failed.
- The original land application system design was substandard.

For example:

- o soil drainage capability was not competently assessed
- o the land application system design is not appropriate for the type of soils at this site
- o land area for soakage is too small for the volume of treated wastewater being dispersed each day
- o pre-existing surface and subsurface drainage patterns were not adequately assessed and soils become over-saturated, particularly after substantive rainfall events
- o excavations or earthworks, after site and soil assessment was completed, have modified soil and drainage characteristics, invalidating the design of the land application system
- o the wrong dosing device has been installed
- o the distribution manifold on the land application system has not been competently designed to achieve even distribution
- o flush ports have not been installed to allow regular flushing to prevent progressive blockage of the distribution manifold (refer to Note 3).



Backup to gully trap from clogged tank

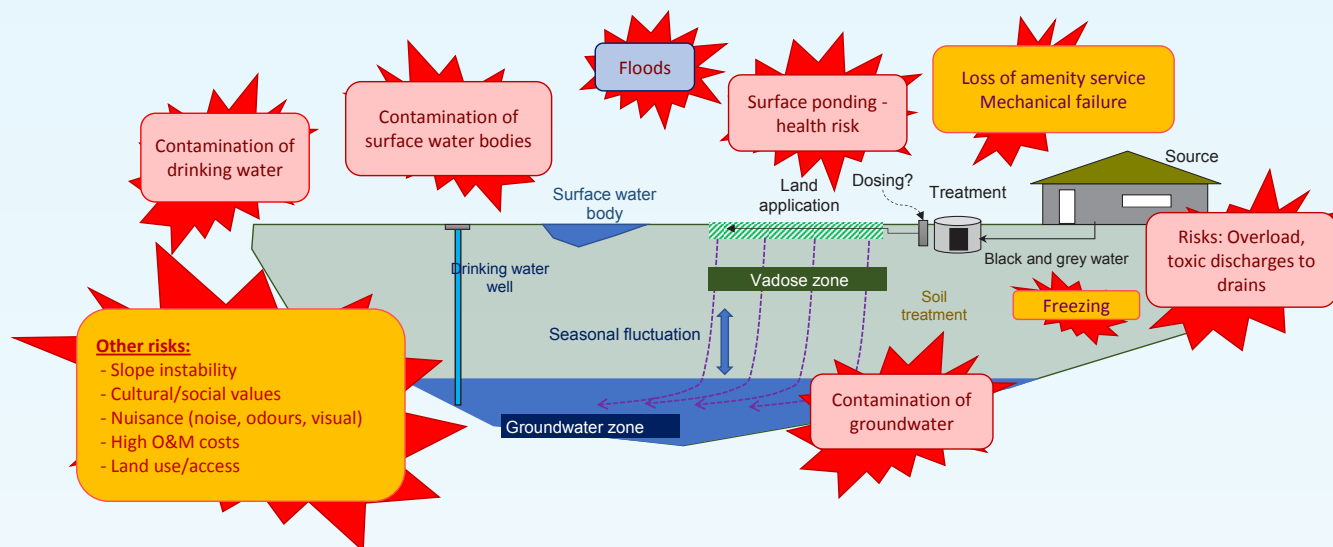
Note 3. System flushing

Bacterial slimes (biofilm) will grow in pipes where treated wastewater is sitting stagnant. If these biofilm deposits are not flushed out, this can cause blockages over time. The rate of growth will depend on the degree of treatment received, temperature and stagnation period. However, even if it is very well treated, biofilm growth can occur within a few hours of stagnation. Therefore, it is always good practice to install flushing ports in all distribution systems and pipe-work at appropriate locations. For most systems servicing should require flushing at least every 6 months.

8 POSSIBLE RISKS OF FAILED OR FAILING ON-SITE WASTEWATER SERVICE

The following figure illustrates what risks may occur if the on-site wastewater system is poorly designed, badly installed, uses substandard technologies or is not regularly serviced as recommended by the supplier. The risks may impact on residents, neighbours and stock; consequences can be severe and potentially costly.

Potential risks from failing/substandard on-site wastewater management services



9 WHAT DO I DO IF MY WASTEWATER SYSTEM IS FAULTY OR FAILING?

The answer to this question is obvious. It is the same as you would do if your washing machine or your car needed fixing. You would typically call in a qualified technician and pay for it to be fixed, unless you considered yourself sufficiently qualified to fix it yourself.

10 OPERATING YOUR ON-SITE WASTEWATER MANAGEMENT SERVICE

It is the responsibility of the property owner to:

- understand the basics of your on-site wastewater management system (refer to Sections 5 and 6)
- ensure all dwelling occupiers understand what can and can't be flushed into the system (refer to Section 10.1)
- ensure at least one responsible dwelling occupier has an understanding of the basics of caring for and operating the OWMS (refer to Section 10.2)
- ensure regular servicing of the OWMS by a suitably qualified servicing technician (refer to Section 10.2.2)
- maintain and file a detailed record of failure and servicing activities carried out (refer to Section 10.3 and Appendix B).



10.1 WHAT CAN BE AND WHAT SHOULDN'T BE FLUSHED INTO THE WASTEWATERS SYSTEM

As Note 2 explains, the on-site wastewater service is a living system. There are some products that may be used in the household that are toxic to the system. Care must be taken by occupants of the dwelling to ensure large quantities of toxic substances do not enter the drainage system.

Do not overload the system.

- The system has been designed for a maximum daily wastewater volume. Ensure that this is not exceeded.
- Avoid overloading the system with high short duration loads by spacing out water use as evenly as possible.
For example:
 - o do not do all the washing on one day, and
 - o do not run the washing machine and dishwasher at the same time.

Reduce solids input to the treatment unit by:

- scraping all dishes to remove fats, grease, and so on before washing
- keeping all possible solids out of the system
- shake all the dirt and sand off your clothes before washing them
- not using a food waste disposal unit (insinkerator)
- not putting sanitary napkins and other hygiene products into the system.

What can go down the drain:

- all that has been first eaten by you
- biodegradable soaps and low phosphorus detergents
- septic-safe disinfectants, bleaches and toilet cleaners in small dilute amounts
- washing machine and dishwasher wastewater
- shower and bath wastewater
- toilet wastewater
- milk and drinks.

Minimise discharging the following substances:

- some **cold wash laundry agents** are aggressively alkaline and can cause septic tank and treatment unit failure
- bleaches, whiteners, nappy soakers, stain removers, disinfectants
- sanitary pads, tampons, disposable nappies, condoms and excessive quantities of paper
- excessive fats, cooking oils and greases
- antiseptics liquids.

Do not discharge the following into the wastewater system:

- **DON'T USE flushable wipes. They can block the system**
- portable cassette toilet waste (use approved dump stations)
- excessive volumes of bleaches and chlorine products
- alkaline detergents such as caustic soda
- acids, pesticides, herbicides, chemicals
- paints, solvents, varnishes and paint thinners
- antibiotics and medicines
- drugs and pharmaceuticals
- motor oil
- toys, clothing, plastic bags and other non-biodegradable products
- storm/roof water
- pool or spa waste.

To support the living ecology in the treatment tank and in the land application area:

- use biodegradable soaps
- use a low-phosphorus detergent
- use a low-sodium detergent in dispersive soil areas
- use detergents in the recommended quantities.

10.2 THE BASICS OF CARING FOR THE OWMS

As described earlier in this document, there are several different types of treatment plants and land application systems that have been installed on properties throughout New Zealand. They will all have their own site-specific operating and servicing requirements. Once you understand the type of system that has been installed on your property, your primary responsibility is to gain full knowledge of what the operating and servicing requirements are and to then ensure that the occupiers of the property have this information and are encouraged to action these.

Ideally the designer and/or provider should have supplied you with:

- a design report showing the details of the complete system (treatment, dosing and land application systems)
- two Operation and Maintenance (O&M) Manuals, one manual for the system owner and the other for the trained servicing technician
- recommendations on suitably qualified local servicing technicians. See Note 4.

If this information and detail is not available, it would be advisable to retrospectively engage a suitably qualified on-site wastewater engineer or technician who will be able to provide the required details. Refer to Appendix A for system description and specification template.



Checking scum and sludge levels in a septic tank



Healthy worm activity in septic tank scum layer

Note 4. Selecting suitably qualified servicing technicians

The OWMS involves complex technologies and systems. It is important that the person you engage to service your system is competent. Some suppliers of the technologies will recommend technicians who have been trained to service their specific technologies. Ensure that the technician is competent in servicing your whole system, including the land application system, and not just part of it, e.g. the treatment plant.

Some local government bodies have a list of “approved” installers and servicing technicians that can be made available to the public.

Otherwise ask around your local area for recommendations.

10.2.1 OWNER/OCCUPIER – PRACTICAL RESPONSIBILITIES

There are basic operational matters the owner or delegated occupier should take responsibility for. These include:

- informing all dwelling occupiers what can and what should not be flushed into the system
- regularly check installed alarms
- noting and actioning any obvious blockages in drains
- noting and actioning any abnormal sewage odours
- ensuring earthmoving activities are prohibited in areas where the treatment plant, land application systems and reserve areas are located
- ensuring vehicles, stock and unauthorised people do not have access to areas where the treatment plant and land application systems are located (unless stock access is approved and built into the design and management of the system)
- if there is a designated reserve area, ensuring this area is retained as available at all times
- checking the treatment plant and noting and actioning:
 - o leakages and ponding
 - o damaged tanks, lids, covers, vents, alarms and other fittings
 - o flooded chamber(s), including dosing chamber
 - o pump (if fitted) running for excessive time period and high power costs
- checking the land application system and noting and actioning:
 - o wastewater leakages and surface ponding
 - o damaged fittings such as vents, Toby boxes, flush ports
 - o obvious patchiness in distribution patterns (abnormal excess vegetative growth)
- where cut and carry or management of vegetative cover is required for the land application system, ensuring this is carried out in accordance with recommendations
- ensuring signage and warning notices remain effective.

10.2.2 SERVICING TECHNICIAN RESPONSIBILITIES

For the more technical servicing and maintenance requirements it is recommended that a suitably qualified servicing technician is engaged to carry out the detailed servicing schedule as recommended by the system designer and technology supplier(s).

The basic and general operation and servicing requirements may include, for example, the following.

- All wastewater tanks will need to be checked for settled sludge (and possibly surface mat formation). This is particularly so for primary tanks, but also all other tanks, including the dosing chamber. Operators should advise when desludging and cleaning is required.
- The following, if part of your system, will need to be regularly checked, cleaned and, where necessary, fixed or replaced:
 - o filters
 - o mechanical components such as pumps, flouts, siphons, aerators
 - o electrics and control panels
 - o alarm systems
 - o distribution boxes, sequencing valves, flush valves
 - o plumbing and fittings (for leakage).
- The land application system is to be thoroughly checked for surface ponding and leakage points. If found, immediate diagnosis and remedial action is required.
- Distribution manifolds for sand beds and trenches, soakage trenches and beds and mounded systems are to be flushed in accordance with the designer's recommendations.

10.3 DOCUMENTATION AND SERVICING RECORDS

Maintain and retain a dedicated file of documentation relating to the on-site wastewater service. This file should include the following:

- i. original system design details with design producer statements
- ii. regional council consent to discharge and supporting documentation (if not a permitted activity)
- iii. land use consents (if required)
- iv. building consent details and documents with as-built plans, Code of Compliance and produce statements
- v. loading certificate. Refer to Appendix A
- vi. operation and maintenance manuals for occupier
- vii. system/component problems or failure events record. Refer to Section 7 and Appendix B
- viii. servicing record. Refer to Appendix B.

11 USING TREATED WASTEWATER IN THE GARDEN

Wastewater, even after treatment, contains nutrients (such as nitrogen, phosphorus and many other plant friendly micro-nutrients) that will benefit and enhance their growth. Recovering wastewater nutrients in this way can be a beneficial “green” practice. If the plants uptake these nutrients and are taken off-site (sometimes referred to as “cut-and-carry”), such practice can be designed into the system to mitigate the risk of unwanted nutrient contamination of groundwater. Furthermore, these plants can uptake the applied soil water in the wastewater by a process known as evapotranspiration. Evapotranspiration is the transfer of water to the surrounding atmosphere because of both plant transpiration (which is water moving from soil pores into plant roots, through the plant and out the stomata on the plant’s leaves) and evaporation (which is the drying effect of any exposed water on the soil surface, leaves and stems). The evapotranspiration rate can vary from say 10 mm/day (same as 10 L/m².day) on a hot, windy summers day to near zero mm/day on a still, cold winters day.

If it is desired to use wastewater for either or both nutrient management and water uptake by evapotranspiration for productive purposes or risk mitigation, then the following matters need to be carefully taken into consideration by your system designer.

- Some plant root systems may damage or block the buried land application pipe distribution system.
- If the wastewater has been chlorinated, this may damage plant growth.
- If the water uptake by plants is to be built into the design and risk mitigation measures, full year water balance modelling by a competent person is required to identify times of the year when surface ponding may be a significant risk. This water balance must take into consideration variations in evapotranspiration rates and rainfall as well as any corresponding variations in wastewater loads.
- Reclaimed (and disinfected) wastewater may be suitable for subsurface irrigation of gardens, including fruit trees and shrubs, but not root crops or spray irrigation of crops that are eaten raw or unprocessed.
- If it is desired that treated wastewater is to be used for productive purposes, appropriate and competent advice must be sought and considerable care should be taken, particularly if the plants are to be used as a human or stock food source.
- It is critical that unauthorised human access is restricted in areas where shallow land application systems (and particularly garden sub-irrigation) are used.



12 APPENDIX A. SYSTEM RECORD

Table A1. Site details and contacts.

| | | | |
|---|--|---------------------|--|
| Address: | | | |
| NZ Grid Reference: | | | |
| Legal description | | | |
| Regional Council | | Consent No.: | |
| District/City Council | | Building Permit No. | |
| System Designer and contact details | | | |
| Technology supplier and contact details | | | |
| Installers and contact details | | | |
| Servicing agent and contact details | | | |
| Date of commissioning | | | |

12.1 GPS DATA

| | | | |
|-----------------|--|-------------------------|--|
| Treatment plant | | Land application system | |
|-----------------|--|-------------------------|--|

12.2 SITE MAP

Loading Certificate: Treatment plant

| | | | | |
|--|------------------------------------|---|------------------------------|--|
| Description of treatment process/technologies | | | | |
| Working capacities of compartments | | | | |
| Temperature and humidity operation range | | | | |
| Description of dosing system | | | | |
| Model details: | Normal treatment capacity (L/day) | 3 –day peak treatment capacity (L/day) ¹ | Emergency storage volume (L) | Dose volume (L) |
| | | | | |
| Service life of treatment process | Treatment process warranty | Serviceable life of tank(s) | Warranty for tank(s) | Electro/mechanical component(s) warranty |
| | | | | |
| Effluent quality (normal loading, domestic influent) | BOD ₅ /TSS ² | TN: % reduction or mg/L | TP: % reduction | F. Coliform Log reduction |
| | | | | |

1. This is the maximum continuous daily flow for 3 days, assuming at least 1 month normal flow follows between such peaks, without significantly compromising the overall plant treatment performance.
2. The **secondary effluent** quality requirements for biochemical oxygen demand (BOD₅) and total suspended solids (TSS) defined by AS/NZS 1547:2012 as follows:
When sampled and tested for biochemical oxygen demand (BOD₅) 90% of samples shall have a BOD₅ of less than or equal to 20 g/m³ with no sample greater than 30 g/m³.
When sampled and tested for total suspended solids (TSS) 90% of samples shall have a TSS of less than or equal to 30 g/m³ with no sample greater than 45 g/m³.
Ref: AS/NZS1547:2012 M2.1

Loading Certificate: Land application system

| | |
|--|--|
| Type and description of land application system (LAS) | |
| LAS system capacity | |
| Variations in flows and consequences of variable loading | |
| Location of land application system and reserve area | |

13 APPENDIX B. OPERATING REPORTS

13.1 REPORTING PROBLEMS AND FAILURE

When failures or problems occur, a detailed record is to be kept.

This report should include:

- date of failure/problem
- description of failure/problem
- action taken and costs
- recommendations.

13.2 MAINTENANCE REPORTING

Note 5. A maintenance certificate shall include (from AS/NZS 1547:2012)

- a) certification by a qualified and experienced person that the on-site system is operating and performing effectively
- b) a note of any specific operation and maintenance attention which is due
- c) identification of any operation and maintenance problems, their likely cause and recommended remedial action
- d) any evidence of system capacity being exceeded or likely to be exceeded (for example, by extra residents, or by holiday period occupiers)
- e) results of effluent quality testing where advanced or disinfection treatment is being used
- f) note of actions taken and results achieved following recommendations for remedial work after the previous routine inspection
- g) a recommendation on when next desludge/pump out should be undertaken and
- h) any other relevant matters.

The servicing technician is responsible for maintaining a detailed servicing report to be filed securely. A copy is to be provided to the owner of the OWMS. The servicing technician will have his or her own report format. Details that should be included in the report should include:

- date of servicing
- name and contact details of servicing technician who performed the field work
- brief description of the servicing completed
- cost of servicing
- advise to occupiers/owner (if appropriate)
- recommendations for additional/future work required (if appropriate).

WHERE CAN I GET MORE INFORMATION?

This document is available online.
<https://www.waternz.org.nz/OWMScompleteguide>

Information on helping you choose an OWMS is available from the
link below.
<https://www.waternz.org.nz/OWMSchoosing>

“Outstanding - probably the best OWMS guide you’ll read this year” -
Alan Ambury, OWMS User



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