

On-site Wastewater Education Programme

Tryphena, Great Barrier Island

Prepared for: Great Barrier Island Local Board

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Limitations:

This report has been prepared for the Great Barrier Island Local Board, according to their instructions, for the particular objectives described in the report. The information contained in the report should not be used by anyone else or for any other purpose.

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Executive Summary

The Tryphena on-site wastewater education programme was developed in response to concerns about poor water quality in the Tryphena catchment. The programme featured three activities: a household survey, a community education event, and a series of free septic tank inspections.

The household survey was used, in part, to gather information on the on-site wastewater systems that are in use in the Tryphena catchment. The survey identified that the most common wastewater system in use is a septic tank discharging to a trench. Many of the septic tanks are old (i.e., installed more than 20 years ago), and many are serviced infrequently or not at all.

The lack of regular servicing is of concern as all on-site wastewater systems can develop problems over time. The findings of the septic tank inspections, carried out as the third strand in this programme, illustrate this point. Of the 13 septic tanks that were inspected, 1 had a major fault that rendered it in-operational for treatment purposes, and a further 7 were operating with one or more major problems.

In addition to septic tanks, several other methods of wastewater management are used in the Tryphena catchment. These include secondary treatment systems, long drops, and greywater diversion to gardens or landscaped areas. These methods were not inspected during the education programme. However, as some of these methods pose contamination risks (especially long drops and greywater diversion), they merit investigation in the future.

Throughout the education programme there were extensive opportunities to discuss wastewater treatment, and water quality issues, with Tryphena residents. Extensive positive feedback was received from residents, indicating that the Great Barrier Local Board's work in this area is well supported. The final section of this report outlines a series of initiatives, aimed at improving wastewater management, for consideration by the Board.

1. Introduction

Whiterock Consulting Ltd and Wilks Environmental Consulting have been engaged by the Great Barrier Island Local Board, via the Auckland Council, to undertake an on-site wastewater education programme within the Tryphena catchment on Great Barrier Island.

The programme was initiated due to concerns about poor water quality in the Tryphena catchment. During a year-long monitoring programme in 2015-16, *Escherichia coli* (*E.coli*) levels (an indicator of faecal contamination) regularly exceeded Ministry for the Environment 'alert' (260 cfu/100 ml) and 'action' (550 cfu/100 ml) levels for three streams in Tryphena: Blackwell Stream, Mulberry Grove Stream and Garden Road Stream (Buckthought, 2016).

The key objectives of the on-site wastewater education programme were to:

- Increase awareness and knowledge within the community of how to look after, maintain and improve on-site wastewater systems;
- Increase awareness and knowledge of the effect poorly performing wastewater systems can have on water quality;
- Collect information about wastewater systems in-use in the Tryphena catchment as well as current householder behaviour.

This report presents the findings of three activities within the on-site wastewater education programme:

1. A household survey conducted by 'door knocking', used to collect information from Tryphena residents as well as to raise awareness via face-to-face discussion;
2. A community wastewater education and awareness event, held at the Stonewall Village market;
3. A series of septic tank inspections, provided free of charge to interested residents.

In addition to the education programme, the Great Barrier Island Local Board has initiated a Microbial Source Tracking (MST) study to investigate potential sources of *E.coli* contamination. The results of the MST study will be addressed in a separate report.



2. Household Survey

2.1 Survey Method and Participants

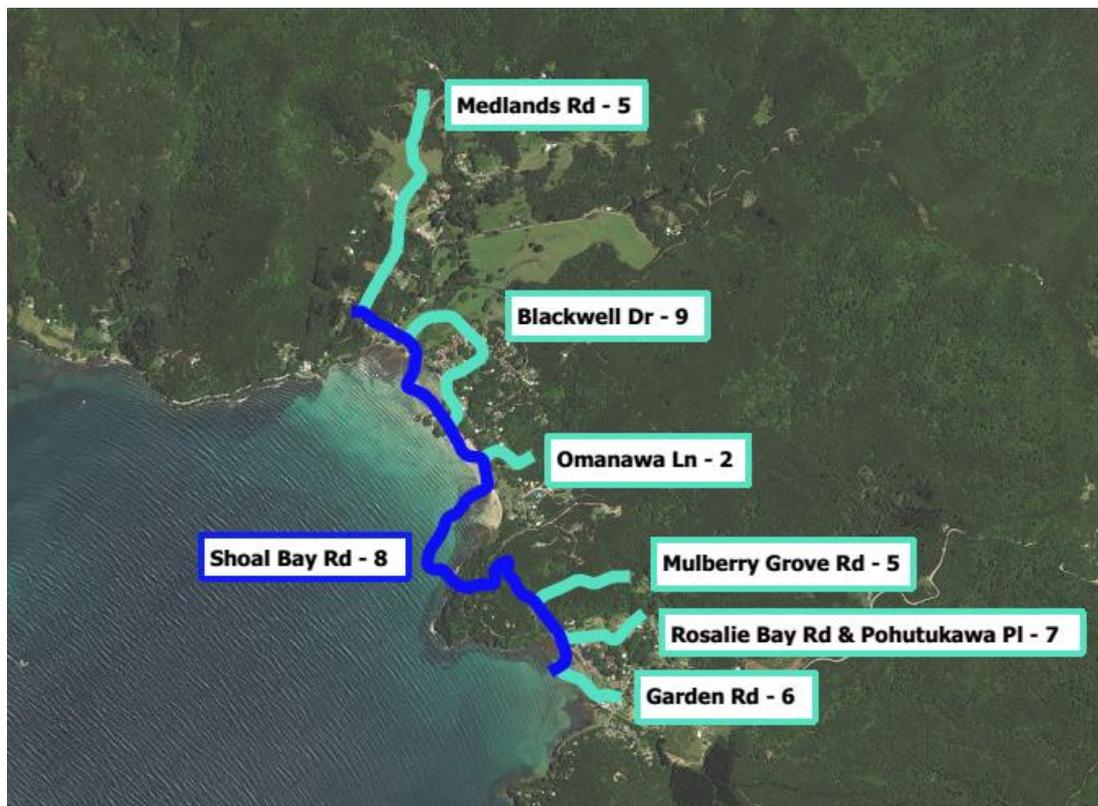
The household survey was targeted at permanent residents, as opposed to holiday home owners and visitors. The survey was carried out by 'door knocking' in the Tryphena catchment during a 10-day period, between 24 February and 3 March 2017. In instances where a house was vacant, a letter was left explaining the survey. These letters resulted in some additional survey responses during March 2017.

Approximately 110 properties were visited during the survey. Of these 110 properties, 55 were inhabited and 55 were vacant. With regards to people at the 55 inhabited properties:

- 42 people completed the household survey;
- 3 people were willing to participate but were unable to answer the questions;
- 10 people chose not to participate.

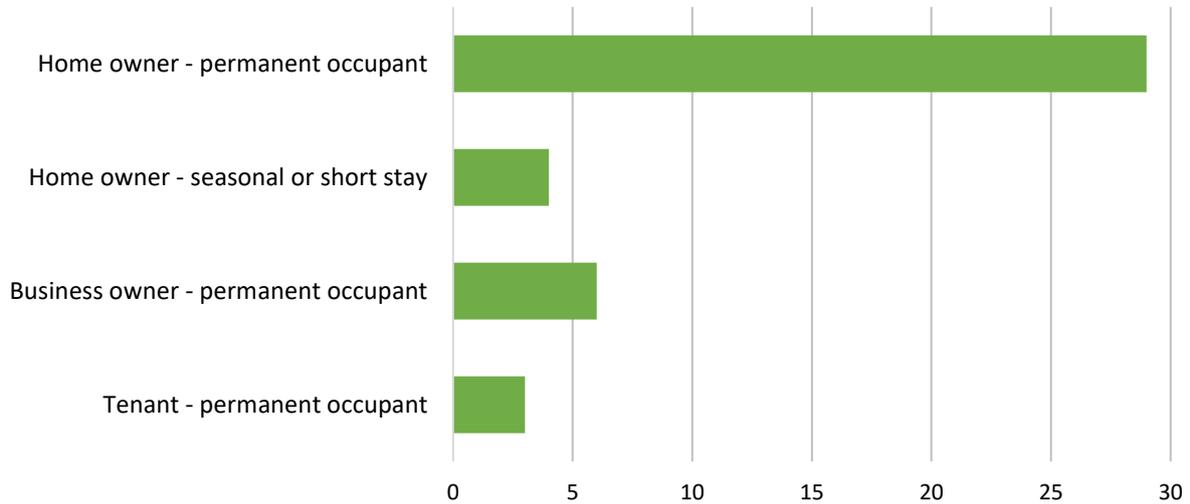
The 42 participants who completed the household survey were evenly distributed throughout the Tryphena catchment (see Figure 1). They included residents and business owners situated close to the waterfront (on Shoal Bay Rd), or nearby one of the local streams (Blackwell Stream, Mulberry Grove Stream and Garden Road Stream). A copy of the household survey questionnaire can be found in Appendix A.

Figure 1: Location and number of survey participants



As a consequence of the survey method and timing (door-knocking during late summer/early autumn), most of the participants were either home-owners or business-owners living permanently on Great Barrier Island (see Figure 2). There were also a small number of tenants and semi-permanent home owners who participated in the survey.

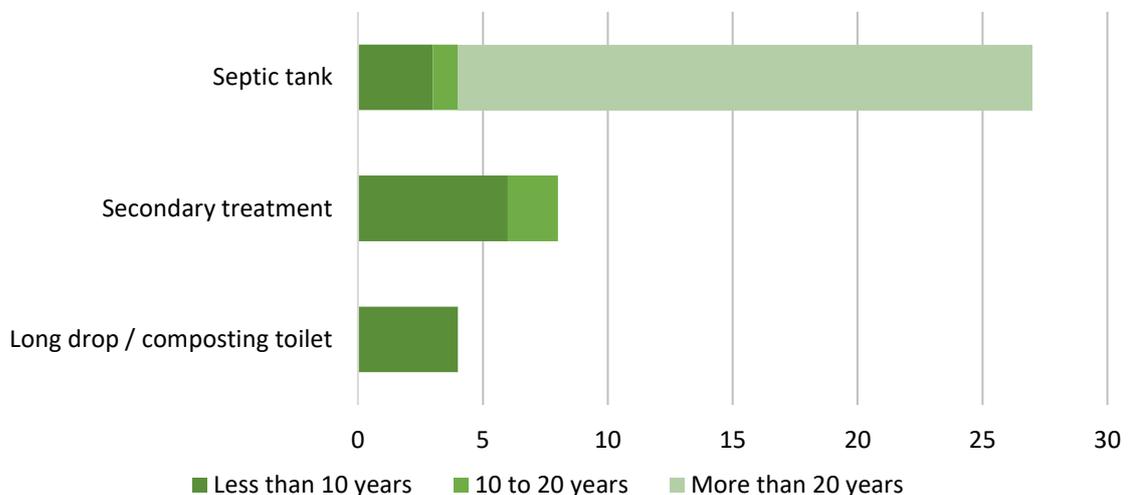
Figure 2: Survey participants by occupancy type



2.2 Wastewater System Details

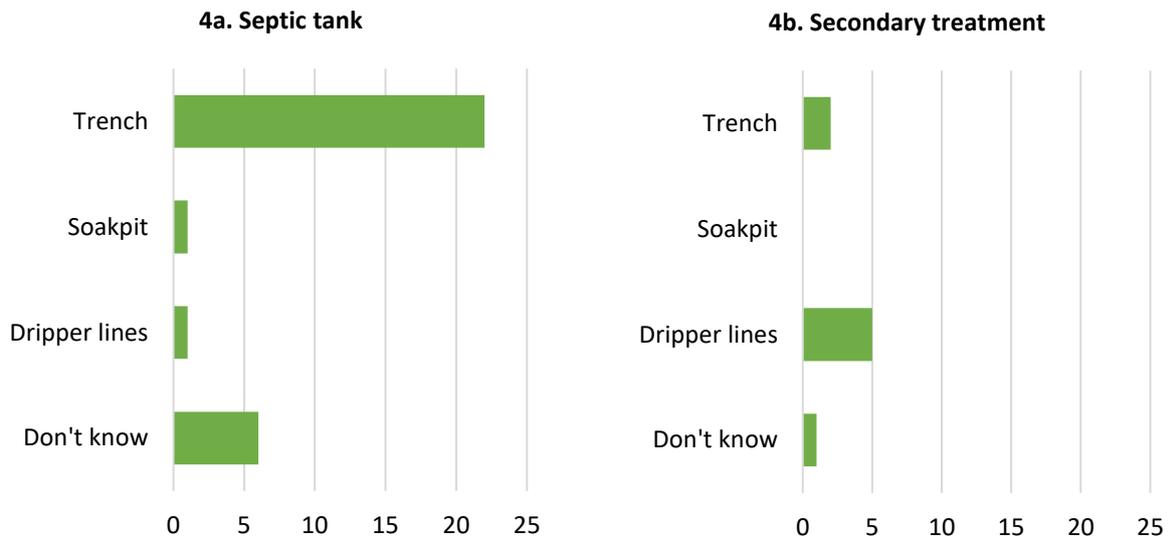
The most common wastewater system amongst the survey participants was a septic tank (see Figure 3). In total, 30 of the 42 survey participants had a septic tank, and 23 of these tanks were more than 20 years old. There was some use of more modern secondary treatment systems, especially by businesses with high wastewater volumes (e.g., cafes, pubs and schools). There were also several survey participants who used a combination of a long-drop toilet, and greywater diversion to a garden or landscaped area.

Figure 3: Wastewater system by type and age



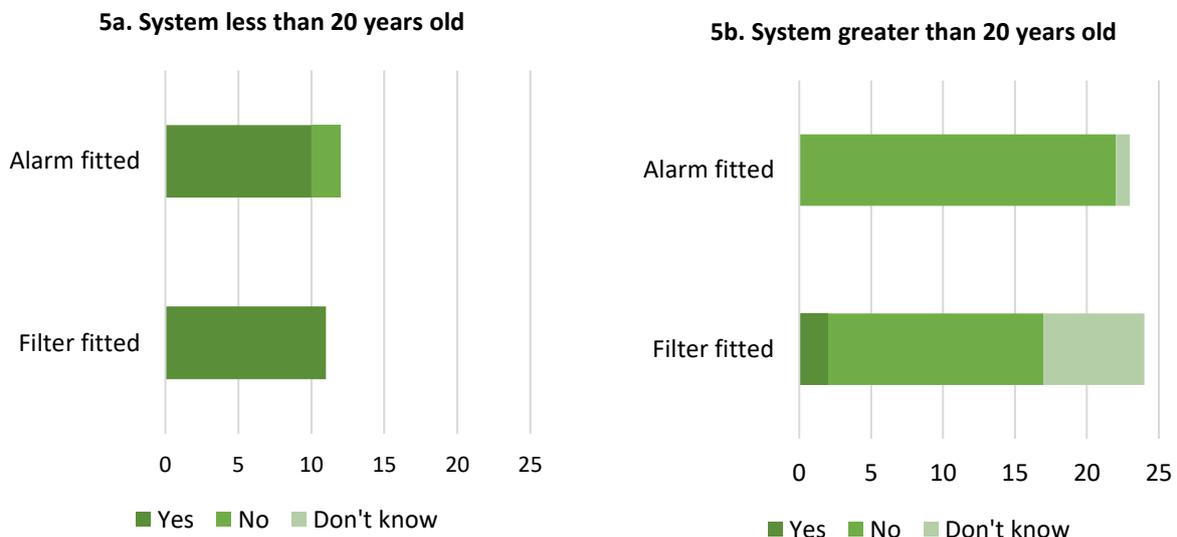
With regards to disposal field types, most participants with septic tank systems reported that they discharged to a trench. In contrast, secondary treatment systems typically discharged via dripper lines, or a combination of a trench and dripper line system.

Figure 4: Disposal field type by system type



Not all participants knew if their system included a filter or an alarm. For those participants who could answer these questions, it was common for newer systems (i.e., those installed in the last 20 years) to include a filter and alarm. In contrast, most of the older septic tanks included neither of these features (see Figure 5).

Figure 5: Use of alarms and filters by system age



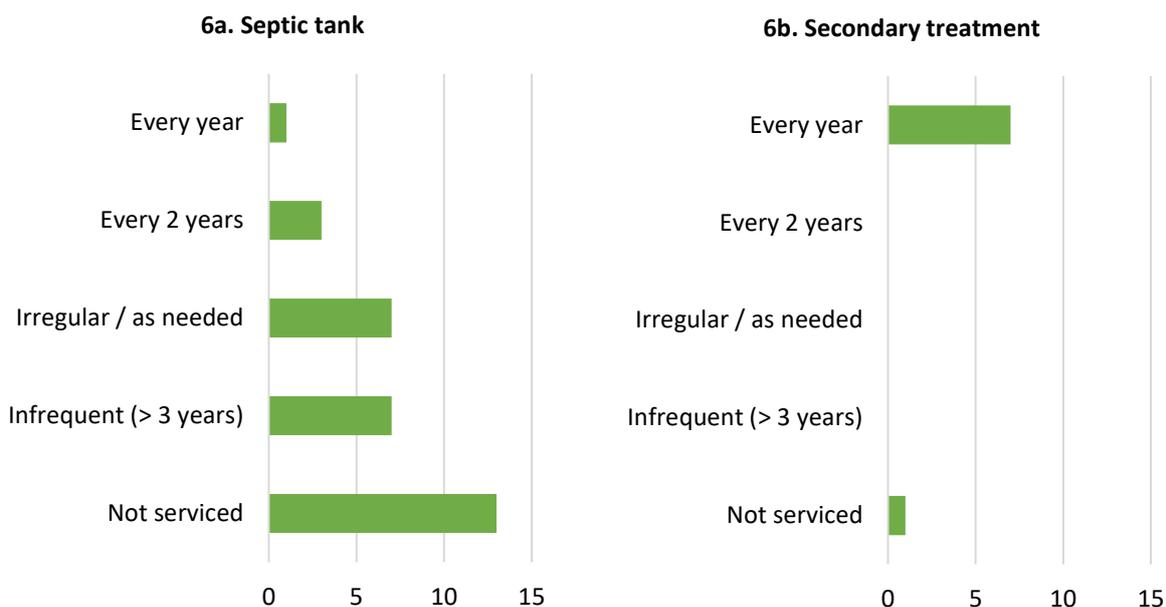
2.3 Wastewater System Operation and Maintenance

Most participants (36 out of 42) thought their system was working properly at the time of the survey. However, approximately one quarter of participants had experienced a problem with their system in the past. The problems experienced included:

- Odour (7)
- Alarm sounding (3)
- Ponding on disposal area (3)
- Ponding near tank (2)
- System overflowing (2)
- Alarm not working (1)
- Blocked pipe (1)
- Blocked filter (1)
- Sinks/toilet slow to drain (1)

When asked if they had their wastewater system serviced periodically, there was a clear difference between participants with septic tanks and those with secondary treatment systems (see Figure 6). Most participants with secondary treatment systems had their systems serviced annually. In contrast, most septic tank owners either did not service their systems, or serviced them infrequently (at intervals exceeding 3 years) or not at all.

Figure 6: Service frequency by wastewater system type



Interestingly, almost one quarter of the survey participants (10 out of 42) reported diverting some or all greywater flows away from their wastewater system (e.g., by directing pipes from their bathroom, laundry or kitchen, on to landscaped areas). As this appears to be a relatively common practice on Great Barrier Island, it would be useful for future surveys to explore it in more depth. The practice of greywater diversion will reduce the load on wastewater systems, but could also create bacterial contamination risks for local waterways if the discharge is not appropriately managed (Auckland Regional Council, 2004, p.116, Section 7.7.6.1).

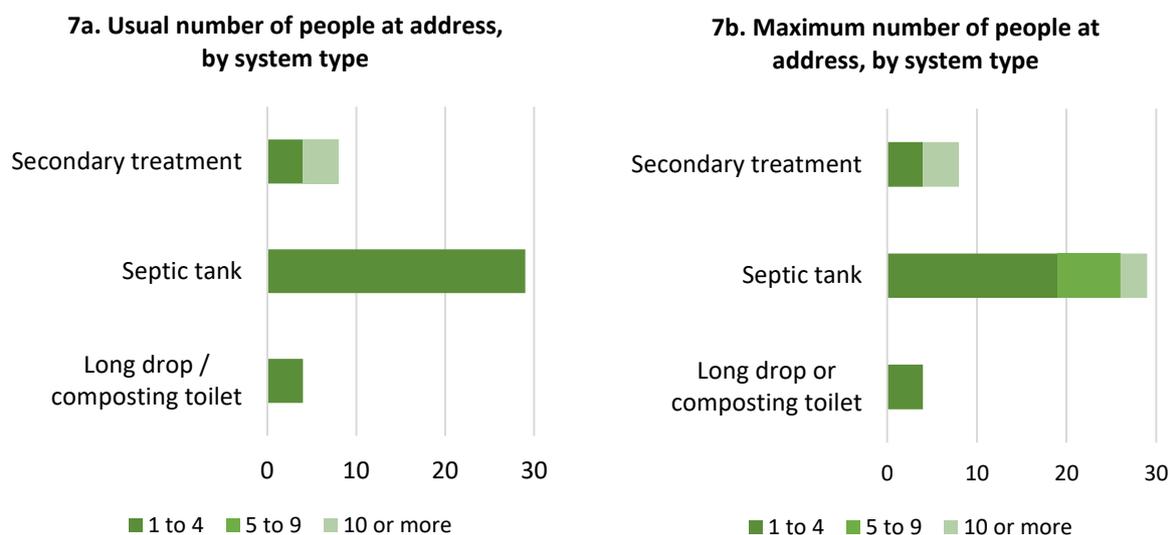
2.4 Other Household Information

In order to understand the demand placed on on-site wastewater systems in the Tryphena catchment, survey participants were asked the number of people who were usually residing at their address (Figure 6a), as well as the maximum number of people staying at the address at any one time (Figure 6b).

Properties with secondary treatment systems included a mix of small households (with 1 to 4 usual residents), and local businesses that hosted 10 or more customers on a regular basis.

Properties with septic tanks and long drops typically had a small number of usual residents (1 to 4). However, some of these properties did host larger groups at times. Of the 29 properties with septic tanks, 7 reported hosting groups of 5-9 people at times, and 3 reported hosting groups of 10 or more.

Figure 7: Number of people at address by system type



Most survey participants (31 out of 42) sourced their water from roof collection, with some also sourcing water from a stream (8 participants) or a bore (4 participants). Due to their limited water supply, most survey participants reported using one or more 'water efficient features' in their house. The most commonly used features were dual flush toilets (34 participants), low-flow taps or showerheads (4), and front-loading washing machines (4).

All survey participants showed a good understanding of household products that could harm their on-site wastewater system. There were no participants that reported using the problematic products that were listed in the survey (antibacterial cleaning products, bleach, or drain cleaners).

When asked if they were interested in receiving further information on wastewater treatment and water quality in Tryphena, 30 of the 42 participants indicated they would be interested. The contact details of these 30 participants will be sent to Auckland Council.

3. Community Education Event

A community education event was held at the Stonewall Village Market on Saturday 4th March 2017. The event was advertised beforehand in the local newspaper (The Barrier Bulletin), on the local radio station (Aotea FM) via an interview with Taryn Wilks, and on social media via the 'Barrier Chitchat' Facebook group.

During the 4-hour market, which ran between 10am and 2pm, approximately 40 people visited the stall to talk, and to pick up the information resources that were available. This included residents and holiday home owners from across Great Barrier Island.

Feedback received during the event was extremely positive. Many of those who stopped to talk expressed concerns about on-site wastewater systems on Great Barrier Island, and commented that it was excellent to see the Great Barrier Local Board funding work, and raising awareness, on this topic.

Common questions related to wastewater systems included:

- What should I do to look after my septic tank? How often should I have it serviced?
- Who on Great Barrier Island can help to service and maintain my current system?
- If I was to install a new system, what options are available and what are the costs?
- Who can help to design a new system?
- Will I be forced to upgrade my system at some point?
- Is there going to be any help offered to upgrade or remediate my system?
- Is faecal contamination from humans the main threat to waterways, or is it stock?

People attending the community education event were also eager to discuss several other related topics. These included:

- Results of water quality monitoring (including Safeswim results) and how these could be accessed by the community;
- Options for sourcing potable water during summer when roofwater tanks, and local streams, are low.



4. Septic Tank Inspections

During the household survey and community education event, Tryphena residents were offered the opportunity to sign up for a free septic tank inspection. Septic tanks were targeted for these inspections because:

- they are a commonly utilised system on Great Barrier Island; and
- they are relatively simple to inspect, unlike specialised secondary treatment systems.

4.1 Participants

The septic tank inspections were carried out during March 5-7 2017. Priority was given to residents whose properties were close to one of the streams of interest (Blackwell Stream, Mulberry Grove Stream, or Garden Road Stream).

In total, 13 septic tanks were inspected (see Figure 8 for an illustration of where these tanks were located). In addition, one commercial site was visited, but due to the size and complexity of the site a full inspection was not undertaken.

Figure 8 – Location and number of septic tank inspections



4.2 Inspection Method

Each septic tank inspection took approximately 60 minutes and aimed to assess the following:

- Measurement of septic tank operating capacity;
- Measurement of septic tank contents (including sludge depth, liquid depth, crust depth and freeboard);
- Assessment of the structural soundness of the septic tank;
- Assessment of septic tank components including the tank lid, air vent, T-pieces, and – if applicable – the filter, alarm, greasetrap and dosing pump;
- Water flow test (run for 15 minutes) to check if water was flowing in and out of tank as expected;
- Assessment of the disposal field to check for signs of failure, or susceptibility to stormwater inundation.

The results of the inspection were used to produce a ‘Warrant of Fitness’ report, which were sent to the homeowners. The template for this Warrant of Fitness report can be found in Appendix B. In instances where problems were identified, the Warrant of Fitness reports also included recommendations as to how the problems could be addressed.

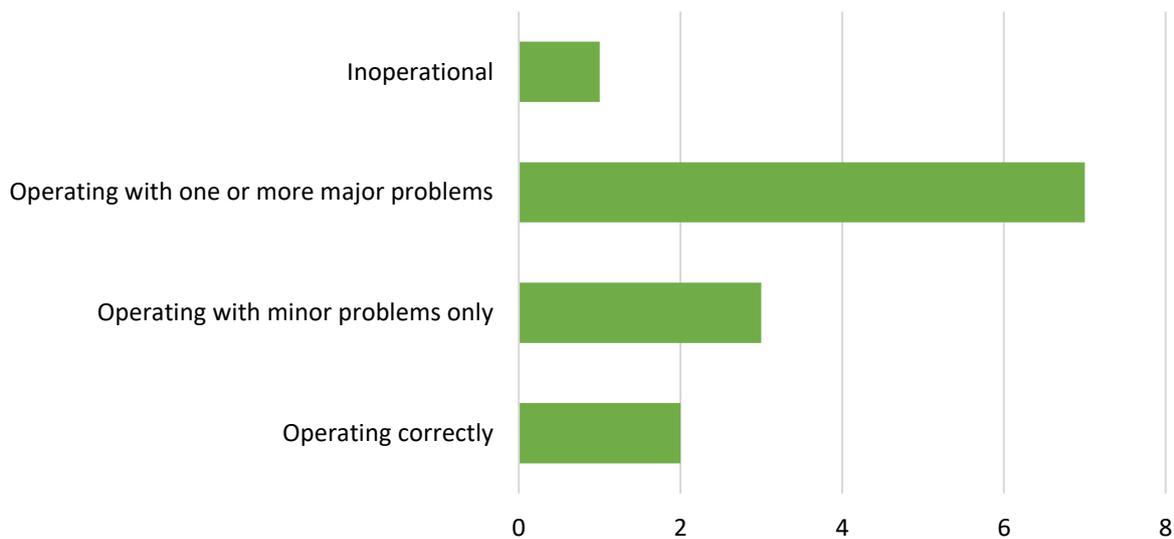


4.3 Inspection Results

Of the 13 septic tanks that were inspected:

- 1 had a major fault that rendered it in-operational for treatment purposes (the tank was cracked and effluent was observed leaking from a side wall);
- 7 were operating with one or more major problems;
- 3 were operating with minor problems only;
- 2 were operating correctly.

Figure 9: Overall assessment of inspected septic tanks



Examples of major operational problems included:

- Disposal field failure (3)
- Pipes allow inappropriate discharge of sewage (2)
- Tank lid is unsealed (2)
- Tank is not structurally sound (1)

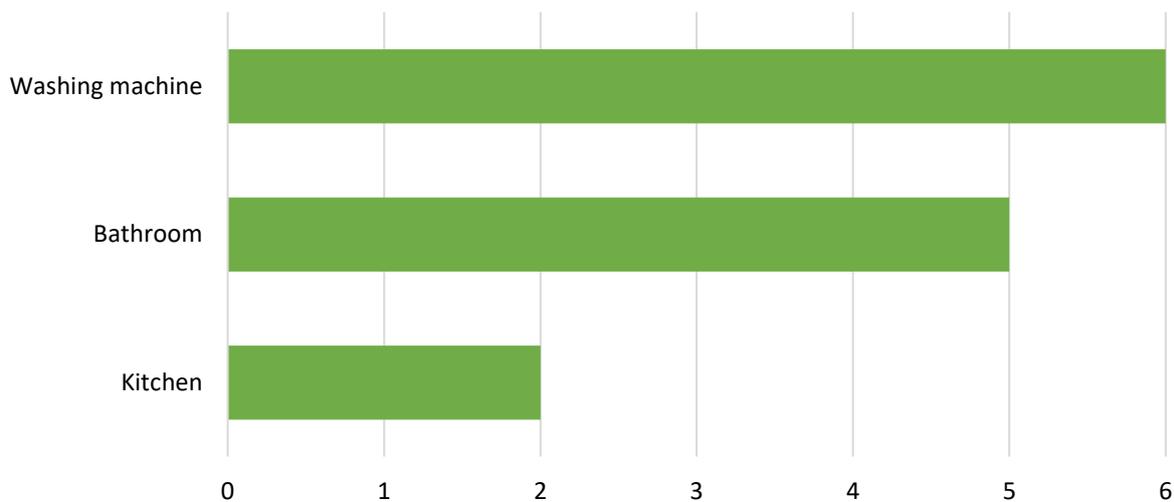
Many of the septic tanks inspected also had one or more minor operational problems.

Examples of minor operational problems included:

- No access to tank lid (6)
- Tank requires desludging (1)
- T-piece not attached (1)
- Disposal field not located (1)

As observed during the household survey, it is relatively common for Tryphena residents to divert their greywater away from their wastewater system. Of the 13 properties visited during the septic tank inspections, 6 were diverting some or all of their greywater (see Figure 10). The alternative greywater solutions on these properties included discharges to soak pits, trenches, or directly on to landscaped areas. While there was not time to inspect these greywater solutions, this would be a worthwhile focus for future inspections.

Figure 10: Greywater diversion at inspected properties



There were two limitations of the septic tank inspections that are also worth noting:

1. The inspections were carried out during a period of fine weather on Great Barrier Island. Many of the properties had poorly drained soils which could be prone to saturation after rain. Consequently, in order to fully inspect the operation of the septic tanks and their disposal fields, it would be beneficial to observe them during or after heavy rainfall.
2. The inspections focused on the current state of the septic systems and did not attempt to assess them against Auckland Council's design guidelines (where the design flows are based on the number of bedrooms). Many of the properties were not fully occupied at the time of inspection. While it was possible to inspect how the septic systems functioned under their current loading (e.g., with 1 or 2 usual residents), it is unclear how these systems would function under heavier loading (e.g., when the houses are fully occupied).

5. Summary and Recommendations

During the household survey, community education event and septic tank inspections, there were extensive opportunities to discuss wastewater treatment, and water quality issues, with Tryphena residents. The positive feedback received from residents indicates that the Great Barrier Local Board's work in this area is well supported. This section summarises the key findings and recommends a series of initiatives, aimed at improving wastewater management, for the Board to consider.

5.1 Septic tanks

Septic tanks are the most common wastewater system used in the Tryphena catchment, and many of these tanks are serviced infrequently or not at all. This is of concern as, in the absence of regular service checks, it is possible for operational problems to go undetected. The following initiatives could be used to improve septic tank performance:

1. Train one or more Great Barrier Island residents to service septic tank systems, so that tanks and disposal fields can be inspected frequently and operational problems can be detected early. It is important to note that servicing a septic tank is not equivalent to pumping out a tank. Servicing a septic tank should comprise a range of actions aimed at ensuring that the treatment system is operating well, including:
 - measurement of relevant levels (e.g., sludge, liquid and crust depths);
 - checks on the structural soundness of system components (e.g., tank, tank lids, vents and t-pieces);
 - checks on water flows to and from the tank;
 - when possible, flushing disposal systems to prevent blockages.
2. Extend the provision of free septic tank inspections, to create a more complete stocktake of septic tank systems on Great Barrier Island.
3. Develop an assistance package for septic tank owners so that, when major operational problems are detected, repair or replacement can be expedited.
4. Work with local drainlayers to ensure they understand common septic tank problems, and suitable solutions for systems that require repair or replacement. Drainlayers are typically the first people contacted when problems arise, so their knowledge on the topic is important.

5.2 Long drops

There are some Tryphena residents who make use of long drops. Long drops may be an acceptable solution if they are located and constructed appropriately. However, if they are poorly located or constructed, they could pose a contamination risk to local waterways. For this reason, the following initiative is recommended:

5. Provide free inspections of long drops in the Tryphena catchment, with the aim of identifying if any pose a contamination risk.

5.3 Businesses with high wastewater volumes

Several Tryphena businesses have high wastewater volumes (e.g., cafes, pubs and schools) and make use of secondary treatment systems. While these systems are serviced annually, it is particularly important to ensure that they provide adequate treatment. For this reason, the following initiative is recommended:

6. Carry out periodic monitoring of local businesses, with high wastewater volumes, to ensure that their treatment systems and disposal fields are operating correctly.

5.4 Greywater diversion

It is relatively common for Tryphena residents to divert their greywater away from their on-site wastewater system (e.g., by directing pipes from their bathroom, laundry or kitchen, on to gardens or landscaped areas). While residents often assume that greywater poses no risk to the environment, previous studies have found greywater can have high faecal coliform bacteria concentrations (Auckland Regional Council, 2004, p.116, Section 7.7.6.1). To address contamination risks arising from greywater disposal, the following initiatives are recommended:

7. Distribute information so that residents understand the risks posed by uncontrolled discharges of greywater.
8. Work with local drainlayers so they are aware of potential contamination risks, as well as appropriate greywater disposal solutions. Drainlayers are typically the first people contacted when homeowners have questions on this topic, so their knowledge is important.

5.5 Additional research

The activities described in this report provide an important, but incomplete, insight into wastewater treatment in the Tryphena catchment. To gain a fuller understanding it would be useful to undertake the following additional work:

9. Wastewater systems in holiday homes: there is a high proportion of holiday homes in Tryphena and the wastewater systems at these properties are subject to their own risk factors (including infrequent use and periodic heavy loading). The household survey discussed in this report deliberately focused on permanent residents. An additional survey focused on holiday home owners would be a useful complement.
10. Operation of wastewater systems during heavy rainfall: many properties in the Tryphena catchment have poorly drained soils which could be prone to saturation after rain. The septic tank inspections discussed in this report were carried out during a period of fine weather on Great Barrier Island. To fully inspect the operation of the wastewater systems and their disposal fields, it would be beneficial to observe them during or after heavy rainfall.

6. References

Auckland Regional Council (2004). *On-site Wastewater Systems: Design and Management Manual*. Auckland Regional Council Technical Publication No.58 (3rd ed.). Retrieved May 19, 2017 from the Auckland Council's Web site:
<http://www.aucklandcouncil.govt.nz/EN/planspoliciesprojects/plansstrategies/unitaryplan/Documents/Material%20incorporated%20by%20reference/upmirbcounciltp58onsitewastewatersystemsdesignmanagementmanual.pdf>

Buckthought, L. (2016). Freshwater monitoring programme: Tryphena Harbour Streams, Great Barrier Island. In *Great Barrier Environment Committee Open Agenda, 22 June 2016*. Retrieved May 19, 2017 from the Auckland Council's Web site:
http://infocouncil.aucklandcouncil.govt.nz/Open/2016/06/GBESP_20160622_AGN_6473_AT_WEB.HTM

Appendix A: Household Survey Questionnaire

1. Site Details	
Road Number	
Road Name	
2. Consent	
The Great Barrier Island / Aotea Local Board has been made aware of water quality issues in Tryphena Harbour. Part of the issue may be poor performing on-site wastewater systems. The Local Board would like to understand the wastewater systems that are used in your area, so that they can help local residents to get their systems working well. Information collected in this survey will be shared with Auckland Council. Are you willing to participate?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. General Information	
Name of respondent	
Occupant Type?	<input type="checkbox"/> Home owner <input type="checkbox"/> Tenant <input type="checkbox"/> Regular bach user <input type="checkbox"/> Other (describe below)
Frequency of occupation?	<input type="checkbox"/> All year <input type="checkbox"/> Seasonal <input type="checkbox"/> Weekends and short stays (bach user)
4. Wastewater System Details	
Wastewater system type?	<input type="checkbox"/> Long drop <input type="checkbox"/> Old septic tank <input type="checkbox"/> Multi-stage septic tank <input type="checkbox"/> Secondary treatment system <input type="checkbox"/> Composting toilet <input type="checkbox"/> Greywater-only system <input type="checkbox"/> Don't know <input type="checkbox"/> Other (describe below)
Age of system? (Record number of years the system has been in place, or leave blank if don't know)	
Wastewater system photo	NB: Fulcrum only

4. Wastewater System Details cont.	
Discharge field type?	<input type="checkbox"/> Soakpit <input type="checkbox"/> Trench <input type="checkbox"/> Dripper lines <input type="checkbox"/> Don't know <input type="checkbox"/> Other (describe below)
Discharge field photo	NB: Fulcrum only
Does your system have a filter?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
Does your system have an alarm?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
Wastewater tank capacity? (Record number of litres, or leave blank if don't know)	
5. Wastewater System Operation and Maintenance	
Is your wastewater system working properly at the moment?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
Have you ever experienced any of the following problems with your system?	<input type="checkbox"/> Sinks and toilets slow to drain <input type="checkbox"/> Filter blocks regularly <input type="checkbox"/> Water ponding on the discharge field during dry weather <input type="checkbox"/> Odour at the treatment tank <input type="checkbox"/> Odour at the disposal area <input type="checkbox"/> Alarm sounding <input type="checkbox"/> Requires regular emptying <input type="checkbox"/> Other (describe below)
After rain, do you ever see water ponding around your wastewater system?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
After rain, do you ever see water ponding on the discharge field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know

5. Wastewater System Operation and Maintenance cont.	
Do you have your wastewater system serviced periodically?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know
(If serviced) Frequency of service?	<input type="checkbox"/> 6-monthly <input type="checkbox"/> 12-monthly <input type="checkbox"/> Every two years <input type="checkbox"/> Don't know <input type="checkbox"/> Other (describe below)
6. Household Questions	
Number of people who usually reside here?	
Highest number of people living here at any one time?	
Number of bedrooms?	
Water supply type?	<input type="checkbox"/> Roofwater tank <input type="checkbox"/> Bore <input type="checkbox"/> Stream <input type="checkbox"/> Other (describe below)
Do you have any of the following water efficient features in the house?	<input type="checkbox"/> Dual flush toilet <input type="checkbox"/> Low flow taps or showerhead <input type="checkbox"/> Front-loader washing machine <input type="checkbox"/> Water efficient dishwasher <input type="checkbox"/> Other (describe below)
Some household products can cause problems for wastewater systems. Do you ever tip any of these products down your sink?	<input type="checkbox"/> Antibacterial cleaning products <input type="checkbox"/> Bleach <input type="checkbox"/> Drain cleaners
Do you have an insinkerator?	<input type="checkbox"/> Yes <input type="checkbox"/> No
7. Interest in Follow-on Activities	
Are you interested in receiving further information on this topic?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Maybe
Are you interested in a free technical check of your wastewater system?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Maybe

7. Interest in Follow-on Activities cont.	
(If interested) A tap in the house will need to be left running for 15 min to test the system. Are you ok with this water use?	<input type="checkbox"/> Yes <input type="checkbox"/> No
(If interested) Can the tank be accessed easily and the lid lifted?	<input type="checkbox"/> Yes <input type="checkbox"/> No
(If interested) Preferred time for technical visit?	<input type="checkbox"/> Sunday 5 March morning <input type="checkbox"/> Sunday 5 March afternoon <input type="checkbox"/> Sunday 5 March evening <input type="checkbox"/> Monday 6 March morning <input type="checkbox"/> Monday 6 March afternoon <input type="checkbox"/> Monday 6 March evening <input type="checkbox"/> Tuesday 7 March morning <input type="checkbox"/> Tuesday 7 March afternoon <input type="checkbox"/> Tuesday 7 March evening <input type="checkbox"/> Other (describe below)
(If interested) Best way of contacting?	<input type="checkbox"/> Post <input type="checkbox"/> Email <input type="checkbox"/> Phone <input type="checkbox"/> Facebook <input type="checkbox"/> Other (describe below)
(If interested) Contact details?	
8. Additional Comments	

Appendix B: Septic Tank Warrant of Fitness Template

Inspection Details			
Address			
Inspection Date			
Inspected By			
Septic Tank Specifications			
Date of last pump out?		Number of chambers	
Primary tank operating capacity (L)		Second tank operating capacity (L)	
Filter fitted?		Alarm fitted?	
Greasetrap fitted?		Dosing pump or siphon fitted?	
Free board (mm)		Crust depth (mm)	
Liquid depth (mm)		Sludge depth (mm)	
Septic Tank Assessment		Y/N	Comment
Do all wastewater flows go to septic tank?			
Are the tanks structurally sound?			
Are the tank lids structurally sound and sealed to prevent insect/vermin access?			
Are the tanks accessible for maintenance purposes, and are suitable inspection caps fitted?			
Is the air vent in a functional state?			
Are both T-pieces attached and operational?			
Is the area flood prone, or is there any evidence of stormwater inundation?			
Does the primary tank/chamber require desludging?			
Pipe Assessment		Y/N	Comment
Does water flow in to the tank as expected?			
Does water flow out of the tank as expected?			
Are there any pipes that allow the inappropriate discharge of sewage?			
Disposal System Assessment		Y/N	Comment
Can the disposal field be located?			
Are there any signs of disposal system failure?			
Is the area flood prone, or is there any evidence of stormwater inundation?			
Are there any drains or streams nearby that could be affected by run-off?			
Comments and Recommendations			