

11.3.4.1 Risk Assessment Conclusion

The community of urban and rural non-serviced has a very high risk assessment for health and environmental impacts compared to other communities assessed. Refer to section 2.3 for overview.

In the short term, as further small residential lots are developed in both the rural and urban areas not serviced by a public sewerage reticulation and treatment facility, contamination problems attributable to ageing on-site wastewater systems can be expected to get worse. However, the adverse effects may be limited by the potential improvements to poorly performing on-site wastewater systems through the possible implementation of a council Wastewater Bylaw including the provision for inspections and investigations by council, as well as pumping out of septic tanks every three years under council operations, with the aim that improved operation and maintenance will lead to improved performance of systems.

Comments on wastewater issues that apply in the case of re-zoning areas for residential development are as follows:

- Developments could be served by on-site wastewater systems, but the lot sizes required for this to be safe and sustainable would need to be greater than 2500m².
- Small lot sizes (less than 2500m²), reticulated sewerage systems would be required, taking either raw sewerage or septic tank effluent.

11.3.5 Assessment of the Quality and Quantity of Discharged Wastewater

11.3.5.1 Collection and Treatment

The predominant disposal method utilised within the unserviced urban and rural areas of the Hauraki District is that of on-site disposal.

On-site treatment of effluent can be referred to as slow rate land treatment. This is the controlled application of wastewater onto or into topsoil such that treatment of the wastewater is achieved through the natural physical, chemical and biological processes occurring in the plant-soil-water mix.

While the use of an on-site effluent treatment system may be an effective method of treating domestic sewage in some situations, it can be unsuitable in others.

Parameters that can determine suitability are:

- Soil type
- Soil properties
- Topography
- Water table
- Rainfall
- Area

Soil type:

In general the soils in the Hauraki District have been identified as having physical properties that are suitable for on-site treatment of effluent. Soils that are unlikely to be suitable for traditional on-site effluent systems will require a more advanced level of treatment technology.

Soil properties:

A number of soil properties have been identified that influence the suitability of a particular soil when used for sewage effluent disposal. These properties include soil structure, soil permeability, soil texture, porosity, the presence of restrictive layers, gleying and soil organic matter. Refer to the diagrams below:

Topography:

Slope not exceeding 30percent (17 degrees) can be considered for on-site disposal systems. However, slopes greater than 20 percent (11 degrees) should be treated with care.

Water table:

Depth to the water table is of critical importance.

There needs to be a minimum of 600 mm between the bottom of the soakage field and the water table for standard systems, and 300mm for advanced systems.

Where soil drainage is poor, there is seasonal elevation of the water table during winter. Temporary elevation (a few days) to within 100mm of the base of the disposal system will not cause operational failure of the soakage field, but will mean that little treatment will occur.

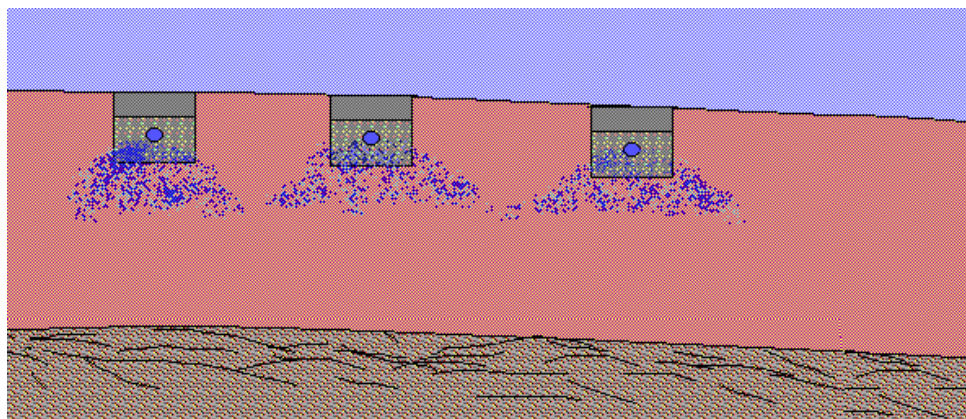
Rainfall:

In the Hauraki District, the highest rainfalls occur in the months May to August. This is them also the time that the water table will be elevated, therefore creating the maximum impact and stress on the on-site treatment system.

Area:

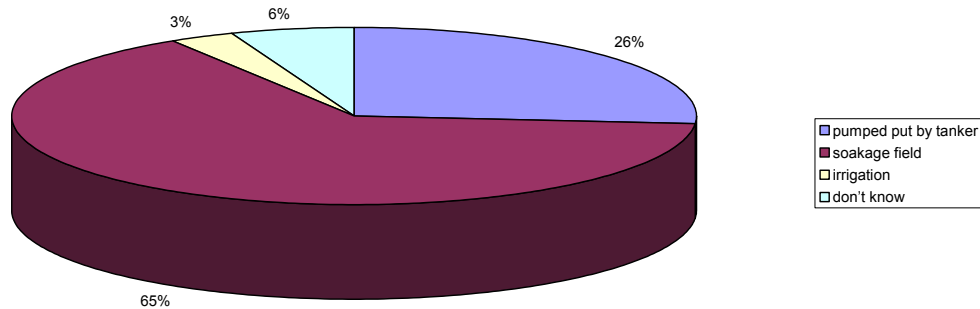
The actual land area occupied by an effluent treatment field for a single family domestic household should be approximately 460 m². However, in practice the fields can vary from 20m² to 460m². The lesser being systems that have been installed in the 1960's and 1970's.

It is recommended that a lot area should not be less than 2500m² for an on-site treatment system to operate satisfactorily. (refer to Environment Waikato Regional Plan).



Of the urban and rural unconnected properties surveyed, 65% said that the household waste water went was disposed by way of soakage field, 26% had the septic tank pumped out by a tanker often, 3% disposed by way of irrigation field and 6% did not know.

Where does your sewage go from your septic tank?



11.3.5.2 Operation and Maintenance

Some of the main reasons for system failure are:

- Septic tank not maintained
- System under capacity
- Soakage system distribution boxes not working or not being used to rotate use of soakage trenches.

Older type conventional on-site effluent treatment systems are not fool proof and they have no controls on the septic tank outlet pipe from the tank to prevent solids from travelling through and clogging the soakage field distribution pipe. It is vital that older septic tanks are cleaned before the solids level reaches the outlet pipe, otherwise the soakage field part of the system will clog and no longer work.

It may be prudent to introduce a council lead maintenance regime for these systems. This would involve council charging the users a set levy, and instigating a maintenance programme.

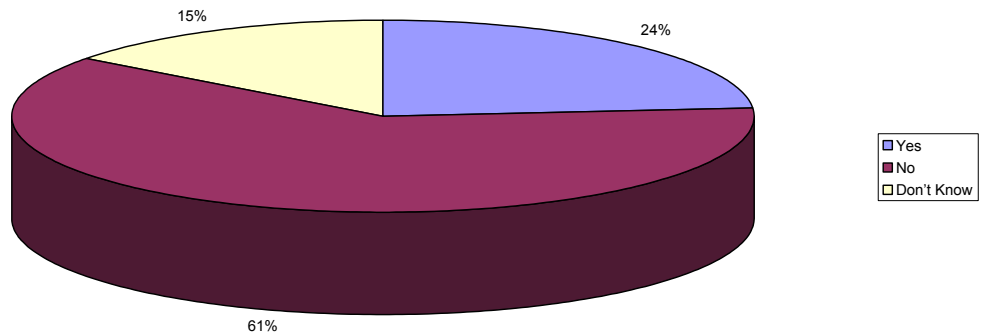
Council asked the following question in the survey.

“Would you be prepared to pay maintenance rates for council to maintain your septic tank?”

A noted majority (61%) said they did not want to pay maintenance rates for council to maintain their septic tanks, with 24% that did want council to maintain their septic tanks, and 15% didn't know and stated that it would ultimately depend on the price of the service: “it's a good idea, but it depends on the price”.



Would you be prepared to pay maintenance rates for Council to maintain your septic tank?



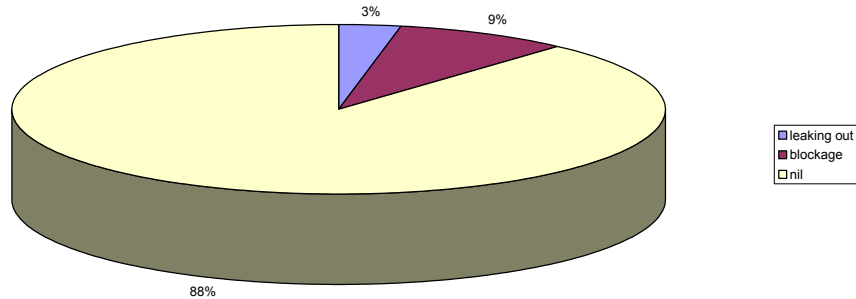
With the survey showing that 24% used septic tank pump out often as their disposal option, it is concluded that these soakage fields may no longer working efficiently and a council run maintenance programme could be beneficial.

11.3.5.3 Treatment Process Effects

Conventional on-site effluent treatment systems can be effective in treating effluent if they are installed, used and maintained correctly. Problems with conventional on-site effluent treatment systems are typically due to the installer or user not understanding what is needed to make them work. Evidence from septic tank cleaners strongly indicates that some septic tank soakage field systems are not suited to the conditions they are being expected to operate in, and that in some cases there are flaws in the initial design and installation of the system. This can be rectified at building consent stage.

Of those surveyed 12% said they had encountered problems with their sewage disposal system in the last 3 years (it is assumed soakage fields), 9% had blockages and 3% leakages (it is assumed from the tank itself).

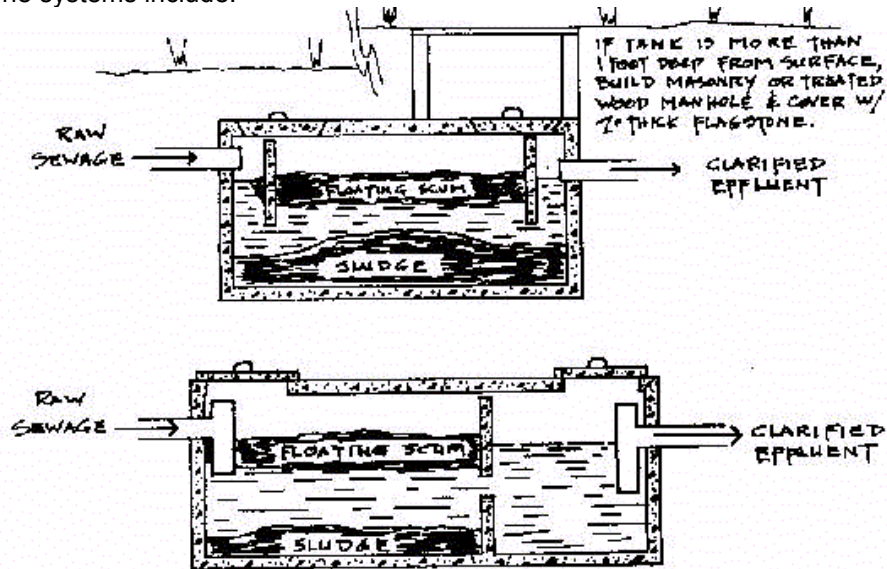
What sort of problems have you encountered with your sewage disposal system in the last 3 years?



11.3.5.4 Effluent Disposal Type

There are many different types of on-site effluent treatment systems in use within the Hauraki District.

The systems include:

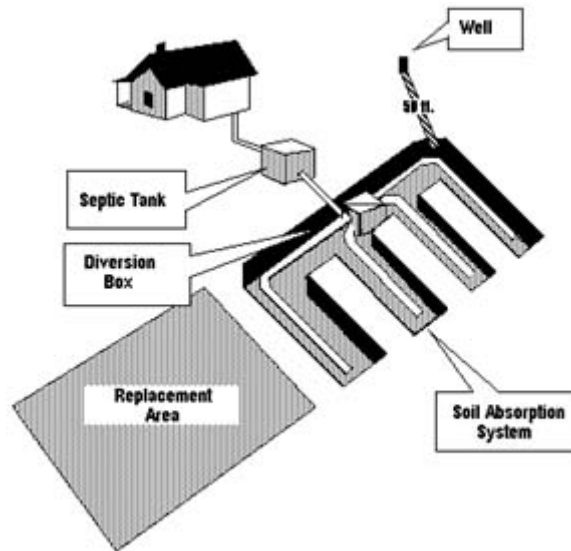


Two types of commonly used and approved precast-concrete septic tanks.

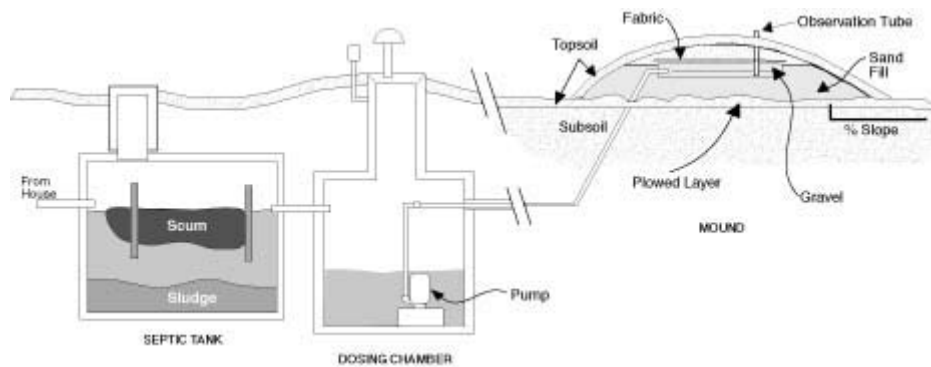
- A single chamber septic tank
- A multi chamber septic tank
- An aerated system
- A pumped system
- A siphon dosing system.

The land application systems include:

- Dripline irrigation
- Evapo transpiration seepage (ETS) beds



- Low pressure effluent distribution (LPED) trenches and “Wisconsin Mounds”



11.3.5.5 Community Description

Waikino

The community of Waikino is located at the eastern side of the Karangahake Gorge along SHWY 2. This community was a thriving gold mining town until 1952 when the Victoria Battery was closed down. Thus the population of Waikino decreased significantly to today. Waikino is now a community of people that are there for the secluded semi-urban lifestyle consisting of a Primary School and a cluster of dwellings set in semi-clad bush. On-site effluent disposal is utilised.

Karangahake

The community of Karangahake is located in the Karangahake Gorge along SHWY 2 approximately 4 kms east of Waikino. This community was also a thriving gold mining town of substantial population. Karangahake today is a small

community very much like that of Waikino consisting of a Primary School, Café, Vineyard, two clusters of dwellings (one on each side of the Ohinemuri River), Hall, Motor caravan park, Scenic reserve administered by the Department of Conservation with public toilets situated in the Karangahake Reserve administered by the Hauraki District Council. On-site effluent disposal is used for the dwellings, with the café, motor caravan park and public toilet utilising mini aeration plants.

Mackaytown

The community of Mackaytown is located at the western side of the Karangahake Gorge along SHWY 2. Another ex gold mining town, Mackaytown now consists of a cluster of dwellings in a semi-urban environment. On-site effluent disposal is utilised.

Patetonga

The community of Patetonga is located on the western edge of the District along SHWY 27. The township consists of a church, pre-school, quarry and a few houses. The school was closed down a few years ago with the old grounds used infrequently for sporting occasions (no ablutions are available at the school). On-site effluent disposal is utilised.

Kaihere

The community of Kaihere is located also on the western edge of the District along SHWY 27 some 4 kms north of Patetonga. This community is not a cluster of dwellings, but better described as a community area of rural farms. On-site effluent disposal is utilised.

Torehape

The community of Torehape is located also on the western edge of the District along SHWY 27 some 4 kms north of Kaihere. This community is not a cluster of dwellings, but better described as a community area of rural farms. On-site effluent disposal is utilised.

Mangatarata

The community of Mangatarata is located also on the western edge of the District at the convergence of SHWY 2 and SHWY 27. This community is not a cluster of dwellings, but better described as a community area of rural farms plus two cafés, a golf club and a bowling club. On-site effluent disposal is utilised.

Miranda

The community of Miranda is located at the north-western corner of the District. This community is not a cluster of dwellings, but better described as a community area of rural farms plus a motor camp and hot springs tourist area. On-site effluent disposal is utilised.

Waitakaruru

The community of Waitakaruru is located on SHWY 25 in the northern part of the district surrounding the head of the Waitakaruru River. This community is described as a cluster of 50 dwellings, a primary school, hall, rugby club, tennis club, two cafés, petrol station, piggery, and a few handcraft shops. This community has a small inadequate public sewerage treatment and reticulation system serving only 14 out of 50 dwellings. The school also has an inadequate

sewerage treatment system. Council is about to start a replacement of these systems including connecting the remaining dwellings, hall, rugby club, cafés, petrol station and shops to a small diameter pressure pipe reticulation with a recirculating filter treatment system. Council expects that this new system will be operational June 2005.

Pipiroa

The community of Pipiroa is located on SHWY 25 in the northern part of the district on the banks of the Piako River some 2 kms from the Firth of Thames. This community is best described as a small cluster of dwellings and businesses (café and horticultural) surrounded by rural farms. On-site effluent disposal is utilised.

Kopurahi

The community of Kopurahi is located at the intersection of SHWY 25 and Hauraki Road in the northern parts of the district some 2kms east of Pipiroa. This community is best described as a small cluster of lifestyle blocks surrounded by rural farms. On-site effluent disposal is utilised.

Orongo

The community of Orongo is located on SHWY 25 in the north-eastern most point of the Hauraki District on the western bank of the Waihou River. This is a very small community of rural farms; however an application for the development of an industrial/commercial area located was applied for a few years ago that has not been acted on. This area may be further developed once the new Kopu Bridge is constructed. On-site effluent disposal is utilised.

Horahia

The community of Horahia is located in the north-eastern side of the District on Hauraki Road. This community is not a cluster of dwellings, but better described as a community area of rural farms. On-site effluent disposal is utilised.

Hauraki Plains

The community of the Hauraki Plains some 150km² in size situated between Patetonga, Mangatarata, and Kerepehi. This community best described as a community of large rural farms. On-site effluent disposal is utilised, however the use of wisconsin mounds are what is being designed now to counter the high ground water levels for the effluent lines.

Netherton

The community of Netherton is located on SHWY 2 some 5 kms north of Paeroa township. This community is best described as a small cluster of dwellings and a primary school surrounded by rural farms. On-site effluent disposal is utilised.

Awaiti

The community of Awaiti is located some 3kms west of Netherton at the south-eastern corner of the Hauraki Plains. This community is not a cluster of dwellings, but better described as a community area of rural farms. On-site effluent disposal is utilised.

Hikutaia South

The community of Hikutaia south is located on SHWY 26 some 9kms north of Paeroa on the district boundary with Thames Coromandel District. This community is not a cluster of dwellings, but better described as a community area of rural farms. On-site effluent disposal is utilised.

Komata

The community of Komata is located on SHWY 26 some 4kms north of Paeroa. This community is not a cluster of dwellings, but better described as a community area of rural farms. On-site effluent disposal is utilised.

Tirohia

The community of Tirohia is located on SHWY 26 some 6 kms south of Paeroa on the district boundary with Matamata-Piako District. This community consist of a primary school, quarry, landfill, Hall and a few dwellings. On-site effluent disposal is utilised.

Te Moananui

The community of Te Moananui is located on Rotokohu Rd some 4kms south of Paeroa. This community is not a cluster of dwellings, but better described as a community area of rural farms plus a golf club. On-site effluent disposal is utilised.

Waitekauri

The community of Waitekauri is located 4kms north of Waikino on Waitekauri Rd. Another ex gold mining town, Waitekauri now consists of a cluster of lifestyle blocks surrounded by rural farms. On-site effluent disposal is utilised.

Golden Cross

The community of Golden Cross is located 4kms north of Waitekauri on Golden Cross Rd. Another ex gold mine, Golden Cross now consists of a the closed Golden Cross mine, old water & wastewater treatment plants that appear to still be in use, a few old administration buildings and a caretakers house. A wastewater treatment plant appears to be utilised, however a detailed assessment has not been undertaken.

Waitawheta

The community of Waitawheta is located on Waitawheta Rd some 3kms south of Waikino. This community is not a cluster of dwellings, but better described as a community area of rural farms plus a camp. On-site effluent disposal is utilised.

Waimata:

The community of Waimata is located on SHWY 2 4kms south of Waihi. This community not only is an area of rural farms, it has a hall, primary school and a secondary cluster of dwellings at the old cheese factory in Ford Rd. On-site effluent disposal is utilised.

Golden Valley

The community of Golden Valley is located on Golden Valley Rd some 3kms east of Waihi. This community is not a cluster of dwellings, but better described as a community area of rural farms plus an earthmoving company. On-site effluent disposal is utilised.

Waiharakeke:

The community of Waiharakeke is located on SHWY 25 some 4kms north of Whiritoa. This community is not a cluster of dwellings, but better described as a community area of rural farms plus a quarry. On-site effluent disposal is utilised.

11.3.5.6 Effluent Disposal Risks

Effluent disposal risks may include:

- Contamination of a waterway due to non-maintenance, overloading and high ground water level.

11.3.5.7 Resource Consents

The following excerpts are taken from the Proposed Waikato Regional Plan. Any resource consents have to abide by all the following excerpts in the Proposed Waikato Regional Plan.

11.3.5.8 Permitted Activity Rule - Discharge Of Domestic Sewage From Existing On-Site Systems (Method 3.3.5.8)

The discharge of domestic sewage effluent (including grey water but not including stormwater) into land from an on-site domestic sewage treatment and disposal system that was lawfully established or authorised before the date of notification of this Plan (28 September 1998), is a permitted activity subject to the following conditions:

- a) The volume of effluent to be discharged from any one system shall not exceed 1.3 cubic metres per day averaged over any one month period.
- b) There shall be no direct discharge of effluent into water.
- c) The minimum depth of unsaturated soil between the effluent disposal field and the water table shall be no less than 600 millimetres.
- d) The discharge shall not result in any objectionable effects from odour beyond the boundary of the subject property.
- e) For discharges from systems installed after 11 July 1994, the effective disposal area * for any treatment and disposal system shall be no less than 2,500 square metres.
- f) For discharge from properties which, at the date of authorisation of the system, exceeded 2,500 square metres, this rule shall not apply where, subsequently, the effective disposal area * is reduced to less than 2,500 square metres.
- g) For discharges from properties which, at the date of authorisation of the system, were less than 2,500 square metres, this rule shall not apply where, subsequently, the effective disposal area is reduced.
- h) The discharge shall not occur within 20 metres of a Significant Geothermal Feature.
- i) From 1 January 1 2006 the septic tank shall be fitted with an effluent outlet filter.
- j) There shall be no adverse change in ground water quality as a result of the discharge, or in combination with other discharges.

Advisory Notes:

- The process for assessing odour is specified under Section 6.4.1.3 of the Plan.
- Discharges of contaminants into or onto land within 20 metres of a Significant Geothermal Feature are addressed by the Rules 7.2.6.1 and 7.2.6.2 of this Plan.
- These existing systems will generally be adequate provided that land and soil conditions are suitable and that regular filter cleaning and desludging is undertaken.
- Should the treatment and/or disposal system fail to the extent that more than routine maintenance such as desludging and filter cleaning is required to reinstate the system, it will no longer comply with this rule and should be upgraded to meet the conditions of Rule 3.5.7.5 or 3.5.7.6.

11.3.5.9 Permitted Activity Rule - Discharge of Domestic Sewage From New On-Site Systems (Method 3.3.5.9)

The discharge of domestic sewage effluent (including grey water but not stormwater) onto or into land from an on-site domestic sewage treatment and disposal system lawfully established or authorised after the date of notification of this Plan (28 September 1998), is a permitted activity subject to the following conditions :

- a) The volume of effluent to be discharged from any one system shall not exceed 1.3 cubic metres per day averaged over any one month period.
- b) The minimum total septic tank size shall be no less than 3,000 litres.
- c) There shall be no direct discharge of effluent into water.
- d) There shall be a zone of unsaturated soil of no less than 600 millimetres between the base of the effluent soakage trench and the top of the water table at all times of the year.
- e) The discharge shall not result in any objectionable odour beyond the boundary of the subject property.
- f) The effective disposal area^{*} for any one treatment and disposal system discharge shall be no less than 2,500 square metres. The discharge shall no longer comply with this rule where the effective disposal area^{*} is subsequently reduced to less than 2,500 square metres.
- g) The sewage disposal system shall not be sited within 30 metres of a Natural State Water Body or Fisheries Class Water Body as specified in the Water Management Class Maps and 10 metres from any other surface water body.
- h) The sewage disposal system shall not be sited within 30 metres of a potable water supply well unless the well is drawing from a separate, confined aquifer.
- i) The discharge shall not occur within 20 metres of a Significant Geothermal Feature.
- j) The septic tank shall be fitted with an effluent outlet filter.
- k) There shall be no adverse change in ground water quality as a result of the discharge, or in combination with other discharges.

Advisory Notes:

- The process for assessing odour is specified under Section 6.4.1.3 of the Plan.
- It is recommended that on-site systems are designed, constructed, operated and maintained in accordance with (Auckland Regional Council 1994 On-site Wastewater Disposal From Households and Institutions – Technical Publication 58).

- Discharges of contaminants into or onto land within 20 metres of a Significant Geothermal Feature are addressed by the Rules 7.2.5.12 and 7.2.5.13 of this Plan.

11.3.5.10 Permitted Activity Rule - Discharge of Domestic Sewage From Improved On-Site Domestic Sewage Treatment and Disposal Systems (Method 3.3.5.10)

Except as provided for by Rule 3.5.7.5, the discharge of domestic sewage effluent (including grey water but not including stormwater) onto or into land from an on-site domestic sewage treatment and disposal system is a permitted activity subject to the following conditions:

- a. The volume of effluent to be discharged shall not exceed three cubic metres per day averaged over any one month period.
- b. The design, construction, operation and maintenance of the system shall meet the following standards:
 - i. pre-treatment of effluent to a standard not to exceed concentrations of 20g/m³ of Biological Oxygen Demand and 30g/m³ of suspended solids
 - ii. there shall be a zone of unsaturated soil as measured vertically between the bottom of the soakage field discharge line and the top of the ground water water table **at all times of the year**, which shall be no less than 600 millimetres for conventional trenches, beds and mounds, or 300 millimetres where dripper irrigation lines are used and the design loading rate for effluent disposal is less than five millimetres/day
 - iii. there shall be no adverse change of ground water quality as a result of the discharge, or in combination with other discharges
 - iv. there shall be no adverse change of surface water quality as a result of the discharge, or in combination with other discharges
 - v. there shall be no direct discharge of effluent into ground water or surface water.
- c. The discharge shall not result in any objectionable effects from odour beyond the boundary of the subject property.
- d. The sewage disposal system shall not be sited within 30 metres of a Natural State Water Body or Fisheries Class Water Body as specified in the Water Management Class Maps and 10 metres from any other surface water body.
- e. Written proof of compliance with this rule shall be provided to the Waikato Regional Council on request in the form of either:
 - i. certification by a person who is qualified and experienced in the field of on-site sewage treatment and disposal that the system will consistently satisfy the above standards taking into account the relevant site constraints, or
 - ii. documentation which demonstrates achievement of the standards.
- f. The discharge shall not occur within 20 metres of a Significant Geothermal Feature.

Advisory Notes:

- The process for assessing odour is specified under Section 6.4.1.3 of the Plan.
- Discharges of contaminants into or onto land within 20 metres of a Significant Geothermal Feature are addressed by the Rules 7.2.6.1 and 7.2.6.2 of this Plan.

11.3.5.11 Discretionary Activity Rule - Other On-Site Sewage Discharges (Method 3.3.5.11)

The discharge of domestic sewage effluent from on-site domestic sewage treatment and disposal systems onto or into land and any subsequent discharges of contaminants into air, in a manner which does not comply with Rules 3.5.7.4, 3.5.7.5 and 3.5.7.6 is a discretionary activity (requiring resource consent).

Exclusion to Rule 3.5.7.7:

Discharges of contaminants within 20 metres of Significant Geothermal Features are excluded from this rule. The effects of these activities are managed by Rules 7.2.6.1 and 7.2.6.2 of this Plan.

Advisory Note:

- Information requirements to enable the assessment of any application under this rule are set out in Section 8.1.2.2 of this Plan. In addition, assessment shall also take into account the matters identified in the policies in Section 3.5.3 of this Plan.

11.3.5.12 Prohibited Activity Rule – Discharges of Untreated Human Effluent to Water (Method 3.3.5.12)

The discharge of untreated human effluent to water is a prohibited activity.

Explanation and Principal Reasons for Adopting Methods 3.5.7.1 to 3.5.7.8

Method 3.5.7.1 and 3.5.7.2 promotes inter-agency integration. The management of on-site sewage discharges is a function that is shared by a number of agencies with overlapping responsibilities. Where a 'problem area' is identified, it is appropriate that Environment Waikato, the relevant territorial and health authorities and the community are all involved in addressing the issue. Reference to 'locally appropriate' solutions acknowledges that there is no single prescription for dealing with these issues and that community input to developing a solution is important. Environment Waikato acknowledges that the continued operation of on-site systems in some high-density areas may not be sustainable in the long term. In such circumstances, the appropriate course of action will be a Plan change allowing input from all potentially affected parties.

With regard to the administration of the regional rules for on-site sewage, territorial authorities have in the past provided a 'one stop shop' for people. This has involved combining an advisory and checking role with regard to the on-site sewage rules with their own building and drainage permitting functions. This has been an efficient and practical arrangement, which has suited both the territorial authorities and Environment Waikato. The general practice has been for territorial authorities to refer any matters to Environment Waikato if they consider that the applicability of the rule to a specific proposal is unclear, or if there are questions of rule interpretation. As part of implementing these methods, these administrative arrangements will need to be reviewed and formally agreed upon.

Method 3.5.7.3 indicates Environment Waikato's support for the development of codes of practice or 'good practice' guides that seek to avoid the adverse effects of on-site disposal. These are an effective method of improving practice particularly if their development involves input from both practitioners and planners in the field.

The permitted activity rules implement Policies 1, 2 and 3. Rule 3.5.7.4 applies to lawfully established systems which are in existence at the date of notification of

this Plan and allows those systems to continue to be used and maintained as long as a number of environmental standards are met. This is because it would be unreasonable to require all existing systems to be upgraded without direct evidence of their failure. The thresholds for volume and depth of unsaturated ground are based on the design assumptions that would have been applied when those systems were installed and represent a maximum reasonable flow rate from a large household or small institution. The minimum property size of 2,500 square metres is set at a level that should not lead to adverse effects on ground water quality provided the system is maintained. If the system is not being maintained adequately, the property size decreases so that the effective disposal area is less or the system fails completely owners will be required to upgrade their technology to meet the criteria provided by Policy 1.

Rule 3.5.7.5 sets out the requirements for new systems using old fashioned technology. These systems are still suitable in situations where the effective disposal area is large enough and located correctly and the system is subject to regular maintenance.

Rule 3.5.7.6 reflects the fact that modern on-site sewage treatment/disposal technology has made significant advances in recent years. Modern systems designed with regard to the range of site factors affecting performance, can overcome most of the problems associated with the use of standard septic tanks. Any system designed to take account of the various site factors and which can be demonstrated to achieve the environmental standards of Rule 3.5.7.6 should be permitted. These standards seek to prevent adverse affects on water quality and soils. In particular, they seek to protect existing uses of ground water and require no degradation of surface water quality.

Under this rule the maximum discharge volume of three cubic metres per day (condition a)) would provide for the equivalent of approximately 15 persons average occupancy. This rule caters for many small amenities such as motels and clubrooms. This volume is significantly higher than that allowed for household septic tanks. The difference reflects the comparative levels of risk associated with the different systems and the better performance that is expected from a site-specifically designed system. The specification of an upper volume limit in the rules is considered appropriate. Volumes greater than this (with proportionately greater potential adverse environmental effects) should be evaluated on a case-by-case basis through the consents process.

Documentation which demonstrates that the on-site effluent disposal system installed achieves the standards (condition e) may be in the form of a letter or certificate outlining the specifications of a system and compliance with the standards.

Rule 3.5.7.7 requires all other on-site sewage discharges that fall outside of the scope of the permitted activity rules to be assessed as discretionary activities in accordance with Policies 1 and 3 of this chapter. This provides for these discharges to be assessed against s104 of the RMA on a case-by-case basis. Rule 3.5.7.8 prohibits the discharge of untreated human effluent into water. This is necessary to address the potential adverse effects of such discharges, to ensure consistency with the manner in which untreated animal effluent is addressed in the Plan and to align the Plan provisions with marine pollution regulations.

Gunn, I. 1994: On-Site Wastewater Disposal From Households And Institutions. *Auckland Regional Council Environment Technical Publication no.58 (2nd ed.)*, Auckland Regional Council, Auckland.

From exerts above, it is assumed that resource consents are not required unless the average outflow of effluent is more than 3000 litres per day over an entire month.

Hauraki District Council is currently liaising and holding on-going discussions with Environment Waikato on some of the proposed conditions.

11.3.5.13 AS/NZS 1547:2000 Compliance

A detailed survey and investigation would need to be undertaken to ascertain any compliance variances to AS/NZS 1547:2000. However, it is estimated that a number of on-site disposal systems within the Hauraki District may not comply due to ground conditions, groundwater levels and/or proximity to waterways. Council is not intending to undertake such a survey in the near future.

11.3.5.14 System Capacity for Future Demands

The problem of on-site disposal of effluent is the cumulative effect of a large number of small discharges. Therefore, system capacity could be addressed at the time of building consent.

11.3.5.15 Existing System Life Expectancy

Life expectancy of on-site effluent disposal systems varies greatly from less than 10 years, to 50 years depending on ground and water level conditions as well as maintenance.

11.3.6 Current and Estimated Future Demands

It is estimated that the communities of Waikino, Karangahake and Mackaytown will require some type of small public reticulated system for each area sometime in the future.

Karangahake will be the community with the most demand due to the location of the Department of Conservation Reserve that is widely promoted as a one day walking reserve with various short duration activities. The current public toilet at times (weekends and public holidays) is having trouble coping with the influx of visitors travelling by car and bus. It is understood that the motor camp is installing an INNOfLOW recirculating textile packed bed reactor (rtPBR) within the next few months, and the café will also be installing a new system.

The east end of Waihi may be subject to an influx of residential development as Waihi expands. If this is so, then Waihi East will be incorporated into the Waihi public sewerage reticulation.

It is not expected that there will be any future extra demand on the general rural non-serviced areas apart from those mentioned above.

11.3.7 Options to Meet Demands and their Suitability

Karangahake would more than likely be split north and south due to the proximity of the Karangahake River dissecting the community. Each sub-community would require a separate reticulation and treatment facility maintained by the council. A small recirculating textile packed bed reactor (rtPBR) or similar like that proposed for the motor camp would suffice for each sub community.

Mackaytown could have two options; one of installing its own treatment facility, or two, pump through a rising main to Paeroa, a distance of 3kms, and into the Paeroa network. These options would need to be investigated.

11.3.8 Intended Role of the Hauraki District Council in Meeting the Demands

HDC does not see a need at this present time to instigate investigations into any of these options. The ratepayers would need to be seen as wanting council to pursue this area.

11.3.9 Hauraki District Council's Proposal for Meeting the Demands

HDC have no proposal for meeting these demands at this stage. This could be addressed if required by the ratepayer.

11.4 INDUSTRY & MANUFACTURING

11.4.1 Description

Industry and Manufacturing within the Hauraki District in this assessment excludes the hospitality industry. Examples are the shops and businesses in the town centres, Waihi gold mining, freezing works & service stations etc.

11.4.2 Methods Used to Dispose of Sewage

The bulk of the Industry and Manufacturing community is on a public reticulated sewage scheme. However, the minority of industry that are not are utilising on-site effluent disposal that may or may not be suitable to their particular use. As businesses are changed within a particular building, the sewage make up changes which could end up having an on-site effluent disposal option not suitable to the sewerage requirements of the business. This area has not been surveyed, therefore an in depth assessment has not been carried out.

11.4.3 Risks Attributable to the Absence of a Reticulated Sewerage Network

INDUSTRY and MANUFACTURING	Current probability of an event occurring	Current consequence of such an event occurrence	TOTAL current risk factor	Future probability of an event occurring	Future consequence of such an event occurrence	TOTAL future risk factor	Difference between Current and future risk
Septic tank failure	3	2	6				
Effluent field failure	3	2	6				
Overloading	2	2	4				
Spillage	3	2	6				
Seepage	3	3	9				
Contamination of a waterway	3	3	9				
Lack of maintenance	3	3	9				
Vegetation growth over effluent field	2	2	4				
Trade waste entering the septic tank	3	2	6				
Public health	3	3	9				

INDUSTRY and MANUFACTURING	Current probability of an event occurring	Current consequence of such an event occurrence	TOTAL current risk factor	Future probability of an event occurring	Future consequence of such an event occurrence	TOTAL future risk factor	Difference between existing and future risk
Unserviced	2.8	2.4	6.72				

11.4.3.1 Risk Assessment Conclusion

The community of industry and manufacturing has a reasonably high risk assessment for health and environmental impacts compared to other communities assessed. Refer to section 2.3 for overview.

11.4.4 Assessment of the Quality and Quantity of Discharged Wastewater

11.4.4.1 Collection and Treatment

From those in the industry and manufacturing community that are not on public sewerage reticulation and treatment, on-site effluent disposal by way of septic tanks with effluent disposal fields are the prevalent disposal method.

11.4.4.2 Operation and Maintenance

Maintenance appears to be as per other communities utilising on-site effluent disposal, that being at least 25% use septic tank pump out often indicating soakage field failure. A council run maintenance programme would be beneficial in these instances.

11.4.4.3 Treatment Process Effects

For those utilising on-site effluent disposal, treatment process effects are those as described under 11.3.5.3.

11.4.4.4 Effluent Disposal Type

The majority of effluent disposal in the Industry and Manufacturing community utilise public sewerage reticulation and treatment, however it is estimated that 25% utilise on-site effluent disposal as their primary sewage disposal option (septic tanks).

11.4.4.5 Effluent Disposal Risks

Effluent disposal risks for on-site effluent disposal may include:

- Contamination of a waterway due to non-maintenance, overloading and/or high ground water level.

11.4.4.6 Resource Consents

It is understood that resource consents are not required unless the average outflow of effluent is more than 3000 litres per day over an entire month.

11.4.4.7 AS/NZS 1547:2000 Compliance

A detailed survey and investigation would need to be undertaken to ascertain any compliance variances to AS/NZS 1547:2000. However, it is estimated that a number of on-site disposal systems within the Hauraki District may not comply due to ground conditions, groundwater levels and/or proximity to waterways. Council is not intending to undertake such a survey in the near future.

11.4.4.8 System Capacity for Future Demands

The problem of on-site disposal of effluent is the cumulative effect of a large number of small discharges. Therefore, system capacity could be addressed at the time of building consent.

11.4.4.9 Existing System Life Expectancy

Life expectancy of on-site effluent disposal systems varies greatly from less than 10 years, to 50 years depending on ground and water level conditions as well as maintenance.

11.4.5 Current and Estimated Future Demands

With council not undertaking any detailed investigation into current and future demands for this community, it is assumed that health guidelines or possible legislation may influence council's decision to further investigate options with regard to public health.

11.4.6 Options to Meet Demands and their Suitability

Options may include small diameter pressure reticulation with recirculating filter treatment system like the scheme council is presently constructing in Waitakaruru. This may also be eligible for government subsidy.

11.4.7 Intended Role of the Hauraki District Council in Meeting the Demands

Council has not formulated any intention to undertake a role at this present time.

11.4.8 Hauraki District Council's Proposal for Meeting the Demands

No proposal has been formulated at present.