

Regional Effluent Land Application Plan

Prepared by
the Southland Regional Council

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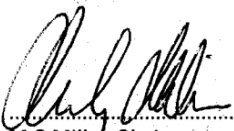
RESOURCE MANAGEMENT ACT 1991
SOUTHLAND REGIONAL COUNCIL
REGIONAL EFFLUENT LAND APPLICATION PLAN

It is hereby certified that this is a correct copy of the Regional Solid Waste Management Plan of the Southland Regional Council, as approved by a resolution of the Council on the 20th day of May 1998.


The Council has further resolved that the Plan shall become operative from the 30th day of May 1998.


.....
L R McKenzie
General Manager

The Common Seal of the Southland Regional Council
was affixed hereto this 20th day of May 1998,
in the presence of:


.....
M G Miller, Chairperson




.....
L R McKenzie, General Manager

Regional Effluent Land Application Plan for Southland

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1 INTRODUCTION

1.1 REGIONAL BACKGROUND

The manner in which effluent¹ and sludge² is treated and/or discharged can make a difference as to whether or not there is an adverse effect³ on the receiving environment. The discharge of effluent and sludge onto or into land is widely practised in the Southland Region. Where adequate pre-treatment is undertaken, and ground conditions are suitable, then it is unlikely that significant adverse effects will arise.

The Southland Region covers an area of approximately 2,030,000 hectares, over half of which is administered by the Department of Conservation (DoC). Of the DoC administered land approximately 11,680 hectares is used for farming through grazing leases (mainly for low intensity grazing). The remainder of the Southland Region (excluding urban areas) is generally devoted to agriculture. The agricultural land use is mainly pastoral, including sheep, beef and dairy. Other land uses include horticulture, cropping and exotic plantations.

Sheep farming is currently the dominant rural activity in the Region, although dairy farming has been undergoing a period of rapid expansion and intensification since 1992. The other main agricultural activities in the Region are goat, deer, pig and poultry farming.

The Southland Regional Council promotes discharges onto or into land rather than water⁴ and, consequently there are only 25 consents for the discharge of dairy effluent to water, out of a total of 400 dairy shed discharge consents issued as at May 1996. In May 1995, there were 35 consents to discharge dairy effluent to water, a reduction of 10 dairy shed effluent discharge to water consents in one year.

The Southland Region has a population of approximately 100,000 people, of which half are located in Invercargill. There are a number of smaller towns and communities throughout the Region. These centres range from rural service

¹ A liquid that may include solid components, discharged as a waste that originates from:

- a. sanitary appliances and fixtures
 - b. community sewage schemes
 - c. agricultural activities
 - d. an industrial or trade process
- but excludes solid waste.

² Sludge is the solid residues from effluent.

³ Effect includes:

- a. Any positive or adverse effect; and
- b. Any temporary or permanent effect; and
- c. any past, present, or future effect; and
- d. Any cumulative effect which arises over time or in combination with other effects- regardless of the scale, intensity, duration, or frequency of the effect, and also includes-
- e. Any potential effect of high probability; and
- f. Any potential effect of low probability which has a high potential impact

⁴ Water –

- a. means water in all its physical forms whether flowing or not and whether over or under the ground;
- b. includes fresh water, coastal water, and geothermal water;
- c. does not include water in any form while in any pipe, tank, or cistern.

centres to fishing communities to tourism-based communities. Only 19 of the approximately 80 settlements (including cities, towns and rural communities) have any sort of sewerage scheme. The remaining settlements and outlying residences rely mainly upon septic tanks for the treatment of their foul water (See Appendix D).

There is pressure to develop peri-urban areas, particularly surrounding Invercargill and Winton, and some coastal areas such as Colac Bay. This pressure is a result of more people aspiring to a rural lifestyle. Subdivision, particularly in the peri-urban areas (for example, Otatara) can result in significant cumulative adverse effects if the subdivision is not controlled. However, the control of subdivision is a territorial authority function, and cannot be fully addressed in this Plan.

Over the past ten years tourism numbers have grown in the Southland Region. This arises from increases in the number of international and domestic tourists visiting the Region, and in the number of Southlanders travelling within the Region. Increasing tourist numbers has placed an additional demand on toilet facilities, particularly at visitor centres, rest areas and huts on tramping tracks.

The increase in visitor numbers has also seen a corresponding rise in nuisance discharges and unauthorised discharges. Such discharges include all effluent and sludge discharges that are not permitted, or do not have a discharge consent and/or have an objectionable or offensive effect. Unauthorised or nuisance discharges are particularly noticeable where campervans and freedom campers discharge their waste at public rest areas or popular camping areas. Although these discharges are often minor in terms of volume, they have an adverse impact on the amenity values of an area, and have the potential to adversely effect human health. Unauthorised discharges from campervans and other mobile sources often indicate a lack of suitable toilet facilities or facilities to discharge chemical toilets (in campervans) into a proper dump station and/or knowledge of where they are.

Discharges from stock trucks transporting livestock can also cause a nuisance, particularly to other road users and pedestrians. These discharges can adversely affect amenity values. Effluent from stock trucks can also have an adverse effect on water quality and water ecosystems when it is washed off roads by rain, and enters a river, stream or drain as part of stormwater.⁵ However, the Transport Act 1962 specifically exempts stock effluent from being a load that must be secured whilst in transit. There is a New Zealand Standard (NZS 5413:1993) that covers the manufacture and use of stock crates on heavy vehicles. The Standard provides an economic incentive to adopt the standard, by allowing a slightly larger crate when complying with the standard. The standard sets out how effluent may be discharged, and how holding tanks are constructed. The standard does not require the use of holding tanks.

Although this Plan focuses on the adverse effects of effluent and sludge discharges, there are some beneficial effects. Effluent and sludge can be utilised as a source of nutrients for soils, and/or as a soil conditioner. In the future, it may be possible to utilise effluent and sludge as a fuel source, although some technological advancements would be required to achieve this.

⁵ Storm water will be addressed in the Regional Water Plan as drains and storm water discharges are more closely linked with that Plan.

Storm water – surface water runoff subsequent to precipitation which is either diffuse or discharged via a conduit directly from surface areas into a natural water course.

1.2 ISSUES

During the public consultation phase of the Southland Regional Policy Statement, and through subsequent consultation, a number of issues have been raised relating to the discharge of effluent and sludge onto or into land. Most of the issues raised refer to the effect of effluent and sludge discharges onto or into land on the soil ecosystem and the fact that, although the discharge is onto or into land, it can still adversely affect water quality and the water ecosystem. The main issues highlighted were:

- | | |
|--|--|
| 1. the degradation of ground and surface water quality from effluent and sludge discharge practices. | 1 –Issues 3.2.1, 3.2.2, 3.2.10;
Objectives 4.1.1, 4.1.2, 4.1.6 |
| 2. effluent and sludge discharges adversely affecting public health. | 2. –Issue 3.2.3
Objective 4.1.3 |
| 3. lack of information about adverse effects of effluent and sludge discharges. | 3. –Issue 3.2.4;
Section 7 |
| 4. lack of information about different effluent and sludge management systems appropriate to the Southland regional climate and soil types. | 4. –Issue 3.2.4;
Section 7 |
| 5. lack of information about the type of effluent and sludge being produced in Southland. | 5. –Issue 3.2.4;
Section 7 |
| 6. incorrect discharge of agricultural wastes onto or into land having an adverse effect on soil resources. | 6. –Issues 3.2.1, 3.2.2, 3.2.9, 3.2.11;
Objective 4.1.1 |
| 7. discharges of liquid trade waste, waste products and domestic sewage onto or into land, restricting the range of activities that can be carried out on the land, causing soil degradation and having adverse environmental effects. | 7. –Issues 3.2.1, 3.2.2, 3.2.3, 3.2.5,
3.2.6, 6.2.4, 3.2.7;
Objectives 4.1.1 – 4.1.6 |
| 8. flow on or indirect adverse effects on water from discharging effluent and sludge onto or into land. | 8. –Issue 3.2.2;
Objective 4.1.2 |
| 9. effluent and sludge from washing down vehicles on land adversely affecting water quality. | 9. –Issues 3.2.1, 3.2.2, 3.2.9;
Objectives 4.1.1, 4.1.2 |
| 10. cumulative adverse effects of discharges from sanitary appliances and fixtures ⁶ of the built environment. | 10. –Issues 3.2.1, 3.2.2;
Objectives 4.1.1, 4.1.2 |
| 11. inadequate community facilities to cope with effluent and sludge from those visiting an area. | 11. –Issues 3.2.1 – 3.2.3, 3.2.5 – 3.2.9;
Objectives 4.1.1 – 4.1.6 |

The above issues are addressed in a variety of ways throughout this Plan, including education, promotion, monitoring, research and the promotion of appropriate discharge facilities.

⁶ Sanitary fixture – any fixture which is intended to be used for sanitation.

Fixture – an article intended to remain permanently attached to and form part of a building.

Sanitation – the term used to describe the activities of washing and / or excretion carried out in a manner or condition such that the effect on health is minimised, with regard to dirt and infection.

In addition to the above issues, are the concerns of the takata whenua. Takata whenua believe in the holistic concept of the ecosystem, and therefore view any degradation in soil or water quality as a degradation to the ecosystem as an entity. To takata whenua any discharge of effluent and sludge into a water body is undesirable as it degrades the mauri, or life force, of the water body. Takata whenua are strong advocates for the discharge of effluent and sludge onto or into land rather than to water.

Consultation with the takata whenua of Southland has highlighted four main issues of concern to them with regard to the discharge of effluent and sludge. These are:

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. the discharge of human and animal waste into water. | <p>1. Issue 3.2.2;
Objective 4.1.2</p> |
| <ol style="list-style-type: none"> 2. the need to ensure that effluent and sludge discharges do not affect the amenity values of areas which are of cultural or historical significance to takata whenua. | <p>2. Issues 3.2.5, 3.2.6;
Objectives 4.1.4, 4.1.5</p> |
| <ol style="list-style-type: none"> 3. the need to protect the coastal environment from adverse effects due to discharges of effluent and sludge onto or into land. | <p>3. Section 8</p> |
| <ol style="list-style-type: none"> 4. the need to protect the health of the ecosystem. | <p>4. Issues 3.2.1, 3.2.2;
Objectives 4.1.1, 4.1.2</p> |

Consultation with takata whenua has led to their issues being incorporated throughout the Plan, rather than separated into a specific section. The Southland Regional Council considers this approach consistent with the holistic approach takata whenua take to resource management issues.

1.3 PURPOSE OF THIS PLAN

The purpose of this Plan is to avoid where practicable, remedy or mitigate the adverse effects on soil and water ecosystems from the discharge of effluent and associated sludges onto or into land. In some policies the phrase “avoid where practicable, remedy or mitigate is used. In those policies priority is being given to the need to avoid adverse effects. Only if this is not practicable are the options to remedy or mitigate to be used. While the intent of this Plan is to avoid where practicable, remedy or mitigate adverse effects in the future, it is acknowledged that there are existing situations which will require remedying. Studies commissioned by the Southland Regional Council have shown that land uses, such as the application of effluent and sludge onto or into land, can have an adverse effect on the receiving environment.

In particular it has been noted that nutrient enrichment of groundwater is often associated with effluent and sludge components, such as nitrates (Robertson & Ryder, 1993). Elevated nitrate levels have been recorded in shallow, unconfined groundwater underlying intensively farmed agricultural land in almost every instance that they are monitored (Rekker, 1994). Research into the Edendale aquifer has identified elevated nitrogen concentrations as the largest groundwater quality issue for the users of this water and noted that the identification of nitrogen leaching sources (such as effluent discharges) is central to any land use management aimed at protecting groundwater quality (Rekker, 1995).

Groundwater, once contaminated, is extremely difficult to restore and may provide a source of contamination for years to come. Surface water contamination can occur as a result of surface runoff or ponding of contaminants from the discharge

of effluent and sludge onto or into land. Some contamination of surface waters may occur as a result of recharge from contaminated groundwater. Also, the application of effluent and sludge onto or into land in a manner which does not have regard to site specific constraints such as soil type, may adversely effect the soil ecosystem and restrict the use of the soil for effluent and sludge discharges, or any other use.

This Plan is not the only mechanism for the management of effluent and sludge in the Region, as there are other regional plans established under the Resource Management Act 1991 and other legislation which also places controls on effluent discharges. For information purposes, other regional plans are outlined in Section 1.4 - Plan Application and other legislation is outlined in Section 2.1.3 - Other Relevant Legislation.

1.4 PLAN APPLICATION

This Plan applies to all existing and future discharges of effluent and sludge onto or into land⁷ which:

- currently have resource consents under the Resource Management Act 1991.
- will require a resource consent for discharges onto or into land under the provisions of this Plan.
- will be permitted under the provisions of this Plan.
- will be prohibited under the provisions of this Plan.
- may affect Southland's Coastal Marine Area⁸

This Plan provides and promotes a framework for effluent and sludge discharge practices that impact on the sustainable management of the natural and physical resources in the Southland Region. It deals specifically with the discharge of effluent and sludge onto or into land. This Plan does not cover the direct discharge of effluent and sludge (treated or untreated) to water bodies as that will be covered by a Regional Water Plan and does not cover the direct discharge of effluent and sludge to the coastal marine area as that is covered by the Regional Coastal Plan.

In particular this Plan has been prepared to address section 15 of the Resource Management Act 1991.⁹ Section 15(1) requires that discharges onto or into land in circumstances which result in the contaminants entering water; and discharges from industrial and trade premises onto and into land, are not permitted unless expressly allowed by a rule in a regional plan and in any relevant proposed regional plan, a resource consent or regulations. Discharges onto or into land from

⁷ Land - Any land, excluding -

- (a) the bed or foreshore of the Coastal Marine Area;
- (b) the bed of a river or lake;
- (c) wetland;
- (d) the airspace above land

⁸ This Plan does not apply in the Coastal Marine Area. However, discharges onto or into land that may affect the Coastal Marine Area are covered. This is a cross-boundary (administrative) issue.

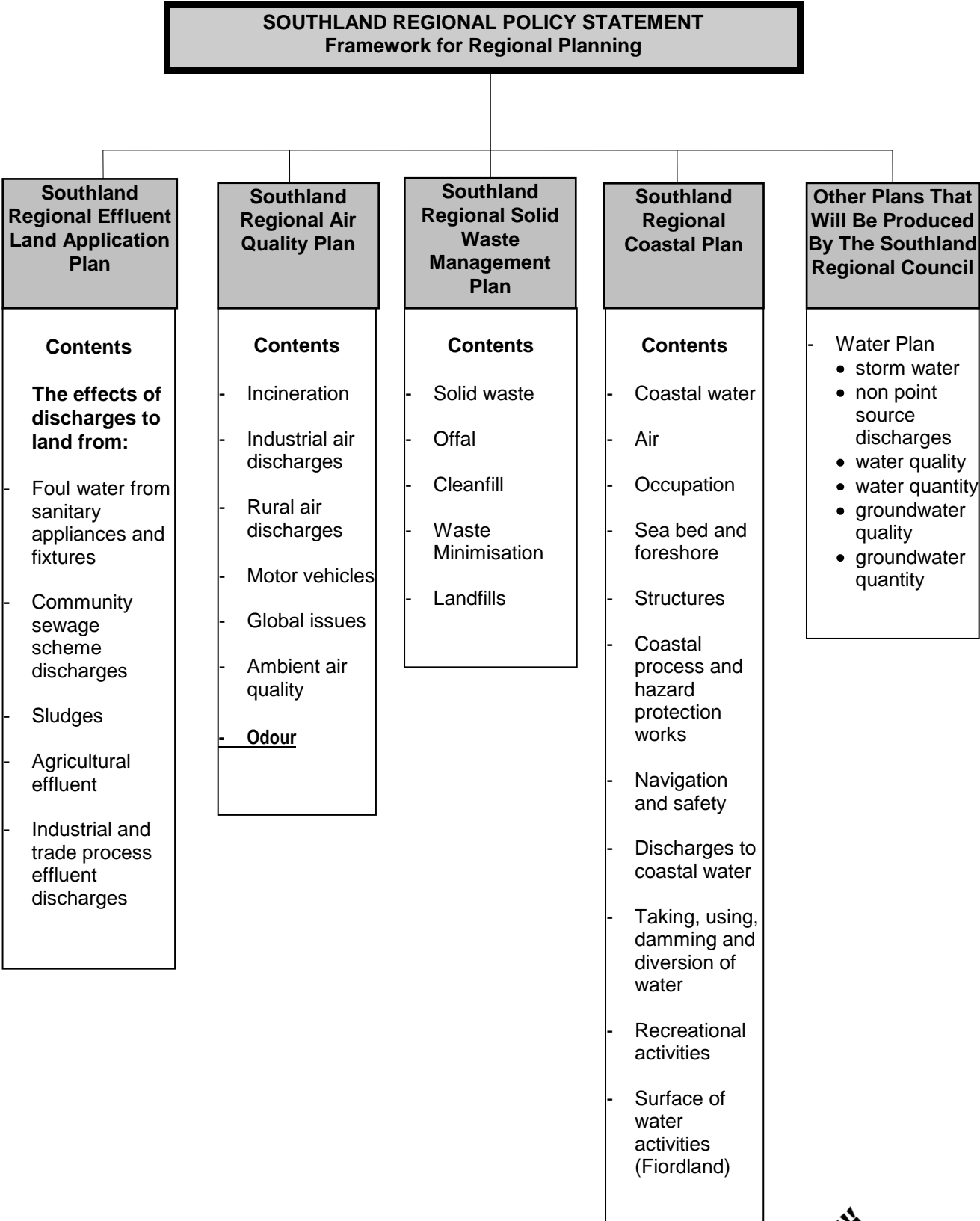
⁹ This Plan only deals with effluent: for other discharges such as solid waste, readers should refer to the Regional Solid Waste Plan and, for discharges to air, the Regional Air Plan should be referred to.

any other place or any other sources are allowed by Section 15(2), unless controlled by a rule in this, or any other, Plan.

This Plan has been developed in accordance with Sections 30 and 67 of the Resource Management Act 1991 which govern the functions of regional councils and the contents of regional plans.

It is also recognised that poorly designed or operated effluent and sludge disposal schemes can result in effluent and sludge flowing quickly from land into water. Effluent and sludge flows containing nutrients can promote noxious algal and fungal growths, reducing water quality and degrading the natural character of the ecosystem, its habitat and amenity values.

Relationship between planning documents being produced by the Southland Regional Council



1.5 FRAMEWORK OF THIS PLAN

Reliance on the variety of legislation that places controls on effluent and sludge discharges, the enforcement procedures available under that legislation, and the Resource Management Act 1991, may result in a piecemeal and unsatisfactory handling of the issues outlined in Section 2.2. It is therefore considered that the preparation, implementation and administration of a Regional Plan is the most appropriate method for managing the application of effluent and sludge onto or into land.

In this Plan, the management of the application of effluent and sludge onto or into land has been discussed in terms of the following five topic areas:

- Foul Water from Sanitary Appliances and Fixtures
- Community Sewage Scheme Discharges
- Sludges
- Agricultural Effluent
- Industrial and Trade Process Effluent Discharges

Where there is a discharge of both foul water from sanitary appliances and fixtures and effluent from industrial and trade processes¹⁰ through the same system in conjunction with each other, the discharge will be considered under the Industrial and Trade Processes rules of this Plan. Where there is no industrial or trade process effluent discharged from industrial and trade premises, the foul water being discharged will be considered under the Foul Water rules of this Plan.

In giving effect to the issues in the Southland Regional Policy Statement that relate to effluent management (outlined in Section 2.2), a framework of using the above topic areas has been adopted in this Plan. The topic areas have similar issues, objectives, policies and methods, therefore, the chapters relating to these address the topic areas together. Separate sections within the rules chapter (Chapter 5) identify particular rules for a single topic area.

¹⁰ Refer to section 3.1.5 for a description of effluent from industrial and trade processes.

2 LEGISLATION

2.1 STATUTORY FRAMEWORK

Effluent discharges are governed by several pieces of legislation in New Zealand. However, as this plan is developed under the Resource Management Act 1991, it can only deal with functions under the Resource Management Act 1991. For information purposes, the most relevant statutes relating to effluent and sludge discharges, and their respective administration and implementation authorities, are given below:

2.1.1 RESOURCE MANAGEMENT ACT 1991

The purpose and principals of the Resource Management Act 1991 are identified in Section 5 of the Act. The main function identified in the Resource Management Act 1991 of particular concern to regional councils with regard to effluent and sludge is the discharge of contaminants¹¹ into the environment (Sections 15 and 30). There is also provision in the Resource Management Act 1991 for Regional Plans to contain rules to govern activities and require consents for specified activities. This Regional Effluent Land Application Plan has been prepared under the Resource Management Act 1991.

2.1.2 RESOURCE MANAGEMENT ACT 1991 ROLES

The following is an outline of the statutory roles of Central Government and the Southland Regional Council under the Resource Management Act 1991:

Central Government- Ministry for the Environment

The Ministry for the Environment is the lead agency for sustainable resource management policy at Central Government level. The Ministry provides information on national soil and water quality issues and monitors compliance with national policies. It is expected that the Ministry will take a proactive role in preparing environmental standards and guidelines, promoting good effluent discharge practices, and public education.

Southland Regional Council

The Southland Regional Council has a role to prepare, implement and administer any plans which it deems necessary in order to carry out its functions. These functions include controlling discharges of contaminants onto or into land, air or

¹¹ Contaminant – includes any substance (including gases, liquids, solids and micro-organisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar or other substances, energy or heat –

- a. when discharged into water, changes or is likely to change the physical, chemical or biological condition of water; or
- b. when discharged onto or into land or into air, changes or is likely to change the physical, chemical or biological condition of the land or air onto or into which it is discharged.

water in order to give effect to the Resource Management Act 1991. The Southland Regional Council also has a role promote sustainable effluent and sludge discharge practices and concepts; and in general ensure that any adverse environmental effects relating to effluent and sludge discharges are avoided, remedied or mitigated.

2.1.3 OTHER RELEVANT LEGISLATION

For information purposes, the most relevant legislation relating to the discharge of effluent and sludge onto or into land is given below:

Health Act 1956

This Act gives territorial authorities, or the Medical Officer of Health on behalf of the local authority, the power to abate any statutory nuisances as defined by Section 29 of the Health Act 1956.

Section 23 of the Act allows every territorial local authority to make bylaws for the protection of public health. This Act is administered by the Ministry of Health and implemented by staff of territorial authorities and designated officers, the Medical Officer of Health and Health Protection Officers employed by the Public Health Service.

Building Act 1991

The Building Act 1991 requires all buildings to meet certain performance criteria. Where community sewage schemes are not provided, the foul water drainage system is considered to be part of the building. An appropriately designed and constructed foul water drainage system must be included in order for the building to comply with the Building Act 1991. Administration of this Act is carried out by the Department of Internal Affairs. Implementation of this Act is carried out by territorial authorities for all areas excepting the Coastal Marine Area which is implemented by regional authorities.

Local Government Act 1974

The Local Government Act 1974 gives territorial authorities the power to make such bylaws as necessary to conserve public health, well-being, safety and convenience (among other things). The Act also gives local authorities the power to undertake works, for example, sewage treatment facilities. Administration of this Act is carried out by the Department of Internal Affairs. Implementation of this Act is carried out by territorial and regional authorities.

Health and Safety in Employment Act 1992

All employers must comply with this Act in terms of the working environment provided for employees. This may include provisions for foul water drainage systems. Administration of this Act is carried out by the Department of Labour and implementation is by the Department's Occupational Health and Safety section.

Historic Places Act 1993

This Act has a specific relationship with the Resource Management Act 1991, and in particular requires regional councils to have regard to any relevant entry in the Historic Places Register when preparing or changing a regional policy statement or regional plan (Sections 61(2)(a)(ia) and 66(2)(c)(ia)). Territorial authorities must

have regard to any relevant entry when preparing or changing a district plan (Section 74(2)(b)(iia)). Any consent authority receiving an application for a resource consent must notify the Historic Places Trust if the application affects any place or area on the Register (Section 93(1)(c)). Administration of this Act is carried out by the Department of Conservation, and implementation is carried out by the Historic Places Trust.

2.1.4 ROLES UNDER OTHER LEGISLATION

For information purposes, the roles which territorial authorities, the Department of Conservation, and the Ministry of Health have under other legislation in the area of effluent and sludge discharge are given below, together with the role which the wider regional community can play with regard to effluent and sludge management:

Southland Territorial Authorities

Southland's three territorial authorities have a role, within their districts, to provide for the health and well-being of their population; promote the sustainable management of their resources; ensure that any public health nuisance effects relating to the discharge of contaminants to land are avoided and enforce applicable legislation, such as the Health Act 1956 and the Building Act 1991.

Department of Conservation

The discharge of effluent and sludge to land can enter wetlands, fresh water and the Coastal Marine Area. The Department, together with the Southland Regional Council has responsibility for managing the Coastal Marine Area under the Resource Management Act 1991. In addition, the Department of Conservation has overall responsibility for managing indigenous freshwater fisheries and freshwater fish habitats under the Conservation Act, and for managing wildlife under the Wildlife Act.

Ministry of Health

The Ministry is accountable to the Minister of Health for discharging the Crown's responsibilities for health regulations. Through the contractual chain, designated officers who are employed by the Public Health Service provide public health regulatory services through the enforcement of public health law in its health district, to avoid potential public health risks by promoting good effluent and sludge management practices.

Regional Community

The regional community is made up of all the individuals, organisations and industry sectors that either reside or conduct their business in Southland. Individuals can play an important role with regard to effluent and sludge management, particularly through the correct installation and operation, or management, of a specific domestic foul water drainage system. Education is necessary to enable private individuals to make informed choices and assist them in avoiding, remedying or mitigating any adverse environmental effects associated with their actions.

Industrial and trade organisations can also play an important role in effluent and sludge management, particularly through the management of any effluent and sludge discharges which may result from their processes. Industry must

responsibly manage discharges in order to meet environmental and economic goals.

The Department of Conservation has a statutory role to advocate for the protection of natural and historic values. The Southland Fish and Game Council has a statutory role to advocate for the protection of fish and game species and their habitats. In relation to this Plan, these roles particularly relate to the adverse effects of effluent and sludge discharges.

2.2 SOUTHLAND REGIONAL POLICY STATEMENT

Under the Resource Management Act 1991 every regional council is required to prepare a Regional Policy Statement which gives an overview of the main resource management issues in the Region and how they are to be dealt with. While there is no specific section dealing with effluent and sludge discharges in the Southland Regional Policy Statement, issues, objectives, policies and methods concerning effluent discharges can be found in sections:

- 5.5 - water quality
- 5.6 - lakes, rivers and wetlands
- 5.8 - soils
- 5.10 - built environment
- 5.11 - transportation
- 5.13 - coast

The following are excerpts from the relevant issues, objectives, policies and methods concerning effluent discharges which can be found in specific sections of the Southland Regional Policy Statement.

Section 5.2 - Biodiversity

Issue 3

Biodiversity within individual ecosystems can be adversely affected by activities, and the effects of activities, including:

- *inappropriate land use practices; ...*

Policy 2.4

Avoid, wherever practicable, remedy or mitigate adverse impacts on biodiversity and the natural processes of ecosystems.

Policies 4.1.1, 4.1.2, 4.1.6

Section 5.5 - Water Quality

Issue 2

Water quality can be affected in both a positive and negative way by a wide range of events and activities, including:

- *sewage disposal, either treated or untreated*
- *industrial waste water disposal*
- *agricultural waste water disposal, for example, dairy sheds*
- *animal waste*

Issue 3

Insufficient regard is given to the range of options available for the alternative means of treatment of waste and the alternatives for its subsequent discharge to different receiving environments.

Objective 5.2

To ensure that in the use and development of water and land resources, and the discharge of contaminants, water quality is maintained and wherever practicable enhanced.

Objective 4.1.2

Policy 5.4

Utilise land treatment of liquid wastes where this can be undertaken in a sustainable manner and without significant adverse environmental effects.

Policies 4.2.2, 4.2.5

Policy 5.5

In preparing, implementing and administering Regional and District Plans and in considering resource consents, local authorities shall assess the effects of landuse and development on groundwater and surface water quality, including both point and non-point source discharges and provide for any adverse effects to be avoided, remedied or mitigated.

Policies 4.2.2, 4.2.3

Section 5.6 - Lakes, Rivers and Wetlands**Issue 5**

In managing surface water, difficulties have arisen in balancing the needs and interactions of many parts of a complex and dynamic system. ... The system is modified by social and cultural systems, and their associated activities, in particular, ... treatment and discharge of effluent.

Objective 6.4

To avoid wherever practicable, remedy or mitigate, the adverse effects of activities in, on, under, adjacent to, or over the beds of lakes, rivers and wetlands.

Objective 3.2.2

Policy 6.11

Manage the effects of activities that could adversely impact on the quality and quantity of waters in rivers and lakes used for public and rural water supplies, and the structures used to draw such waters.

Policies 4.1.2, 4.1.3

Issue 9

Agricultural runoff and inappropriate riparian management can adversely affect water quality, wetlands and estuaries.

Section 5.8 - Soils**Issue 1**

The long term sustainable management of the most versatile soils in the Region may be compromised by activities and the effects of activities undertaken.

Issue 2

Although appropriate in many cases, the discharge of liquid trade wastes, chemicals, waste products and domestic sewage to land, for example, sludge onto land and waste lubricating oils onto roads, can restrict the range of activities that can be carried out on the land, cause soil degradation and have adverse environmental effects. In the extreme, the contamination of soils restricts their use and may have other effects, for example, on water quality

and health.

Issue 4

The incorrect disposal of agricultural wastes to land, including dairy and piggery shed effluent, offal pits and silage pit leachate, can have adverse effects on soil resources.

Issue 11

Wahi tapu and wahi taoka are not being protected from the effects of activities on the land.

Objective 8.1

To promote the sustainable management of all soils.

Objective 4.1.1

Objective 8.4

To avoid the contamination of soils

Objective 4.1.1

Objective 8.5

To avoid, remedy or mitigate any adverse effects of the use or development of land on wahi tapu, wahi taoka and archaeological sites.

Objective 4.1.5

Policy 8.1

Maintain and enhance Southland's soil resource by avoiding, remedying or mitigating the adverse effects of activities.

Policy 4.2.1

Policy 8.2

Provide for the sustainable management of the most versatile soils of the Region.

Policy 4.2.1

Policy 8.5

Promote land use practices which avoid the contamination of soils.

Policies 4.2.1, 4.2.2

Section 5.10 - Built Environment

Issue 5

The cumulative adverse effects of components of the built environment can be significant, even if the individual effects appear insignificant.

Objective 10.5

To minimise the adverse effects of the built environment on natural and physical resources.

Objective 4.1.4

Section 5.11 - Transportation

Issue 1

All forms of transportation can give rise to adverse effects, for example:

- *Waste from animals being carried on stock trucks causes a nuisance to other road users when disposed onto the road, and lowers water quality in the vicinity.*
- *Waste from the practice of washing down trucks lowers water quality in the vicinity.*

Policy 11.8

Minimise the adverse effects of waste discharges on water quality from vehicles carrying stock or passengers, campervans and vehicle washing facilities on water quality.

Policies 4.2.11, 4.2.12, 4.2.16

Section 5.13 - Coast

Issue 1

Adverse effects arise because the interaction between activities on land and on water is not given adequate recognition.

Issue 3

Industrial, refuse disposal site, stormwater and sewage discharges and agricultural runoff adversely impact upon water quality, ecosystems, amenity and estuarine values, limit opportunities for recreational activities and adversely affect the suitability of shellfish for human consumption.

Objective 13.5

To facilitate integrated management of the land and coastal marine area interface.

Objective 13.8

To maintain or enhance the quality of coastal waters to a level which is suitable for -

- (a) contact recreation;*
- (b) the growth of shellfish, the human consumption of which is not limited by pathogenic or chemical contamination;*
- (c) the health and vitality of aquatic organisms.*

Policy 13.13

Promote the adoption of systems for the discharge of wastes and contaminants which have the least adverse effects.

Objective 4.1.3

Policies 4.2.11, 4.2.12, 4.2.13, 4.2.16

The issues relating to the discharge of effluent and sludge onto or into land, and outlined above are addressed in the objectives, policies and methods in this Plan.

Section 67(2) of the Resource Management Act 1991 requires that this Regional Plan shall not be inconsistent with the Regional Policy Statement. In that regard, the Regional Policy Statement provides the framework for the preparation, implementation and administration of this Plan.

3 BACKGROUND & ISSUES

3.1 BACKGROUND

3.1.1 FOUL WATER FROM SANITARY APPLIANCES AND FIXTURES

Foul water discharges are discharges from sanitary fixtures and appliances and exclude any type of sludge. The conveyance of this foul water to an outfall, including any treatment, is via a foul water drainage system.

Foul water drainage systems range from older single stage systems with soak holes or a soakage field, through to the more modern three stage systems with dosed soakage fields. The most dominant system used in Southland incorporates a single septic tank. As foul water technology improves, the options available for foul water discharges increase.

The single stage tank, which is still common in Southland, does not produce reliably good quality septic tank effluent. High levels of suspended solids in the effluent, gross sludge overflow from the tank, and large particle passage through the tank are all possible (Graham, 1993). A lack of maintenance compounds problems experienced with single stage septic tanks.

In Southland it is apparent that there are problems associated with some foul water discharges. In January/February 1995 an Invercargill City Council survey of 291 properties with on-site foul water drainage systems in the Invercargill peri-urban area indicated that at least 20% of those systems were not treating the effluent to a satisfactory standard. Some soakage fields appeared to cross into neighbouring properties and there appeared to be a lack of understanding or knowledge of the foul water drainage system.

Similar surveys were carried out on Stewart Island in 1987 and 1990. The Stewart Island surveys showed a 33% failure rate. While the surveys were of a general nature and only covered a limited area, the problems highlighted could be indicative of the wider Southland Region.

Disposal of foul water from trampers' huts and other facilities in remote areas with high natural value (for example Fiordland National Park and Stewart Island) can become a significant issue if visitor numbers rise. Problems have been experienced at Milford Sound in the past because visitor numbers have exceeded the capacity of the original foul water drainage systems, in an area where expectations of a relatively pristine environment remain high.

Functioning foul water drainage systems which are poorly designed, managed and monitored have the potential to contaminate water, particularly groundwater. They can compromise the life supporting capacity of the soil ecosystem, and may also give rise to noxious, offensive or objectionable effects. Adverse health effects can also arise from contact with soil that is contaminated with foul water.

The community, and takata whenua in particular, have concerns relating to the discharge of human excrement into water. It is therefore important that foul water discharged onto or into land avoids where practicable, remedies or mitigates any adverse effects on water quality and water ecosystems.

Unauthorised discharges of effluent from mobile and static sources can have adverse effects, and can be particularly offensive. Examples of mobile sources include campervans, caravans, mobile shops, trains and buses. However, it is noted that Tranz Rail intends to have retention toilets installed in all long distance carriages by the end of 1998. Static sources include porta-loos and holding facilities. As both domestic and international tourist numbers increase throughout the Region, the potential for an increase in this problem is significant.

In order to ensure that foul water drainage systems function properly, a number of factors have to be addressed including:

Design

Essentially, a foul water drainage system can be designed and constructed to suit almost any site. There is a wide range of foul water drainage systems available, including three chamber septic tanks and package treatment plants. Each design must address site specific constraints. These constraints include depth to the water table, slope, soil type, permeability, size of the soakage field and expected volume of septage as well as the density of development.

System management

Foul water drainage systems need to be managed to ensure that failure does not occur. Good management includes:

- proper installation
- regular maintenance
- operation within design parameters
- protection of the soakage field

Regular maintenance is needed to ensure that the system will perform the function for which it is designed. Lack of maintenance is often a major reason for failure. The frequency and nature of maintenance will vary depending upon the design of the system. For example, a pit privy (longdrop) needs less maintenance than a single stage septic tank. Maintenance includes desludging and inspection for leakage, as well as maintenance of the soakage field.

Each foul water drainage system is designed to cope with a particular type or volume of effluent. For example, a three stage septic tank system can cope with a greater volume and wider range of effluent components than a single stage septic tank. Care must be taken by the operator so that inappropriate substances such as strong detergents, fats, chemicals and stormwater are not allowed to enter the system as they may overload the system, or adversely effect the efficiency of the system.

The soakage field is an integral part of the whole system and must be protected. If soil is lost, or biological activity within the soil ecosystem is inhibited in the soakage field area, the ability of the soil to act as a treatment medium will be reduced. Building on the soakage field, or any activity which removes soil or damages the soil ecosystem, should therefore be avoided.

Monitoring

It is necessary to monitor the performance of foul water drainage systems so that adverse effects on the environment are avoided where practicable, remedied or mitigated. Currently, there is no integrated monitoring of foul water discharges in Southland and as a result, current designs are based on empirical evidence and extrapolation of evidence from other regions or countries. Although some of this evidence may be valid, it is not an ideal situation.

Southland experiences relatively unique weather conditions, with a cool climate resulting in low evapotranspiration during winter and moderate rainfall in most areas and often in high groundwater tables and saturated soils. The climate has an influence on the biological activity in the soil ecosystem. Generally, the cooler temperatures experienced in Southland results in slower rates of decomposition. It is important that an accurate set of data is collected which reflects the Southland situation with regard to foul water discharges.

3.1.2 COMMUNITY SEWAGE SCHEME DISCHARGES

There are only three community sewage schemes¹² in Southland that discharge onto or into land (refer to Appendix D). These facilities are at Waikaka, Omaui and Riverton East. The Southland District Council has consent to discharge treated sewage to land as part of a proposed scheme for Oban, Stewart Island.

A number of community sewage schemes in Southland are either at or near capacity, for example Gore. Wyndham is an historic anomaly whereby septic tank treated effluent is discharged to the Maitai River through a series of stormwater drains.

Further pressure is being placed upon community sewage schemes with the encouragement of new industry and tourist numbers into Southland. As a result, new or larger facilities may be required.

There is increasing pressure for sewage to be treated and discharged onto or into land rather than into water. Takata whenua have stated that the discharge of human excrement into the water ecosystem is a significant concern. These concerns have been reflected in the New Zealand Coastal Policy Statement and the Southland Regional Policy Statement, both of which encourage the discharge of effluent to land rather than water.

The quality of the effluent discharged is influenced by a variety of factors, including design, management and the waste stream being received by the system.

Design

A community sewage scheme should be designed to reduce the effect of the discharged sewage flow on the environment by progressively treating the sewage at a number of levels. The level of treatment for which the facility should be designed depends upon the nature of the receiving environment and the desired quality of the discharge. The design of each system is site specific and depends on the characteristics of the sewage flow and the

¹² A community sewage scheme means a scheme that collects and discharges sewage from more than three sites which are predominantly residential housing, but may also include a component of industrial and trade process effluent. Generally a community sewage scheme is operated by a local authority or a company contracting to the local authority.

sensitivity of the receiving environment.

Facility management

The management of a community sewage scheme includes the operation and regular maintenance of the site as well as the development and implementation of contingency plans and back up systems. All such schemes should be maintained and operated by suitably qualified personnel.

Contingency plans and back up systems should include:

- equipment failure
- significant alterations in sewage quality and quantity.

Influent

Influent, or the waste stream which is entering the sewage scheme, is important with respect to the ability of the scheme to operate efficiently and effectively. For example, large volumes of storm water entering the system will reduce the retention times of the sewage. This will result in a reduction in the quality of the effluent being discharged. Chemicals and trade wastes which the sewage scheme is not designed for, entering the system, may alter the chemical balance and place the biological components of the scheme under stress, resulting in a reduction of effluent quality. No Southland territorial authority has in place trade waste bylaws, or the ability to monitor what effects the influent stream is having on the resulting discharge from their schemes.

Monitoring

Regular monitoring is needed to ensure that a sewage scheme is working efficiently and effectively. The waste stream entering the system needs to be monitored so that any changes can be detected at an early stage. The different stages in the scheme should be monitored regularly to ensure that the resulting effluent will be of the desired quality.

3.1.3 SLUDGES

Although a wide variety of sludges are produced in Southland, there is only limited information about their volume, nature and where they are discharged. For example, only a small percentage of the Region's septic tank sludge is discharged into community sewage schemes. Invercargill City accepts 50 loads per month and Southland District only approves about 12 loads annually. Coupled with this is the fact that there are only a limited number of authorised sludge discharge sites in Southland, for example, Mataura Paper Mill and Prime Range Meats.

Sludges can generally be grouped into human, agricultural, industrial and trade, and other sludges. Other sludges include grease trap sludges, oil and sediment type sludges. Each sludge grouping has its own set of potential adverse effects.

Human sludges are those sludges that are collected from foul water drainage systems, or are produced in a community sewage scheme. Human sludges can contain a wide variety of pathogens including bacteria, viruses, fungi and parasite eggs. These originate largely from the human population that produce the sludge. The pathogens contained in this type of sludge can pose a significant risk to human health, and as such, their discharge onto or into land must be undertaken in a manner that reduces any risk to human health. Human sewage sludge can also have beneficial effects as well. If applied correctly, human sewage sludge can act as a low grade fertiliser and soil conditioner. The sludge assists in the build up of humic material and organic matter which in turn promotes the development of soil structure.

Agricultural sludges are those sludges produced as a result of agricultural activities and generally result from the collection and/or temporary storage of animal effluent. Agricultural sludges can contain pathogens that pose a risk to both human and animal health. Agricultural sludges can contain higher levels of organic contaminants. If the organic sludge is applied in an appropriate manner it can be beneficial as a soil conditioner, but if these contaminants are discharged at too high a rate, the soil ecosystem may become overloaded, and the living organisms in the soil will be unable to process all of the contaminants. If this occurs, there is potential for the contaminants to adversely affect the life supporting capacity of the soil ecosystem, and/or leach into water, and consequentially, adversely affect the water ecosystem. If the loading rates are too high, overland runoff may also occur, resulting in surface water contamination.

A wide variety of sludges are produced as a result of industrial and trade processes.¹³ These sludges can range from relatively inert to highly toxic, containing heavy metals, hydrocarbons and other contaminants. The toxicity of a sludge is dependent on the process from which it originates. The potential adverse effects of discharging sludges that result from industrial and trade processes are dependent on the particular sludge, and the manner in which it is discharged.

Other sludges include grease trap sludges, oil and sediment type sludges, for example, sediment sludges resulting from the cleaning of water tanks. These sludges vary in both volume and nature and, consequentially, their potential adverse effects also vary considerably.

Although discharging sludges onto or into land, with appropriate controls, is acceptable in many instances, it is preferred that sludges are discharged into an appropriately designed facility. Such a facility would include, but not be limited to landfills, sewage schemes, a dedicated treatment facility or a containment facility. However, there are large areas of Southland where, due to distance constraints, or a lack of appropriate facilities, it is not practicable to take sludges to an appropriately designed facility.

Takata whenua have concerns regarding the loss of mauri, or life force, of ecosystems. The potential toxicity of some sludges may adversely impact on the mauri of an area, so care must be taken when discharging sludges. There is also a potential for impacting on wahi tapu and other culturally significant sites .

3.1.4 AGRICULTURAL EFFLUENT

Agriculture is the major land use in the Southland Region. The discharge of agricultural effluent onto or into land does not include agricultural sludges as these are dealt with as sludges. Agricultural effluent includes wastes containing contaminants which are predominantly organic in nature and derived from either pastoral or horticultural farming. Agricultural effluent usually contains a mixture of contaminants which may include animal faeces, urine, spilt milk, feed, detergents and animal health remedies. Sources of agricultural effluent include:

- dairy sheds
- piggeries
- wintering pads¹⁴

¹³ Industrial and trade process includes every part of a process from the receipt of raw material to the dispatch or use in another process or disposal of any product or waste material, and any intervening storage of the raw material, partly processed matter or product.

¹⁴ Wintering pad – a purpose-built area on production land for confining stock in order to avoid damage to pasture, and for feeding out supplements during periods when soils

- feed lots¹⁵
- dipping
- silage pits
- bulb washing
- vegetable washing

The presence of bacterial organisms, and in some cases viruses, in agricultural effluent creates the potential for animals and humans to contract a variety of diseases, such as brucellosis or leptospirosis. High quantities and/or concentrations of such effluent also has the potential to adversely effect both soil and water ecosystems.

Monitoring undertaken by the Southland Regional Council indicates a general trend of decreasing water quality as land use intensifies. Elevated nitrogen levels are recorded in shallow, unconfined groundwater underlying intensively farmed agricultural land in almost every instance that they are monitored (Rekker, 1994). Research has indicated that a properly designed and managed agricultural effluent discharge system will not contribute to these elevated levels.

In the past, many discharges of agricultural effluent associated with animals were directed to water. Pre-treatment of agricultural effluent became wide spread as the adverse effects of these practices became apparent, and awareness of environmental issues increased. Pre-treatment was primarily by way of a two pond anaerobic system. Although this system was an improvement, design limitations and overloading often led to failure. The partially treated effluent was still discharged to water in most instances.

The discharge of agricultural effluent onto or into land using the system of slow rate land treatment is the predominant effluent discharge method currently used in Southland. This system involves the discharge of effluent onto or into land at a rate where the soil can assimilate the nutrients into a form which can be utilised by plants, while avoiding any adverse effects on water quality. This system is sustainable in the long term and allows the effluent to be utilised as both a fertiliser and a soil conditioner.

Although there are benefits to this method of agricultural effluent discharge, there is still only a limited amount of information relating to the environmental effects, and more particularly, the volumes and rates of discharge that are suitable for any given area, or soil type. Given these information constraints, controls are still required to ensure that the application is undertaken in such a manner as to avoid potential human and animal health problems, as well as any potential adverse effect on the environment. Due to ongoing development of effluent management technology, other discharge methods may be preferred in the future.

Agricultural effluent resulting from activities such as bulb or vegetable washing have only been managed on an ad-hoc basis, and often only as a result of complaints. As a result, there is only limited information relating to the extent of this type of discharge.

Bulb and vegetable washing can result in large volumes of effluent being produced. The effluent can be best characterised as being water with a very high

are saturated. It excludes self feeding from silage stacks when stock are not contained lightly to the area adjacent to the stack, but have the ability to graze on adjacent paddocks for most of the day.

¹⁵ Feedlot – located on production land, and is a confined site predominantly used all year round for the purpose of intensive controlled feeding of stock for high weight gains or lactation with feed concentrates and supplements. Can be located either indoors or outdoors but excludes piggeries.

suspended solid (soil) content. Generally the effluent produced is relatively inert chemically, but has the capacity for physical adverse effect, such as smothering. There is also a potential for discharge into water, which can adversely effect water quality and the water ecosystem.

The storage of silage produces particularly strong leachate. This leachate is considered an agricultural effluent. The discharge of this leachate, if not properly managed can have adverse effects on water quality and the soil and water ecosystems.

Takata whenua in particular, have concerns relating to the discharge of animal excrement into water. The potential contamination of both soil and water may adversely affect the mauri, or life force, of ecosystems.

There are a number of factors which need to be addressed in order to ensure that the management of agricultural effluent does not have an adverse effect on the environment. These factors include:

Design

A well designed effluent collection, storage and discharge system can reduce the likelihood of unauthorised discharges. Potential adverse effects from discharging agricultural effluent onto or into land can also be avoided if the system is designed properly.

There is a wide range of agricultural effluent systems, most of which involve combinations of sumps or anaerobic ponds to collect the effluent, and spray irrigators or tankers to spread the effluent. The particular design will depend upon the nature, quality and quantity of effluent to be discharged. Each design must address site specific constraints. These constraints include such things as depth to the water table, slope, soil type, permeability and the area available for discharge. The design of the system should ensure that any risk of failure is minimised, that adequate bunding, barriers or separation distances are provided to ensure that any spills do not enter water and that there is sufficient storage in case of pump failure or adverse weather conditions. The design should also incorporate contingency provisions for emergencies.

System management.

Any system designed to collect, treat and discharge agricultural effluent must be operated within its design parameters and be regularly maintained. An agricultural effluent system generally has large volumes of effluent going through it for relatively short periods of time. Therefore, a failure during use has the potential to cause a major spill and consequently, adverse effects may arise. Regular maintenance will reduce the risk of failure of the system.

Effluent application loading rates.

There are three main parameters which may limit the loading rates of agricultural effluent onto or into land, where there is no persistent organic chemicals, bioaccumulatives or toxics. These parameters are the biological loading, hydraulic loading and the nutrient loading.

The biological loading particularly relates to the carbonaceous BOD₅ (Biological Oxygen Demand) loading. Excessive BOD₅ levels may lead to anoxic conditions where there is a depletion of free oxygen. This condition can adversely effect the soil ecosystem.

If the discharge of effluent onto or into land exceeds the hydraulic capacity of the soil, ponding and surface runoff may occur. Prolonged periods of saturation and runoff can increase the potential for undesirable contaminants to reach

either groundwater or surface water. The soil structure and chemistry may also be adversely effected.

The application of effluent onto pasture at or near maximum rates, coupled with heavy grazing has the potential to result in loss of nitrogen to the groundwater. This loss can be increased markedly by application of nitrogen fertilisers to areas irrigated with effluent. This application of nitrogen fertilisers is generally inappropriate to areas irrigated by effluent from dairy sheds. These potential effects can be exacerbated by more permeable soils (sands and gravels) or shallow groundwater. In these circumstances it may be preferable to either reduce the quantity of effluent applied to pasture, or, instead of heavy grazing, the grass could be harvested for silage or baleage.

The biological components of the soil ecosystem, including plants, may utilise the nutrients contained in agricultural effluent, particularly nitrogen and phosphorus. Water may become nutrient enriched if the loading rate exceeds the soil ecosystem's ability to assimilate these nutrients.

In addition, excessive loading rates, particularly of solids, can have a smothering effect on soils and vegetation. Other effects of increased loading rates may include ion exchange. Ion exchange may adversely effect both soil structure and chemistry. Due to the varying strength of agricultural effluent, loading rates are generally expressed as kilograms per hectare of nitrogen, and the rate of application expressed in millimetres.

3.1.5 INDUSTRY AND TRADE PROCESS EFFLUENT DISCHARGES

Many industries in Southland discharge more than one type of waste stream onto or into land, for example, foul water, process effluent, sludges and solids. Industrial and trade process effluent only deals with discharges of effluent from industrial and trade processes onto or into land and includes the situation where both effluent from industrial and trade processes and foul water from sanitary appliances and fixtures are discharged through the same system. It does not include effluent collected via a community sewage scheme, discharges of sludges, or discharges of agricultural effluent, and solid waste from these processes.

Industrial and trade premises can produce large quantities of effluent and/or effluent with a high degree of contamination. The effluent produced can contain environmental pollutants such as heavy metals, hydrocarbons, nutrients, or a mixture of other contaminants. The contaminants contained in the effluent are dependent on a combination of the raw materials used and the process that produces it. The range of effluent qualities and quantities gives rise to a range of potential adverse effects.

On the other end of the scale, some industrial and trade process effluent is similar in volume and character to that of foul water produced by residential dwellings. Examples of these types of premises include small restaurants, retail outlets and other businesses which do not have an "effluent producing process". Larger restaurants, motels, licensed hotels and the like, produce effluent that is similar in character, but larger in volume. Often these type of premises are connected to a community sewage scheme, or use a foul water drainage system with some form of soakage. For these type of premises, it is often difficult to distinguish between what is a foul water discharge, and what is an industrial or trade process effluent. **Where there is no "industrial or trade process effluent" discharged from industrial and trade premises, the foul water being discharged will be**

considered as a foul water discharge .

In order to avoid any potential adverse effects on the soil and water ecosystems or human and animal health, a number of factors have to be addressed, including:

Site evaluation

The suitability of the site to act as a receiving environment needs to be assessed prior to the design of the effluent system. Site specific characteristics such as available area, soil type, depth to groundwater, slope, stormwater drainage or proximity to waterbodies, aspect and proximity to residential areas need to be identified as well as the existence of trade waste bylaws.

Design

The design of an industrial and trade process effluent system is influenced by the characteristics of the site that have been identified in the site assessment, as well as the characteristics of the effluent, particularly quality and quantity. The potential for expansion of the operation over time should be considered at the design stage, as well as any potential cumulative effects. Contingency measures in case of an emergency or plant failure must be clearly stated.

The design should ensure that any adverse effects on the soil and water ecosystem, as well as human and animal health are avoided.

Operation

The operation of the system needs to be carried out in a manner which is consistent with its design parameters. Discharge of chemicals or other contaminant into any system for which the system is not designed should be avoided.

Maintenance of the system

An industrial and trade process effluent system requires regular maintenance in order to perform the function that it is designed for. Lack of maintenance is often a major reason for failure. Maintenance includes cleaning and removal of any sludge on a regular basis. Conduits, reservoirs, pumps and other equipment associated with the effluent system need to be maintained in an efficient operating condition to ensure that the system as a whole does not fail, and a maintenance schedule should be developed to ensure that it occurs. Failure of an effluent system can have an adverse effects on the environment and give rise to noxious, objectionable, or offensive effects beyond the site boundary.

Monitoring

In order to accurately assess whether or not discharges onto or into land from industrial and trade process effluent systems are causing an adverse effect on the environment, it is necessary to monitor their performance. It is important that an accurate set of data is collected which reflects the Southland situation with regard to the effects of discharging industrial and trade process effluent onto or into land. Monitoring must reflect the local site conditions and constraints such as climate, biological growth rates as well as soil type, depth to groundwater and proximity to waterbodies.

3.2 ISSUES

The resource management issues with regard to the discharge of effluent and sludge from sanitary appliances and fixtures, community sewage schemes, agricultural activities and industrial or trade processes are:

Issue 1

Discharges of effluent and sludge onto or into land has the potential to enhance or adversely affect the life supporting capacity of the soil ecosystem.

Objectives 4.1.1, 4.1.3, 4.1.6;
Policies 4.2.1, 4.2.4, 4.2.7, 4.2.10 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 2

Discharges of effluent and sludge onto or into land which may enter water (including groundwater) has the potential to adversely affect water quality and the life supporting capacity of the water ecosystem.

Objectives 4.1.2, 4.1.3, 4.1.5, 4.1.6;
Policies 4.2.2 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 3

Discharges of effluent and sludge onto or into land has the potential to adversely affect both human and animal health.

Objectives 4.1.3, 4.1.6;
Policies 4.2.1 – 4.2.7, 4.2.10 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 4

There is no strategy to determine what type of information is required to quantify and qualify the adverse effects of effluent and sludge discharges onto or into land and to collect the required information.

Objectives 4.1.1 – 4.1.5;
Policies 4.2.1 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 5

Discharges of effluent and sludge onto or into land has the potential to adversely affect amenity values.

Objectives 4.1.4, 4.1.5;
Policies 4.2.1 – 4.2.3, 4.2.5, 4.2.7 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 6

The mauri of ecosystems, wahi tapu sites and other sites of cultural significance can be adversely affected by inappropriate discharges of effluent and sludge onto or into land.

Objectives 4.1.4, 4.1.4, 4.1.5, 4.1.6;
Policies 4.2.1 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 7

Heritage sites may be adversely affected by discharges of effluent and sludge onto or into land.

Objective 4.1.4;
Policies 4.2.1 – 4.2.5, 4.2.7 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 8

Discharges of foul water from mobile sources, particularly campervans and mobile homes at other than recognised dedicated foul water dump stations, can present a risk to public health and amenity values, and is objectionable, noxious and offensive.

Objectives 4.1.3, 4.1.4, 4.1.5;
Policies 4.2.7, 4.2.11, 4.2.12;
Methods 4.3.1 – 4.3.15

Issue 9

There is a lack of dedicated sludge treatment facilities in Southland.

Objectives 4.1.1 – 4.1.4;
Policies 4.2.7, 4.2.13;
Methods 4.3.1 – 4.3.15

Issue 10

Discharges onto or into land which may enter water (including groundwater, coastal marine area and wetlands) or soil from effluent or sludges have the potential to adversely affect significant indigenous vegetation and significant habitats of indigenous fauna.

Objective 4.1.6;
Policies 4.2.1 – 4.2.16;
Methods 4.3.1 – 4.3.15

Issue 11

Effluent from stock trucks gives rise to adverse effects because it is discharged in an uncontrolled manner.

Objectives 4.1.1 – 4.1.3, 4.1.6;
Policies 4.2.7, 4.2.16;
Methods 4.3.1, 4.3.3, 4.3.9

4 OBJECTIVES, POLICIES & METHODS

4.1 OBJECTIVES

The resource management objectives with regard to the discharge of effluent and sludge from sanitary appliances and fixtures, community sewage schemes, agricultural activities and industrial or trade processes are:

Objective 4.1.1 - Soil

To ensure that the life supporting capacity of the soil ecosystem is safeguarded from the adverse effects of discharges of effluent and sludge onto or into land.

Policies 4.2.1, 4.2.4, 4.2.7, 4.2.10 – 4.2.16;
Methods 4.3.1 – 4.3.15

Objective 4.1.2 - Water

To ensure that water quality and the life supporting capacity of the water ecosystem is safeguarded from the adverse effects of discharges of effluent and sludge onto or into land which may enter water.

Policies 4.2.2 – 4.2.16;
Methods 4.3.1 – 4.3.15

Objective 4.1.3 - Human and animal health

To ensure that effluent and sludge discharges onto or into land do not adversely affect human and animal health.

Policies 4.2.1 – 4.2.7, 4.2.10 – 4.2.16;
Methods 4.3.1 – 4.3.15

Objective 4.1.4 - Amenity values

To ensure that amenity values are not adversely affected by discharges of effluent and sludge onto or into land.

Objectives 4.1.4, 4.1.5;
Policies 4.2.1 – 4.2.3, 4.2.5, 4.2.7 – 4.2.16;

Objective 4.1.5 - Takata whenua

To recognise and provide for the relationship of takata whenua with ancestral sites, wahi tapu and other taoka.

Policies 4.2.1 – 4.2.16;
Methods 4.3.1 – 4.3.15

Objective 4.1.6 - Significant vegetation and habitats

To ensure that effluent or sludge discharges onto or into land do not adversely affect areas of significant indigenous vegetation and significant habitats of indigenous fauna.

Policies 4.2.1 – 4.2.16;
Methods 4.3.1 – 4.3.15

Principal Reasons

Soils provide the foundation and medium in which plants grow, and are an integral and living part of the wider ecosystem, as well as being an ecosystem in their own right. The soil ecosystem provides an environment where the bioremediation of effluent and sludge can take place and the soil ecosystem can also benefit from some effluent and sludge discharges. It is therefore important that the life supporting capacity of the soil ecosystem is safeguarded.

Discharges of effluent and sludge onto or into land has the potential to enter water either directly or indirectly, through leaching, run-off, spray drift, or some other process. If the discharge enters water, there is potential for the water quality to be degraded. This would adversely effect the life supporting capacity of the water ecosystem.

Generally, the life supporting capacity of the water ecosystem is an indicator of water quality. The greater the biological diversity, the better the water quality. Good quality water is needed for a range of uses, including drinking supplies and stock water.

The contents of effluent and sludge being discharged onto or into land is an indicator of the health of the human population that gave rise to it. Effluent and sludge contains a number of pathogens and viruses, all of which can have an adverse effect on either human or animal health. Industrial and trade process effluent can contain any number of contaminants, particularly of concern are heavy metals, hydrocarbons, persistent organic compounds, toxics and bioaccumulative substances. These can also have adverse effect on either human or animal health. These adverse effects should be avoided.

Amenity values include those characteristics that contribute to people's appreciation of an area's pleasantness, aesthetic coherence, and cultural and recreational attributes. Effluent and sludge discharge systems can be designed, managed and operated in a manner that ensures that these amenity values are not adversely affected.

The cultural and traditional spiritual values and relationships that have been developed over time by takata whenua are a combination of environmental and conservation ethics and history. These values need to be recognised and provided for. The discharge of effluent and sludge has the potential to adversely affect ancestral sites, wahi tapu sites and other taoka. Wahi tapu are sacred places, and for cultural reasons they need to be protected.

Southland has large numbers of stock which are moved on a regular basis within the Region resulting in a relatively high number of trucks on the road carrying stock. Effluent from stock trucks can enter water courses from the road and result in reduced water quality, cause damage to roads in terms of the chemical composition of the effluent and the way it reacts with road surfaces and cause a nuisance to other road users.

The main statutory framework for managing the discharge of effluent from stock trucks on state highways is the Transit New Zealand Act 1989. It is an offense under Section 51(2)(e) of this Act to cause or allow any effluent to flow from any vehicle onto a road or into a ditch or drain associated with the road. Anyone breaching this section is liable to be fined.

4.2 POLICIES

The resource management policies with regard to the discharge of effluent and sludge from sanitary appliances and fixtures, community sewage schemes, agricultural activities and industrial or trade processes are:

Policy 4.2.1 - Sustainability of the soil ecosystem

Protect the sustainability of the soil ecosystem from adverse effects of effluent and sludge discharges onto or into land.

Methods 4.3.1 – 4.3.15

Explanation

Soils are utilised as either a treatment medium and/or a final receiving environment of most effluent and sludge discharge systems. While the soil can benefit from applications of effluent and sludge, the soil ecosystem can be adversely affected by these discharges and as a consequence, needs to be managed. The soil ecosystem, in particular the microbiological components of the soil, act as a treatment medium. If the soil ecosystem is adversely affected as a result of the siting, design or operation of the system, or the discharge of sludge, the ability of the soil to act as a treatment medium may be compromised. It is necessary to protect the sustainability of the soil ecosystem in order that it can continue to act as a treatment medium for effluent and sludge discharges into on onto it.

Site specific constraints must also be taken into account. A failure to provide for site specific constraints such as depth to groundwater, slope, soil type and permeability or proximity to water, can lead to a failure of the system. If the system fails, the life supporting capacity of the soil ecosystem may be adversely affected. If the life supporting capacity of the soil ecosystem is adversely affected, the ability for the soil to continue to act as a treatment medium may be compromised. If this occurs, measures to remedy or mitigate them, or an upgrade, repair or replacement of the system or, where appropriate, connection to a community sewage scheme, may be required.

Sludges are discharged in a variety of ways. Where there is a specific sludge discharge facility, the facility will be required to be sited, designed and operated to avoid where practicable, remedy or mitigate any adverse affect on the soil ecosystem. Where the discharge is from a sludge tanker, the discharge will be required to be undertaken in a manner so as to avoid where practicable, remedy or mitigate adverse effects on the soil ecosystem.

Some sludges and industrial and trade process effluent has the potential to contain toxic, biotoxic or bioaccumulative substances, for example, heavy metals. These substances have the potential to have significant adverse effects on soil ecosystems, as well as human and animal health. Where it is unclear whether these substances are present in a sludge, tests should be undertaken to confirm if they are present or not.

Policy 4.2.2 - Discharge to land

Utilise land treatment of effluent and sludge where this can be undertaken in a sustainable manner and without significant adverse effects.

Methods 4.3.1 – 4.3.15

Explanation

Any new effluent and sludge discharges will be encouraged to utilise land-based discharge methods rather than water. Many water-based discharge methods are heavily reliant upon dilution, which may be highly variable in inland watercourses, and can be objectionable. Discharge onto or into land is preferable. Treatment of an effluent and sludge before discharge to land may be necessary to remove contaminants that are difficult or impossible to bioremediate. In some instances where discharges onto or into land will give rise to significant adverse effects and discharge to water can be undertaken in a manner that, after reasonable mixing,

meets water classification standards, it may be appropriate to discharge effluent and sludge to water.

Policy 4.2.3 - Avoid where practicable, remedy or mitigate adverse effects on water

Avoid where practicable, remedy or mitigate adverse effects on water quality, water ecosystems and water potability from effluent and sludge discharges onto or into land.

Methods 4.3.1-4.3.15

Explanation

Discharges from effluent discharge systems and of sludges onto or into land utilise the soil as either a treatment medium and/or a final receiving environment. However, through the process of direct runoff or leaching, it is possible that the contaminants may reach water, including groundwater. Where this occurs, it is important that the adverse effects on the water ecosystem are avoided where practicable, remedied or mitigated.

Groundwater is increasingly being utilised as a source of potable water so it is important that the potability of that groundwater is not reduced. Where the existing water quality is better than the drinking water standards, as defined by the 'Drinking Water Standards for New Zealand 1995', the water quality should be maintained.

Sludges are discharged in a variety of ways. Where there is a specific sludge discharge facility, the facility will be required to be sited, designed and operated to avoid where practicable, remedy or mitigate any adverse affect on the water ecosystem. Where the discharge is from a sludge tanker or is sprayed onto land, the discharge will be required to be undertaken in a manner so as to avoid where practicable, remedy or mitigate adverse effects on the water ecosystem.

As more development takes place, whether it be an increase in the density of subdivision or use of the land, there is a corresponding increase in the potential for cumulative effects resulting from effluent and sludge discharges onto or into land. Initially the potential for cumulative adverse effects should be avoided through design, location and operation of the discharge system. Where there are existing effluent and sludge systems, and there are undesirable background levels of contamination, measures will need to be taken to remedy or mitigate those existing adverse effects. In some cases, where development has become too great, a community sewerage scheme may have to be considered.

Policy 4.2.4 - Precautionary approach

Adopt a precautionary approach to the discharge of effluent and sludge onto or into land where there are uncertainties regarding adverse effects.

Methods 4.3.1 – 4.3.8, 4.3.10, 4.3.12, 4.3.13

Explanation

In the absence of adequate or sufficient evidence regarding the discharge of effluent and sludge, a precautionary approach needs to be taken in relation to decision making. A precautionary approach can be reflected in a number of ways, including buffer distances. Any precautionary approach should take into account site specific factors.

Policy 4.2.5 - Development

Advocate that territorial authorities include provision for effluent and sludge management when evaluating subdivision and development proposals.

Methods 4.3.1 – 4.3.15

Explanation

New subdivisions and development proposals have the potential to increase the intensity of land use. As land use intensifies, the potential for cumulative adverse effects increases. This is of particular concern as pressure to develop in the peri-urban areas increases.

Territorial authorities should be encouraged to assess the effects of new development on any existing community sewage scheme. In particular, consideration should be given to the effects of new industrial development on community sewage schemes. In some cases, where subdivision or development warrants, it may be necessary for a new community sewage scheme to be developed, or alternatively, an existing scheme upgraded.

Residential subdivisions, when not serviced by a community sewage scheme, have the potential to increase the volumes of sewage sludge being produced and discharged. Territorial authorities should ensure that there are either sufficient facilities to accept this sludge, or there is sufficient land available to discharge it in accordance with this plan.

Where development is in the form of an effluent or sludge producing industry, the facilities available for discharging that effluent or sludge should be assessed at the earliest possible stage.

The actual discharge of effluent and sludge is a Southland Regional Council responsibility, and is controlled by this Plan. However, territorial authorities should assess the effects or potential effects of the subdivision, or development, particularly in relation to the potential necessity for a community scheme to service that development or subdivision, or development on any community sewage scheme, particularly where an existing scheme is at, or near its design capacity, as the territorial authority is the body responsible under the Local Government Act 1974 for ensuring the provision of community sewage schemes.

Policy 4.2.6 - Human and animal health

Avoid where practicable, remedy or mitigate any adverse effects to human and animal health arising from discharges of effluent and sludge onto or into land.

Methods 4.3.1 – 4.3.6, 4.3.10 – 4.3.12

Explanation

Discharges of effluent and sludge onto or into land can introduce contaminants, particularly heavy metals and pathogens, and/or chemicals into the soil ecosystem. Potential adverse effects can be avoided by ensuring that the foul water discharge is properly managed.

Policy 4.2.7 - Good practice and maintenance

Promote good practice and regular maintenance of effluent and sludge systems.

Methods 4.3.1 – 4.3.6

Explanation

Good practice and regular maintenance are an integral part of ensuring that the system continues to function as it was designed to. Good practice includes:

- reduction of effluent and sludge at source
- regular cleaning
- protection of any treatment/soakage field so that it remains capable of acting as a receiving environment
- ensuring that the design parameters of the system are not exceeded due to inappropriate volumes, substances and/or chemicals being put through the system
- avoiding solids entering any treatment field
- ensuring that grey water is separated from stormwater
- efficient water usage
- effluent and sludge management system
- reviewing of contingency plans

Policy 4.2.8 - Takata whenua

Recognise and provide for takata whenua concerns related to the discharge of effluent and sludge onto or into land.

Methods 4.3.1 – 4.3.12

Explanation

Takata whenua have concerns relating to the discharge of human effluent. The primary concern is the discharge of effluent and sludge into the water ecosystem. There are also wider concerns relating to the effects on the cultural values of the land. These values include wahi tapu, ancestral sites and other taoka.

Policy 4.2.9 - Amenity values

Avoid where practicable, remedy or mitigate any adverse effects on amenity values from discharges of effluent and sludge systems onto or into land.

Methods 4.3.1-4.3.15

Explanation

Discharges of effluent and sludge onto or into land have the potential to have adverse effects on amenity values. Discharges should avoid any potential adverse effects on amenity values, because the current technology for effluent and sludge systems is such that adverse effects should not arise. Where this is not possible, measures should be taken to remedy or mitigate any adverse effects on amenity values from effluent and sludge discharges onto or into land.

Policy 4.2.10 - Monitoring

Monitor, as appropriate, discharges of effluent and sludge onto or into land and, where practicable, the effects.

Methods 4.5.7, 4.3.13

Explanation

Monitoring will enable the Southland Regional Council to ascertain whether the objectives of this section of the Plan are being achieved. Other benefits of monitoring may include clarification of the contributing sources and effects on non-point source pollution of groundwater and surface water. Monitoring will also assist in avoiding adverse effects and provide a better understanding of the effects of discharging effluent and sludge onto or into land.

Policy 4.2.11 - Encourage the use and development of dump stations

Encourage the use and development of dedicated foul water dump station effluent from vehicular sources, including campervans and mobile homes.

Explanation

Dedicated foul water dump stations are designed to collect the effluent from the holding tanks of campervans and mobile homes. There are already many dump stations throughout the Southland Region. While some stations are provided by local authorities, many are also provided by commercial camping grounds. The problem appears to be that campervan and mobile home users are either unaware of the location of dedicated foul water dump stations or they are unaware that they have an obligation to discharge their effluent in a responsible manner.

Encouraging campervan and mobile home users to use dump stations through such methods as education, will assist in reducing the noxious, offensive and objectionable effects of foul water discharges from mobile sources.

The incidence of unauthorised or nuisance discharges from campervans and mobile homes is an indication that a more extensive network may be needed. By encouraging the provision of these stations, an extensive network can be developed. Such a network of dump stations would assist mobile home and campervan users to locate a dump station, and reduce unauthorised discharges on road sides.

Policy 4.2.12 - Changes to campervan and mobile home design

Promote rules requiring that new campervans be fitted with:

- i. **dedicated foul water holding facilities; and**
- ii. **discharge couplings that only allow the emptying of holding facilities at dedicated effluent dump stations.**

Explanation

The design of the discharge points and toilet facilities on many campervans and mobile homes allows users to empty their foul water at any time and any location. Changes to the design of vehicles would help to reduce the discharge of foul water at places other than dedicated dump stations.

Policy 4.2.13 - Development and use of treatment facilities

Promote the development and the use of properly designed and managed sludge treatment facilities.

Explanation

There are a wide variety of facilities that can bioremediate, accept or store sludges, including landfills, sewage schemes, or a dedicated sludge containment facility. These facilities are either designed or are able to accept a variety of sludge types. By discharging sludges into these type of facilities, the potential adverse effects of discharging sludges can be avoided.

However, there is a lack of these facilities that are specifically designed to accept and/or treat sludges in Southland. Although the actual provision of sludge treatment facilities is not a Southland Regional Council role, the Southland Regional Council can take a proactive advocacy role for the development and use of sludge facilities that avoid any adverse effects on the environment.

Methods 4.3.1 – 4.3.15
Section 7

Methods 4.3.1, 4.3.9, 4.3.15

Methods 4.3.1 – 4.3.6, 4.3.9 – 4.3.12

Policy 4.2.14 - Trade waste bylaws

Encourage Territorial Authorities to adopt trade waste bylaws.

Method 4.3.1, 4.3.6, 4.3.11, 4.3.12

Explanation

The quality of effluent being discharged from a community sewage scheme is dependent on a number of factors, including; the type of contaminants entering the scheme; retention time; and the biological processes that work within the scheme. Trade waste bylaws assist to control the type and volume of trade wastes entering a community sewage scheme. Trade waste bylaws also assist ensuring that new or expanding industry does not overload existing community sewage schemes.

Policy 4.2.15 - Significant Indigenous Vegetation

Avoid where practicable, remedy or mitigate the adverse effects on areas of significant indigenous vegetation and habitats of indigenous fauna from effluent and sludge discharges onto or into land.

Method 4.3.1 - 4.3.15

Explanation

Discharges of effluent or sludge onto or into land has the potential to adversely affect significant indigenous vegetation and habitats of indigenous fauna. These adverse effects can arise from the direct discharge into or onto land which supports the significant indigenous vegetation and habitats of indigenous fauna, or from the indirect contamination of water from discharges into or onto land. Where discharges occur it is important that adverse effects on significant indigenous vegetation and habitats of indigenous fauna are avoided where practicable, remedied or mitigated.

Policy 4.2.16 - Stock Truck Effluent

Encourage the use of holding tanks on stock trucks.

Method 4.3.1, 4.3.3, 4.3.9

Explanation

Effluent that is discharged onto roads from stock trucks has the potential to be washed into stormwater drains and enter water, thereby adversely affecting water quality. In addition, the effluent can cause a nuisance to other road users, as well as having an adverse effect on public health. Effects of public health are a particular concern where effluent is discharged in urban areas and small rural townships. The use of holding tanks in stock trucks will assist in avoiding such discharges.

The main statutory framework for managing the discharge of effluent from stock trucks on state highways is the Transit New Zealand Act 1989. It is an offence under Section 51(2)(e) of this Act to cause or allow any effluent to flow from any vehicle onto a road or into a ditch or drain associated with the road. Anyone breaching this section is liable to be fined.

4.3 METHODS

The resource management methods with regard to the discharge of effluent and sludge from sanitary appliances and fixtures, community sewage schemes, agricultural activities and industrial or trade processes are:

Method 4.3.1 - Education and public awareness

Produce and distribute educational material and, where practicable, share information with territorial authorities on the environmental effects of effluent and sludge discharges onto or into land.

Explanation

There are joint responsibilities between territorial authorities, the Public Health Service and the Southland Regional Council with respect to effluent and sludge. These responsibilities are for different aspects of effluent and sludge management under different Acts. For example, territorial authorities have a responsibility under the Building Act 1991 for approving the construction of the system, while the Southland Regional Council is responsible for the actual discharge.

A dual responsibility necessitates a co-operative approach to educational strategies. The Southland Regional Council will produce and distribute educational material that is relevant to the region and to the functions of the Regional Council. A co-ordinated approach to educational material will minimise duplication of effort. The Southland Regional Council will also provide information, including results of its monitoring programmes, for inclusion in any educational material or pamphlets produced by the respective territorial authorities in Southland. Regional production and distribution of educational material that is relevant on a regional scale will enable a consistent standard of material throughout the Region.

Effluent and sludge management begins at the point at which effluent and sludge is produced, and includes both the collection and discharge of the effluent and sludge. Production of educational material to highlight good effluent and sludge management practices, to point out the adverse effects of poor management practices, and to promote regular owner inspections with follow up action if necessary, will assist in avoiding any actual or potential adverse effects from effluent and sludge discharges.

Method 4.3.2 - Promotion

Promote good practice and regular maintenance in relation to the discharge of effluent and sludge onto or into land, and encourage the beneficial use of some effluent and sludge application to land.

Explanation

The Southland Regional Council will promote good practice and regular maintenance in relation to discharging effluent and sludge onto or into land, wherever possible. An example of this promotion is the provision of information.

Method 4.3.3 - Consultation

Consult, where appropriate, with interested parties, in particular the takata whenua, when considering matters relating to the discharge of effluent and sludge onto or into land.

Explanation

In order to gain a balanced view and to avoid where practicable, remedy or mitigate adverse effects from discharges of effluent and sludge onto or into land it is necessary to consult with interested parties, such as neighbours and other stake holders. Where people are adversely affected, consultation will enable both parties to identify solutions that will avoid where practicable, remedy or mitigate adverse effects.

Consultation with takata whenua is necessary to avoid where practicable, remedy

or mitigate any adverse effects on wahi tapu sites, urupa and other sites of significance to takata whenua are not adversely affected by discharges of effluent and sludge onto or into land.

Method 4.3.4 - Negotiation and facilitation

Provide opportunities for negotiation and facilitation, where this will assist in the resolution of issues associated with the discharge of effluent and sludge onto or into land.

Explanation

In cases where the parties wish to adopt informal processes to resolve differences, techniques can be adopted instead of, or in addition to, the formal processes under the Act, for example, pre-hearing meetings. Negotiated agreements are a particularly useful method of obtaining an outcome that is satisfactory to all parties involved.

Method 4.3.5 - Guidelines

Promote the development and the use of guidelines for the management of effluent and sludge discharges onto or into land so as to avoid where practicable, remedy or mitigate any adverse effect and promote soil enhancement practices.

Explanation

Guidelines are non-regulatory and can be used to expand upon, or complement more regulatory methods. Guidelines are an effective means to encourage the appropriate discharge of sludges and design, siting, maintenance and operation of effluent systems so as to avoid where practicable, remedy or mitigate any potential adverse effect.

Method 4.3.6 - Protocols and accords

Promote the development of protocols and accords between territorial authorities, industry, the Southland Regional Council and other parties relating to the discharge of effluent and sludge onto or into land.

Explanation

Protocols are formal agreements with statutory agencies as to the approach that will be adopted in dealing with a particular matter, for example in the processing and consideration of joint applications.

Accords are formal agreements with industry and affected parties covering the standards which sector groups will adopt in carrying out particular activities, for example codes of practice. Accords may negate the need to implement controls.

Territorial authorities approve foul water drainage systems under the Building Act 1991. They also have responsibility for the land use aspects of community sewage systems. Where these schemes also discharge onto or into land, it is appropriate that protocols and accords are developed to ensure that all aspects of foul water management are considered at the initial building consent stage, so that buildings not only meet the Building Code, but produce a desirable quality of effluent and sludge discharge.

Before protocols and accords are formalised they will be subject to public notification and consultation.

Method 4.3.7 - Monitoring

To:

- i. **monitor the effects of discharges onto or into land from community sewage schemes.**
- ii. **encourage inter-agency co-operation in monitoring discharges of effluent and sludges onto or into land and where practicable, the effects.**

Explanation

Public Health Service, territorial authorities, the Ministry of Agriculture, and the Southland Regional Council have responsibilities for the management of effluent and sludge discharges onto or into land under different Acts. Each agency should carry out its own monitoring with respect to its individual responsibilities. Co-ordination of each monitoring program will prevent duplication and ensure that the information gathered is put to maximum use. Co-operation between agencies will require a monitoring strategy to be developed. Such a strategy would outline how co-operation and co-ordination would be achieved, and may also include aspects such as periodic auditing of effluent and sludge discharge systems, monitoring of system maintenance, state of the environment monitoring and complaints monitoring.

Monitoring the quality of the effluent and sludge being discharged from community sewage schemes will indicate whether the effluent and sludge has been pre-treated to the desired level. Monitoring will also indicate whether any conditions that may be imposed on the discharge consent are achieving the desired outcomes. Specific monitoring programmes will also enable the Southland Regional Council to gain a better understanding of the effects arising from discharges onto or into land from community sewage schemes, such as the build up of heavy metals in soils or the effect of the discharge on groundwater. This better understanding can then be applied to any future schemes or any review of conditions for existing schemes.

Method 4.3.8 - Research

Facilitate research into the volume, characteristics and effects of effluent and sludge discharges onto or into land.

Explanation

Research, in collaboration with industry and other councils assists in gaining a full understanding of the potential impacts of effluent and sludge discharges onto or into land.

On occasions, where it may be appropriate, the Southland Regional Council will undertake some research. At other times, the most appropriate action is for the Southland Regional Council to act as a facilitator by providing information, resources or facilities to further advance that research. Any research proposals would have to be considered with respect to their cost and how that research would better achieve the objectives of this Plan.

Method 4.3.9 - Advocacy

To advocate:

- i. **that strategies and documents developed under legislation other than the Resource Management Act 1991 consider the adverse effects of foul water, agricultural effluent, and industrial and trade process effluent management.**
- ii. **the adoption of trade waste bylaws by Territorial Authorities.**
- iii. **for the development of specifically designed and managed sludge treatment facilities in Southland.**
- iv. **the use of effluent holding tanks on stock trucks.**

Explanation

During the preparation of plans and strategies, particularly under other legislation, it will sometimes be appropriate to advocate the adoption of a particular objective, policy or method to ensure that effluent and sludge discharges system management is given proper consideration in those documents.

The types and characteristics of wastes entering the sewage scheme can affect the ability of the scheme to operate effectively. For example, hazardous substances in the system can adversely affect biological processes and consequentially, the quality of the effluent and sludge being discharged can be adversely affected. The adoption of trade waste bylaws by territorial authorities is one method of ensuring that the final discharge from a community sewage scheme is not adversely affected by the substances entering the system.

During the preparation of plans and strategies, particularly under other legislation, it will sometimes be appropriate to advocate for the adoption of particular objectives, policies or methods to ensure that the development of sludge treatment facilities is given proper consideration. Properly designed and managed sludge treatment facilities that are developed by territorial authorities or industry will be promoted, provided that any adverse effects on the environment are avoided where practicable, remedied or mitigated.

There is a lack of facilities that are designed specifically to accept and/or treat effluent and sludge collected in holding tanks. Although the actual provision of effluent and sludge treatment facilities is not a Southland Regional Council role, the Southland Regional Council can take a proactive advocacy role for the development of effluent and sludge facilities that avoid where practicable, remedy or mitigate any adverse effects on the environment.

Method 4.3.10 - Resource Consents

Make submissions on resource consent applications to territorial authorities relating to effluent and sludge systems that involve discharge onto or into land, as an interested party.

Explanation

Territorial authorities often request comment from the Southland Regional Council on some resource consent applications. Where the Southland Regional Council is an interested party, it is appropriate that the Southland Regional Council comment on appropriate provisions relating to effluent systems that discharge onto or into land, or on land use provisions relating to the appropriate management of industry

and trade processes, for example, whether a particular proposed subdivision would be better serviced by a community sewage scheme, or the proposed land use is sited in an area that is not suitable for the discharge of agricultural effluent.

The Southland Regional Council, when making such submissions must comply with the requirements of the Resource Management Act in terms of being a submitter.

Method 4.3.11 - Enforcement Procedures

Use of enforcement procedures to deter unauthorised activities.

Explanation

Where provisions in the Resource Management Act 1991, rules set out in this Plan, or consent conditions are breached, the Southland Regional Council can utilise the enforcement procedures available to it in order to prevent the unauthorised activity having, or continuing to have, an adverse effect on the environment. Enforcement procedures may also be used to prevent a recurrence of an unauthorised activity. Where there has already been an adverse effect on the environment, the Southland Regional Council can use enforcement procedures to mitigate or remedy the effect.

Method 4.3.12 - Rules

Application of rules.

Explanation

The potential for adverse effects from effluent and sludge discharges onto or into land can be of such a scale that it is necessary to ensure that the environment is protected from them.

Conversely, other discharges may be allowed as of right, due to their minor adverse effects. The use of rules which can allow for specific discharges to be either permitted, controlled or discretionary is an appropriate method of dealing with effects depending upon their specific characteristics.

Method 4.3.13 - Auditing

Undertake regular auditing of foul water drainage systems and discharges and agriculture effluent discharge systems as part of an environmental monitoring programme.

Explanation

The majority of foul water drainage systems will be permitted under Rules 5.1.1, 5.1.2, 5.4.1 and 5.4.2. In order to ensure compliance with these rules, and to ensure that the objectives of this Plan are being achieved, it will be necessary to carry out an environmental audit of foul water drainage systems and agricultural effluent discharge systems. An environmental audit is a check on foul water drainage systems and agricultural effluent discharge systems to ascertain if they are performing properly, and that they are properly maintained. Each year, a random sample of foul water drainage systems and agricultural effluent discharge systems will be audited. These audits will provide an opportunity for the Southland Regional Council to give advice on the proper maintenance of a foul water drainage system and agricultural effluent discharge system.

Method 4.3.14 - Transfer of Powers

Transfer of powers.

Explanation

Where discharges have only a limited or localised environmental or public health nuisance impact, it is appropriate for territorial authorities to maintain the management of these discharges within their own boundaries. Discharges onto or into land from foul water drainage systems may be included in this category.

Any transfer of powers will be undertaken in accordance with Section 33 of the Resource Management Act 1991. As with any transfer of powers, the Southland Regional Council will determine the standards and rules relating to those powers, and territorial authorities may only implement the provisions of this Plan. Territorial authorities do not have the power to include objectives, policies or rules relating to discharges of foul water in their own District Plans.

Method 4.3.15 - Strategies

- i. **Prepare and implement a campervan and mobile home foul water management strategy.**
- ii. **Co-ordinate the development of an integrated monitoring strategy amongst agencies with a statutory interest in the effects of foul water discharges.**

Explanation

In the past the Southland Regional Council has had very little success in managing the adverse effects of foul water from campervans and mobile homes being discharged in inappropriate locations. This lack of success has been due to the singular, and often isolated, focus of the approach taken to these types of discharges. An effective and efficient means of avoiding adverse effects of discharges of foul water from campervans and mobile homes is by preparing and implementing a strategy that addresses the activity through several approaches.

A strategy could consider a number of ways to achieve the objectives of this Plan with specific reference to campervans and mobile homes, including:

- i. consultation - between the Southland Regional Council, territorial authorities, campervan manufacturers, rental companies and sales outlets, and central government agencies.
- ii. education - of campervan users, for example pamphlets.
- iii. research - to determine the scope of the problem and the practicability of implementing physical solutions.
- iv. advocacy
- v. enforcement procedures to be taken against users of campervans and mobile homes that are detected breaching rules in this Plan.

Public Health Service, territorial authorities, the Ministry of Agriculture, and the Southland Regional Council have responsibilities for the management of foul water discharges onto or into land under different Acts. Each agency should carry out its own monitoring with respect to its individual responsibilities. Co-ordination of each monitoring program will prevent duplication and ensure that the information gathered is put to maximum use.

5 RULES & PRINCIPAL REASONS

5.1 FOUL WATER

The following rules apply to discharges of foul water from sanitary appliances and fixtures onto or into land.

Rule 5.1.1

The discharge onto or into land from an existing foul water drainage system is a permitted activity, provided that the following criteria are met:

- a. the foul water drainage system had been installed and was operational prior to 1 July 1996; and
- b. the volume of the discharge does not exceed 1.25 cubic metres (1250 litres) per day, averaged over a period of one month; and
- c. there is no discharge of foul water directly to water, including groundwater, or the coastal marine area by:
 - i. tile drainage
 - ii. overland flow
 - iii. pipes, or stormwater drains
 - iv. artificial free drainage areas; and
- d. the system is designed and sited to avoid stormwater infiltration; and
- e. the discharge only contains foul water; and
- f. all pipelines, drains, pumps and reservoirs associated with the foul water drainage system are maintained so as to avoid any noxious, dangerous, offensive, or objectionable effect; and
- g. the foul water drainage system is not used for disposal of chemical toilet waste.

Explanation

The discharge of foul water from sanitary appliances and fixtures is an activity where the potential adverse effects can easily be avoided, remedied or mitigated. It is therefore appropriate to permit the activity, subject to criteria that will ensure that adverse effects are avoided, remedied or mitigated. The maximum discharge volume is based on the volume of foul water that can be expected from an average residential dwelling with six to eight full-time adult occupants. For guidance as to typical domestic foul water flow designs see Appendix E.

Direct discharges of contaminants into water bodies or the coastal marine area will adversely affect water quality, and the life supporting capacity of the water ecosystem. Storm water and groundwater drainage systems have the potential to deliver contaminants directly into ground or surface water.

It is important that the foul water drainage system is maintained and operated within the design parameters of the system, with respect to effluent characterisation and volume. Stormwater entering the system will substantially increase the discharge volume. This may compromise the integrity of the soakage field. It is also important to ensure that strong detergents, acids, or other chemicals are not added to the system. These substances can adversely affect the life supporting capacity of the soil ecosystem. They may also adversely affect the micro-biological activity within the foul water drainage system.

The discharge should not result in an objectionable or offensive odour, or effect (in the opinion of a Southland Regional Council enforcement officer) beyond the property boundary. If the discharge does result in any of the above adverse effects, Section 17 (3) (a) and (b) of the Resource Management Act 1991 provides the Southland Regional Council with the power to serve an enforcement order, or an abatement notice in order to avoid those adverse effects.

Rule 5.1.2

The following activities are permitted activities:

- 1. The discharge onto or into land from a new foul water drainage system; and**
- 2. The discharge onto or into land from a replacement of an existing foul water drainage system;**

provided that the following criteria are met:

- a. the volume of the discharge does not exceed 1.25 cubic metres (1250 litres) per day, averaged over a period of one month; and**
- b. there is no discharge of foul water directly to water, including groundwater, or the coastal marine area by:**
 - i. tile drainage**
 - ii. overland flow**
 - iii. pipes, or stormwater drains**
 - iv. artificial free drainage areas; and**
- c. the system is designed and sited to avoid storm water infiltration; and**
- d. the discharge contains only foul water; and**
- e. all pipelines, drains, pumps and reservoirs associated with the foul water drainage system are maintained so as to avoid any noxious, dangerous, offensive, or objectionable effect; and**

- f. **the soakage field dosage pipes are not within:**
 - i. **20 metres of any water body or wetlands listed in Appendix F, excluding aquifers;**
 - ii. **50 metres of any coastal water;**
 - iii. **50 metres of any existing potable water abstraction point;**
 - iv. **20 metres of another septic tank on the same property and**
- g. **no part of the infiltration surface is within 900 mm of the groundwater table at its mean seasonal high water level; and**
- h. **community sewage reticulation is further than:**
 - i. **30 metres from the nearest boundary of the allotment where the foul water originated; or**
 - ii. **60 metres from the nearest part of a building from which the foul water originated; and**
- i. **the soakage field dosage pipes evenly distribute the foul water effluent to the infiltration surface of the soakage field; and**
- j. **the foul water drainage system is not used for disposal of chemical toilet wastes.**

Explanation

The discharge of foul water from new and replacement sanitary appliances and fixtures is an activity where the potential adverse effects can easily be avoided. It is therefore appropriate to permit the activity, subject to criteria that will ensure that adverse effects are avoided.

The maximum discharge volume is based on the volume of foul water that can be expected from an average residential dwelling with six to eight full-time adult occupants. For guidance as to typical domestic foul water flow designs see Appendix E.

Direct discharges of contaminants into water bodies or coastal marine area will adversely affect water quality, and the life supporting capacity of the water ecosystem. Storm water and groundwater drainage systems have the potential to deliver contaminants directly into ground or surface water.

Buffer distances are utilised as a precautionary measure to mitigate the adverse effects of the discharges on potable water. The distance of 900 mm above groundwater will ensure that there is sufficient suitable soil to assimilate any contaminants. Where groundwater is very shallow (less than 900 mm) it is possible to build the soakage field beds up to attain the required buffer distance.

It is important that the foul water drainage system is maintained and operated within the design parameters of the system, with respect to effluent characterisation and volume. Stormwater entering the system will substantially increase the discharge volume. This may compromise the integrity of the soakage field. It is also important to ensure that acids or other chemicals that may adversely affect the biological processes within the foul water drainage system are not added to the system. These substances can adversely effect the life supporting capacity of the soil ecosystem. They may also adversely affect the micro-biological activity

within the foul water drainage system. Where community sewage reticulation is reasonably available, a connection should be made to it.

The discharge should not result in an objectionable or offensive odour, or effect (in the opinion of a Southland Regional Council enforcement officer) beyond the property boundary. If the discharge does result in any of the above adverse effects, Section 17 (3) (a) and (b) of the Resource Management Act 1991 provides the Southland Regional Council with the power to serve an enforcement order, or an abatement notice in order to avoid those adverse effects.

The requirements of this Plan are in addition to the need to obtain a building consent for the construction, replacement or alteration of buildings and/or sanitary plumbing.

Rule 5.1.3

The discharge onto or into land from a foul water drainage system is a discretionary activity where it does not meet any of the criteria in Rule 5.1.1 or Rule 5.1.2.

Information Required

Section 88 and the Fourth Schedule of the Resource Management Act 1991 requires certain information to be submitted with any application for a resource consent. Pursuant to Section 88(4)(c) of the Resource Management Act 1991 the Southland Regional Council shall also require the following information to be submitted with any application for a resource consent:

- a. the matters set out in (1) to (8) of Appendix A of this Plan; and
- b. a site investigation that includes those matters set out in Appendix B of this Plan, as well as any other site specific parameters which may affect the operation of a foul water drainage system; and
- c. the design of the foul water drainage system; and
- d. the volume of discharge; and
- e. proposed management of any buffer zones; and
- f. a report from a suitably qualified engineer, experienced in the design and operation of foul water drainage systems.

Information for Consent Applicants

Any application for a resource consent under Rule 5.1.3 may be considered as a non-notified discretionary resource consent in accordance with Section 93 of the Resource Management Act 1991, unless the Southland Regional Council considers that special circumstances exist in relation to any such application.

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of foul water from sanitary appliances and fixtures may be subject to the following types of conditions, as well as any other conditions deemed necessary due to site specific factors:

- a. maximum loading or dosage rates for the particular site.
- b. site inspection or monitoring which may be carried out by, or on behalf of, the Southland Regional Council.

- c. the Southland Regional Council may annually, or at times specified in the consent, serve notice of its intention to review the conditions of the consent for the purposes of:
 - i. dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - ii. complying with the requirements of a regional plan.
- d. charges, may be made in accordance with Section 36(1) of the Resource Management Act 1991, for the carrying out of the Southland Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 of the Resource Management Act 1991.

Any alteration to the activity, which will increase the quantity of contaminants, or change their nature or concentration to the detriment of the environment (including amenity values) must be applied for and have the consent of the Southland Regional Council.

Explanation

Some foul water discharges may not comply with the permitted activity criteria. As the volume, or site constraints become greater, the potential for adverse effects increases. In some cases, when chemicals such as those used in porta-loos and other portable toilets are being discharged through the foul water drainage system, the potential for adverse effects increases. The Southland Regional Council wishes to retain discretion in those cases.

For the guidance of applicants, Appendix A contains a more specific listing of those matters which should be addressed as part of the assessment of effects under the Fourth Schedule of the Resource Management Act 1991, and the requirements of Section 88. Appendix B outlines the relevant factors which should be addressed within a site investigation.

Rule 5.1.4

The discharge of foul water onto or into land from a dedicated foul water dump station is a discretionary activity.

Information Required

Section 88 and the Fourth Schedule of the Resource Management Act 1991 requires certain information to be submitted with any application for a resource consent. Pursuant to Section 88(4)(c) of the Resource Management Act 1991 the Southland Regional Council shall require the following information to be submitted.

- a. the matters set out in (1) to (9) of Appendix A of this Plan; and
- b. site investigation that includes those matters set out in Appendix B of this Plan, as well as any other site specific parameters which may affect the operation of a foul water drainage system; and
- c. the design of the foul water drainage system; and
- d. the volume of discharge; and
- e. proposed management of buffer zones.

Information for Consent Applicants

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of foul water from dedicated foul water

dump stations may be subject to the following types of conditions, as well as any other conditions deemed necessary due to site specific factors:

- a. maximum loading or dosage rates for the particular site.
- b. site inspection or monitoring which may be carried out by, or on behalf of the Southland Regional Council.
- c. the Southland Regional Council may annually, or at times specified in the consent, serve notice of its intention to review the conditions of the consent for the purposes of:
 - i. dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - ii. complying with the requirements of a regional plan.
- d. charges, may be made in accordance with Section 36(1) of the Resource Management Act 1991, for the carrying out of the Southland Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 of the Resource Management Act 1991.

Any alteration to the activity, which will increase the quantity of contaminants, or change their nature or concentration to the detriment of the environment (including amenity values) must be applied for and have the consent of the Southland Regional Council.

Explanation

This rule is intended to provide for the facilities that are used to receive foul water from mobile homes and campervans. Foul water from some mobile homes and campervans contain chemicals that may adversely effect the functioning of a conventional foul water discharge system, as a result, the discharge of this foul water is a discretionary activity.

Rule 5.1.5

The discharge of foul water onto or into land from campervans, mobile homes, caravans and other vehicles used for human occupation, is a prohibited activity.

Explanation

The discharge of human effluent from campervans and mobile homes on roadsides, picnic areas, pastoral land and ditches can adversely affect human and animal health, as well as water quality and amenity values. The discharge of foul water onto roadsides or public rest and picnic areas is an objectionable noxious, and offensive practice.

Dump stations that are specifically designed to receive foul water from vehicular sources, particularly campervans and mobile homes are located throughout the Southland Region. These stations should be used to empty chemical toilets.

PRINCIPAL REASONS

Territorial authorities and the Southland Regional Council have a role in respect to foul water. The adoption of the objectives, policies, and methods recognise that joint responsibility. Particularly, methods such as accords, advocacy, transfer of

powers and the formulation of submissions to land use consents and District Plans assist to establish a consistent approach to foul water throughout the Region.

The objectives which have been adopted in this Plan have been derived from the Southland Regional Policy Statement.

Most of the adverse effects of discharges of foul water from sanitary appliances and fixtures can be avoided by ensuring that the design of the foul water drainage system is suitable for the particular characteristics of the site. Good design, combined with proper maintenance and use of the system can ensure that adverse effects are completely avoided. Therefore the policies, methods and rules adopted in this section of the Plan have an emphasis on good design and management of the foul water drainage system. The activity which is prohibited is directly related to avoiding the contamination of the water ecosystem.

5.2 COMMUNITY SEWAGE SCHEME

The following rule applies to effluent discharges from community sewage schemes onto or into the land.

Rule 5.2.1

The discharge of effluent onto or into land from a community sewage scheme is a discretionary activity.

Information Required

Section 88 and the Fourth Schedule of the Resource Management Act 1991 requires certain information to be submitted with any application for a resource consent. Pursuant to Section 88(4)(c) of the Resource Management Act 1991, the Southland Regional Council shall require the following information to be submitted.

- a. the matters set out in (1) to (8) of Appendix A of this Plan; and
- b. a site investigation that includes those matters set out in Appendix B of this Plan, as well as any other site specific parameters which may affect the operation of a community sewage scheme; and
- c. contingency plans developed in accordance with Appendix C of this Plan; and
- d. maximum volumes, and degree of treatment.

Information for Consent Applicants

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge to land of effluent from community sewage schemes may be subject to the following types of conditions, as well as any other conditions deemed necessary due to site specific factors:

- a. maximum loading rates for the particular site, including restrictions on when discharges may occur, particularly relating to weather and soil conditions.
- b. site inspection or monitoring which may be carried out by, or on behalf of the Southland Regional Council.
- c. the Southland Regional Council may annually, or at times specified in the consent, serve notice of its intention to review the conditions of the consent for the purposes of:
 - i. dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - ii. complying with the requirements of a regional plan.
- d. charges, may be made in accordance with Section 36(1) of the Resource Management Act 1991, for the carrying out of the Southland Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 of the Resource Management Act 1991.

Any alteration to the activity, which will increase the quantity of contaminants, or change their nature or concentration to the detriment of the environment

(including amenity values) must be applied for and have the consent of the Southland Regional Council.

Explanation

Discharges of effluent onto or into land from community sewage schemes has the potential to adversely affect the life supporting capacity of soil and water ecosystems. These discharges also have the potential to adversely affect human health, animal health and amenity values. The Southland Regional Council therefore wishes to retain its discretion with respect to these discharges.

PRINCIPAL REASONS

It is a policy of the Southland Regional Policy Statement to utilise land disposal of liquid wastes where this can be undertaken in a sustainable manner and without significant adverse environmental effects. Community sewage schemes are generally large scale, with whole communities linked into them. The scale and the nature of the contaminants has the potential to have significant adverse effects on the environment. The focus of this section is to avoid the adverse effects, particularly on soil and water ecosystems, of discharging effluent onto or into land. As a result, a more regulatory approach has been adopted.

5.3 SLUDGES

The following rules apply to discharges of sludges onto or into land.

Rule 5.3.1

The discharge of sludge onto or into land from individual foul water drainage systems or agricultural effluent treatment systems are permitted activities, provided that the following criteria are met:

- a. **the sludge is discharged onto the same property as it was generated. If the sludge is not discharged onto the same property, then the property which receives that discharge may not accept more than one sludge discharge application during a 12 month period; and**
- b. **there is no discharge of sludge directly to water, including groundwater, or the coastal marine area by:**
 - i. **tile drainage**
 - ii. **overland flow**
 - iii. **pipes, or storm water drains**
 - iv. **artificial free drainage areas; and**
- c. **the rate of discharge does not result in any runoff; and**
- d. **the maximum depth of sludge application is 7 mm; and**
- e. **the minimum return period¹⁶ for discharging any other sludge or effluent onto or into the site is 28 days; and**
- f. **the discharge is not within:**
 - i. **20 metres of any water or wetland listed in Appendix F, excluding groundwater;**
 - ii. **100 metres from any potable water abstraction point;**
 - iii. **20 metres of any property boundary;**
 - iv. **100 metres of any residential dwelling other than residential dwellings on the property; and**
- g. **the effluent discharge system is operated so that there is no odour or spray drift nuisance beyond the boundary of the property.**

¹⁶ Return period – the time between consecutive applications of sludge or effluent.

Explanation

Regular cleaning of foul water drainage systems is encouraged as good practice in the foul water section of this Plan. The periodic (approximately once every two to three years) discharge of sludge from an individual foul water drainage system has only minimal adverse effects. These adverse effects can be avoided by using buffer zones and applying maximum loading rates.

Agricultural effluent ponds also require periodic desludging. Provided that the sludge is discharged in accordance with the above criteria, adverse effects can be avoided.

Rule 5.3.2

The discharge of sludges onto or into land, other than those permitted under Rule 5.3.1 or non complying under Rule 5.3.3 is a discretionary activity.

Information Required

Section 88 and the Fourth Schedule of the Resource Management Act 1991 requires certain information to be submitted with any application for a resource consent. Pursuant to Section 88(4)(c) of the Resource Management Act 1991 the Southland Regional Council shall require the following information to be submitted.

- a. the matters set out in (1) to (8) of Appendix A of this Plan; and
- b. a site investigation that includes those matters set out in Appendix B of this Plan, as well as any other site specific parameter which may affect the manner in which the discharge is undertaken; and
- c. characterisation of the sludge to be discharged.

Information for Consent Applicants

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of sludges to land may be subject to the following types of conditions, as well as any other conditions deemed necessary due to site specific factors:

- a. maximum loading or dosage rates for the particular site.
- b. sludge quality standards to be achieved prior to discharge.
- c. restrictions on the future use of the site, particularly in relation to human and animal health factors.
- d. engineering works such as lining the site to prevent future leaching, bunding or fencing.
- e. site inspection or monitoring which may be carried out by, or on behalf of the Southland Regional Council.
- f. the Southland Regional Council may annually, or at times specified in the consent, serve notice of its intention to review the conditions of the consent for the purposes of:
 - i. dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - ii. complying with the requirements of a regional plan.

- g. charges, may be made in accordance with Section 36(1) of the Resource Management Act 1991, for the carrying out of the Southland Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 of the Resource Management Act 1991.

Any alteration to the activity, which will increase the quantity of contaminants, or change their nature or concentration to the detriment of the environment (including amenity values) must be applied for and have the consent of the Southland Regional Council.

Explanation

The discharge of sludge to land has the potential to have significant adverse effects. These effects include the contamination of soil and water. There is also potential for adverse effects on human and animal health. The Southland Regional Council wishes to retain its discretion with regard to discharging sludges to land.

For the guidance of applicants, Appendix A contains a more specific listing of those matters which should be addressed as part of the assessment of effects under the Fourth Schedule of the Resource Management Act 1991, and the requirements of Section 88. Appendix B outlines the relevant factors which should be addressed within a site investigation.

Rule 5.3.3

The discharge of sludge onto or into land is a non complying activity where the discharge takes place within:

- a. **100 metres of a residential dwelling other than residential dwellings on the property;**
- b. **100 metres of any potable water abstraction point;**
- c. **20 metres of any water body or wetlands listed in Appendix F, excluding aquifers;**
- d. **20 metres of any coastal marine area .**

Explanation

There is potential for sludges to have adverse effects on human health, as well as contaminating water. Buffer distances reduce the risk to human health by isolating the contaminants from direct contact. Site specific parameters, such as topography, may result in the possibility of being able to safely reduce some buffer distances. In some cases, the nature of the sludge may mean that a smaller buffer distance is appropriate. A non complying activity allows for these situations, whilst strongly discouraging smaller buffer distances.

PRINCIPAL REASONS

The potential adverse effects resulting from the discharge of treated sludge will be less than that of untreated sludge. In order to reduce the potential adverse effects of discharging sludges to land, this section of the Plan encourages the discharge of sludges into properly designed treatment facilities. If there are sludge treatment facilities available throughout the Region, and it is practicable to use them, then there will be less untreated sludges discharged to land. The Southland Regional Council therefore promotes the development of these facilities.

Where it is not practicable to discharge sludges into treatment facilities, the adverse effects, particularly on soil and water ecosystems, should be avoided where practicable, remedied or mitigated. In order to ensure that adverse effects are avoided where practicable, remedied or mitigated, the Southland Regional Council has retained discretion over discharges of sludges, except where the effects are minor, or easily avoided.

5.4 AGRICULTURAL EFFLUENT

The following rules apply to agricultural effluent discharges onto or into land.

Rule 5.4.1

The discharge of agricultural effluent onto or into production land from the following agricultural sources is a permitted activity, provided that the criteria which follow the list are met:

- 1. Dairy sheds servicing a maximum of 50 cows**
- 2. Piggeries with a maximum of 70 x 50 kg pig equivalents**
- 3. Feed lots and wintering pads servicing no more than 100 adult cattle or 250 adult deer.**
- 4. Effluent from holding tanks on stock trucks.**

Criteria

- a. there is no discharge of agricultural effluent directly to water, including groundwater, or the coastal marine area by:

 - i. tile drainage**
 - ii. overland flow**
 - iii. pipes, or stormwater drains**
 - iv. artificial free drainage areas; and****
- b. the rate of discharge does not result in any ponding of the agricultural effluent; and**
- c. the agricultural effluent discharge, including spray drift, is not within:

 - i. 20 metres of any water or wetlands listed in Appendix F, excluding groundwater**
 - ii. 100 metres from any potable water abstraction point**
 - iii. 20 metres of any property boundary**
 - iv. 100 metres of any school, or marae, or residential dwelling, other than residential dwellings on the property; and**
 - v. 50 metres from the coastal marine area; and****
- d. the maximum rate of agricultural effluent application is 7 mm per hour; and**
- e. the maximum rate of agricultural effluent loading does not exceed 150 Kilograms of nitrogen per hectare per year (150 kg N/Ha/yr); and**

- f. **the minimum return period¹⁷ for discharging agricultural effluent onto or into the site is 28 days; and**
- g. **the agricultural effluent discharge system is operated so that there is no odour or spray drift nuisance beyond the boundary of the property; and**
- h. **all pipelines, drains, pumps and reservoirs associated with the effluent management system are maintained so as to avoid any noxious, dangerous, offensive, or objectionable effect.**

Explanation

Rule 5.4.1 is intended to permit small scale discharges that only have minor adverse effects that can easily be avoided where practicable, remedied or mitigated. The Southland Regional Council does not require ongoing monitoring of dairy sheds that service less than 50 cows, as the potential adverse effects are considered to be minor. Piggeries with less than 70 x 50 kg pig equivalents are permitted because they produce an equivalent volume of nitrogen per year as that produced by 50 cows in a milking season. It should be noted that odour associated with piggeries is addressed under the Regional Air Quality Plan.

Buffer zones have been utilised to avoid potential adverse effects on water as well as human health. In the case of the buffer distance from property boundaries, the 20 metres has been utilised to avoid nuisance effects of the adjoining property, and ensuring that the discharge does not affect the adjoining property owners grazing regime. A buffer distance of 100 metres from a residential dwelling reduces potential adverse effects on human health, as well as other nuisances such as odour.

The maximum loading rates and return periods ensure that the soil can assimilate the nutrients (particularly nitrogen) into a form which can be utilised by plants, while avoiding any adverse effects on water quality or water ecosystems. The rates of effluent application and return period also ensure that the life supporting capacity of the soil ecosystem is safeguarded.

Odour and spray drift can have an adverse effect on amenity values of an area and therefore be a limiting factor when discharging effluent onto or into land, particularly piggery effluent. By ensuring that the discharge system is operated so that there is no odour or spray drift nuisance beyond the property boundary, amenity values can be protected.

Rule 5.4.2

Any discharge of agricultural effluent onto or into production land from vegetable or bulb washing is a permitted activity, provided that the following criteria are met:

Criteria

- a. **the discharge does not exceed 20 cubic metres per day; and**
- b. **the rate of discharge does not result in any ponding of the agricultural effluent; and**

¹⁷ Return period - the time between consecutive applications of sludge or effluent.

- c. the discharge only contains water and soil, and there are no measurable concentrations of chemical additives present in the discharge; and
- d. the discharge is not within:
 - i. 20 metres of any water or wetland listed in Appendix F, excluding groundwater
 - ii. 20 metres of any property boundary
 - iii. 100 metres of any residential dwelling; and
- e. the discharge does not result in an increase in the suspended solid load of any surface water body; and
- f. all pipelines, drains, pumps and reservoirs associated with the effluent management system are maintained so as to avoid any noxious, dangerous, offensive, or objectionable effect.

Explanation

Discharges from vegetable or bulb washing are generally made up of water, with a high suspended solid content. The solids are generally made up of the soil that is washed off the vegetables, or bulbs, with a small amount of vegetative matter. The discharge itself is chemically inert, and the effects are confined to physical and amenity. Smaller discharge volumes only have minor potential adverse effects that are easily avoided, remedied or mitigated.

In some cases, chemical additives such as anti-sprout agents are sprayed onto vegetables and bulbs. The volume of water used in vegetable or bulb washing activities is such that any additives are diluted to the extent that they are not measurable above background levels and they will not have an adverse effect on the life supporting capacity of water or soil ecosystems.

Buffer distances have been adopted to ensure the discharge does not result in an increased sediment load in nearby water bodies. The buffer distances from residential dwellings and property boundaries help to maintain amenity values, and avoid adverse effects beyond the property boundary.

The high suspended solid content of a discharge from a vegetable or bulb washing operation has the potential to smother aquatic ecosystems. The discharge should therefore be undertaken in a manner that ensures that the solids do not enter a water body.

Rule 5.4.3

The discharge of agricultural effluent and associated sludge onto or into land from stationary agricultural dips, mobile sheep dips and spray dips is a permitted activity, provided that the following criteria are met:

- a. there is no discharge of agricultural dip effluent directly to water, including groundwater, or the coastal marine area by:
 - i. tile drainage
 - ii. overland flow
 - iii. pipes, or stormwater drains

- iv. artificial free drainage areas; and
- b. the rate of discharge does not result in any ponding of the agricultural effluent; and
- c. the discharge is not within:
 - i. 20 metres of any water or wetlands listed in Appendix F, excluding groundwater
 - ii. 100 metres from any existing potable water abstraction point
 - iii. 20 metres of any property boundary
 - iv. 100 metres from any residential dwelling other than residential dwellings on the property; and
- d. all pipelines, drains, pumps and reservoirs associated with the agricultural effluent management system are maintained so as to avoid any noxious, dangerous, offensive, or objectionable effect; and
- e. the discharge of agricultural effluent from stationary agricultural dips, mobile sheep dips and spray dips occurs on the property where the dipping has taken place.

Explanation

Agricultural dip effluent is produced as a result of normal agricultural activities. Although the agricultural dip effluent is relatively high in strength, it is small in volume. Because of the small volume involved, the adverse effects can be avoided if the effluent is managed properly. The strength of agricultural dip effluent means that it is important that the effluent is not discharged in close proximity to water, and does not enter water.

~~Rule 5.4.4¹⁸~~

~~The discharge of leachate onto or into production land from silage pits is a permitted activity, provided that the following criteria are met:~~

- ~~a. the silage pit has an integral waterproof concrete lining, or equivalent thereof; and~~
- ~~b. there is no discharge of silage leachate directly to water, including groundwater, or the coastal marine area by:

 - ~~i. tile drainage~~
 - ~~ii. overland flow~~
 - ~~iii. pipes, or stormwater drains~~
 - ~~iv. artificial free drainage areas; and~~~~
- ~~c. the rate of discharge does not result in any ponding of the agricultural effluent; and~~

¹⁸ Rule 5.4.4 was revoked on 23 November 2011 as a result of Policy 44 and Rule 51 of the Regional Water Plan for Southland becoming operative.

- d. ~~any point where the silage pit leachate discharges onto or into land is not within:~~
- i. ~~20 metres of any water body, or wetlands listed in Appendix F, excluding an aquifer~~
 - ii. ~~100 metres from any existing potable water abstraction point~~
 - iii. ~~20 metres of any property boundary~~
 - iv. ~~100 metres from any residential dwelling; and~~
- e. ~~all pipelines, drains, pumps and reservoirs associated with the agricultural effluent management system are maintained so as to avoid any noxious, dangerous, offensive, or objectionable effect.~~

Explanation

Silage leachate is produced as a result of normal everyday agricultural activities. Although the effluent is relatively high in strength, it is small in volume. Because of the small volume involved, the adverse effects are only minor, and can be easily avoided where practicable, remedied or mitigated if the effluent is managed properly. Because of the strength of silage it is important that it does not enter water.

The criteria for lining the pad ensures that water is not contaminated as a result of effluent seeping through the base of the silage pit. A permeability at least equivalent to a concrete pad can be achieved through standard compaction procedures on soils with more than 8 percent clay content. If soil has less clay content than this a concrete pad may be required, or an artificial liner could be used.

Rule 5.4.5

The discharge of effluent onto or into production land from the following agricultural sources is a controlled activity provided that the criteria following the list are met:

1. Dairy sheds servicing more than 50 cows and less than 600 cows.
2. Piggeries with more than 70 x 50 Kg pig equivalents and less than 500 x 50 kg pig equivalents.

Criteria

- a. there is no discharge of agricultural effluent directly to water, including groundwater, or the coastal marine area by:
 - i. tile drainage
 - ii. overland flow
 - iii. pipes, or stormwater drains
 - iv. artificial free drainage areas; and

- b. **the discharge is not within:**
 - i. **20 metres of any water or wetlands listed in Appendix F, excluding groundwater**
 - ii. **100 metres from any potable water abstraction point**
 - iii. **20 metres of any property boundary**
 - iv. **100 metres from any residential dwelling other than residential dwellings on the property; and**
- c. **all pipelines, drains, pumps and reservoirs associated with the effluent management system are maintained so as to avoid any noxious, dangerous, offensive, or objectionable effect.**

Reservation of Control

The matters which the Southland Regional Council shall exercise its control over, with regard to resource consents for the discharge of agricultural effluent from dairy sheds servicing more than 50 cows and less than 600 cows, or from piggeries with more than 70 x 50 kg pig equivalents and less than 500 x 50 kg pig equivalents are:

- a. the maximum rate of effluent application.
- b. the return period for application of the effluent.
- c. the location and area of land available for discharging the effluent onto or into land.
- d. monitoring.
- e. desludging and the discharge of that sludge.
- f. contingency plans.
- g. duration of the consent.
- h. administrative charges.

Information Required

Section 88 and the Fourth Schedule of the Resource Management Act 1991 requires certain information to be submitted with any application for a resource consent. Pursuant to Section 88(4)(c) of the Resource Management Act 1991 the Southland Regional Council shall require the following information to be submitted.

- a. the matters set out in (1) to (8) of Appendix A of this Plan; and
- b. a site investigation that includes those matters set out in Appendix B of this Plan, as well as any other site specific parameter which may affect the operation of an agricultural effluent system; and
- c. contingency plans developed in accordance with Appendix C of this Plan; and
- d. estimation of nitrogen produced per year ; and
- e. animal numbers (number of cows, or number of 50 kg pig equivalents); and

- f. description of the discharge system, including:
 - i. proposed design of the system
 - ii. means of application (tanker or spray)
 - iii. approximate depth of application.
 - iv. application rate
 - v. areas of land where the effluent will be discharged (ie: area to which waste is to be physically applied).

Information for Consent Applicants

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of agricultural effluent onto or into land may be subject to the following types of conditions, as well as any other conditions deemed necessary due to site specific factors:

- a. maximum loading rates for the particular site.
- b. contingency plans relating to emergencies, including pump failure.
- c. site inspection or monitoring which may be carried out by, or on behalf of the Southland Regional Council.
- d. the Southland Regional Council may annually, or at times specified in the consent, serve notice of its intention to review the conditions of the consent for the purposes of:
 - i. dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - ii. complying with the requirements of a regional plan.
- e. charges, may be made in accordance with Section 36(1) of the Resource Management Act 1991, for the carrying out of the Southland Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 of the Resource Management Act 1991.

Any alteration to the activity, which will increase the quantity of contaminants, or change their nature or concentration to the detriment of the environment (including amenity values) must be applied for and have the consent of the Southland Regional Council.

Explanation

The adverse effects of discharging agricultural effluent from dairy sheds servicing more than 50 cows and less than 600 cows, or from piggeries with more than 70 x 50 kg pig equivalents and less than 600 are likely to be minor, provided that the criteria (a) to (c) are met. In order to ensure that any adverse effects are avoided where practicable, remedied or mitigated the Council requires an application, and has retained control over particular matters. These include the maximum rate of effluent application, the return period for application of the effluent and the location and area of land available for the discharge, which ensures that the soil can adequately assimilate the discharge. Monitoring will enable the early detection and management of any effects which are significant.

The effect of this rule is that a resource consent application can not be declined, but the Council can impose conditions on the consent in relation to matters (a) to (h) specified.

Rule 5.4.6

The discharge of agricultural effluent onto or into land, other than provided for in Rules 5.4.1-5.4.5 is a discretionary activity.

Information Required

Section 88 and the Fourth Schedule of the Resource Management Act 1991 requires certain information to be submitted with any application for a resource consent. Pursuant to Section 88(4)(c) of the Resource Management Act 1991 the Southland Regional Council shall require the following information to be submitted.

- a. the matters set out in (1) to (9) of Appendix A of this Plan; and
- b. site investigation that includes those matters set out in Appendix B of this Plan, as well as any other site specific parameters which may affect the operation of an agricultural effluent system; and
- c. contingency plans developed in accordance with Appendix C of this Plan; and
- d. estimation of nitrogen produced per year ; and
- e. animal numbers (number of cows, or number of 50 kg pig equivalents); and
- f. description of the discharge system, including:
 - i. proposed design of the system
 - ii. means of application (tanker or spray).
 - iii. approximate depth of application.
 - iv. application rate
 - v. areas of land where the effluent will be discharged (ie: area to which waste is to be physically applied).
 - vi. irrigation return period (time between applications).

Information for Consent Applicants

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of agricultural effluent onto or into land may be subject to the following types of conditions, as well as any other conditions deemed necessary due to site specific factors:

- a. maximum loading rates for the particular site.
- b. buffer distances. These distances will typically be applied around the following:
 - i. water
 - ii. property boundaries
 - iii. water abstraction point
 - iv. grazing livestock

- v. dwellings.
- c. contingency plans relating to emergencies, including pump failure.
- d. site inspection or monitoring which may be carried out by, or on behalf of the Southland Regional Council.
- e. the Southland Regional Council may annually, or at times specified in the consent, serve notice of its intention to review the conditions of the consent for the purposes of:
 - i. dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - ii. complying with the requirements of a regional plan.
- f. charges, may be made in accordance with section 36(1) of the Resource Management Act 1991, for the carrying out of the Southland Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 of the Resource Management Act 1991.

Any alteration to the activity, which will increase the quantity of contaminants, or change their nature or concentration to the detriment of the environment (including amenity values) must be applied for and have the consent of the Southland Regional Council.

Explanation

This rule is intended to allow the Southland Regional Council to exercise some discretion with respect to agricultural effluent. The rule focuses on those agricultural activities which are the source of either significant volumes of effluent or a high concentration of effluent. The rule enables the potential adverse effects of discharging effluent to land to be avoided.

Applicants should consult with the Southland Regional Council for assistance in determining the estimated nitrogen produced.

PRINCIPAL REASONS

The discharge of agricultural effluent onto or into land is considered to be preferable to discharging effluent to water. Discharging effluent to land in a manner which does not adversely effect the life supporting capacity of soil, or water quality enables the effluent to be utilised as a fertiliser resource. Soil also acts as a natural treatment medium. Therefore the discharge of agricultural effluent onto or into land is promoted in this section of the Plan.

Maintaining the effluent management system, as well as backup systems in an efficient working order helps to prevent accidental discharges and spills.

The rules which have been adopted allow normal agricultural activities which have no adverse effect on the environment. For activities which potentially have significant adverse effects, the emphasis has been placed on avoiding those effects.

5.5 INDUSTRIAL AND TRADE PROCESSES

The following rules apply to discharges onto or into land of industrial and trade process effluent.

Rule 5.5.1

The discharge onto or into land of effluent from industrial and trade processes, other than agricultural effluent, is a discretionary activity.

Information Required

Section 88 and the Fourth Schedule of the Resource Management Act 1991 requires certain information to be submitted with any application for a resource consent. Pursuant to Section 88(4)(c) of the Resource Management Act 1991 the Southland Regional Council shall require the following information to be submitted.

- a. the matters set out in (1) to (8) of Appendix A of this Plan; and
- b. a site investigation that includes those matters set out in Appendix B of this Plan, as well as any other site specific parameters which may affect the operation of an agricultural effluent system; and
- c. contingency plans developed in accordance with Appendix C of this Plan.

Information for Consent Applicants

Consent conditions are dependent upon the scale of the process and potential for adverse effects. Consents issued for the discharge of industrial and trade process effluent may be subject to the following types of conditions, as well as any other conditions deemed necessary due to site specific factors:

- a. maximum loading or dosage rates for the particular site.
- b. site inspection or monitoring which may be carried out by, or on behalf of the Southland Regional Council.
- c. any alteration to the activity, which will increase the quantity of contaminants, or change their nature or concentration to the detriment of the environment (including amenity values) must be applied for and have the consent of the Southland Regional Council.
- d. charges, may be made in accordance with Section 36(1) of the Resource Management Act 1991, for the carrying out of the Southland Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under Section 35 of the Resource Management Act 1991.

The Southland Regional Council may annually, or at times specified in the consent, serve notice of its intention to review the conditions of the consent for the purposes of:

- i. dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
- ii. complying with the requirements of a regional plan.

Rule 5.5.2

The discharge onto or into production land of whey is a permitted activity provided that the following criteria are met:

- a. there is no more than four applications to any one area of a property in any twelve month period; and
- b. the total quantity of whey discharged onto a property does not exceed 40,000 litres/hectare/application; and
- c. the application rate does not exceed 150 kilograms of nitrogen/hectare/year onto or into the site; and
- d. the minimum return period for discharging whey onto or into the site is 16 days; and
- e. no whey is discharged onto or into land which receives dairy shed effluent discharge from travelling irrigators; and
- f. no whey is discharged onto or into land that received dairy shed effluent discharges from a slurry tanker, or the like, within 12 months of any discharge of dairy shed effluent; and
- g. the application of whey does not result in surface ponding or runoff; and
- h. whey is not stored for a period longer than 48 hours before being discharged; and
- i. the discharge is not within:
 - i. 20 metres of water, and wetlands, excluding groundwater;
 - ii. 100 metres of any existing potable water abstraction point;
 - iii. 20 metres of any property boundary;
 - iv. 100 metres of any residential dwelling, other than residential dwellings on the property; and
- j. the discharge is operated so that there is no odour or spray drift nuisance beyond the boundary of the property.

Explanation

Industrial and trade process effluent can have a large number of contaminants which may be toxic, persistent or bioaccumulative, for example, heavy metals and hydrocarbons. For this reason, the Southland Regional Council wishes to retain discretion in regard to discharging industrial and trade process effluent onto or into land, and discharges onto or into land in circumstances where it may enter water.

PRINCIPAL REASONS

Problems associated with the discharge onto or into land of industrial and trade process effluent are often associated with the design and management of the system or the type of effluent to be treated and discharged. Therefore this section

of the Plan promotes good practice with respect to the management of the system and education. Site specific design is also encouraged.

The discharge of industrial and trade process effluent has been given a discretionary activity status in order to ensure that the adverse effects on the environment, particularly soils and water, can be avoided where practicable, remedied or mitigated. Avoiding where practicable, remedying or mitigating adverse effects on soil and water is adopted in order to maintain consistency with the Southland Regional Policy Statement.

The discharge of industrial and trade process effluent is also addressed under other Acts, such as the Building Act 1991 and the Health Act 1956. The discharge of industrial and trade process effluent is related to land use. Advocacy methods have therefore been adopted.

6 OUTCOMES

The outcomes expected through the adoption of the above policies, methods and rules are:

1. The life supporting capacity of soil ecosystems is safeguarded from discharges of effluent and sludge onto or into land.
2. The life supporting capacity of water ecosystems is safeguarded from discharges of effluent and sludge onto or into land.
3. Increased knowledge and understanding of effluent and sludge discharges onto or into land and its effects.
4. Protection of human and animal health from the effects of effluent and sludge discharges onto or into land.
5. Protection of amenity values from discharges of effluent and sludge onto or into land.
6. Protection of takata whenua values from discharges of effluent and sludge onto or into land.
7. A reduction in the number and scale of failures of foul water drainage systems.
8. Implementation of an effective foul water monitoring programme.
9. An increase in the number of sludge treatment facilities which are designed to avoid any adverse effects on the environment.
10. Protection of significant indigenous vegetation and habitats of significant fauna from the adverse effects of discharges of effluent and sludge onto or into land, including those indirectly entering water
11. Enhancement of poor quality land is achieved by effluent and sludge discharge application.

7 MONITORING AND REVIEW

7.1 REVIEW

The Resource Management Act 1991 requires that this plan be reviewed not later than 10 years after becoming operative. However any of the following factors could act as a trigger for starting the review process earlier:

- a. rules in any other Southland Regional plans which require an alteration to any part of this Plan;
- b. results of state of the environment monitoring, or specific monitoring outlined in this Plan indicates that a review may be necessary;
- c. major advances in effluent and sludge management technology which should be incorporated into this Plan;
- d. a change in the Region's socio-economic base which results in a major change in the volume or toxicity of sludge, or effluent and sludge being produced by any sector of the Regional community.
- e. a decision to combine this Plan with other Regional Plans into a single document.
- f. scientific and technical information.

Prior to the review process being initiated, the Southland Regional Council will consult with any sector(s) concerned.

7.2 PLAN MONITORING

In addition, the following will be monitored to measure the effectiveness of this Plan and to assist in determining whether any part of it should be reviewed:

- a. the amount and type of educational material produced and/or distributed Southland Regional Council, and any advocacy or encouragement by the Southland Regional Council to other organisations with regard to educational materials;
- b. the type of research being undertaken in relation to effluent and sludge management in Southland, and the ways in which the Southland Regional Council facilitates such research;
- c. the advocacy and encouragement measures the Southland Regional Council undertakes in relation to the discharge of effluent and sludges onto or into land;

- d. complaints, including their resolution, regarding unauthorised or non-complying activities, location of effluent and sludge discharges in relation to sites protected under the Historic Places Act 1993, performance of territorial authorities carrying out duties under a transfer of power, and any nuisance complaints regarding discharges of effluent and sludge onto or into land;
- e. the occasions when enforcement procedures are used and any outcomes;
- f. the management of effluent and sludge discharges and the health concerns taken into consideration during the application/consent process.

This information will be gathered through:

- the region-wide adoption of this Plan
- the resource consent assessment process and compliance monitoring, including site investigations
- analysis of complaint statistics
- consultation with interested groups in the Region, in particular the takata whenua
- monitoring the inclusion of supporting provisions in District Plans.

A monitoring report which is specific to the Regional Effluent Land Application Plan will be produced annually to coincide with the State of the Environment Monitoring report and the Regional Council's Annual Plan.

7.3 ENVIRONMENTAL MONITORING

The majority of environmental monitoring in Southland has been undertaken as part of a state of the environment monitoring strategy. The overall strategy has been developed independently of this Plan, and will involve a wide range of monitoring activities. The specific monitoring programmes that are of most relevance to this Plan are the Freshwater Ecology Programme, Riverine Component and the Oteramika Trial Catchment Programme.

The Freshwater Ecology programme is a region wide monitoring programme. There are currently 68 sites around the region that are monitored on a monthly basis for:

- Aquatic plant growth (Macrophytes and Periphyton)
- Dissolved Oxygen
- pH
- Nutrient levels (eg: nitrates)
- Waterborne pathogens (faecal coliforms)
- Water clarity

The results of this monitoring programme are reported to the Southland Regional Council on an annual basis. It is anticipated that when there are sufficient data available, trend analysis can be undertaken, and appropriate recommendations can be made to the Southland Regional Council on the basis of the results of this monitoring programme.

The Oteramika Trial Catchment programme is specifically related to land use management and its effects on water quality, particularly non-point source pollution. The Oteramika catchment is a 9,000 hectare catchment that has a high proportion of its land dedicated to dairy farming.

Some of the key areas for study include:

- Modelling land use and water quality relationships
- Predicting the effects of altering land use practices on water quality
- Trialing and monitoring of best management practices and their effects on water quality
- Discharges of effluent and sludge onto or into land

It is anticipated that the study will lead to the identification and promotion of land use practices which avoid where practicable, remedy or mitigate adverse environmental effects.

In addition to the above general environmental monitoring, this Plan sets out a number of methods relating to monitoring. These methods range from the co-ordination of existing monitoring programmes undertaken by various agencies, through to auditing of existing foul water drainage systems. The results of these monitoring programmes will be reported on annually. This report will include:

- A description of the monitoring that has been undertaken
- The results of that monitoring
- Where appropriate, analysis of the data collected
- Any recommendations that may result from the monitoring results.

7.4 CONSENTS MONITORING

An essential element in understanding and interpreting trends found from the state of the environment monitoring is the resource consent monitoring data. Consents monitoring will be undertaken in order to assess the actual effects and cumulative effects of the exercise of consents granted under this Plan. Consent monitoring is particularly useful in identifying specific potential “hotspots” as well as understanding the causes of any trends found in the wider state of the environment monitoring. It will not always be necessary to monitor every consent where the effects can be detected by a more general monitoring programme in conjunction with random monitoring of a small sample of consents. More detailed monitoring will be utilised to assess whether the conditions of consent are being complied with, and whether the conditions are appropriate for the discharge.

The degree and nature of consent compliance that is undertaken will be commensurate with the type of discharge, the results of previous monitoring and budget available. Monitoring costs should be paid by the consent holders.

8 CROSS BOUNDARY ISSUES

8.1 CROSS BOUNDARY ISSUES

Cross boundary issues with regard to the application of effluent and sludge to land in the Southland Region exist on six levels:

1. Between territorial authorities within the Southland Region;
2. Between territorial authorities and the Southland Regional Council;
3. Between the land and coastal interface within the Southland Region;
4. Between the land and water interface within the Southland Region;
5. Between the Southland Region and its neighbouring Otago and West Coast Regions;
6. Between the Southland Region and the remainder of New Zealand.

The main issues for each level are outlined below:

1. Between territorial authorities within the Southland Region
 - sludges and effluent being transported and discharged into adjoining districts
 - the development of industry such as tourism in one district resulting in increased pressure on facilities in adjoining districts, for example, public conveniences
 - the potential for discharges of effluent and sludges onto or into land restricting future land use options
 - effluent and sludge discharges from mobile sources
 - consistency in the use of transfer of powers
 - consistency in the manner in which effluent and sludge facilities are managed
 - provision of educational material, particularly with regard to localised adverse effects and their avoidance
 - the use of joint hearing procedures
2. Between territorial authorities and the Southland Regional Council
 - transfer of powers
 - joint hearings
 - the consistency in the use of powers
 - cumulative adverse effects, particularly relating to land use development and subdivision.
3. Between the land and the coastal interface within the Southland Region
 - discharges of effluent and sludge onto or into land entering into the coastal marine area and affecting the quality of coastal marine area
 - discharged effluent and sludge onto or into land affecting shellfish and other seafood in the coastal marine area, and associated

- health risks
 - coastal processes affecting sewage scheme sites
4. Between the land and water interface within the Southland Region
 - discharges of effluent and sludge onto or into land entering into water, and affecting the quality of that water,
 - particularly potable water
 - discharged effluent and sludge onto or into land affecting the life supporting capacity of the water ecosystem
 - hydraulic processes affecting effluent and sludge discharge systems
 5. Between the Southland Region and its neighbouring Otago and West Coast Regions
 - variability in consent conditions for discharges of effluent and sludge onto or into land
 - provision of educational and promotional material and research information
 - transportation of sludges and/or effluent and consequential discharges
 - effluent and sludge discharges from mobile sources
 6. Between the Southland Region and the remainder of New Zealand
 - statutory responsibilities, and cognisance of international conventions to which New Zealand is a signatory
 - effluent and sludge discharges from mobile sources
 - provision of educational material
 - variability in consent conditions for discharges to land of effluent and sludge
 - sharing monitoring information that is collected

The Southland Regional Council will consider the above issues in order to ensure a fair, equitable and consistent management of effluent and sludge land application issues within the Southland Region, between the Southland Region and adjoining regions, and nationally. This will be undertaken by:

1. communication and consultation at both the staff and political levels between the various organisations.
2. submissions on District, Regional, or National Policies, Plans and Strategies.

The communication and consultation undertaken at both staff and political levels between the various organisations will be monitored together with any submissions made by the Southland Regional Council to determine if it is successful in ensuring fair, equitable and consistent management of effluent and sludge in the Southland Region. In particular, communication and consultation will aim for consistency between this Plan and other Southland Regional Plans.

9 REFERENCES

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Public Health Guidelines for the safe use of sewage effluent and sewage sludge on land, 1992.

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Sewerage and Sewage Disposal for the Health Inspector, 1995.

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Advances in Onsite Wastewater Disposal US and NZ Practice, 1987.

On-site Domestic Wastewater Management AS/NZS 1547 1996

Septic Tanks for Domestic Wastewater AS/NZS 1546 1996

10 DEFINITION OF TERMS

Agricultural effluent

Effluent that is derived from either pastoral or horticultural farming, but excludes excreta from individual animals, fertiliser application and non-point source discharges from normal farming practices.

Agricultural effluent pond

A pond used for the storage or treatment of agricultural effluent.

Amenity values*

Those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.

Background level

The ambient level of a contaminant in the local area of the site under consideration.

Bioaccumulative

A chemical or biological substance that accumulates in either living or non living tissue, and can be transferred to other organisms via the food chain, for example, lead or other heavy metals.

BOD5

Biochemical Oxygen Demand. The concentration of oxygen demand generated by bacteria engaged in the stabilisation of organic matter measured over 5 days at 20 degrees Celsius. Is usually expressed in grams per cubic metre (g.m^{-3}).

Coastal Marine Area*

means the foreshore, seabed, and coastal water, and the air space above the water -

- a. of which the seaward boundary is the outer limits of the territorial sea;
- b. of which the landward boundary is the line of mean high water springs, except that where that line crosses a river, the landward boundary at the point shall be whichever is the lesser of -
 - i. one kilometre upstream from the mouth of the river; or
 - ii. the point upstream that is calculated by multiplying the width of the river mouth by 5.

Coastal water

Includes:

- a. seawater with a substantial fresh water component; and
- b. seawater in estuaries, fiords, inlets, harbours, or embayments.

Note - coastal water is considered to be within the coastal marine area.¹⁹

Contaminant*

Includes any substance (including gases, liquids, solids, and micro-organisms)

* These definitions are included to assist in the understanding of the terms used in this plan. Where the definition is taken from the Resource Management Act 1991, this is indicated by means of an *. Other sources, where used, are identified accordingly.

or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy or heat:

- a. when discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or
- b. when discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged.

Community sewage scheme

A scheme that collects and discharges sewage from more than three sites which are predominantly residential housing, but may also include a component of industrial and trade process effluent. Generally a community sewage scheme is operated by a local authority, or a company contracting to the local authority.

Controlled activity*

An activity which:

- a. is provided for, as a controlled activity, by a rule in a plan or proposed plan; and
- b. complies with standards and terms specified in a plan or proposed plan for such activities; and
- c. is assessed according to matters the consent authority has reserved control over in the plan or proposed plan; and
- d. is allowed only if a resource consent is obtained in respect of that activity.

Dedicated foul water dump station

A storage facility available for public use which has the sole purpose of enabling foul water from mobile sources to be deposited.

Discretionary activity*

An activity:

- a. Which is provided for, as a discretionary activity, by a rule in a plan or proposed plan; and
- b. Which is allowed only if a resource consent is obtained in respect of that activity; and
- c. Which may have standards and terms specified in a plan or proposed plan; and
- d. In respect of which the consent authority may restrict the exercise of its discretion to those matters specified in a plan or proposed plan for that activity.

Effect*

includes:

- a. Any positive or adverse effect; and
- b. Any temporary or permanent effect; and
- c. Any past, present, or future effect; and
- d. Any cumulative effect which arises over time or in combination with other effects-
regardless of the scale, intensity, duration, or frequency of the effect, and also includes-
- e. Any potential effect of high probability; and
- f. Any potential effect of low probability which has a high potential impact

Effluent

A liquid that may include solid components, discharged as a waste that originates from:

- a. sanitary appliances and fixtures
 - b. community sewage schemes
 - c. agricultural activities
 - d. an industrial or trade process
- but excludes solid waste.

Faecal coliform

A group of rod-shaped bacteria associated with the faecal wastes of warm blooded animals. Generally used as an indicator to micro-biological contamination that may pose a human health risk.

Feedlot

Located on production land, and is a confined site predominantly used all year round for the purpose of intensive controlled feeding of stock for high weight gains or lactation with feed concentrates and supplements. Can be located either indoors or outdoors but excludes piggeries.

Field drain

An open joined or perforated drain for the collection or removal of groundwater, or a downpipe.

Foul water

The discharge from any sanitary fixtures or sanitary appliances, but excludes sludges and effluent from Industrial and Trade Processes, Agricultural Effluent, and sewage collected by Community Sewage Schemes.

Foul water drainage system

Drains, joints and fittings normally laid underground and used specifically for the conveyance of foul water to an outfall and includes any treatment system

Health

In relation to human health, a state of complete physical, mental and social well being, and not merely the absence of disease or infirmity. In relation to animal health, the absence of disease or infirmity.

Hydraulic conductivity

The rate at which a fluid can move through a permeable medium. It is the quantity of fluid that will flow through a unit cross sectional area of porous material per unit time under a gradient of 1 (measured at right angles to the direction of flow).

Industrial or trade premises*

Industrial or trade premises means -

- a. Any premises used for any industrial or trade purposes; or
- b. Any premises used for the storage, transfer, treatment, or disposal of waste materials or for other waste-management purposes, or used for composting organic materials; or
- c. Any other premises from which a contaminant is discharged in connection with any industrial or trade process

and includes any factory farm; but does not include any production land.

Industrial and trade process*

Includes every part of a process from the receipt of raw material to the dispatch or use in another process or disposal of any product or waste material, and any intervening storage of the raw material, partly processed matter, or product.

Industrial and trade process effluent

Includes all liquid effluent from industrial and trade processes.

Infiltration Surface

The surface at which the effluent leaves the constructed trench or soakage field bed and enters the soil medium.

Land

Any land, excluding -

- a. the bed or foreshore of the Coastal Marine Area;
- b. the bed of a river or lake;
- c. wetland;
- d. the airspace above land

Mean seasonal high water level

The average of the highest ground water level relative to either the bottom of a sewage effluent trench or bed, where there is one, or the surface of the ground.

Minimum return period

The time between applications of effluent to the same area.

Non-complying activity*

An activity (not being a prohibited activity) which:

- a. contravenes a rule in a plan or a proposed plan; and
- b. is allowed only if a resource consent is obtained in respect of that activity.

Outcomes

The environmental results anticipated from the implementation of the policies and methods.

Outfall

That part of a disposal system receiving foul water from the drainage system. For foul water, the outfall may include a sewer or septic tank.

Permitted activity*

An activity that is allowed by a plan without a resource consent if it complies in all respects with any conditions (including any conditions in relation to any matter described in section 108 or section 220) specified in the plan.

Persistent organic compounds

Chemicals or biological compounds that are not easily broken down by normal biological processes, and remain in the environment.

Potable water

Drinking water which complies with the Drinking Water Standards for New Zealand 1995 or later additions or amendments to the standards.

Precautionary approach

A precautionary approach is one that adopts prudent foresight and involves the making of judgements based on existing knowledge and understanding while not limiting the ability to utilise innovative solutions.

Production Land*

- a. Means any land and auxiliary buildings used for the production (but not processing) of primary products (including agricultural, pastoral, horticultural, and forestry products):
- b. Does not include land or auxiliary buildings used or associated with prospecting, exploration, or mining for minerals, or used for factory farming, - and "production" has a corresponding meaning.

Prohibited activity*

An activity which a plan expressly prohibits and describes as an activity for which no resource consent shall be granted; and includes any activity prohibited by section 105(2)(b) of the Historic Places Act 1993.

Residential dwelling

Any building, whether permanent or temporary, that is occupied, in whole or in part, as a residence; and includes any structure or outdoor living area that is accessory to, and is used wholly or principally for the purposes of, the residence; but does not include the land upon which the residence is sited.

Return period

The time between consecutive applications of contaminants.

Sanitary appliance

An appliance which is intended to be used for sanitation, but which is not a sanitary fixture. Included are machines for washing dishes and clothes.

Sanitary fixture

Any fixture which is intended to be used for sanitation.

Fixture is an article intended to remain permanently attached to and form part of a building.

Sanitation is the term used to describe the activities of washing and/or excretion carried out in a manner or condition such that the effect on health is minimised, with regard to dirt and infection.

Seasonal high water table

The highest ground water level relative either to the surface of the ground or the bottom of a sewage effluent trench or bed.

Sewage

The contents of sewers carrying the waterborne wastes of a community. This is sometimes called "waste water" or "foul sewage" to distinguish it from stormwater.

Sludge

The solid residues from effluent.

Soakage field dosage pipes

Pipes laid in the ground being part of a foul water drainage system from which either treated or raw foul water is discharged.

Soil ecosystem

The physical, chemical and biological components of the soil, both living and non-living, and the community of organisms that interact with those components.

Solid waste

Any solid material including containers, which are considered to be of no further economic use, and require permanent disposal, or storage until such time that they can be reused or recycled, and includes residues from incineration, but excludes a sludge.²⁰

Stock water

Water used for consumption by stock, and complies with the standards set out in the Australian Water Quality Guidelines for Fresh and Marine Water; 1992.

Stormwater

Surface water runoff subsequent to precipitation which is either diffuse or discharged via a conduit or drain (lined or unlined) directly from surface areas into a natural water course or onto or into land.

Toxics

Biological or chemical substance that because of its strength, volume or character is harmful to human or animal health, or the environment.

Water*

- a. Means water in all its physical forms whether flowing or not and whether over or under the ground;
- b. Includes fresh water, coastal water, and geothermal water;
- c. Does not include water in any form while in any pipe, tank, or cistern.

Water body

Means fresh water or geothermal water in a river, lake, stream, pond, wetland, or aquifer, and includes water in any open drain, canal, or open reservoir, or any part thereof, that is not located within the coastal marine area.

Water ecosystem

The physical, chemical and biological components of water, both living and non-living, and the community of organisms that interact with those components.

Wetland*

Includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.

Whey

The liquid and waste residue from the processing of dairy products.

²⁰ Regional Solid Waste Management Plan for Southland 1996.

Wintering pad

A purpose built area on production land for confining stock in order to avoid damage to pasture, and for feeding out supplements during periods when soils are saturated. It excludes self feeding from silage stacks when stock are not confined tightly to the area adjacent to the stack, but have the ability to graze on adjacent paddocks for most of the day.

APPENDIX A

INFORMATION TO BE SUBMITTED WITH A RESOURCE CONSENT APPLICATION

All applicants for a resource consent to carry out an activity under the provisions of this Plan shall submit the following information, on the prescribed form, with the resource consent application:

1. a description of the activity for which consent is sought, including the methods and processes to be used. The description should identify the location(s) of the discharge(s) by way of a map, the legal description of the site and the correct topographic map grid reference taken from the NZMS 260 topographic map series (for example, NZMS260 Sheet E45, MR 987765); and
2. the site characteristics of the discharge location, including but not limited to, any hydrogeological information, soils, slopes, significant indigenous vegetation or significant habitats of indigenous fauna, and the distance to any water body or coastal area, etc; as specified in Appendix B; and
3. site plan of the property showing:
 - property boundaries
 - adjoining landowners
 - relevant drainage channels
 - the area where the effluent and sludge is to be discharged (soakage field)
 - location of any bores where water is abstracted (this does not include bores used exclusively for monitoring) and distance from discharge area
 - location of any surface waterways, wetlands, ponds or lakes and distance from discharge area
 - location of any dwellings and distance from discharge area
 - scale and north
 - any other relevant feature which may effect the discharge of effluent and sludge
 - fencelines
 - paddocks
 - accesses and stock races
4. the nature of the discharge (quality, quantity, frequency, duration, hazardous properties etc); and
5. a description of the consultation undertaken in relation to the application, and the outcomes of that consultation; and
6. an assessment of any actual or potential effects which the activity may have on the environment, and the ways in which any adverse effects may be avoided, remedied or mitigated. This assessment

shall be in such detail as corresponds with the scale and significance of the actual or potential effects that the activity may have on the environment, and shall be prepared in accordance with the Fourth Schedule of the Resource Management Act 1991. In particular, the assessment of environmental effects will focus on:

- a. any adverse effects on:
 - human health
 - amenity values
 - resources or values of significance to takata whenua
 - soil, significant indigenous vegetation and significant habitats of indigenous fauna, plants, animals, and ecosystems
 - surface water, groundwater, water bodies or coastal marine area;
 - b. any cumulative effects which may arise over time or in combination with other effects;
 - c. any effects of low probability or high potential impact; and
7. proposed monitoring provisions; and
 8. a statement of all other resource consents or approvals which the applicant may require from any consent or approval authority in order to undertake the proposed activity, and whether or not the applicant has applied for such consents; and
 9. any additional information which may be required in relation to applications for specific types of discharges. Some additional information requirements are set out in the rules. Southland Regional Council staff should be contacted to discuss the scope and contents of any other additional information that may be required.

Circumstances in which the powers of Section 92 may be used

The powers of Section 92 of the Resource Management Act 1991 may be used if insufficient information is provided on any matter set out above, or any additional information which is required by the rule to which the application pertains.

APPENDIX B

SITE ASSESSMENT

Those matters which should be addressed in a site assessment are:

Groundwater

- a. depth to groundwater, and seasonal variation of the water table
- b. direction and rate of flow of saturated groundwater
- c. existing groundwater quality

Soil information

Soil profile description of the different horizons including:

- a. depth
 - b. texture - approximate percentage of sand, silt, clay and gravel in each horizon
 - c. presence or absence of clay and iron pans
 - d. infiltration and drainage characteristics - a percolation test may be used
 - e. variability in soil/water parameters and/or soil chemistry

Other site information

- a. topography, slope and slope stability
- b. rainfall and susceptibility of the site to temporary flooding and ground saturation during rain
- c. evapotranspiration potential (exposure to sun and wind)
- d. proximity to water bodies and drainage flow paths for surface runoff and closest distance from discharge area
- e. site vegetation
- f. location of bores where water is abstracted (this does not include bores used exclusively for monitoring), structures, paved areas and site boundaries
- g. section size and shape, and the availability and location of potential application areas
- h. water supply source
- i. surrounding land uses
- j. other local experience with effluent and sludge land application.

APPENDIX C

CONTINGENCY PLANS

A contingency plan is designed to ensure that suitable emergency procedures are in place to either prevent an accident or pollution incident, or reduce the effect of that accident or pollution incident should it occur. Contingency plans are also essential for health and safety purposes. Individual consent holders, private industry and authorities that manage and discharge effluent, or sludge should develop a contingency plan that will address the local conditions that may threaten the integrity of the system.

Contingency plans should clearly specify responsibilities for the consent holder, occupier of the land or authority who has responsibility for the discharge system. The plan should also identify the fail safes that have been built into the design of the plant and equipment, and include a communication plan that outlines the relevant authorities to be contacted as well as providing alternative plans for the storage and discharge of the effluent or sludge.

Should an accident, emergency or other problem occur, the following action should be taken, and outlined in the contingency plan:

Note: Ensuring the health and safety of people is primary and should take precedence in all cases.

1. Assess the size and extent of the emergency or problem
 - if relevant, stop the release of the contaminant
 - can the incident be contained or remedied on-site
 - has the incident caused an impact off site
 - determine the assistance required
 - determine the probable cause of the emergency.

2. Assess the level of risk to the environment and public health, for example, is a water supply involved, or potentially involved.
 - take action to remedy or mitigate any environmental or public health risk that has been identified
 - take action to avoid any potential environmental or public health risks that have been identified

3. Advise appropriate agencies or authorities of
 - the nature of the incident (contaminant involved)
 - location of incident
 - visual and potential impacts on and off site (to people, land, air and water)
 - measures taken to control and remedy situation
 - properties involved
 - agencies or authorities who have been or are to be advised.

In addition to the above, a contingency plan should outline the planned contingencies under three main headings. These headings are; prevention, response and available resources.

Prevention

Maintenance schedule

A maintenance schedule is important to ensure that the entire system is maintained in a clean and efficient operating condition. Maintenance schedules assist to identify any potential problems, or equipment failure before they occur. Maintenance also reduces the potential for major, or irreparable damage to vital systems.

Operator

The operator must ensure that the entire discharge system is operated within its design parameters, and any consent conditions. To this extent, the operator should be suitably qualified and experienced.

Topics that should be covered, in relation to the operator include:

- Required qualifications
- Required experience
- Training provisions
- Provision of information to operator
- Use of operation procedures

Design

The design of the system must include back up systems, fail safes and other features that reduce the potential for spills, or other pollution. In particular, the design should include sufficient bunding of appropriate areas. Effluent and sludge storage is also required in case of adverse conditions preclude the discharge of effluent and sludge. Topic areas that should be covered are:

- External threats
 - Power failure
 - Persistent rain
 - Floods (preventing inundation of storage ponds)
 - Saturated ground (exceeding hydraulic capacity of soil)
 - Frozen ground (causing surface runoff)
 - High winds (spray drift)
 - Drought (available water for usage)
 - Fire
 - Alteration of influent character
 - Any other threat that may arise from local conditions
- Internal threats
 - Pump failure
 - Pipe or other plumbing failure
 - Increasing volume of effluent and sludge
 - Spillage (both major and minor)
 - Other equipment failure
 - Design features
 - Containment facilities
 - Back up equipment
 - Fail safes
 - Alarms that will activate if critical equipment fails

Response

Containment

- Procedures and action plans
- Priorities
- Emergency assistance
- Contact names and phone numbers for assistance

Clean up

- Techniques
- Equipment available for cleanup

Response

- Response forms
- Description of emergency
- Cause
- Action taken
- Time of occurrence
- Time taken
- Personnel involved

Notification

- Organisations and people to notify that a pollution incident has occurred, or is about to occur

Resources

In the event of an emergency, some resources will be required, particularly in relation to carrying out the actions outlined in the contingency plan. The resources that may be required, and their location should be recorded. In particular, the location of the following should be recorded:

- Plans of the plant
- Location and plans of drainage
- Location of clean up equipment
- Location of other response materials
- All technical equipment (particularly electrical) should have clear instructions for safe and proper use.

APPENDIX D

SETTLEMENTS WITH SEWERAGE SCHEMES

Settlements with Sewerage Schemes		
Settlement	Approx. Population Served	Design Capacity
Balfour	170	200
Bluff	2,500	5,000
Browns	100	100
ICC Clifton	47,800	75,000
Gore, Grasslands Road	9,500	25,000
Lumsden	570	900
Manapouri	630	750
Mataura	2,600	4,000
Makarewa (freezing works)	freezing works, leather co., domestic dwellings	unknown
Nightcaps	415	560
Ohai	400	unknown
Omaui	60	85
Otatara	940	950
Riversdale	Riversdale	figures unavailable
Riverton	2,500	not applicable
Stewart Island	350-690	690
Te Anau	2,500 (winter)	2,400
Tokenui	Tokenui township	figures unavailable
Waikaka	170	200
Winton	2,300	5,000 - oxidation pond 2,500 - clarigester

(From information supplied by Southern Health, as at 25 May 1996)

Other Southland Settlements

Athol	Otautau
Brydone	Oteramika
Centre Bush	Papatotara
Clifden	Pukerau
Dacre	Rimu
Dipton	Ryal Bush
Drummond	Te Tipua
Edendale	Thornbury
Fairfax	Tisbury
Fortrose	Tuatapere
Garston	Tuturau
Greenhills	Underwood
Haldane	Waianiwa
Hedgehope	Waihoaka
Hokonui	Waikana
Isla Bank	Waikawa
Kapuka	Waikeria
Kennington	Waimahaka
Lochiel	Waimatua
Lorneville	Waimumu
Makarewa	Wairio
Mandville	Wallacetown
Milford Sound	Wendon
Mokoreta	Wendonside
Monowai	West Plains
Morton Mains	Wilden
Mossburn	Willowbank
Myross Bush	Woodend
Oban	Woodlands
Orawia	Wrights Bush
Orepuki	Wyndham
Oreti Beach	

(Information taken from Southland 1994 Telephone Directory)

APPENDIX E

TYPICAL DOMESTIC FOUL WATER FLOW DESIGN ALLOWANCES

Typical Domestic Foul Water Flow Design Allowances		
Source	Typical Foul Water Flow Allowance in Litres/Person/Day	
	On-site Roof Water Tank Supply	Reticulated Community or a Borehole Water Supply
Households with standard facilities (including automatic washing machine).	140	180
Households with full water reduction fixtures.	115	145
Households with extra wastewater producing facilities (eg: garbage grinders, dishwashers, douches etc)	170	220
Households (blackwater only).	50	60
Households (sullage only)	90	120
Motels/Hotels		
guests, resident staff	140	180
non-resident staff	30	40
reception rooms	20	30
bar trade (per customer)	20	25
restaurant (per diner)	20	30
Community Halls		
banqueting	20	30
meetings	10	15
Restaurants (per diner)		
dinner	20	30
lunch	15	25
Tea rooms (per customer)		
without restroom facilities	10	15
with restroom facilities	15	25
School (pupils plus staff)	30	40
Rural Factories, shopping Centres	30	50
Camping grounds		
fully serviced	100	130
recreation areas	50	65
Notes		
1. The flow allowances above do <u>not</u> (except where stated) include garbage grinders.		
2. Flows are minimum's, unless actual flows from past experiences can be demonstrated.		

APPENDIX F

Key Wetlands in the Southland Region

Awarua Plain - Southland Estuaries including:
 Waituna Scientific Reserve
 Seaward Moss
 Wetlands adjoining Awarua Bay
 Wetlands adjoining Bluff Harbour
 New River Estuary
 Fortrose Harbour (including lower Mataura River)

Bayswater Bog
 Big Bay - Waiuna
 Borland Mire
 Castle Downs (Hamilton Burn)
 Drummond Peat Swamp (Isla Bank)
 Fiordland National Park (World Heritage site) including:
 Back Valley
 Grebe Valley
 Lower Hollyford
 Sutherland Sound

Five Mile Swamp (wetland in ancient Lake Wakatipu lake outlet)
 Freshwater Valley including:
 Freshwater Flats
 Ruggedy Flat

The following wetlands in the Garvie Mountains
 Blue Lake wetland
 Gow Lake wetland
 Scott Lake wetland

Haldane Estuary and reservoir
 Lake George
 Lake Vincent, near Fortrose
 Lake Brunton, Otara
 Mount Tennyson string bog
 Redcliff Reserve
 So Big Swamp
 Silver Lagoon
 Table Hill

Te Anau Basin wetland complex including:
 Kepler Mire
 Dome Mire - Dismal Swamp
 Dunton Swamp
 Tekaro Wetland
 Amoeboid Swamp
 Kakapo Swamp
 Snowdon Forest
 Dale Lake
 Lake Luxmore
 Lagoon Creek

Toetoes Flats
 Waiau River - Te Waewae Lagoon
 Waikawa Estuary
 Waimatuku wetland
 Wairaki Lagoon (Waiau River)
 Waterloo (Aparima)