



Information guide for
Stormwater Discharges
in Southland



environment
SOUTHLAND

Te Taiao Tonga



January 2013

1. Introduction

As part of an effort to improve the quality of Southland’s water, Environment Southland has introduced two rules to its Regional Water Plan in order to regulate stormwater discharges.

The rules are designed to help Southland achieve the water quality outcomes in the Regional Water Plan.

This Information Guide is intended for use by persons and their consultants when preparing permit applications for the discharge of stormwater in the Southland region. The Information Guide should be read in conjunction with the Southland Regional Water Plan and the Resource Management Act 1991.



The Guide provides:

- Details of the relevant regional plan rules (and other plan provisions), and which activities require permits.
- A summary of the permit application process.
- Details of the information requirements for stormwater permit applications, and guidance for preparing an Assessment of Environmental Effects (AEE).
- Examples of conditions typically included on stormwater discharge permits.

The Guide does not provide:

- A literature review of everything relating to stormwater discharges.
- A technical review of stormwater treatment systems or devices.
- A guide prescribing what you must do in every situation (as this depends on the scale
- Significance of the activity, and the specifics of the proposal including location and the receiving environment).

2. Stormwater planning provisions and rules

Regional plan rules for stormwater discharges are in place. Persons discharging (or proposing to discharge) stormwater need to be aware of the requirements for managing stormwater under the Southland Regional Water Plan.

Stormwater discharges are a “permitted activity” if they meet the conditions of Rules 11 and 12(a) of the Southland Regional Water Plan. If the conditions cannot be met, a discharge permit (i.e. a resource consent) must be obtained from Environment Southland.

To apply for a discharge permit, please fill out the resource consent application attached to this guide.

Stormwater discharges into water - Rule 11

Rule 11 of the Water Plan deals with the discharge of stormwater into surface water. Rule 11 became operative at the end of October 2008. Stormwater discharges into water that require permits are mainly those:

- From reticulated systems.
- From sites with hazardous substances.
- Containing sewage, foul water or agricultural effluent.
- Resulting in the production of conspicuous oil or grease films, scums, foams or floatable or suspended materials.
- Within Natural State Waters.



Stormwater discharges to land - Rule 12

Rule 12 of the Water Plan deals with the discharge of stormwater into or onto land, and has been operative since July 2007. Stormwater discharges to land that will require permits from Environment Southland are mainly those:

- From reticulated systems.
- From sites with hazardous substances.
- Containing sewage, foul water or agricultural effluent.
- Resulting in the production of conspicuous oil or grease films.
- Cause flooding of any other person's property, erosion or land instability .
- Within Natural State Waters.

Stormwater discharges from reticulated systems

The discharge of stormwater from a reticulated stormwater system (i.e. a piped or channelled network that collects stormwater from numerous landholdings and discharges it at a single point) will require a discharge permit from Environment Southland.

The reason why reticulated stormwater systems require a discharge permit is that they often carry high levels of sediment, oil and grease, organic material, faecal matter (e.g., e.coli), nutrients or hazardous substances.

Stormwater discharges from industry/trade premises, involving hazardous substances.

The discharge of stormwater from industry/trade premises where hazardous substances (see appendices for definition) are stored or used requires a discharge permit from Environment Southland. However, no permit is required where:

- Hazardous substances cannot enter the stormwater system.
- An interceptor system is in place (that is effective and regularly maintained).



A reticulated stormwater drain.

The following stormwater discharges WILL NOT require a discharge permit from Environment Southland:

- The discharge of stormwater into a reticulated stormwater system.
- Stormwater discharges in minor quantities, such as from residential properties.
- Stormwater discharges in the coastal marine area, which are a permitted activity under Rule 7.3.4.1 of the Regional Coastal Plan for Southland. For example, the coastal marine area boundary for the Waihopai River is State Highway 6/North Road Bridge. Therefore, downstream from this point, stormwater discharges are permitted provided they meet ANZECC sediment quality guidelines and water quality standards 50 metres from the discharge.

3. Guidance notes for Stormwater Discharge Permits/Assessments of Environmental Effects

These notes are intended to help persons prepare an application and an Assessment of Environmental Effects (AEE) for stormwater discharge permits. Please read and follow carefully.

Adhering to the instructions and recommendations here may greatly reduce the chance that Environment Southland will require further information before being able to process your application. This means you will receive a decision regarding your permit sooner.

3.1 SUMMARY OF ENVIRONMENT SOUTHLAND PERMIT APPLICATION PROCESS

Permit application process:

1. Confirm discharge permit requirements with Environment Southland Consents Staff.
2. Prepare application for a discharge permit:
 - Complete Environment Southland application form (see Appendices).
 - Prepare an Assessment of Environmental Effects (AEE).
 - Consult/seek approval from affected parties.
3. Apply to Environment Southland for a discharge permit.
4. If necessary, provide further information on the proposed activity.
5. Receive Environment Southland's decision concerning your discharge permit. Note that permits may be granted (usually subject to conditions) or declined.

3.2 GUIDANCE NOTES FOR PREPARING A STORMWATER AEE

An Assessment of Environmental Effects (AEE) should identify the scale and environmental impacts of the specified stormwater discharges. To achieve the best results, an AEE will usually require the expertise of a qualified professional.

The contents of individual AEEs will depend on the scale and significance of the referenced discharge activities, as well as on the particulars of the proposal, including matters such as location and receiving environment.

AEEs may include the following information:

1. Description of the stormwater activity.

- A description of the stormwater system (existing/proposed).
- A description of the drainage area, including an estimate of the types of surfaces and land uses within the drainage area and size, and the general topography.
- Identification of any consented or non-stormwater discharges to the system.
- Information about ownership, operation and maintenance of the stormwater system.



Stormwater discharge.

2. Description of the affected environment.

This could include:

- Mapping of surface water and/or land that will be affected.
- Identification of any habitats, ecological values, recreational or amenity values that are associated with the water or land.

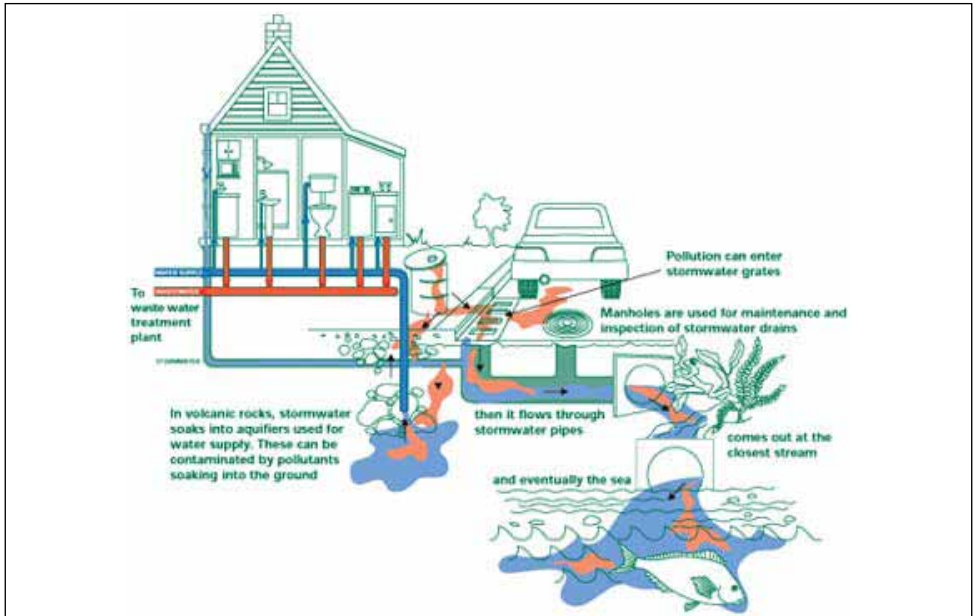
3. Assessment of the risks of hazardous substances (if relevant).

Please see definitions contained in the appendices.

4. Assessment of environmental effects.

This could include:

- Details of the expected stormwater contaminants in the discharge. This should be in accordance with the scale and significance of the discharge as well as the likely effects on the receiving environment. This should also demonstrate compliance with water quality standards in the Southland Regional Water Plan.
- Assessment of the sensitivity of the receiving environment from the discharge. (This is probably best achieved by a survey of water quality and/or sediment effect, and an aquatic biota assessment.)
- A sediment survey, specifically recommended for systems that drain industrial areas or that discharge to land. (In some instances, erosive or deposition effects at the outfall may need to be addressed, as well as heavy metal sampling of sediment.)
- Information concerning the stormwater's secondary flow paths, excess to the system's capacity, and the effects of stormwater ponding.



Stormwater discharges can end up in rivers.

5. Description of mitigation measures (including safeguards and contingency plans where relevant).

In compiling your AEE, you will need to include details of stormwater treatment and mitigation measures, as well as your system's design and instructions for maintenance. This will include measures for preventing contaminants from entering the stormwater system. (This may mean that applicants need to demonstrate that they are adopting best management practices, or where this is not possible, best practicable options.)

Depending on the situation, stormwater treatment and mitigation could:

- Occur immediately on all new developments (e.g. stormwater from a new development may have a period where there is increased run-off due to exposed or disturbed soils).
- Occur as upgrades of stormwater systems take place.
- Involve the installation of a settling system that captures the first flush of stormwater during a rain shower before it enters a body of surface water.
- Adopt best management practices for stormwater discharges as maintained by various industries' codes of practice and guidelines¹.

A management plan for the system can also be useful (e.g. outlining details and locations of sampling sites, measures to maintain/improve pre-treatment of the stormwater, response measures, reporting procedures, etc.).

¹ For example, see *New Zealand Environment Research Foundation (2004) On-Site Stormwater Management Guideline*, Wellington, New Zealand (www.waternz.org.nz)

Some helpful tips for the design of stormwater systems and mitigation measures can be found in the appendix. However, the design guidelines may not always be appropriate to every circumstance, and alternative site or parameter-specific measures may be necessary.

6. Alternative locations or methods.

Applicants should consider alternative methods of discharging/treating stormwater, for applications concerning new and existing stormwater discharges. Possible alternatives may include:

- Linkage of wastes to a community reticulated system (if one is nearby).
- Improved separation and containment of contaminants.
- The use of interceptors to filter sediment and contaminants from stormwater.

7. Identification of the persons affected by the proposal and the consultation, if any, that has been taken.

8. Monitoring to be undertaken.

AEEs should contain comprehensive information about how a given stormwater discharge will be supervised and/or its effect on the receiving environment. This process may include monitoring of inputs and mitigation measures within the stormwater system.

This information is important for your application because it:

- Provides information that can be used to establish parameters for contaminant quantity, which if exceeded, will prompt investigation or more extensive monitoring.
- Identifies contaminant sources that adversely affect the receiving environment and are a priority for further investigation and/or mitigation.

Stormwater assessment techniques should be based on the first flush of stormwater after a dry spell, as this discharge will generally be of poorer quality and more harmful to the environment than regular stormwater flows. Ideally, monitoring should be carried out during a rainfall event of at least two hours every six months. (For more information, see Southland Rainfall Data in Appendix 5).

3.3 GLOBAL STORMWATER DISCHARGE PERMIT

It is unlikely that every stormwater discharge will require an “individual discharge permit”. Environment Southland Consents staff may instead direct you to apply for a “global discharge permit”, which covers the stormwater discharge of an entire township or catchment. For example, this may mean that:

- A single discharge permit application could be made, which covers stormwater discharges from the Te Anau township.
- Within the Invercargill District, the stormwater discharge permit applications may need to be grouped into separate catchments for the Waihopai River, Otepunu Stream and Kingswell Creek.



3.4 RESOURCE CONSENT CONDITIONS

In granting permits, Environment Southland will likely impose conditions to mitigate adverse environmental effects of stormwater discharges. The following are some of the more common conditions to which stormwater consents may be subject to:

- Limits on the type and scale of the stormwater discharge, which are based on the details provided in the application.
- Requirements to meet sediment guidelines and water quality standards contained in the Southland Regional Water Plan.
- Stormwater system (e.g. describing where stormwater goes and how it should be treated, secondary flow paths, etc.).
- Detailed design specifications for the stormwater system (e.g. sumps, inlets, outlets, erosion, discharge rates, and treatment devices).
- Inspection and maintenance requirements.
- Monitoring, including frequency, contaminants to be monitored and the location of sampling sites.
- Reporting and recording (e.g. timeframes for reporting, details for monitoring and results, and record-keeping).
- Management plan (e.g. setting out sampling site locations, management measures, responses and reporting procedures).
- Permit term (i.e. lapsing date).
- Review condition, to give Environment Southland the option to revisit the discharge permit in certain cases, which are specified in the condition.

3.5 COMPLIANCE ISSUES

The purpose of this Information Guide is to provide advice and information to persons and their consultants preparing stormwater permit applications.

Despite Environment Southland's efforts to promote understanding of the region's new stormwater requirements, familiarity and compliance with regional plan rules are **the responsibility of persons discharging stormwater**, be they existing or proposed activities. The onus is on persons to apply for all necessary discharge permits from Environment Southland within the required timeframe. Failure to act accordingly or to comply with approved consent conditions may result in enforcement action by Environment Southland.

Discharges of the following contaminants, should be immediately referred to Environment Southland's Compliance Division upon discovery:

- Illegal connections of foul water, raw sewage or untreated effluent to a reticulated stormwater system;
- Wastewater from washing vehicles being flushed into stormwater systems.



Discharge from an industrial/trade premises.

3.6 ADDITIONAL CONSENTS MAY BE NECESSARY

Large scale subdivisions and land use resource consent proposals received by District and City Councils may need **separate** stormwater discharge permits from Environment Southland.

Section 91 of the Resource Management Act 1991 provides for the deferral of pending applications for additional consents. This way multiple applications can be processed concurrently by the relevant councils. Environment Southland encourages this practice.

Appendix 1. Key Stormwater Provisions from the Southland Regional Water Plan

POLICY 11 – STORMWATER DISCHARGES

Apply consent conditions requiring consented discharges of stormwater to meet both the ANZECC sediment guidelines (as shown in Appendix E of this Plan) and the relevant water quality standards specified in Appendix G “Water Quality Standards” following reasonable mixing to:

- a) all resource consents for new stormwater discharges; and
- b) all new resource consents for existing stormwater discharges. Unless it is consistent with the purpose of the Act to allow further time, existing discharges will be required to meet the standards and guidelines by 2010 or the date the resource consent commences, whichever is the latter.

Explanation

The policy as been developed to ensure that discharges into surface water meet the ANZECC sediment guidelines and the relevant water quality standards following reasonable mixing with receiving waters from the point of discharge. The policy does not include discharges into reticulated systems as Section 15 of the Act only allows the Council to control discharges from these systems. The Local Government Act 2002 enables territorial authorities to establish Trade Waste Bylaws to control what can be discharged into the stormwater systems in the region. Environment Southland needs to work closely with

the territorial authorities to achieve this policy having regard to the practical constraints that exist and the communities’ ability to pay for improvements. It is recognised that it would be unreasonable and costly to require existing stormwater systems to comply with water quality standards within the short term. As a consequence, a 10-year period from the date the proposed Plan was publicly notified is provided during which those persons or authorities responsible for these discharges can take action to meet the appropriate standards.

It is expected that the prime means of achieving these standards will be through adopting best management practices (or the best practicable option where it is not possible to adopt best management practices) to prevent contaminants entering the stormwater system.

This could occur immediately on all new developments and could occur in other areas as upgrades take place. In some cases, it may be necessary to install some form of settling system that captures the first flush of stormwater in a rain event, before it enters a surface water body.

Policy 6 “Non-regulatory methods” is also relevant to stormwater discharges. Environment Southland will support the development and implementation of best management practices such as those contained in the various industry codes of practice and guidelines. The oil industry is one sector that has produced a detailed guideline that addresses management of stormwater discharges from petroleum industry sites (Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand, Ministry for the Environment, 1998).

RULE 11 - DISCHARGE OF STORMWATER INTO SURFACE WATER

The discharge of stormwater into a surface water body or water in an artificial watercourse is a permitted activity provided the following conditions are met:

- a) the discharge is not from a reticulated system.
- b) the discharge does not originate from industrial or trade premises where hazardous substances are stored or used unless:
 - i) hazardous substances cannot enter the stormwater system; or
 - ii) there is an interceptor system in place to collect stormwater that may contain hazardous substances and discharge or divert it to a trade waste system; or
 - iii) the stormwater contains no hazardous substances except oil and grease and the stormwater is passed through an oil interceptor system prior to discharge.
- c) the discharge does not contain any sewage, foul water or agricultural effluent;
- d) the discharge does not result in the production of any conspicuous oil or grease films, scums, foams or floatable or suspended materials;
- e) except for the discharge of stormwater from a roof, road or vehicle parking area, the discharge is not into water within Natural State Waters.

Explanation

Stormwater has the potential to carry high levels of contaminants into surface water. Contaminants may include sediment, oil and grease, organic material, faecal material and hazardous chemicals. The risk of such contaminants being present is higher when the discharge is from industrial or trade premises or from a reticulated system that collects stormwater from a larger area and a number of properties. For this reason, the rule has specific conditions in relation to these types of discharge. If the conditions attached to the rule cannot be met, the activity will require consent under one of Rules 1, 2 and 3 of this Plan depending on the receiving water and whether or not the discharge will meet the water quality standards for the relevant surface water body. This will enable Council to ensure that appropriate treatment measures are in place to meet water quality standards. It will also allow the discharges to be monitored.

Under Section 20A of the Act, a resource consent application must be made within six months of a rule becoming operative for a lawfully established activity requiring consent under that rule. Conditions of consents granted for existing stormwater discharges would stipulate that the standards and guidelines specified in Policy 11 were to be met at the end of the phase-in period contained in the policy; alternatively consents may be granted with a shorter consent term to allow reconsideration of the activity and appropriate consent conditions at the end of the phase-in period.

It is unlikely that every stormwater discharge will need to be individually consented in practice. The process will be more efficient if resource users obtain "global" consents that allow them to discharge into surface water, subject to meeting the conditions specified on the consent including requirements to provide the Council with information.

Other stormwater discharges, for example from individual dwellings, are likely to contain far fewer contaminants. It is appropriate that, provided the other conditions can be met, the discharge is permitted.

Discharges from industrial and trade premises are permitted. Raw sewage, foul water and untreated effluent may not be discharged. This can occur, for example, where stormwater enters sewage collection pipes, causing them to overflow. Stormwater discharge into water within Natural State Waters will require consent under Rules 1, 2 and 3 of the Plan.

RULE 12 - DISCHARGE OF STORMWATER INTO OR ONTO LAND

- a) The discharge of stormwater onto or into land is a permitted activity provided the conditions below are met:
 - i) the discharge is not from a reticulated system;
 - ii) the discharge does not originate from an industrial or trade premises where hazardous substances are stored or used unless:
 - 1) hazardous substances cannot enter the stormwater system; or
 - 2) there is an interceptor system in place to collect stormwater that may contain hazardous substances and discharge or divert to a trade waste system; or
 - 3) the stormwater contains no hazardous substances except oil and grease and the stormwater is passed through an oil interceptor system prior to discharge;
 - iii) the discharge does not contain any sewage, foul water or agricultural effluent;
 - iv) the discharge does not result in the production of any conspicuous oil or grease films;
 - v) the discharge does not cause flooding of any other person's property, erosion or land instability;
 - vi) except for the discharge of stormwater from a roof, road or vehicle parking area, the discharge is not onto land where it may enter water within Natural State Waters.
- b) The discharge of stormwater onto or into land that cannot meet the above conditions is a discretionary activity.

Explanation

Stormwater run-off to ground will generally have few adverse effects on water quality. The exception is where contaminants such as untreated agricultural effluent, sewage or hazardous substances may be present. The conditions attached to Rule 12(a) should ensure that the risk of such contaminants being present in the discharge is low. The stormwater disposal system needs to be designed so that stormwater does not cause erosion, land instability or flooding of a neighbouring property.

If the conditions attached to the rule cannot be met, the activity will require consent under Rule 12(b). Under Section 20A of the Act, a resource consent application must be made within six months of a rule becoming operative for a lawfully established activity requiring consent under that rule. Conditions of consents granted for existing stormwater discharges would stipulate that the standards and guidelines specified in Policy 11 were to be met at the end of the phase-in period contained in the policy; alternatively consents may be granted with a shorter consent term to allow reconsideration of the activity and appropriate consent conditions at the end of the phase-in period.

SECTION 8: GLOSSARY

Stormwater	Surface water runoff subsequent to precipitation.
Reticulated system	This is the means by which water is collected and delivered prior to discharge. In the context of stormwater discharge, this term also refers to a piped or channelled network for collecting stormwater from a number of landholdings with a single common discharge point.
Hazardous substance	Includes but is not limited to, any substance defined in Section 2 of the Hazardous Substances and New Organisms Act 1996 as a hazardous substance ² .

² In the *Hazardous Substances and New Organisms Act 1996*, hazardous substance means, unless expressly provided otherwise by regulations, any substance —

- a) With one or more of the following intrinsic properties:
 - i) Explosiveness
 - ii) Flammability:
 - iii) A capacity to oxidise:
 - iv) Corrosiveness:
 - v) Toxicity (including chronic toxicity):
 - vi) Ecotoxicity, with or without bioaccumulation; or
- b) Which on contact with air or water (other than air or water where the temperature or pressure has been artificially increased or decreased) generates a substance with any one or more of the properties specified in paragraph (a) of this definition.

Appendix 2. Section 20A of the Resource Management Act 1991

Resource Management Act 1991

20A Certain existing lawful activities allowed

- 1) If, as a result of a rule in a proposed regional plan taking legal effect in accordance with section 86B or 149N(8), an activity requires a resource consent, the activity may continue until the rule becomes operative if,—
 - a) before the rule took legal effect in accordance with section 86B or 149N(8), the activity—
 - i) was a permitted activity or otherwise could have been lawfully carried on without a resource consent; and
 - ii) was lawfully established; and
 - b) the effects of the activity are the same or similar in character, intensity, and scale to the effects that existed before the rule took legal effect in accordance with section 86B or 149N(8); and
 - c) the activity has not been discontinued for a continuous period of more than 6 months (or a longer period fixed by a rule in the proposed regional plan in any particular case or class of case by the regional council that is responsible for the proposed plan) since the rule took legal effect in accordance with section 86B or 149N(8).
- 2) If, as a result of a rule in a regional plan becoming operative, an activity requires a resource consent, the activity may continue after the rule becomes operative if,—
 - a) before the rule became operative, the activity—
 - i) was a permitted activity or allowed to continue under subsection (1) or otherwise could have been lawfully carried on without a resource consent; and
 - ii) was lawfully established; and
 - b) the effects of the activity are the same or similar in character, intensity, and scale to the effects that existed before the rule became operative; and
 - c) the person carrying on the activity has applied for a resource consent from the appropriate consent authority within six months after the date the rule became operative and the application has not been decided or any appeals have not been determined.

Appendix 3. Suggested Guidelines for the design of stormwater systems and mitigation measures

Auckland Council Stormwater Industry Guides:

See the Auckland Council website: www.aucklandcouncil.govt.nz

***On-site Stormwater Management Guideline*, New Zealand Water Environment Research Foundation and Ministry for the Environment, July 2004:**

See the Water New Zealand website: www.waternz.org.nz

Note: The design guides are generally based on 24-hour rainfall events. Rainfall data for Southland is summarised in Appendix 4.

Appendix 4. Rainfall data for Southland

24-hour duration rainfall events

(Rainfall depths are stated in millimetres)

Sites	Return Periods (years)					
	2	5	10	20	50	100
Eyre Creek at Shepherd Creek Hut	60	74.1	81.4	87.2	93.4	97.1
Fairlight at Cainard Station	57.4	79.6	94.9	109.7	129.2	144
Five Rivers at Five Rivers Station	55.2	72.9	83.5	93	104.4	112.3
Hamilton Burn at Mt Hamilton Rd	74	97.7	112.4	125.5	141.2	152.1
Hokonui Hills at Lora Station	51	60.5	64.8	67.9	71	72.6
Kingswell Creek at Tisbury Dam	41	50.8	58.1	65.7	76.8	86
Mataura River at Tukurau	43	53.5	59.1	63.5	68.2	71
McKellars Flat at Gorge Burn	62	83.3	95.3	105.9	118.4	127.1
Middle Creek at Otahuti	48.5	69.6	89.9	115.2	159.4	203.6
Mokoreta at Mt Alexander	45.7	60.1	70.9	81.9	97.3	109.8
Ohai at Wether Hill Station	61	76	82.2	86.4	89.9	91.7
Oreti River at Lumsden Cableway	47	64.3	74.8	84.1	95.1	102.6
Oreti River at Three Kings	62.5	82.2	93	101.8	111.3	117.3
Waiau River at Clifden	54	68.5	80.2	93.4	113.6	131.6
Waikaia River at Piano Flat	51.8	70.4	83.4	95.9	112.5	125.1
Waimea Stream at Mandeville	39	53.5	62.5	71.3	83.1	92.1
Wendon Valley at Waikaka	42.05	57.9	69.3	80.9	96.7	109.4
Woodlands at Garvie Road	47.5	63	74.6	86.2	102.4	115.3

Two hour duration rainfall events

(Rainfall depths are stated in millimetres)

Sites	Return Periods (months)			
	Full record		Summer months only	
	6	12	6 ¹	12
Eyre Creek at Shepherd Creek Hut	14.5	16.5	11.5	14.5
Fairlight at Cainard Station	14.5	17.0	10.5	14.5
Five Rivers at Five Rivers Station	14.5	16.5	11.3	14.8
Hamilton Burn at Mt Hamilton Rd	10.2	15.2	13.0	16.5
Hokonui Hills at Lora Station	13.5	15.7	11.0	14.4
Kingswell Creek at Tisbury Dam	12.5	13.6	9.0	12.0
Mataura River at Tukurau	9.8	12.2	9.5	13.0
McKellars Flat at Gorge Burn	14.5	16.4	11.0	14.1
Middle Creek at Otahuti	12.8	15.2	9.7	13.5
Mokoreta at Mt Alexander	14.5	16.5	12.5	15.0
Ohai at Wether Hill Station	13.8	17.0	11.8	15.5
Oreti River at Lumsden Cableway	13.0	15.5	10.0	14.0
Oreti River at Three Kings	14.0	16.1	11.8	15.0
Waiau River at Clifden	14.5	15.0	10.0	15.0
Waikaia River at Piano Flat	13.0	15.5	10.7	14.0
Waimea Stream at Mandeville	10.6	12.0	9.0	11.0
Wendon Valley at Waikaka	12.0	13.6	9.8	13.0
Woodlands at Garvie Road	11.6	14.4	9.0	12.0

1. The return period is twice per year rather than in 6-month intervals. The data portrays the 2-hour duration rainfalls that occur, on average, twice during the 1 December to 31 March period each year.

FOR MORE INFORMATION CONTACT:

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