

# Resource Consent Application Form 9A



## Land Use Consent

- To construct or alter a bore
- To drill over an aquifer

## IMPORTANT NOTES TO THE APPLICANT

You must complete this form **and** Resource Consent Application Form 1 in full.

It is crucial that you provide as much relevant information as possible with your application and in an understandable way. This will help ORC staff process it efficiently, and at the minimum cost.

If all the necessary information is not entered on the form or supplied with the application then Otago Regional Council may return your application, request further information or publicly notify your application. This will lead to delays in the processing of your application and may increase processing costs.

This application form, when properly completed, should provide an adequate "Assessment of Effects on the Environment" (AEE) where the adverse effects of a proposal are not significant. However, this can only be determined on application.

**For bores:** Depending on the location, quantity and intended use of the groundwater to be taken from the bore, you may require a separate Water Permit to take and use water from the Otago Regional Council. **If you need a water permit please refer to the aquifer testing requirements attached to this form.** When siting your bore you should consider the location in terms of compliance with the rules permitting abstraction in the *Regional Plan: Water for Otago*. You should also consider any effects on water levels in neighbouring bores, allocation availability within the aquifer, and potential stream depletion effects. Such effects may influence the likelihood of obtaining a resource consent to take groundwater at the volume you request.

**Disclaimer: It is the applicant's responsibility to ensure that:**

- the bore is suitable for the purpose required;
- the bore will penetrate water-bearing material;
- the consent holder will have physical access to any water in the bore;
- the consent holder will be legally able to take water; and
- any future taking of water will not have adverse effects on other users or the environment.

**GENERAL**

1. Which of the following activities are you seeking to undertake? (please tick)

- Construct a new bore
- Alter an existing bore
- Drilling over an aquifer identified in the C-series maps, other than for the purpose of creating a bore
- Constructing a piezometer / monitoring well
- Drilling for a geological, geotechnical or groundwater investigation

2. Legal Description of the site where the drilling will occur. Please also attach a Certificate of Title less than 3 months old.

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3. Owner of the site where the drilling will occur (if different from applicant on Form 1)

Full name(s) of owner(s) \_\_\_\_\_

Address \_\_\_\_\_

Phone number \_\_\_\_\_

Email address \_\_\_\_\_

4. Name and address of driller of person undertaking the works

Full name(s) \_\_\_\_\_

Company (if applicable) \_\_\_\_\_

Phone number \_\_\_\_\_

Email address \_\_\_\_\_

5. How many drill holes are proposed? \_\_\_\_\_

6. Please provide an accurate GPS location in NZTM2000 (New Zealand Transverse Mercator) format for each drill hole. Note: this should be two seven digit numbers e.g. E1415593 N4923363 and can be obtained from your driller or using a GPS.

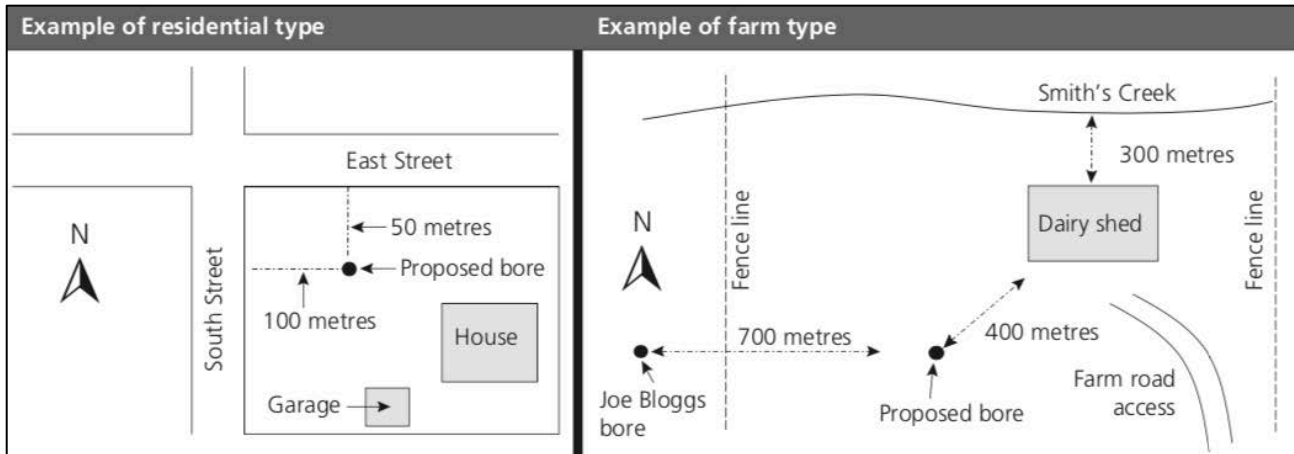
E \_\_\_\_\_ N \_\_\_\_\_

E \_\_\_\_\_ N \_\_\_\_\_

E \_\_\_\_\_ N \_\_\_\_\_

E \_\_\_\_\_ N \_\_\_\_\_

7. Please attach a site plan. This must show the location of the proposed drill sites in relation to nearby houses, driveways, streets, intersections, springs, waterways, and property boundaries. If possible, please also show bores, septic tanks, and waste disposal sites. Two examples of acceptable drawings are shown below.



8. Please provide drill hole details. If more than four drill holes are proposed, provide the following details on a separate sheet.

Hole 1		Hole 2	
Hole Diameter (mm):		Hole Diameter (mm):	
Estimated Hole Depth (m):		Estimated Hole Depth (m):	
Estimated Casing Depth (m):		Estimated Casing Depth (m):	
Casing Material (if PVC, state grade):		Casing Material (if PVC, state grade):	
Aquifer:		Aquifer:	
Method of Drilling:		Method of Drilling:	
Method of Construction:		Method of Construction:	
Backfill material:		Backfill material:	

Hole 3		Hole 4	
Hole Diameter (mm):		Hole Diameter (mm):	
Estimated Hole Depth (m):		Estimated Hole Depth (m):	
Estimated Casing Depth (m):		Estimated Casing Depth (m):	
Casing Material (if PVC, state grade):		Casing Material (if PVC, state grade):	
Aquifer:		Aquifer:	
Method of Drilling:		Method of Drilling:	
Method of Construction:		Method of Construction:	
Backfill material:		Backfill material:	

## BORES ONLY

**9. What is the bore to be used for? (please tick)**

- Domestic. Number of houses: \_\_\_\_\_
- Stock drinking water
- Irrigation
- Industrial / Commercial
- Exploratory
- Other. Please specify: \_\_\_\_\_

**10. What quantity of water do you propose to take and at what rate?**

Maximum rate of take \_\_\_\_\_ litres per second

Maximum daily volume \_\_\_\_\_ cubic metres per day

## DRILLING OVER AN AQUIFER

**11. Which aquifer do you propose to drill over?** If you are unsure refer to Maps C1-C17 in the Regional Plan: Water for Otago and maps contained in Plan Change 4A (they are available for viewing on [www.orc.govt.nz](http://www.orc.govt.nz), or at our offices). Information on the location of the 'others' list can be obtained from Council's Resource Science Unit.

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|--|--|
| <input type="checkbox"/> Cardona Alluvial Ribbon     | <input type="checkbox"/> North Otago Volcanics       |
| <input type="checkbox"/> Cromwell Terrace            | <input type="checkbox"/> Roxburgh Basin              |
| <input type="checkbox"/> Dunstan Flats               | <input type="checkbox"/> Papakaio                    |
| <input type="checkbox"/> Earnsclough Terrace         | <input type="checkbox"/> Pomahaka Basin              |
| <input type="checkbox"/> Ettrick Basin               | <input type="checkbox"/> Shag Alluvium               |
| <input type="checkbox"/> Hawea Basin                 | <input type="checkbox"/> Wanaka Basin Cardona Gravel |
| <input type="checkbox"/> Inch Clutha River / Mata Au | <input type="checkbox"/> Wakatipu Basin              |
| <input type="checkbox"/> Kakanui-Kauru Alluvium      | <input type="checkbox"/> Unknown                     |
| <input type="checkbox"/> Kuriwao Basin               | Others:  |
| <input type="checkbox"/> Lindis Alluvial Ribbon      | <input type="checkbox"/> Bendigo                     |
| <input type="checkbox"/> Lowburn Alluvial Ribbon     | <input type="checkbox"/> Clydevale                   |
| <input type="checkbox"/> Lower Taieri                | <input type="checkbox"/> Glenorchy                   |
| <input type="checkbox"/> Lower Waitaki Plains        | <input type="checkbox"/> Strath Taieri               |
| <input type="checkbox"/> Maniototo Tertiary          | <input type="checkbox"/> Tarras                      |
| <input type="checkbox"/> Manuherikia Alluvium        | <input type="checkbox"/> Wairuna                     |
| <input type="checkbox"/> Manuherikia Claybound       |  |

## ASSESSMENT OF ENVIRONMENTAL EFFECTS

### 12. Please tick appropriate boxes:

YES NO

- Is the proposed drilling within 50 metres of a known contaminated site?
- Is the proposed drilling within 100 metres of any existing bores on neighbouring properties?
- Is the proposed drilling within 50 metres of any existing septic tank / outfall or long drop toilet?
- Are there any surface water bodies within 100 metres of the proposed drilling?
- Is the proposed drilling over either the Papakaio or Lower Taieri Aquifer?
- Is the proposed drilling located in a historical place, recorded archaeological site, or in an area of cultural or spiritual significance to Tangata Whenua?

### Details of any neighbouring bores:

Owner's Name	Bore number	Distance (m)	Depth of bore (m)

### Details of any nearby septic tank / outfall or long drop toilets:

Owner's Name	Distance (m)

### Details of any nearby surface water bodies:

Surface Water Body	Distance (m)

Distance to the coast if less than 50 metres: \_\_\_\_\_

### 13. What is the minimum distance from the drill site(s) to the property boundaries?

\_\_\_\_\_

We advise that you consult with your neighbour if the drill site(s) are near your property boundary.

**STATUTORY ASSESSMENT**

**14. The following policies from the Regional Plan: Water for Otago may be relevant to your application.**

- *Policy 9.4.14 To require appropriate siting, construction and operation of new groundwater bores, to prevent:*
  - a) *Contaminants from entering an aquifer; and*
  - b) *The contamination of groundwater in any aquifer from the groundwater in another aquifer; and to promote such management for existing bores.*
- *Policy 6.4.10C To require appropriate siting, construction and operation of new groundwater bores, to maintain artesian pressure in confined conditions and to promote such management for existing bores.*
- *Policy 6.4.10D To require that new bores in the Papakaio and Lower Taieri Aquifers are constructed of materials suitable to resist corrosion and in a manner that enables their complete shutdown.*
- *Policy 6.4.10E Unless provision has been made to permanently decommission and seal the bore, to require the structural condition and control mechanisms of all existing bores in the Papakaio and Lower Taieri Aquifers to be certified as being secure against uncontrolled artesian discharge at no more than 5 year intervals.*

In situations where more than one hole is drilled, this policy also applies:

- *Policy 9.4.17 To require new drill holes to be appropriately sealed to prevent contaminants entering any aquifer.*

**Is your proposed activity consistent with Policies 9.4.14, 6.4.10C, 6.4.10D, 6.4.10E and where relevant 9.4.17?**

Yes  No

If No, please explain.

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**AFFECTED PARTIES AND WRITTEN APPROVALS**

If you are not the owner of the land upon which the drilling is proposed, written approval is required from all parties who own the land as shown on the Certificate of Title. This is to demonstrate that agreement has or is being attained where the activity is located on property that you do not own.

**Supply written approvals at the time of lodging your application to reduce delays in consent processing and to keep costs to a minimum. You can use the written approval form available on the ORC website.**

## CHECKLIST

In order to submit a complete application, have you remembered to?

- Fully completed this application form and Form 1?
- Attached maps and drawings as appropriate?
- Attached a Certificate of Title less than 3 months old?
- Attached any written approvals?
- Paid your deposit or attached a cheque?

To keep consent processing costs to a minimum it is strongly recommended that the checklist is complete, and all items required are attached **before** you lodge your application to the Otago Regional Council.

# OTAGO REGIONAL COUNCIL MINIMUM AQUIFER TEST REQUIREMENTS

## **1. Why do I have to do an aquifer test?**

Aquifer tests are required by the Otago Regional Council as part of the information requirements for a resource consent application to take and use groundwater. This information sheet outlines the Otago Regional Council's minimum aquifer test requirements to support resource consent applications. Aquifer tests are required for two reasons. First to demonstrate that you can actually take the amount of water you are seeking and second for information on aquifer parameters which are used to assess the potential effects of the proposed take.

## **2. What is an aquifer test?**

Aquifer tests consist of pumping a bore at a certain rate and recording drawdown in the pumped bore and nearby observations bores at specific times. There are two main types of pump tests; step-drawdown tests and constant-rate tests.

- A step-drawdown test occurs when a bore is pumped at successively greater discharge rates for relatively short periods of time. These tests are used to describe bore performance which is a function of the construction of the bore and aquifer characteristics.
- A constant-rate test occurs when a bore is pumped for a significant length of time at one rate and often includes monitoring of groundwater level recovery once pumping has ceased (a recovery test). These tests are used to provide information on aquifer parameters such as transmissivity, storativity and leakage.

## **3. Doing an aquifer test**

The aquifer test must be of sufficient quality to demonstrate to the Council you are able to take the amount of water you are seeking and to provide a reliable assessment of aquifer properties to support an assessment of environmental effects. If the pump test is not of sufficient quality your application may not be accepted.

It is recommended that you discuss your aquifer test with a groundwater scientist and or the Otago Regional Council Resource Science Unit before proceeding.

The aquifer test data should be designed and analysed by a suitably qualified and/or experienced groundwater scientist. It is recommended that they are contacted before undertaking a pump test so that they can advise you on aquifer test design.

If for some reason you are unable to meet the recommended minimum aquifer test requirements, then it is advisable to contact either the Otago Regional Council or your consultant to discuss appropriate alternatives to ensure that your application will be accepted.

## **4. Do I need resource consent?**

Under our Regional Water Plan, aquifer tests are a permitted activity the pumping rate does not exceed 2,000,000 litres per day (23.15 litres per second) and they do not exceed three consecutive days duration. If you are planning an aquifer test that does not meet these requirements you will need to obtain resource consent. However, you can apply for a water permit for the aquifer test at the same time you are applying for your bore permits.

## **5. Further information**

For more information please contact either a suitably qualified and/or experienced person in hydrogeology or Otago Regional Council.



## 6. General Requirements

- The pumping rate should be kept constant within +/- 5% and measured to within +/- 5% accuracy. It is recommended that a data logging electronic flow meter be used to achieve these requirements.
- After step and constant rate aquifer tests, recovery should be measured to within 10% of the initial static water level.
- After the start of pumping and during recovery, at a minimum, water levels in the pumping and observation wells should be measured at 30 second intervals during the first 5 minutes, 1 minute intervals between 5 and 15 minutes, 5 minute intervals between 15 and 60 minutes and 15 minute intervals thereafter. It is recommended that data logging pressure transducers be used to achieve these requirements.
- Pumped water should be discharged at a location where it won't cause recharge of the aquifer and influence the aquifer test.
- Aquifer pumping tests should be conducted during stable weather conditions. Significant rainfall, barometric pressure changes, high or variable river flows and other factors may influence the results of your test. Be prepared to delay the test if required.

## 7. Specific Requirements

Takes less than 250 m <sup>3</sup> /d	2 hour pumping at the maximum proposed rate. Water level monitoring should include drawdown and recovery in the pumping well.
Takes between 250 to 750 m <sup>3</sup> /d	<ol style="list-style-type: none"> <li>1. Static water level to be monitored for at least 24 hours prior to start of test in the pumping and observation wells</li> <li>2. A step-drawdown aquifer test comprising a minimum of 4, 1 hour pumping steps followed by measurement of recovery. The maximum pumping rate should be equal to the maximum proposed rate.</li> <li>3. A 24-hour constant-rate aquifer test undertaken at the maximum proposed rate. Water level monitoring should include drawdown and recovery in the pumping bore and in at least one observation bore within the area of localized drawdown.</li> </ol>
Takes greater than 750 m <sup>3</sup> /d	<p><b>Confined or leaky aquifers</b></p> <ol style="list-style-type: none"> <li>1. Static water level to be monitored for at least 24 hours prior to start of test.</li> <li>2. A step-drawdown aquifer test comprising a minimum of 4, 1 hour pumping steps followed by measurement of recovery. Maximum pumping rate should be equal to the maximum proposed rate.</li> <li>3. A 72-hour constant-rate aquifer test undertaken at the maximum proposed rate. Water level monitoring should include drawdown and recovery in the pumped bore and at least two observation bores in the source aquifer and one observation well in the overlying aquifer within the area of localized drawdown.</li> </ol>
	<p><b>Unconfined aquifers</b></p> <ol style="list-style-type: none"> <li>1. Static water level to be monitored for at least 24 hours prior to start of test.</li> <li>2. A step-drawdown aquifer test comprising a minimum of 4, 1 hour pumping steps followed by measurement of recovery. Maximum pumping rate should be equal to the maximum proposed rate.</li> <li>3. A 48-hour constant-rate aquifer test undertaken at the maximum proposed rate. Water level monitoring should include drawdown and recovery in the pumped bore and at least two observation bores within the area of localized drawdown.</li> </ol>

### **8. Information to be included with the aquifer test results**

The following information should be provided with the aquifer test results:

- A map of the site with key features including the pumping and observation bores, surface water features and pumped water discharge location identified.
- Coordinates for pumping and observation bores used in the aquifer test.
- Surveyed elevations for pumping and observation bores used in the aquifer test and for nearby surface water level.
- Bore logs and construction information, including depth and diameter for the pumping and observation bores.
- Information on the location of pumped discharge, the method used to measure discharge and the discharge monitoring records in electronic format (Excel).
- Records of measured groundwater levels in the pumping and observation bores in electronic format (Excel).
- Records of measured or observed of rainfall, barometric pressure and river flows.
- Analysis of aquifer test results to provide estimates of relevant aquifer parameters to support the effects assessment.

This should include details of any data corrections used, analysis methods, plotted data, calculations used and discussion of data and analysis reliability

### **9. References**

Aitchison-Earl, P. and Smith, M. 2008. Aquifer test guidelines (2nd Edition). Environment Canterbury Technical Report R08/25, Environment Canterbury, New Zealand.

Kruseman, G. P. and de Ridder, N. A. 1994. Analysis and evaluation of pumping test data (2nd Edition). Publication 47: International Institute for Land Reclamation and Improvement, Wageningen, the Netherlands.

### **10. Acknowledgements**

This document is based on the Aquifer Pump Tests Information Sheet from Environment Southland (ES). ORC would like to thank ES for the sharing of information and ideas.