

# ASSOCIATED NOTES

## LAND USE CONSENT TO INSTALL OR ALTER A BORE

### 1. AQUIFER

Most groundwater in Canterbury comes from layers of gravel and sand with different permeabilities. Some of these layers allow water to pass through them quite easily (referred to as 'water bearing' or aquifers), others hold onto water more tightly (aquitards).

#### Resource Consent Condition:

- Only one aquifer or water-permeable zone shall be accessed by a single bore.
- All aquifers and permeable zones of differing pressure, water quality, or temperature shall be sealed to prevent the interconnection or movement of groundwater between aquifers or waterpermeable zones.

### 2. BACKFLOW

Back flow prevention is the prevention of backflow (a reversal of the normal direction of flow in a pipe) of unwanted and undesirable nonpotable water or other toxic substances.

You may be required to install a back-flow prevention valve to the mainline of your bore (particularly for irrigation takes).

Your Water Permit could have this condition.

### 3. BORE COMPLIANCE AND INSTALLATION REPORTS

Environment Canterbury maintains a database of bores, wells and galleries within its region. The information provided in the Bore Compliance and Installation reports is extremely valuable for our continuous management of the groundwater resource.

The Bore Compliance Report provides Environment Canterbury with information about compliance with conditions relating to headworks, labelling, fencing, concrete sealing and a tap are not usually part of the Driller's contract.

#### Resource Consent Condition:

- The information requirements of the BORE COMPLIANCE REPORT CRC and PLAN shall be completed and returned to Environment Canterbury within 20 working days of the completion of construction of the bore or water infiltration gallery.

The Bore Installation Report is an alternative to the Driller's Log. This should be completed only if you have not employed a driller.

#### Resource Consent Condition:

- The information requirements of the BORE INSTALLATION REPORT, including the installers or Drillers GPS eight digit map reference (i.e. BY20: 1234-5678), shall be completed and returned to

Environment Canterbury within 20 working days of the completion of construction of the bore or water infiltration gallery.

### 4. BUND

A bund is a raised embankment to prevent the flow of contaminants entering the groundwater supply.

#### Resource Consent Condition:

- The bore shall be surrounded by a bund at least 300 millimetres above ground level and not more than one metre from the perimeter of the bore.

### 5. CAP

When a bore is not in use, it must be capped to prevent the entry of contaminants down the bore or artesian water flowing from the bore.

An uncapped bore that allows water to run to waste is an offence under the RMA.

#### Resource Consent Condition:

- The top of the bore shall be covered or capped to prevent contaminants entering the bore and underlying groundwater.

### 6. CASING

All casing materials used (including temporary casing) shall be suitable in terms of its composition, cleanliness, strength and corrosion resistance for the site, installation conditions, and the intended use of the bore. Bore casing must be leak-proof throughout its length.

### 7. CONSENT REQUIRED

Any device that taps underground water, no matter how shallow, requires resource consent. Before you can install a new bore or alter (e.g. deepen) an existing one you will need resource consent from Environment Canterbury.

### 8. CONSTRUCTION

Poorly constructed bores harm the environment by taking away the naturally protective soil cover normally overlying groundwater and allowing direct access to the groundwater beneath. An open bore leaves this groundwater vulnerable to any contaminant which may find its way into the bore, either accidentally or possibly deliberately. Once a contaminant enters groundwater, it is very difficult to remove.

### 9. CONTAMINATED SITES

If the water is to be used as a source of drinking water, you should take care to site the bore away from possible sources of contamination such as:

- Septic tank effluent disposal areas\*
- Offal pits
- Sumps holding animal effluent
- Landfills
- Road stormwater

- Stockyards and other areas where animals may congregate
- Cemeteries
- Underground storage tanks for petrol or hazardous substances
- Chemical stores

\* See Note 31 a) Separation distances

## 10. DECOMMISSIONING

Abandoned or obsolete bores or galleries must be identified and decommissioned to prevent:

- a) the entry of contaminants from the land surface; or
- b) the exchange of water between aquifers, or water bearing layers in an aquifer, or between surface water and groundwater.

Environment Canterbury maintains a database of the bores, wells and galleries within its region.

If a bore or gallery is decommissioned, Environment Canterbury needs to be advised so information on the database can be amended.

**A resource consent may be required to carry out this activity. Rule 5.107 of the Land and Water Regional Plan as amended by decisions, provides for decommissioning as a permitted activity, provided several conditions are met.**

## 11. DEPTH

Information about other bores in your area can be obtained from a number of sources such as neighbouring bore owners, well-drillers and Environment Canterbury. Environment Canterbury has records of logs from thousands of bores installed throughout its region, as well as records from water quality and depth to water surveys carried out throughout the region over many years.

### Resource Consent Condition:

- Bore [ ], proposed depth [ ] metres beneath the ground surface and the diameter shall not exceed 760 millimetres, and shall be located at or about map reference NZTopo50 [ ] within the area marked on the plan attached to this consent.

## 12. FENCING

Where stock are present the construction of a fence around a bore will reduce the risk of animal effluent entering the well and contaminating groundwater.

### Resource Consent Condition:

- The bore shall be surrounded by a stock proof fence, at a distance of not more than two metres from the perimeter of the bore.

## 13. GALLERIES

An infiltration gallery is a device for harvesting shallow groundwater, usually created by digging a trench at right angles to the flow paths of the groundwater system.

### Resource Consent Conditions:

- A sealing layer shall be installed to confine the gallery system and prevent contaminants from surface sources leaking or leaching to groundwater.
- The gallery shall be backfilled to prevent contamination of the underlying groundwater.
- The filter or gravel pack material shall be clean, rounded and uniform.

## 14. GALLERIES IN RIVER BEDS

If it is your intention to install a gallery in the bed or banks of a river, please also consider the following:

- Effect on the flood carrying capacity of the river;
- Effects on the stability of the bed and banks of the river;
- Effects on water quality and the instream ecosystem;
- Effects on water flow within the river; and
- Effects on artificial structures.

### Resource Consent Conditions:

- On completion of works, the site shall be restored to its original condition as far as is practicable.
- No works shall occur within 100 metres of nesting birds.
- All practicable measures shall be undertaken to minimise adverse effects on property, amenity values, wildlife, vegetation and ecological values.
- The works shall be undertaken in such a manner as to avoid erosion of the riverbank.
- Vehicles and machinery shall, as far as practicable, not enter river channels containing flowing water and there shall be no refuelling of machinery within the streambed or at the site of works.

## 15. GRAVEL PACK

A gravel pack is designed to provide a zone of high permeability in the annulus around a bore screen.

The gravel pack shall consist of non-toxic, washed, rounded gravel of selected grain size and gradation, free of material that may decay or disintegrate during installation, development and bore use.

### Resource Consent Condition:

- The filter or gravel pack material shall be clean, siliceous, rounded and uniform.

## 16. GROUT MATERIALS

A fluid mixture of cement and/or bentonite and water must be used to provide a watertight seal in a bore annulus or hole. Grout can also be used to avoid corrosion of the bore casing or to provide structural support for casing materials.

All grout materials used must be suitable in terms of its composition, density, strength and corrosion resistance for the site and installation conditions.

### Resource Consent Condition:

- The annulus of the bore shall be sealed with grout to above the screen pack or one metre below ground level, whichever is the lesser, to prevent fluid movement down the sides of the casing into the screened collection layer.

## 17. HEADWORKS

Headworks include all materials used at the ground surface to complete the bore. It includes pipework, valves, gauges and access points and concrete pads.

Loosely installed bores (with a gap around the outside of the casing) can allow contaminants directly into groundwater, perhaps washed in with stormwater runoff.

### Resource Consent Conditions:

- A concrete pad of at least 0.3 metres radius and 0.1 metres thickness shall be constructed around the bore head at ground or pumphouse floor level to prevent leakage of groundwater, any movement of the casing, and any material or surface water entering the bore or annulus.

The concrete pad shall slope away from the bore.

- The top of the bore shall be covered or capped to prevent contaminants entering the bore and underlying groundwater.

## 18. HOURS

Where bores are installed in residential areas or near buildings, noise and vibrations may be an issue. Noise during construction can cause nuisance for people living nearby, or in some cases, sensitive wildlife.

### Resource Consent Condition:

- Drilling shall only be undertaken between the hours of 8 a.m and 6 p.m Monday to Saturday.

## 19. KOIWI TANGATA

The protection of any site or activity that yields evidence of koiwi tangata (human bones) or artefacts (taonga) must be protected from violation or desecration.

The consent condition is in addition to any agreements that are in place between the consent holder and the Upoko Runanga (Cultural Site Accidental Discovery Protocol).

### Resource Consent Condition:

- In the event of any disturbance of Koiwi Tangata (human bones) or taonga (treasured artefacts), the consent holder shall:

- a) Cease any further excavation for a period of at least 24 hours and
- b) Immediately advise the Environment Canterbury of the disturbance; and
- c) Immediately advise the Upoko Runanga or relevant runanga, or his representative, of the disturbance.
- d) The New Zealand Historic Places Trust shall be notified and a response obtained before work recommences.

### 20. LABELLING

To ensure easy field identification of wells both by well owners and monitoring staff, all wells must have a permanent label attached displaying the well number e.g. BY20/1234.

#### Resource Consent Condition:

- The bore shall be easily identifiable by a permanent label, which may be welded or engraved on the casing, or on the equivalent fixed part of the well construction or associated building.

The numbering on the label shall be the bore number assigned by Environment Canterbury as referred to in Condition (1).

### 21. LOCATION

All bore sites shall have sufficient open surroundings to avoid the accumulation of hazardous gases in the vicinity of the bore site, and allow access for maintenance, testing or decommissioning of the bore and monitoring of groundwater.

You will also need to make sure the area surrounding your proposed bore is free from any source or potential source of contamination.

Depending on how much water you want to take from your bore, separation from other bores and surface water is also important.

#### The Map Reference

The three commonly used references are:

- NZTopo50 (BY20:XXXX-XXXX)
- Latitude and Longitude (1949 Datum)

The grid reference acceptable to Environment Canterbury is the New Zealand Map Grid (NZTopo50) reference.

#### NZ Topo50

Each grid reference on a New Zealand Map Grid map gives a unique identifier. To ensure the bore location is accurately identified, Environment Canterbury prefers a 10 metre resolution (that is a four digit easting number and a four digit northing number).

Therefore when providing the map reference for your proposed bore please specify the the easting and northing numbers (e.g. BY20:1234-5678) where BY20 is the map number, 1234 is the easting and 5678 is the northing).

## **Changes to the location after the land use consent is issued.**

If you nominate a parcel of land, the bore must be installed within that parcel. If you nominate a fixed location the bore must be installed within 20 metres of that location. Changes of location by more than 20 metres will require a change to the bore permit conditions prior to drilling commencing. Bores not installed at the location authorised by the bore permit will be deemed to be 'unlawfully established'. A Consent may be required to abstract stock and domestic water from such a bore and applications for irrigation water will be treated as non-complying activities.

Additionally, enforcement action may be taken against the consent holder and/or the driller who installed the bore.

### **Resource Consent Condition:**

- Bore [ ], proposed diameter [ ] millimetres, proposed depth [ ] metres beneath the ground surface, shall be located at or about map reference NZTopo50 [ ], or within the area marked on the plan attached to this consent.

## **22. LOG OF DRILLING OR EXCAVATION**

A log (or the Bore Installation Report) shall be prepared as soon as practicable following the completion of drilling, bore construction, maintenance or testing, or decommissioning of bores, or excavation, construction, and installation of a water infiltration gallery, and a copy forwarded to Environment Canterbury within 20 working days of the completion of construction of the bore or water infiltration gallery.

### **Resource Consent Conditions:**

- The information requirements of the BORE INSTALLATION REPORT, including the installer's or Driller's GPS eight digit map reference (i.e. BY20: 1234-5678), shall be completed and returned to Environment Canterbury within 20 working days of the completion of construction of the bore or water infiltration gallery.

## **23. MAINTENANCE**

Groundwater bores and infiltration galleries are to be constructed and maintained so that contaminants are prevented from entering a bore or gallery from the land surface, or from the backflow of water down the bore, or down the side of the bore casing or gallery. A bore loosely installed into a confined aquifer, normally containing water of a very high quality, can cause harm by allowing leakage from one aquifer to the next. This is aggravated if the bore is removed to leave a hole which is not plugged, or rusts away, or has a crack somewhere along its length.

**This activity is permitted – no resource consent required.**

## **24. MEASUREMENT DEVICE**

A screw-in bung should be installed at the top of the bore to allow you or the Council to easily measure your water level.

This is inexpensive and can be installed by your well driller.

### **Resource Consent Condition:**

- A device shall be installed in the bore to allow water measurements to be taken by one of the methods described below:

EITHER

- (a) Where there is sufficient space for a water level probe between the riser and the well casing and the lowest pumped water level is less than 10 metres below ground level, install a standard 25

millimetre socket and screw-in bung on top of the bore to enable water level measurements to be taken using a water level probe.

OR

(b) When there is insufficient space for a water level probe between the riser and the well casing, connect a socket and bung of 25 millimetres diameter to a 20 millimetre diameter pipe down the well so a water level probe can be inserted without being caught in cables or between the flanges of the riser pipe and casing. The pipe should extend to within two metres of the top of the pump. Then take water level measurements using the water level probe.

OR

(c) If (a) or (b) cannot be carried out, install a small pressure tube of not less than five millimetres down the well to allow a pressure gauge to be used for a water level depth measurement. The depth at which the end of the pressure tube is installed shall be measured from the top of the casing to an accuracy of 0.05 metres and the pressure gauge dial shall be accurate to the nearest 0.1 metres. After lifting and re-placing the submersible pumps the pressure tube shall be replaced at the same depth or the difference shall be recorded in a note book kept for that purpose.

### 25. MULTIPLE SCREENS

A bore installed with multiple screens may allow the flow of water between aquifers at different pressures. This compromises the integrity of the individual aquifers which may also have distinct quality properties reserved for different uses. If the water is drawn below the level of the shallowest screen, water drawn into your pump may be aerated causing problems with its operation, and rusting of the bore casing.

To avoid the mixing of water between aquifers and the potential for contamination, each well should only take water from one aquifer, except where specific investigation of the groundwater resource has demonstrated that the quality of the water in the aquifers is sufficiently similar and mixing will not result in a change in the water quality of the aquifers.

#### Resource Consent Condition:

- (Special conditions will apply to each unique situation)

### 26. NOTIFYING ENVIRONMENT CANTERBURY

The granting of a consent is the beginning of a formal contractual relationship between Environment Canterbury, on behalf of the community and the consent holder, to ensure the consent is operated within the conditions specified.

Environment Canterbury will monitor and enforce compliance with the conditions of any resource consent it has granted.

#### Resource Consent Condition:

- Environment Canterbury, Attention: RMA Compliance and Enforcement Manager, shall be notified not less than 48 hours prior to the commencement of works.

### 27. PERMITTED ACTIVITIES

- Construction of a bore by a drilling company with current accreditation under the CRC Bore Installers Programme (certain conditions apply)
- Taking groundwater for firefighting.

- Taking groundwater for reasonable domestic needs and for stock water (except in some Waitaki zones and the Waipara zone).
- Maintenance of a groundwater bore or infiltration gallery.
- Construction and use of a bore other than a bore for the taking of groundwater or for monitoring or investigations, or a hydrocarbon bore (certain conditions apply).
- Discharging water as a result of pump testing into a surface water body or onto land which may result in water entering a surface water

body is permitted, provided the discharge complies with certain conditions (see Rules 5.119 and 5.120 in the LWRP for more information)

**These activities are permitted – no resource consent is required.**

## 28. PROPERTY PERMISSION

The Resource Consent does not guarantee you can install the bore at your chosen location. It is up to you to obtain any permissions and easements you may need in order to secure access to install the bore at your preferred location.

## 29. REHABILITATION

This applies mainly to galleries installed in the beds of lakes and rivers.

### Resource Consent Conditions:

- The site shall be returned to its original state, as far as is practicable, after completion of works.
- The gallery shall be backfilled to prevent contamination of the underlying groundwater.

## 30. SCREENS

Screens are slotted or perforated material used to stabilise the aquifer or gravel pack, while allowing groundwater to flow into the bore. (See Multiple screens note)

### Resource Consent Conditions:

- Only one aquifer or water-permeable zone shall be accessed.
- All aquifers or water-permeable zones of differing pressure, water quality, or temperature shall be sealed to prevent the interconnection or movement of groundwater between aquifers or water-permeable zones.

## 31. SEPARATION DISTANCES - GENERAL

Depending on how much water you want to take from your bore, separation from other bores is critical. You may take a certain volume of water as a permitted activity (meaning you do not require a water permit) PROVIDED THAT your bore is a minimum distance from other bores, streams and rivers.

### a) Separation distances – Sources of contamination

As a general guide, you should carefully examine an area at least 1000 metres up-gradient (direction from which water flows) and 500 metres in any other direction, for any potential sources of contamination such as septic tanks (especially older installations discharging straight into boulder holes), offal pits, rubbish pits (see note (9) for more sources).

Septic tank effluent disposal areas - separation distances set out in plans assume a properly functioning and maintained system.

If this is not the case, contaminants in septic tank effluent may travel very long distances.

### **b) Separation distances – Neighbours – Bores**

Small quantities of groundwater

Council plans authorise the taking and use of groundwater, in small quantities, in certain parts of the region.

Such authorisation is subject to conditions. One of these requires that the bore should be located at least 50 metres from any bore that your neighbour is authorised to use.

#### **Resource Consent Condition:**

- The bore shall be located at least 50 metres from any bore that your neighbour is authorised to use.

#### **Larger quantities of groundwater**

Calculations will need to be done, to predict how much your take will lower the groundwater level in neighbouring bores, before deciding where to locate your bore. Once installed it cannot be pulled out and re-installed at another location without considerable expense and inconvenience.

### **c) Separation distances – Neighbours – Dwellings**

Where bores are installed in residential areas or near buildings, noise and vibrations may be an issue. Noise during construction can cause nuisance for people living nearby or, in some cases, sensitive wildlife. Distances should be considered case by case, taking into account the uniqueness of each location.

#### **Resource Consent Condition:**

- Drilling shall only be undertaken between the hours of 8 a.m and 6 p.m Monday to Saturday.

### **d) Separation distances – Surface Water**

#### **Small quantities of groundwater**

Environment Canterbury plans authorise the taking and use of groundwater, in small quantities, in certain parts of the region. Such authorisation is subject to conditions as follows:

The bore is to be located at least 50 metres from the:

- Bank of a river or stream; and
- High water mark of any lake or pond; and
- Boundary of any wetland.

#### **Resource Consent Condition:**

- The bore shall not be installed within 50 metre of any surface water body.

#### **Larger quantities of groundwater**

Calculations will need to be done, to predict how much your take will affect surface water resources, before deciding where to locate your bore. Once installed it cannot be pulled out and re-installed at another location without considerable expense and inconvenience.

It is worth noting that larger takes can have significant (i.e. above the Land and Water Regional Plan) stream depletion effects for distances beyond 1000 metres if the gravels next to streams are sufficiently permeable.

### 32. SILENT FILE AREAS

A silent file area is an area identified by Ngai Tahu as being the general location of wahi tapu (sacred places) or other special sites. The silent file areas have been specified in Te Whakatu Kaupapa – the Ngai Tahu Resource Management Strategy for the Canterbury region.

Our Customer Services Section can advise you if your site is located within a silent file area. Note: It is the applicant's responsibility to consult the local Runanga if the proposed bore site is within a silent file area.

### 33. SITE PLAN

A site plan (topographical map) is required for all proposed bores. You can select a fixed location or a designated area.

Indicate the location of the following: (both within the area and around the perimeter)

- nearest bore on your property
- your nearest neighbour's bore
- nearest neighbour's dwelling or structures
- nearest permanent or intermittent surface water (stream/river)
- nearest septic tank/contaminated site (see note 9).

Please provide measurements in metres.

The designated area can be to a maximum of one kilometre square or set to the boundaries of the legal description you provide, whichever is smaller.

The area must be clearly outlined and cover either all or part of a Land Parcel.

### 34. SMALL COMMUNITY SUPPLY

A community drinking water supply is a public or privately owned supply providing drinking water to at least 15 dwelling houses or other buildings year-round, or to a least 25 people, but principally serving the same people for more than sixty days each year.

It includes:

- Piped water supply networks which supply to more than 15 service connections, year-round, including urban areas, rural-residential and residential subdivisions, commercial and industrial areas.
- Schools and other education facilities with more than 25 staff and students, industrial and commercial premises with more than 25 staff.

It does **not** include:

- Water supplies to small subdivisions and water schemes with less than 15 connections.
- Any water supply which serves transient populations e.g. camp grounds, hotels/motels, restaurants.

*Note: Drinking Water is water intended to be used for human consumption, food preparation, utensil washing, oral hygiene and personal hygiene (DWSNZ 2005).*

## 35. TANGATA WHENUA/HISTORIC SITES

Tangata whenua are the people of the land, the people who hold traditional authority over an area according to local tribal and hapū (family) custom.

Ngai Tahu is recognised as tangata whenua throughout the entire Canterbury Region.

Te Rūnanga o Ngai Tahu is the governing body that oversees the tribe's activities. It is the legal identity of the tribe, created by the Te Rūnanga o Ngai Tahu Act 1996.

Ngai Tahu is made up of whanau and hapū (family groups) who practise kaitiakitanga (guardianship) over the resources in their area.

These groups are represented by Rūnanga (local representative Maori groups).

Your activity could affect wetlands, springs, rivers, settlement areas or historic sites. If in any doubt, you should contact the appropriate Rūnanga to discuss your proposed activity.

To find out the local Rūnanga, please contact our Customer Services section.

## 36. TAP

A tap should be fitted on the outlet side of the bore discharge main and maintained in good operating condition to enable a sample of the bore water to be collected.

### Resource Consent Condition:

- To enable the measurement of bore water quality, a tap shall be fitted on the outlet of the bore discharge main and maintained in good operating condition.

## 37. TOPOGRAPHICAL MAP

A topographical map from New Zealand Map Series 260 1:50,000 scale is required with all bore applications. If a topographical map is not received with your application you will be requested to provide one.

The topographical map (available from our web site and from our Customer Services staff) must have the proposed drilling area or proposed bore location marked on it (see note 33).

If a topographical map is inappropriate considering the size and location of the land parcel (i.e. small lot in a city block), then a plain GIS plan (obtained from Customer Services staff) would be acceptable.

## 38. WATER PERMIT

A resource consent to install a bore does not guarantee or imply that you will be authorised to abstract any water, other than for fire-fighting. There are some zones where groundwater may be taken as a permitted activity, one of the conditions of these being that quantities are set at five litres per second or 10 cubic metres per day per property. For most situations though, a water permit will be required.

## 39. WORKS WITHIN THE BED OF A RIVER OR LAKE

Restriction on certain uses of beds of lakes and rivers.

1) No person may, in relation to the bed of any lake or river:

a) Use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed; or

b) Excavate, drill, tunnel, or otherwise disturb the bed;

unless expressly allowed by a rule in a regional plan and in any relevant proposed regional plan or a resource consent.

#### 40. REPLACEMENT IRRIGATION BORES

This applies if either your irrigation bore has collapsed or it is no longer yielding sufficient flows and you intend to replace it by installing a new bore at the same depth. To avoid the requirement to change the conditions of your water permit, to add the new bore number, you can apply to REPLACE A BORE. This means that the new bore will take the old bore's number thus enabling your water permit to continue unabated. There are certain conditions attached to this activity as follows:

- The new bore must be **within 10 metres** of the old bore
- The new bore must be **drilled to the same depth +- one metre**
- The new bore must **comply with the conditions of the bore consent within 20 working days** of its installation
- The old bore must be filled to ground level

If these conditions are not met, then the abstraction of water for irrigation purposes may be unlawful.