

Re: Application by Invercargill City Council to have the Alternate Water Supply project included in Schedule 2A of the Fast Track Act.

The anticipated and known adverse effects of the project on the environment

The potential adverse effects of the project are primarily related to the effects of taking groundwater due to the anticipated large volume of water required for the community. The include effects on:

- The aquifer and lawfully established groundwater users
- Ground settlement
- Stream/wetland depletion effects

Effects on groundwater and groundwater users

Preliminary groundwater modelling of a range of pumping scenarios has demonstrated the parameters within which a bore field could be operated to limit the risk of saline intrusion to the freshwater aquifer.

Saline intrusion is a significant constraint on the end use of municipal water and therefore is something Invercargill City Council would manage the operation of bores to avoid. This is a self-limiting factor.

Final groundwater modelling will establish the sustainable yield from the Chatton Aquifer and therefore the limits on groundwater allocation. The effects on other groundwater users will be considered in determining the water allocation sought in the resource consent application .

Land Settlement Effects :

Groundwater abstraction has the potential to result in land subsidence due to the consolidation of geological materials. The potential for land subsidence to occur is increased where aquifers being pumped are overlain by fine-grained unconsolidated geological material. Awarua is a low lying area and even relatively small amounts of land subsidence have the potential to affect land drainage and increase flood risk.

Subsidence effects can be reduced and mitigated through determining appropriate pumping regimes and increasing the distance between bores. The effects of long term pumping can be measured through ongoing monitoring and review.

Stream Depletion and Wetland effects

Final groundwater modelling will assess whether there are any effects of groundwater abstraction on streams and wetlands. The Chatton Aquifer is a deep confined aquifer and not connected to surface water bodies. However, the effects of the abstraction on the aquifer and land settlement may alter the surface drainage and the connected water bodies. Assessment of these effects will enable significant adverse effects on freshwater to be avoided.

Comments on effects of other activities needing approvals

Approvals other than for water permit are listed above. While the potential adverse effects of these activities are expected to be a smaller scale than the water permit a commentary on those effects is noted below.

- The effects of drilling and testing bores in accordance with the consent conditions issued by Environment Southland is considered minor

- The designation over the very large land parcel owned by Invercargill City for water supply and treatment purposes is not considered to affect any person.
- Backwash water from a new water treatment plant will be required as part of the water treatment process and to meet regulations. The discharge environment will be selected taking account of the contaminants (solids) and flows. Adverse effects on the environment can be mitigated through the discharge environment selection process.
- Earthworks for the water treatment plant and to install the pipework to Invercargill City may require consent (depending on the regional plan and district plan triggers). It is considered that the adverse effects of these activities can be mitigated through appropriate design, methodology and management plans.

Conclusion:

The potential adverse effects of the proposal are able to be mitigated and managed through

- Groundwater modelling to :
 - Determine the sustainable yield of the Chatton Aquifer
 - Identify the optimum groundwater pumping regime to mitigate the effects of saline intrusion and land subsidence
 - Assess the scope of effects on freshwater bodies
 - Assess the effects of the Invercargill City Council groundwater abstraction on other lawfully established groundwater users
- Ongoing monitoring of the aquifer and land
- Appropriate conditions being placed on the approvals.