

Policy on Backflow Prevention

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| Adopted: | 6 th June 2023 |
| Review: | Every three years or as required |
| Consultation: | Internal Consultation with Staff, External Consultation with Irrigation supply companies, Environment Canterbury and Irrigation NZ |
| Related Documents: | Irrigation NZ: New Zealand Guideline for the Safe Management of Irrigation Systems with Effluent, Fertiliser and/or Agrichemical Injection Environment Canterbury: Requirement for the use of chemigation valves for backflow prevention in Canterbury; Chemigation Valve Test Sheet |

1. Scope

This policy explains the required safety devices and systems to be used when injecting effluent, fertilisers, herbicides, pesticides, and other agrichemicals (“agrchemicals”) into an on-farm irrigation system connected to the Ashburton Lyndhurst Irrigation Ltd. (“ALIL”) Pressurised Scheme.

The specific hazard being guarded against is effluent, fertiliser or other agrichemicals being drawn into the water supply.

2. Purpose

ALIL Property off takes (POTs) are not fitted with anything that would stop water flowing backwards from the farm into the ALIL system. Normally, the higher pressure from the ALIL system prevents water flowing into the ALIL system, however if the ALIL pipe is drained for any reason or if there are pressure fluctuations in the system reverse flow can occur. It is extremely important that water contaminated with effluent, fertiliser or other agrichemicals does not enter the ALIL system.

ALIL’s backflow prevention policy is based on Irrigation New Zealand’s document [“New Zealand Guideline for the Safe Management of Irrigation Systems with Effluent, Fertiliser and/or Agrichemical Injection”](#) and ECAN’s document [“Requirement for the use of chemigation valves for backflow prevention in Canterbury”](#). Copies of these documents may be obtained by clicking on the links above, or by visiting the INZ and ECAN websites, or by requesting one from the Ashburton Lyndhurst office. The major requirements for agrichemical injection systems as discussed in these documents are outlined below.

3. Requirements

3.1 A chemigation valve must be installed between the POT and the point of the injection. Chemigation valves are the only backflow prevention device permitted for backflow prevention on the ALIL scheme. [Double check valves are no longer an acceptable backflow prevention method](#), however, if a double check valve was already installed prior to the adoption of this policy, it can

remain in service for the life of the valve provided it meets the installation and testing requirements laid out below.

3.2 An air/vacuum breaker must be installed as part of the backflow prevention system. Chemigation valves come fitted with vacuum breakers. An existing double check valve arrangement (no longer a valid backflow prevention device after the date of this policy) requires a vacuum breaker be fitted on top of the pipe upstream of the check valve to prevent back siphoning.

3.4 Shareholders are to arrange for their backflow prevention devices to be tested by ALIL staff, or other suitably trained technician, prior to being made operational and at least annually thereafter. Regular maintenance of all other parts of the system is required to be documented.

- ALIL adopts ECAN's Chemigation Valve Test Sheet as the testing standard.
- The backflow prevention system must be fitted with the valves and ports necessary for testing to be carried out. Chemigation valves come fitted with the required test ports. A double check valve arrangement requires the installation **of at least two isolation valves** (one after each check valve), as well as test ports for each check valve for purposes of pressurising the upstream side to test the integrity of the seal. It is not possible to use the downstream isolation valve which exists on the ALIL offtake as an isolation valve for a double check valve system. The backflow prevention device should be able to be completely isolated using on-farm isolations. The reason for this is to allow testing of the double check valve without allowing a risk of on-farm effluent or agrichemicals reaching the downstream side of the offtake.

3.5 A small check valve is recommended in the injection line to prevent water flowing from the shareholder's irrigation system into an agrichemical mixing tank (refer to INZ Guidelines for details).

3.6 An anti-syphon device or vacuum breaker is recommended in the injection line to prevent agrichemicals being syphoned from a mixing tank into the system (refer to INZ Guidelines for details).

3.7 An interlock device is recommended. This is a mechanical and/or electrical device to ensure that if the irrigation stops, the injection pump will also stop (refer to INZ Guidelines for details).

3.8 ALIL will keep a register of shareholders using fertigation/chemigation. Shareholders are to provide the following for the register:

- Details of the agrichemicals to be used.
- A map detailing the irrigation and proposed fertigation/chemigation reticulation.
- A drawing of the section of pipework at the point of injection detailing all associated valves and control equipment.
- Details of the backflow prevention installed including test certificates and location.

- A description of the interlocks in place, both electrical and/or mechanical and the methodology to demonstrate that a shutdown of the effluent pump in the event that the main irrigation pump stops.
- Results and dates of initial and scheduled testing.

3.8 Non-compliance will be administered as per the ALIL Non-Complying Shareholders Policy, detailed within the ALIL Environmental Management Strategy (EMS), which can be found on the company's [website](#).

4 Sign-Off and Revisions

| Revision Chronology | | | | | |
|----------------------------|------------------------|-------------|-----------------|----------------|-----------------|
| Rev | Revision Status | Date | Preparer | Checked | Approved |
| 1 | <i>First draft</i> | 8/12/2017 | JD | ? | Board |
| 2 | <i>Updated</i> | 23/12/2019 | RP | RW | |
| 3 | <i>Updated</i> | 11/11/2020 | RP | RW | |
| 4 | <i>Updated</i> | 14/2/2023 | CF | | |
| 5 | <i>Updated</i> | 06/06/2023 | RP | RW | Board |