

# Managing water / bore / pump irrigation issues Post earthquake

Prepared by WaterForce and Irrigation NZ (INZ), 9 September 2010

## HEALTH AND SAFETY MUST BE THE FIRST PRIORITY

### Power – electricity is dangerous so always assume live power

- Approach pump sites/sheds with caution, observe, beware of surface water around electrical hardware, fallen lines, loose wires, tilted or fractured foundations or anything not usual.
- Turn off mains if power cut, unless factors above make this too dangerous. If any doubt, **do NOT touch**.
- Check for obvious damage, cut or unstructured lines, cable damage to motors, switchboards, transformers and poles.
- Get an electrician to check properly before turning back on.

### Potable – domestic water systems from boreholes (wells) and stock water

- Once power supply is established, if possible disconnect water pipes at the pump well head and discharge water to waste (ground) to ascertain water quality and clarity. NB – start submersible pump with a valve that is 90% closed. This will reduce “shock” intake of possible silts etc. After 30-60 seconds continue to open the valve. But remember the submersible motor is relying on the velocity of water passing the motor so minimum flows to be at no less than approx 20% of the full flow.
- Check water quality – if silty/milky colour and the silt/sand content covers the bottom of a cup, run to waste to see if water clears, once it starts to clear then open up control valve to increase flow and go through the procedure again.
- We strongly recommend a bacteria test, particularly for shallower bores (less than 50m deep). The Selwyn District Council is providing professional water analysis at no cost. Please lodge your request on their contact number 03 347 2800. We strongly recommend potable water is boiled correctly until test results.
- If the well fails to improve, then a redevelopment by a well driller may be necessary.
- A pressure fault occurring or low pressures experienced, can indicate blocked filters, and pipes. Remember, most modern taps have small filters to protect the ceramic seats so they could well be blocked.
- Blockage caused by silt in ball cocks and trough valves will be an issue. Silt may also prevent these valves from sealing, so continual leakage may result.

### Electric pump starting general

- If the irrigation bore pump is not required to start, i.e. not filling tanks for potable/stock or dairy supply, then we recommend the pump is not started for another week. This will give the aquifer some opportunity to clear.
- Look and observe prior to starting for loose/distorted pipework, cables, motor/pump alignment, fixings of pump, cabinets, structure of pump shed, etc.
- Start against a 90% closed valve as outlined above.
- Listen for any unusual noises/vibrations and stop if any present.
- Check pipe systems for leaks.
- Check pump performance for any obvious loss of performance in terms of pressure and flow.
- Check the safety equipment like the pressure/flow switches etc.

## Rivers

- Check ground around pump station and intake, intake structures, suction pipe, suction screens etc. Surface pump plinths (concrete foundations) could be fractured and present a danger.

## Storage dams

- Check suction pipe carefully, particularly if through dam wall, look for signs of seepage
- Check overall integrity of dam, for seepage, cracks etc

## Diesel / petrol pumps

- Look for obvious damage, i.e. fuel leaks, fuel lines, fuel tanks, misaligned between the pump and engine. If fuel lines are sub-surface call your local service technician.
- Be aware of the presence of fumes.
- Check structure of chassis for any possible movement.
- Check concrete pad / foundations for cracks or fractures.

## Pipe systems

- Gently open up valve to fill mainline as you would when commissioning (first starting) a new system. This needs to take some time. Do not be impatient – the pipe system must fill slowly, which will cause water hammer (water shocks) and further damage.
- Check for visible leakage.
- Check to ensure the system comes up to the similar pressures as before the earthquake event.

## Irrigators

- Check the physical structure of the irrigator (particularly pivots, linears), any cables, truss rod supports, broken welds, twists, bending etc
- Concrete plinths (centre point concrete foundations) for pivots should be checked thoroughly for structural cracks, fixing-bolts secure, electrical connections and cable secure, control cabinet secure etc.
- Visibly check any electrical controls, wires or connections. If there are any doubts, engage an electrician.
- Check pivot and linear bridge crossings etc for any misalignment.
- Check irrigator clearance on any obstacles that the irrigator travels over.
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- Check anchor points for wire pull irrigators like the Roto Rainer.

**If in doubt contact your pump and irrigation supplier.**



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