

Fire fighting pump redesign

Making sure a pump actually works when there is a fire

BY ALLAN JAMES & KATE O'DWYER

Up here in our part of Queensland we are starting to worry about bushfires more than we did in the past. Since our hot summer season used to also be our wet season, with long green grass and high humidity the norm, bushfires were never as big a worry as they are down south. However in the last few years things seem to be changing, possibly due to global warming, and it was with this in mind that Kate and I decided to install some type of fire fighting set up around our house and farm buildings.

The plan was to use as much of our current infrastructure as possible and, as this is extensive with underground poly pipe and taps to most parts of our buildings already in place, would not be too big a project. A big bonus was having some old overhead sprinkler setups complete with 25mm hoses that we had acquired a few years ago. These would have come from an old vegetable farm and were common around here.

Setting up

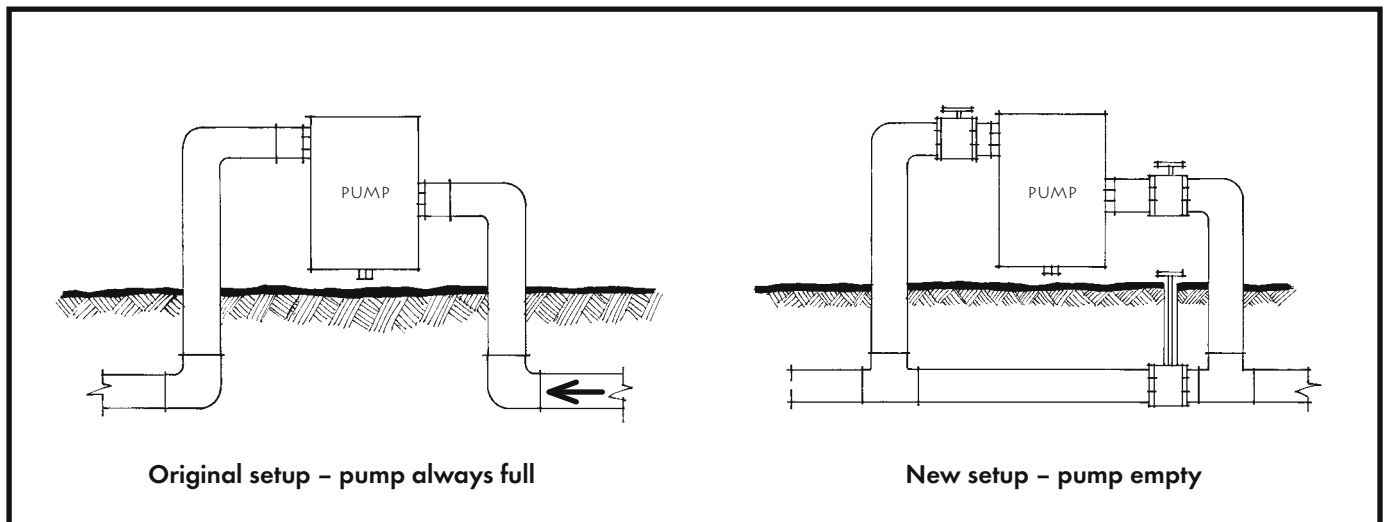
The setting up of the sprinklers was straight forward; buy some manifolds that had four individual outlets; screw these onto the existing taps and run the hoses out to the sprinklers which could be moved around to the best position depending on which direction the fire was coming from. The water spraying from the sprinklers would protect the hoses but if one did melt through it could be individually turned off, restoring pressure to the others. Nine overhead sprinklers were set up in this way as well as some fire fighting hoses with proper fire fighting nozzles.

As most people would know, it takes a lot of pressure to run a big sprinkler and lots, lots more to run nine. It was obvious that we would have to pressurise our system as the gravity from the dam water tank up the hill would only run one sprinkler.

The dam water tank is 300 metres up the hill with a 12 metre head and has a 50mm underground poly pipe. It is filled by a small fire fighter pump from a lovely clean dam over in another paddock and the poly pipe line from this tank back down to our buildings is the one we needed to pressurise to work all those sprinklers.

Pressurising this line was just a matter of digging down to the pipe, installing some fittings that would bring the line to the surface, buying a petrol powered fire fighting pump and installing it in such a way that the water flowed through it all the time, whether turned on or not. All that had to be done to get maximum pressure was to start the pump. Very simple!

Oh yes, another thing we also did was to install a pressure relief valve at one of the taps so if the pump was started before the sprinklers were turned on at their manifolds, the





1. Gunk growing in metal pump housing.
2. Our dam water tank.
3. A four outlet manifold, each with its own on-off tap.
4. New pump in its very own mini pump house.
5. Overhead sprinkler in the front garden.
6. One of the drums strategically placed at a shed entrance.

pressure would not blow something apart. Although we were told this was not necessary we certainly did not want to have something blow at a critical time, so spent the extra money anyway.

Six months ago when we set it up we thought it was great and, indeed, it was at that time. Complemented with drums of water left at strategic places like shed openings we felt prepared and secure. When we turned a tap on to say, water the garden, the water flowed down the pipe, through the pump and continued on its way to the tap we were using. When we started the pump and turned the sprinklers on at their manifolds they all sprayed beautifully.

Six months later

It was with shock and horror, when giving the pump its six monthly check, that we found it seized. If we were trying

to start it because of a fire it would have been a disaster. This was a six months old pump. It would not move!

On inspection we found that the pump impeller was completely gunked up. This gunk (see photo) seemed to be growing out of the metal. We sent a photo to the pump manufacturer and thought that they would be so concerned that they would send their scientists up in a Lear Jet the next day (or at least ask for a sample of our dam water). But no, all they did was send some standard paper work on pump maintenance. What to do?

If the pump is going to foul up when water flows through it we realised we had to leave it empty. After cleaning the gunk off and a bit more expense

and work, we rerouted the water, added some stopcocks and drained the pump, which we now leave empty to keep it useable. We have to turn on a couple of stopcocks and turn one off before starting the motor – and away we go.

At the dam pump we also added an overhead sprinkler that acts as a dampener for the area around the pump and exposed pipes. The sprinkler is installed on the pressure side of the pump as we figured that if a fire comes we will be pumping water to the dam water tank to keep it full. Now, if a fire comes, we feel more ready to fight it than when we had just a garden hose to do the job. And we will certainly be continuing our six monthly checks on that pump! ■

Step by step photos

Gunk growing out of the metal pump housing seized the pump after six months. It is interesting to note that the old pump, bought second-hand nine years ago, and pumping the same water to the concrete tank, has never had a problem.

Our homemade concrete dam water tank was made by rotating an arm with a metre long curved formwork attached around a central post, filling it with concrete and a strand of barbed wire. The tank was then well plastered on the inside to make it waterproof. Water is pumped from our dam and then gravityfeeds down to the house via 50mm pipe.

A four-outlet manifold, each with its own on/off tap. The left hand hose is just a normal garden hose, while the 25mm hoses are for firefighting. Instructions on which way to turn valves/stopcocks are written on the underside of the lid that covers the underground pipes. The red lid on the pump house lifts off quickly to get the thing going pronto! This is the pump that pressurizes the underground line that works all the nine sprinklers and is the one that had seized up.

Overhead sprinklers and firefighting hoses with firefighting nozzles are attached to the front garden tap with a four-outlet manifold. A similar system is situated at four others sites around the house and sheds.

Drums of water are strategically placed at shed entrances as a backup to the sprinkler and fire hose system.