



Eastwood eases water worries

When ATM first visited Eastwood Golf Club at the start of 2007, the main dam was at just 10 per cent and newly appointed superintendent Michael Vozzo was wondering what he had got himself into. More than three years on and following a series of works to increase water harvesting abilities, the club's water worries have eased considerably.



PRINCIPAL PARTNERS



As of February 2010 the Eastwood dam was at 70 per cent capacity, a far cry from the same time three years ago when it just at just 10 per cent

Traditionally, Eastwood Golf Club, located in the far eastern suburbs of Melbourne, had always found it difficult to harvest enough stormwater for irrigation every summer. To offset this, prior to my arrival in January 2007, all hand watering of greens, watering with impact sprinklers and the irrigating of our two bowling greens was with potable water therefore reducing somewhat the need for stormwater from the irrigation dam.

Obviously with severe water restrictions in place, we very quickly converted our bowls greens irrigation to dam water (after we completely lost the top green in February 2007) and installed quick coupler valves to all golf greens therefore eliminating the use of potable water (a saving financially, but meaning we needed about 4-5 megalitres more in our irrigation dam per year).

Around this time we had only enough water in our dam to irrigate greens only (approx. 3-4ML) and even had to truck in some more just in case. It would be fair to say that in some way I was fortunate that the situation got this extreme as every suggestion to improve water harvesting since this date has been met with approval, including finance, which historically wasn't necessarily the case prior.

EVERY DROP COUNTS

The Eastwood site is unique in that the course



This dam next to the 3rd green is one of a series of four linked dams at the southern end of the Eastwood Golf Club site which combined hold 8ML. Water from these dams used to be lost but is now pumped to the club's main irrigation dam on the other side of the course

is situated on a 'hog's back' running east to west through the middle of the property with the clubhouse being right in the centre. Our main 30ML irrigation dam is on the northern border, fed from stormwater off Liverpool Rd, the northeast corner of the car park and some drainage lines on two fairways.

However, all stormwater from the club's driveway, car park, bowling greens, clubhouse roof, maintenance sheds and drainage on 10 holes, found its way into a system of four dams dotted throughout the southern end, which eventually overflowed into nearby Bungalook Creek. These dams combined hold an extra 8ML so it was vital we devised a plan to somehow utilise this precious water and virtually increase our holding capacity to 38ML.

We decided to install a diesel transfer pump (we had no power in the vicinity) at a cost of almost \$30,000 to transfer water through the irrigation line, from the last dam in this link (between the 1st and 2nd holes) to the main dam some 700m away at the other end of the course. This had to be done manually, but with careful planning and keeping an eye on the weather radar, we are able to drain the final dam prior to any rain event (it pumps at approx. 36,000l/hr). To date, some two-and-a-half-years after installation, this diesel transfer pump has transferred just over 26ML with diesel fuel being the only cost.

It was also very important that all routes for the stormwater were clear and unimpeded to ensure all captured water found its way into the dams. The route for the stormwater from Liverpool Rd to the main dam was directly on the northern fence line, under many Cypress pines.

Over time this route had washed, was overgrown with vegetation and some of the fencing had falling into the depression. (There was even a suggestion that one of the neighbours was detouring some of the water into his property). So we re-routed the stormwater further into the property to ensure this wasn't going to happen and installed some crushed rock into the base as a short term fix until the water made its own course through the new depression (see photos bottom of this page). After lengthy



Eastwood's desalination unit can supply the club with 14.5ML annually

negotiations the council assisted in installing a new stormwater pit on Liverpool Rd to ensure better flows.

Being an undulating course, we also decided to re-shape most of our paths (formed either with Lilydale toppings or granitic gravel as it is the cheapest method) to direct stormwater to adjacent pits to be sent to nearby dams. For instance the path that runs between the 10th green and 11th tee is almost 250m long and collects almost 2ML annually – every drop counts.

While this has been tremendously successful, it has come with massive headaches including path wash outs, pipe and pit blockages. We have installed significant sized rocks along the gully to trap some of the debris but some still finds its way into the pit at the end. As I write this, a member of the club is about to install asphalt to our 1st and 10th tee paths, which will further assist with directing stormwater without the washouts.

In some spots, we have eliminated pipes in deep roughs to minimise blockages and installed open creek systems to transfer the water. These are well out of play and eliminate pipe blockages and also collect more surface water than previously. These were completed in late December 2009 with native *juncus planifolius* planted among the rocks.

DESALINATION

Despite all the above works we were still reliant on rainfall so in mid-2008, after attending the ARUP Water Conference in Melbourne with my Greens chairman Brian Lanigan, we realised we needed another water source, with the only viable option to further inspect our salty bore.

I remember talking at this conference to Flinders Golf Club superintendent Colin Morrison who mentioned that desalination could be an option for us. After further investigating by both Brian and I, desalination was a viable but costly option for Eastwood. Again in February of 2009 (around Black Saturday) I was watering greens only and with some member support the club cleared the finance



for a desalination unit to be installed by Aqueous Solutions.

We learnt quite quickly that you have to work backwards when installing such a unit. Firstly, after we found we had a plentiful supply, we had to work out where we were to dispose of the brine. The only option was to connect into the sewer near our work sheds some 600m away. However, Yarra Valley Water (which governs the sewer) only allows a total of 200kg of salt waste to flow into the sewer per day.

Considering our salt reading from the bore was 4400ppm, this meant we could only retrieve approx 50,000l of bore water per day. The corresponding unit would place, after we re-blended with some salty water, around 40,000l of water with salt of 650ppm into the main dam. It may not sound much, but that is 14.5ML annually.

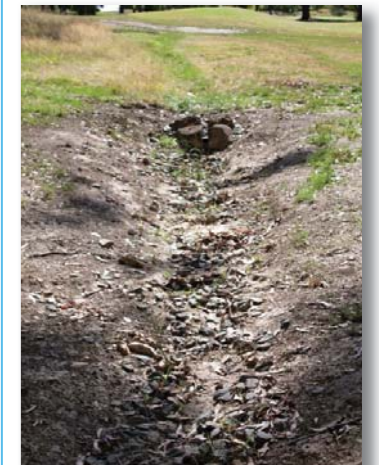
After much rigmarole and red tape with authorities, the unit was installed in late September 2009 at a total cost of around \$110k including installation, shed and associated costs. To date, this has added another 4.5ML to our supply.

Not content with all of these projects we also apply Aquatain to all of our dams to minimise evaporation with some very good results. We have also planted native *juncus planifolius* and *juncus flavidus* around dam edges and placed barley straw at pipe entrances to filter the stormwater in an attempt to reduce the risk of algal blooms.

So, either by good luck (and Melbourne has had some good rainfalls this past spring and summer) or by good management, in early February 2010 our main dam was at 70 per cent capacity (approx. 21ML). For the first time in many years, Eastwood Golf Club will have no concerns this summer and perhaps beyond. 🏌️



By re-grading paths Eastwood has maximised the amount of runoff to its dams. For instance the path that runs between the 10th green and 11th tee is almost 250m long and collects 2ML annually



In out of play areas around the course, open creek systems are an effective means of transferring surface runoff

Eastwood's main source of water is stormwater runoff from Liverpool Rd. Work was undertaken to ensure all routes for the stormwater were clear and unimpeded while council assisted with the installation of a stormwater pit