

Thanks to Roger Ward, Laurence Blacka and Craig Feuerriegel, we've put together three little turf case studies – two serious rebuilds and a test plot on a foul site...



**Let's begin with Newcastle's Arthur Edden Oval**, home to both the Northern NSW Soccer Federation and The Lambton Jaffa's Soccer Club. An enclosed field with a grandstand, it sees a lot of action – training sessions and games - from junior to senior teams. Despite an upgrade to facilities at the field's edge several years ago - a new amenities block complete with a canteen - until recently the actual playing ground had some serious issues...

\*When Roger Ward, Newcastle City Council's Recreation Project Officer says that the field didn't meet standards, he's politely understated things. In fact, all the fundamental essentials of a living turfed playing surface were compromised. "It wasn't a level playing field and that was because it had been both a soccer and a cricket field in the past. When it was dedicated to soccer, the cricket wicket soil was removed but the surface wasn't regraded so the high point where the pitch had been was still there."

And that's not all. "There was very poor turf coverage – I'd estimate fifty percent grass and fifty percent weed – and the soil was seriously compacted." The implications of a field that didn't drain well included games played elsewhere and this translated to a loss of income for the club when that fabulous new canteen wasn't able to carry out its usual fundraising activities during hosted games.

Happily this story has a promising ending. It was obvious that the oval needed major work, and that it couldn't be undertaken in stages. To make it all possible, the cost of work was shared between Council and the Club. To top things off, the Department of Environment and Climate Change NSW provided funding and support through a trial (titled Improving the Performance and Sustainability of Sporting Fields Using Recycled Organics) which is looking into the effects of introducing organic matter into playing fields. ("They're looking at how it affects compaction and therefore water retention.")

With all this in place, work began in October of 2007, the aim being to have the turf ready for action with the start of the 2008 soccer season.

"We began by removing all the grass which was stockpiled and used later to green up the surrounds. Three hundred millimetres of soil was then removed – and to do it we had to use a dozer to rip and push it back because the soil was so compacted a grader wouldn't do it." The Department-supplied recycled organic matter was then rotary hoed in, along with the star ingredient - TerraCottem. "We've been using TerraCottem for all our street trees for over ten years. We'd also recently used it on one of our other fields and the result was enough for me to say that we need to use it when we do any major field renovations."

Following these soil additions, the oval was laser levelled and a Hunter irrigation system installed, hooked up to an almost unbelievable asset – a natural spring which fills two underground tanks located conveniently on the edge of the ground.

"To help speed up establishment and meet our deadline, we laid kikuyu in maxi rolls, 1.2 metres wide and 20 metres long. To establish the turf, the irrigation was scheduled every second day for two weeks, then we reduced it to nothing over the following month, and they were running on the field after only three more weeks. We did miss a couple of games at the beginning because

we'd lost some time earlier during construction through heavy rain, but the field has held up very well in its first season, especially since it's had no water following establishment, only normal rain fall."

And that's where the findings of the soil scientist supplied as part of the Department's trial are interesting. "They're monitoring the site for twelve months and to date are really pleased with the soil profile. Testing also showed that the root growth was very impressive – between 100 and 120 mm down into the profile – something which was achieved in a very short growth season before winter set in and the grass went into its dormant stage."

Overall it's been a success. During winter and during times with no rain for a month it hasn't yellowed or died back but continued to grow. Since the turf first went in it never looked back, needing a trim in the first fourteen days. And perhaps most importantly, despite rain prior to matches, none have had to be cancelled which means the canteen has been open for business as planned. So how many sausages do you have to sell to pay for a half share of a rebuild like this one? A lot.

### Scratching around on a foul site.

Sometimes desperation creates an opportunity to try something new. Laurence Blacka of Redland City Council did just that in November last year when he decided to include TerraCottem in a \*turf trial at the Raby Esplanade...

"After hearing about the product I decided to incorporate it in a trial I was already undertaking on soil remediation. The trial area's behind a canal revetment wall where the soil is made up of marine muds and clays that were pumped in during the construction of the canals - it's very anaerobic, low organic, acidic, salt laden, compacted, with some areas of poor drainage.

"Growing on top was a mixture of all types of turf species - predominantly green couch, sporobolus and patches of kikuyu and bahia grass - not that we were too concerned as we aren't trying to establish a monoculture here but rather taking the approach, if it can grow here, let it."

The process was fairly straightforward : the area was rotary hoed to 150mm then the necessary amendments (lime, magnesium and organics) added as prescribed by the soil analysis. Then the TerraCottem was added and the whole mix hoed in. After leveling, the main trial area was turfed with sea isle turf, and a smaller area nearby left prepared and treated but not turfed to see what would grow back from the original grasses that were hoed in. The area was then watered in and regularly irrigated for 10 days after which everything was left to fend for itself.

And what did the trial show? "The area seemed to consume a large volume of water on the initial watering and then required little water to maintain sufficient water for turf establishment. The turf did establish quickly and well and the area not turfed showed earlier than estimated regrowth of the green couch which had been hoed in. In the longer term both areas completely established a

good coverage and continue to do well. Compared to the control area where no TerraCottem was used, the new areas seem to hold colour a little longer through prolonged dry periods and appear to bounce back a little quicker after a rain event."

Laurence's honest feeling about TerraCottem? "I have no doubts about the positive effects of using it for turf establishment but it's not cost effective on large areas where budgets are very limited. We've also used TerraCottem in some tree planting projects with very good results and believe we'll continue to use it."

### When wear and tear is your main problem.

Sometimes all that's wrong with a playing field is its popularity – take the A J Kelly Park at Redcliffe in South East Queensland as a classic example. Home to the Peninsula Power Football Club, this field is the Club's main competition oval. Inspected prior to each season by the Football Association, the playing surface has to meet standards. And given the amount of use the ground gets – men's and women's premier teams as well as other division's and the junior league's finals – meeting those standards was getting tougher each year. Club President Craig Feuerriegel explains why.

"It's our flagship park and it gets a lot of use - recovery time was becoming an issue – but we also had some issues with drainage and levels. It was clear that we should start from scratch, so we applied successfully for funding from both local and state governments, showing that both maintenance and water use would be reduced."

Australian Irrigation Services began work once the season finished, with a representative from Council keeping in close contact and helping to keep things on track. The process was straightforward: nuking the existing mish-mash of species then hoeing them to produce a soil bed; trenching the field and installing a new, fully-automated, pop-up irrigation system complete with tanks off the club house roof; broadcasting the TerraCottem and rotary hoeing it all in; laser leveling the field; then rolling out the Tif Sport turf chosen "... because it has a reputation for being hard-wearing, versatile with a good recovery rate." Establishment irrigation wasn't too much of an issue as there had been plenty of natural rainfall (too much in fact) over the life of the project.

Looking at the field after its first season of play, Craig can't say the establishment was anything to remark about one way or the other. "But the recovery is a lot better than we'd seen in previous years." Which is good news given the TerraCottem wasn't a small item on the budget. "Our contractor, Dean Smith, sold me on the idea for the longer term, saying we'd have better growth, better recovery time, and better water retention – which was also important because we didn't want to be putting as much water on the ground as we had in the past. Yes, it was a significant part of the budget (which we could have made use of elsewhere) but we were doing the job properly with long-term benefits in mind. This was the way to go, so we kept the TerraCottem in the schedule of works."



The trial site at Raby Esplanade – in April last year, and then again seven months later. Note the untreated section in the background.

# A GUTSY MOVE PAYS OFF

There aren't many businesses which knowingly jettison a broad product base to focus on only one – but that's exactly what TC Advantage's Colin Wise and Russell James decided to do.

Only two years ago, they walked away from a business that was supplying the recreational turf industry with virtually everything they'd need, to launch a business dedicated to supplying just one.

"Of course there were a number of reasons, but to put it simply, we could see the potential in TerraCottem. We wanted to sell a product that has a unique benefit to the market place." Saying this, Colin Wise sums up what opening the doors on TC Advantage represented – a pure demonstration of faith in the product and what it can do.

Not that Colin and Russell were making the decision without information. After all, they'd been looking closely at TerraCottem since the early 1990s, learning more about it from an international perspective then watching it perform in Australian conditions.

In fact this year marks the 15th anniversary of a similar mark of faith, by Bernard Devos, when he set up TerraCottem International. And in that time..? "The amount of city councils, technicians and architects specifying the product has grown exponentially, thanks to the hard work of our distributors and sales staff and the growing awareness that water availability and quality is an issue."

As for Australia, "... it's the country that has evolved best and quickest, from a commodity selling company, to selling a dozen niche products, to finally dedicate themselves 100% to TerraCottem. They put a lot of effort in training customers, on-site assistance and follow-up and it pays off." But in some ways that isn't a surprise – after all, Australians have a reputation for being willing to try something new and are quick to spot something that works.



**What is TerraCottem?** Developed at the University of Ghent, TerraCottem is a physical soil improving product – a blend of more than 20 substances, all assisting plant growth in a synergetic way. TerraCottem stimulates bio-mass production and plant growth; and it increases the water and nutrient retention capacity of soils or substrates.

# A GROUNDBREAKING TREE IDEA

What are the global climatic, demographic, and ecological challenges that bear in on life in 21st century Australia? How do we work towards healthy biodiversity? What, actually, is sustainability in a landscape and how is it achieved?

These questions and more were addressed at the ninth annual Treenet\* Symposium in Adelaide in September. On day one, Professor Barry Brook (University of Adelaide) set the tone giving a global perspective on climate change and the synergies which are affected by and feed into it. Other speakers continued to ride that momentum, addressing issues from responsible management of changing demographics to biodiversity in urban contexts to local examples of water management strategies to the study of Australia's many memorial tree avenues.

At the Waite Arboretum on day two, the best of practical knowledge was on display as we were treated to various tours geared to arboriculture and the wise management of trees.

As a stand out, Treenet's David Lawry (who has just received his OAM medal for services to arboriculture and the environment)

guided participants through the trial work on utilising stormwater in verges – a concept both groundbreaking and simple.

In a nutshell, much of our stormwater – loaded up with pollutants, heavy metals and nutrients – ends up in rivers and harbours where it damages ecosystems. David's idea is based around channeling waste water to an area to be used by trees – a system which would also sequester the most harmful components of that first flush of rainwater to come off the road and pavement.

In his vision, our urban roadsides will no longer be hostile sites through the installation of simple, easily maintainable systems, which store up to 1000 litres of stormwater in the verge. The tree gets the benefit of the water, the worst pollutants are pulled out of the runoff, and council and ratepayers enjoy the amenity of healthy trees.

Keep a look out for this system as it becomes streamlined and then rolled out on a large scale.

\*Treenet is an independent, not-for-profit organisation whose aim is to build the bank of knowledge around street trees, primarily through its annual symposium. For more information visit [www.treenet.com.au](http://www.treenet.com.au)



Treenet's Stormwater Inlet – a simple system to channel stormwater to trees planted into the verge. Put simply, water captured by the inlet fills a cubic metre, gravel-filled sump which then irrigates the surrounding beneath-pavement soil.

# WATCHING THE GRASS GROW, AND LOVING IT

If you want a straight-up view of how we've been managing turf over the last ten years you could spend way too much time pouring over old maintenance schedules – or you could ask Mick Munday a thing or two.

Mick's been around turf all his life – chasing work experience at his local golf club (Warwick, Queensland) when he was still at school; turning down a university offer of Forestry to take up a greenkeeping apprenticeship instead; working for a chunk of time, and then forming his own Gold Coast business.

"I grew up on a dairy farm, and when my father retired and moved here, he started up the business. Not long after that, I was made redundant - Mick's employer took up an external maintenance contract option, jettisoning the internal maintenance team - and so I went into the business full time."

That was the birth of East Coast Turf Renovations. Together with Mick's other turf interest, Sport Turf Services, these two operations handle everything from basic maintenance (the holy trinity of aeration, scarifying and top dressing) to major rebuilds. Golf courses, playing fields, lawn bowls – he does them all, and this is why he's worth quizzing.

**What's changed over the last ten years?** "Standards – they used to be a lot lower. But we've set higher benchmarks and people now expect these. Quality is no longer a special request."

**What makes you jump up and down?** "Being a specialist, you know what needs to be done but there are always people further up the system – I call them the bean counters – who don't have a turf background, and so they're making short term decisions. Lately there've been a few councils who've appointed people who know what they're talking about and it shows. They're great to deal with and it makes my job, building the best possible quality field, easier."

**What about water?** "Here in southern Queensland we've suffered a major drought for years though it looks like it may be easing. And because of it, we've had to design and construct fields with limited water. This means you keep a look out for anything that makes a difference. Based on the TerraCottem trial up at Redlands (which we put in), I know the stuff works and so we use it."

**Is there something the industry should be doing?** "It's hard finding green keepers, and it's even harder finding young people keen to take up an apprenticeship, partly because it's so poorly paid. The result? Greenkeeping is officially classed as a skill shortage in Australia which is a shame since it offers a fantastic lifestyle. It's a tough one to sort given tight times have forced clubs to keep their budgets lean – I know one club which hasn't had a budget increase in five years."

**What do you like about being a turf man?** "It's the challenge: always trying to better the last job; juggling the huge amount of work we have on; going back and taking a good look at a job we've done and seeing how beautiful it is. It's a put-down to say something's as exciting as watching grass grow, but I really love it."

Mick in scarifying mode.



## TECH TALK

Here's an arm's length study – reproduced here in its English translation – which was carried out in Finland over a five year period. See how turf responds to TerraCottem...

The Laboratory of Engineering Geology at Tampere University of Technology (TUT) Finland has carried out a study (1997-2001) on the properties of a turf area of a football pitch in Käpylä, Helsinki. The objective of the study is to examine elasticity and water permeability of an area treated with the TerraCottem® soil conditioner and an area not treated with the product. In addition, samples from both areas were taken in order to visualize root growth. A summary of the results is presented below.

Substrate samples of the Käpylä turf area were taken at different locations, both on TerraCottem®-treated areas and non-treated areas and at different times (1997, 1998 and 2001). These samples were analyzed for particle size distribution and root growth. The field measurements were done on elasticity (by using a Loadman apparatus) and water permeability (infiltrometer test).

The benefits of using TerraCottem® on sports turf are mainly better root growth, which results in a stronger sward, and an increase of the water retention capacity of the top layer into which TC was incorporated. This study also shows that the presence of TerraCottem in the top soil does not reduce its drainage capacity nor makes the surface too soft.

Root system of the turf on a TerraCottem-treated area (right) and a non-treated area (left).



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