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COVER

Royal Canberra Golf Club: Looking from behind the par four 10th back down the fairway towards the Royal Canberra clubhouse, late on the afternoon of the first round of the 2013 ISPS Handa Women's Australian Open in mid-February. **Photo:** Brett Robinson.

GRASS-ROOTS WITH JOHN NEYLAN
The finer details 26

In his latest ATM column, agronomic expert John Neylan looks at construction best practice and stresses the importance of ensuring the small details are all in order and not compromised because of cost.

AGCSATECH UPDATE
Mix 'n' match 34

Andrew Peart comments on another summer of inspections conducted at regional sportsfields preparing to host NAB Cup AFL pre-season competition matches and looks at some of the issues facing community grounds in the lead-up to another football season.

RESEARCH
Remnant refuges 44

As part of the joint AGCSA-University of Melbourne biodiversity and carbon benefit study, research team member Lee Wilson examined the quality of remnant vegetation on nine of the project's participating golf courses.

Keeping it green 48

Phil Ford reports on the findings of his VGCSA-commissioned research project which examined a range of products to reduce couchgrass dormancy at two golf clubs in Melbourne.

Also in this edition…

Contributors to Australian Turfgrass Management Journal Volume 15.2 (March-April 2013)

Barry Bryant (SAGCSA); Gavin Darby (Melbourne Stadiums Ltd); Ben Evans (Bardwell Valley GC); Peter Frewin (AGCSA); Phil Ford; Scott Fogg (Queanbeyan GC); John Geary (St Andrews Private GC); Charlie Giffard (Indooroopilly GC); Tony Guy (STA WA); Addison Hamilton (Daily Advertiser); Scott Harris (Gold Creek CC); Dean Hopper (Camden Lakeside CC); Danny Hull (STA ACT); Ryan Irwin (NZGCSA); Peter Jans (Clublinks); Steve Jensen (Mirage CC); Allison Jones (NSWGCSA); Matt King (Getty Images Sport); Peter Lonergan (GCSAQ); Steve Marsden (Royal Sydney GC); Ian McKendry (STANZ); Craig Mills (Maryborough GC); John Neylan (Neyturf); Marcus Pamplin (Blundstone Arena); Andrew Peart (AGCSATech); Simone Staples (AGCSA/NTEWG); Wayne Tickle (Ballina GC); Michael Waring (Royal Canberra GC); Lee Wilson (University of Melbourne).

Back on the tools

I clearly recall the first time I spoke to John Geary. The well respected Victorian course superintendent was calling from a picket line outside the front gates of The Golf Club St Andrews Beach on a cold, wet and blustery Mornington Peninsula day in early October 2007. Alongside him were 13 members of his maintenance crew and a number of industry colleagues who had come to support them in their fight against Golf Club Properties Limited (GCPL) which just a week earlier had unceremoniously given them the boot.

For 30 minutes he outlined the events which had led to them taking such action. Staff wages were in arrears (senior staff, including Geary, hadn't been paid for up to three months) and superannuation contributions hadn't been made since mid-2006. So bad had it become that Geary at one stage resorted to paying wages out of his own pocket!

Trade accounts and subcontractor invoices were simply left to pile up, while maintenance operations were being increasingly hamstrung by GCPL's chronic cash flow problems. It got to the point where the amount of money spent each week on course maintenance works was purely dependent on pro shop takings from the previous weekend.

Then came the final ignominy – GCPL informed Geary and his crew in late September 2007 that they no longer had jobs. On top of that, all outstanding wages and entitlements were held back and, to add further insult to injury, staff from another of the owner's numerous subsidiary companies were brought in to take over maintenance of the course.

At the height of the fallout, Geary commented in ATM Volume 9.6 (November-December 2007): "It's unfortunate that it has got to this stage, but there are a few chapters still to be written yet." Those words proved prophetic and eight months later GCPL went into administration and the course shut its gates. Along with the many investors who had parted with some serious money to secure a part of the exclusive development, Geary was left out of pocket and with a sense of emptiness that in the years since has only slightly diminished.

More than five years on, however, and a new, hopefully positive chapter is now being written in the St Andrews saga. After a four year period with the AGCSA, Geary now finds himself back on the Mornington Peninsula heading up construction of the new St Andrews Private Golf Club development. It is being built on the same land that was originally earmarked for a second course during the GCPL days, but this time around there is a new owner, new architect and a renewed sense of purpose.

Having worked alongside Geary for the past four years, it was clear that his admiration and enthusiasm for the St Andrews site had never waned. We often talk about superintendents becoming attached to their patch of turf (sometimes to their detriment), but having had the chance to see the St Andrews Private site first hand, it's not hard to see why Geary has taken the punt, albeit after plenty of soul-searching, and gone back on the tools. As he comments in this edition's lead story which focuses on the new St Andrews Private development, "I was very proud of what we achieved at St Andrews Beach and I think St Andrews Private can be as good, if not better."

It will be fascinating to see how the course develops and starting from this edition ATM will carry a series of regular construction updates. There are some very interesting elements to the design – principally the decision to go with a blend of fescues on fairways – but given the natural beauty of the site and the team Geary has working with him, half the battle would appear to be already won. ATM wishes John and the crew all the best and looks forward to tracking the development of what will be a very unique course. Enjoy the read!

Brett Robinson,
Editor

PETER FREWIN, GENERAL MANAGER, AGCSA

Successful Canberra delegation promotes business of golf

I had hoped to be able to start one of these columns without needing to make a reference to the weather. Alas that is not possible. I had the pleasure of recently travelling and holidaying overseas and during this time away I had little communication with what was happening in Australia. On my return I was alarmed to find the southern half of the country on fire and great expanses of the northern half under water. It is certainly a vast and unpredictable continent on which we live.

On my return from San Diego where I attended the Golf Industry Show (more on that later), I had the opportunity to travel to Canberra as part of the Australian Golf Industry Council (AGIC) delegation. This was the first time I had been involved in such a visit since starting as AGCSA general manager and what an eye-opener it proved to be. It provided a great opportunity to visit Parliament House to meet and discuss the game of golf with both sides of politics.

The visit was the next step in an initiative that started some years ago with the assistance of Jamie Briggs MP (Liberal member for Mayo) and Richard Marles MP (Labor member of Corio and Parliamentary Secretary). The bipartisan approach of these two members has been a great tool to promote golf to the wider audience in Canberra. For them to put political allegiances aside and work together to promote the 'business' of golf is great for the game.

As part of the visit we were granted an escorted access to all areas of Parliament House and got to see the workings of politics which made for a very interesting day. The office of Jamie Briggs is directly opposite that of one Kevin Rudd (MP) and there appeared to be a great deal of movement in and out of that office during our visit. With a trip to the polls in September it may be a case of 'watch this space'!

The day also included a lunch which was attended by about 35 MPs and Senators and included guests Nick Green OAM (Australian Olympic team Chef de Mission) and Jessica Korda (2012 Australian Women's Open champion). Highlighted to all in attendance was the benefit golf has on the economy. Not only is it one of the largest participation sports in Australia, it also contributes nearly $3 billion to the economy and employs a great number of people. These numbers were not lost on the politicians in attendance.

The AGIC is a great tool for the industry and with the support of all involved is beginning to get some traction and all looks positive going forward.

As mentioned earlier, I was lucky enough to have a holiday in the United States which ended in San Diego where I attended the GIS. It would appear that the confidence is returning to the US market as most that attended the show either as a delegate or trade exhibitor were very buoyant.

The Australian market had to some extent been sheltered from the GFC by our booming resource sector, but as that slows we had the potential to be exposed to some volatility. The mood on the trade show floor at GIS was certainly positive and one hopes that this mood will take root in Australia and we will continue to prosper.

While walking around it was again pleasing to see Australian companies flying the flag, in particular Graden, Tru-Turf and e-par. Their presence highlights that Australia not only presents world class turf surfaces but also world class machinery and services.

The GIS was also an opportunity for the world associations to get together and continue the good

work that started at last year's International Summit held during the Australian Turfgrass Conference in Melbourne. I am pleased to report that the major associations from all corners of the globe have agreed on an International Environmental Statement which will be circulated shortly. This document will assist in promoting the green credentials of golf.

In closing, I would like to take this opportunity to thank Tony Fogarty for his contribution to the AGCSA during his term as director. Tony, who stood down after 34 years at Club Catalina Country Club in January, was a great asset to the AGCSA and while he is still a part of the industry in his capacity with Living Turf, he will be missed by all in the office and the remaining directors – thanks Tony.

Please feel free to contact me on 0418 593 072 or peter@agcsa.com.au should you have any issue or suggestions; feedback is always welcomed.

AGCSA general manager Peter Frewin (centre) with Graden representatives Mark Bainbridge (left) and Michael Dryden (right) at the recent GIS show in San Diego

CORRECTION

In Dr Don Loch's article **'The environmental turfgrass'** which appeared in ATM Volume 15.1 (January-February 2013), there was a small error in Table 1. – Characteristics of Zoysiagrass Species (pg 46). Under the 'Tolerance of Wear' attribute, both *Z. japonica* and *Z. matrella* should have read 'very high', not 'very fast' as was printed. In addition to this, Table 2 (pg 49) presented a list of zoysiagrass species and their commercial availability in Australia. To this list can be added the coarse-leafed *Zoysia macrantha* variety Nara™ (MAC03 A). Australian Turfgrass Management apologises for any confusion caused.

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Private haven

In January, work started in earnest on St Andrews Private, a new exclusive golf club development on Victoria's Mornington Peninsula. Having built the original St Andrews Beach course which opened to much acclaim in 2006, construction superintendent John Geary finds himself back in familiar territory, crafting some of the region's prime terrain into what is hoped will be a world class golf course. ATM editor Brett Robinson visits the windswept site during the early stages of construction in the first of a series of articles tracking the creation of a new golf course.

Imagine the feeling if, one day, something you had devoted the last three-and-a-half-years of your life to, where you had literally created something from nothing, was taken away from you within a split second. John Geary knows only too well the maelstrom of emotions that can well up inside you in such a situation – loss, emptiness, despair, bitterness, sheer bloody anger.

A golf course superintendent's job can be tenuous at the best of times and for Geary the memories and emotions surrounding the very public demise of Golf Club Properties Limited (GCPL) and its St Andrews Beach course development in 2007 are still as fresh today as they were back then. No doubt he has conducted countless post-mortems over what transpired in the years since, but at the end of the day he was just one of many who were ultimately burnt as the exclusive development haemorrhaged and went belly-up.

Five years on from those troubled times and a significant amount of water has passed under the bridge. The land which Geary and his team skilfully shaped to bring Tom Doak's acclaimed design to life was sold off to a Chinese investor and after shutting the gates for a period it was subsequently reopened as the public access course St Andrews Beach.

The original GCPL concept for the site was to have two Doak-designed golf courses – the exclusive members-only Gunnamatta Course (what we now know as St Andrews Beach) and a second public access 18 – the Fingal Course. With the Gunnamatta Course opened in 2006, construction was due to start on the Fingal Course, but as GCPL foundered that never eventuated. The land on which that second course was to be built was also sold off in the subsequent carve up, purchased in the end by Melbourne businessman Randal Shreeve, owner of Billboard Media.

Although moving on to positions with South East Water and then the Australian Golf Course Superintendents' Association, Geary readily admits he found it hard to put the St Andrews saga behind him. Not only did it hurt that his tenure was cut short after devoting so much time and effort transforming what was a series of degraded paddocks into a world class golf course, he also never got the chance to realise the untapped potential of the proposed second course.

In 2012, however, that chance tantalisingly presented itself. With a vision to establish a truly exclusive members-only golf club, Shreeve commissioned golf course architect Ross Perrett to come up with a new routing for what has become known as the St Andrews Private Golf Club. Needless to say they had just one person in mind to bring the project to life and it was only a matter of time before they called on Geary.

By no means, however, did Geary instantly jump at the prospect. In fact it took days of deliberating and reconciling before he eventually decided to take the plunge. The model which the St Andrews Private development is being founded on is certainly unique, targeting an exclusive high-end clientele. It will have a membership limited to just 281 (the score, incidentally, which Peter Thomson shot to win the 1955 Open Championship at St Andrews), with

PHOTOS: BRETT ROBINSON AND ST ANDREWS PRIVATE

potential members being 'wholesale or sophisticated investors'. The Corporations Act 2001 defines such investors as either having an annual income of over $250k and/or net assets in excess of $2.5million. St Andrews Private memberships reportedly start at $98,000 with annual subs on top of that.

Although far from your average golf course development, the lure of being able to take care of some unfinished business proved too irresistible for Geary and in early December 2012 he departed the AGCSA to take up the role of construction superintendent. Since then he has gone about sourcing an expert construction team, locking in machinery and irrigation tenders, setting up a site base – affectionately dubbed 'Camp Beirut' due to its exposed location and motley assortment of shipping containers and rudimentary portables – as well as reacquainting himself with the delights of the Peninsula's gale force winds.

"It did take me some time to make my mind up to get back involved, but now that I am here I am really enjoying it and feel comfortable that I have made the right decision," says Geary. "I'm quite confident that the project will be a success and I am really looking forward to playing my part in helping shape one of the most natural golf course sites you would find anywhere in the world."

BEST OF BOTH WORLDS

An unabashed devotee of the traditional links courses of Scotland and Ireland, it's easy to see why Geary has such affection for the St Andrews Private site. Having spent more than three years moulding and shaping the landscape next door at St Andrews Beach, it's the sort of land which gets under your skin.

As Geary propounds, the St Andrews Private site has the best of both worlds. Parts of it are akin to the heaving landscape that is such a dominant feature of St Andrews Beach, yet in other parts the land opens up and is more subtle in nature.

"The terrain at St Andrews Beach is quite violent, with massive ridge lines and deep valleys which reminds me of some of the Irish courses like Ballybunion, Lahinch or even Royal County Down," says Geary. "The parcel of land on which we are building the new course is similar and from first glance you would be hard pressed to notice the differences. But the further you move into the western corner of the property – on what will eventually be holes 10-13 – the land opens up to the point where you can see across four or five fairways. I guess it's more reminiscent of what you would see on a Scottish links course.

"And that, I believe, is the strength of this site – you get a bit of both. On the one hand you have the dramatic ridge lines, but then you also have these more subtle undulations. The more we have been working in that western corner, the more I am looking forward to getting stuck in and constructing those holes to see how they will look.

"We are blessed with some pretty spectacular golfing terrain on the Mornington Peninsula and I think most people would agree that it's somewhat reminiscent of the links land you'd find in Ireland and Scotland. Not just from a marketing perspective

Left and above: The site of the 16th green at St Andrews Private. Holes 15 and 16 were the first to be tackled when works got underway in January, with the 16th green shaped in less than half a day

Looking from one of the site's many dramatic ridges down on to what will be the par four 18th which runs parallel to the 1st

The St Andrews Private site is routed through prime golfing terrain and is blessed with natural greens sites such as the 4th pictured above

but from an agronomic and turf perspective as well, we really want this course to play similar to how those true links courses do. To that end the playing characteristics of the fairways and green surrounds will be extremely important and that's one of the reasons why we are going with fescue."

FIRM AND FAST

Perhaps the biggest talking point of the St Andrews Private development from an agronomic point of view has been the decision to go with a blend of fescues on fairways. Originally the fairways were going to be couchgrass, but with the luxury of having a small membership base, minimal rounds and therefore minimal wear, fescue quickly came into the reckoning. Not only does the fescue provide a key point of difference from other courses on the Peninsula, more importantly for Geary it is in keeping with the desire for the course to pay homage to traditional links golf.

In saying that, however, Geary is under no illusion how challenging a task it will be to maintain the fescue, especially at the height of a Victorian summer, but with significant water resources at his disposal and irrigation infrastructure specifically designed to cater for a wholly cool-season grass course, he says there is no reason why fescue can't work.

"The decision to go with fescue is not one we have made lightly," states Geary. "It is a calculated risk, but having done the research I think it's one worth taking. From an agronomic and playing perspective, we are very keen to promote the firm and fast playing characteristics that you get on a fine leaf fescue, which is totally different to what you get off couchgrass that you find on most courses in Melbourne nowadays.

"When I first started as a greenkeeper, most courses had a two grass policy on fairways – couch in the summer and *Poa* or a cool-season mix in the winter – but due to a number of factors most have now converted to couch. There's no doubt the couch provides an unbelievable playing surface, but we just tend to think there's no real reason why we can't have the fescue, provided we have the water resources and irrigation system to match which we will. We know it's going to be a tough ask, but I certainly wouldn't be doing it if I didn't think it was achievable."

Although still to be finalised as this edition of ATM was going to print, Geary was looking at a blend of creeping red fescue and Chewings fescue for the fairways and intermediate roughs, and a mix of hard and sheep's fescue in the out of play areas and tee surrounds.

The links philosophy will also carry over onto the greens and the choice of grasses. Rather than going with a single creeping bentgrass cultivar, Geary is planning on hydroseeding the greens with a mix of three varieties – Authority, Mackenzie and Penn A1 – the aim being to have a mottled look similar to that often found on traditional links courses. The tees, by contrast, will be solid turfed with Santa Ana couchgrass and oversown with light rates of the fescue mix which will eventually be chosen for the fairways.

UP AND RUNNING

With planning for the St Andrews Private development in the pipeline for well over a year, earth finally started moving shortly after New Year. Fairways were

CONTINUED ON PAGE 12

Towards the western end of the site the land is a lot more subtle, reminiscent of the links courses in Scotland. This photo is taken from what will be the 10th tee

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ST ANDREWS PRIVATE - THE KEY INGREDIENTS

Greens construction will see the top layer of darker sand stripped off and the yellow dune sand underneath shaped to form the bases

SOILS

Being located on Victoria's Mornington Peninsula just a stone's throw from the St Andrews Ocean Beach, drainage won't be an issue for the new St Andrews Private Golf Club development. The site contains an abundance of sand – a top layer of dark, organic, fine sand down to depths of about a metre, with a yellow dune sand underneath which drains in excess of 1000mm/h.

Although requiring a lot of double handling, the construction process will see the darker sand stripped off and stockpiled, with the yellow dune sand then shaped. The darker sand will then be spread back over the top (300mm depth minimums on greens and up to 250mm on tees and fairways) and although not as free-draining as the yellow, the suction forces at work with the yellow sand underneath will ensure sufficient drainage rates.

One unknown aspect of the site, however, is the amount of limestone that will be encountered. Pockets of limestone reside throughout the property and during the early stages of construction an old limestone kiln was discovered on the ridge that separates what will be the 8th and 11th fairways. Fairways 1, 12 and 13 are known to have areas of limestone and test holes have been drilled on all proposed greens and greens surrounds. If limestone is struck, those green sites will need to be benched out.

WATER

The St Andrews Private site has one bore which was drilled by Romano Grande of Borewell in late February. The bore feeds directly into a series of three storage tanks that can hold up to 1.2 megalitres. At 78 metres deep with a 390mm stainless steel casing, the bore reaches down 65m below the top level of the water table. Yield is 45 litres per second with quality around 500ppm and a pH of 7.

With the decision to use fescue on the fairways, an estimated total of 350ML per annum will be required to irrigate the St Andrews Private playing surfaces. To ensure the quality and quantity of water, additional bore licenses have been purchased off surrounding properties to supplement the property's existing bore allocation.

Taking into account the fescue fairways, the irrigation system has been specially designed by Paul F. Jones & Associates with A&M Watering (Brendan Graham) successfully tendering to install it. The Toro decoder system will feature hard-lined fairways with part circle sprinklers around greens. At capacity, the Grundfos pump system (four main variable speed pumps and a jockey pump) will be able to pump water out on to the course at 60 litres per second.

MACHINERY

St Andrews Private will be a Toro course, using second hand machinery during construction and then migrating across to new equipment under a lease agreement come the maintenance phase. Essential items such as a 100hp Deutz Fahr tractor (with turf tyres) and 100hp Case CT450 100hp skid steer have been purchased outright. One of the more interesting items purchased has been the BLECavator BV200HD, a rotardarium style cultivator which will be used in the preparation of fairways prior to seeding (see page 14 for more on this machine). The shaping crew has at its disposal a 14.5 tonne JCB JZ140 excavator, a 12 tonne Kato HD512 III excavator with tilt bucket, a D5K Caterpillar crawler bulldozer, a posi-track with blade and York rake.

CONTINUED FROM PAGE 10

sprayed out on three occasions using label rates of Roundup (glyphosate), Fusilade (fluazifop) and Hammer (carfentrazone) and by mid- to late January the shaping crew and irrigation team were on site (see page 14 for more on the St Andrews Private construction team).

Less than six weeks in and by the first week of March 2013 six greens (15, 16 and two of the course's three feature double greens – 14/17 and 1/13) and five tee complexes (14-18) had been shaped, with greens 14/17, 15 and 16 fumigated with Basamid in preparation for hydroseeding. The tee complexes on 16, 15 and 17 had been solid turfed (in that order) with Santa Ana sod from Carrum Downs-based Australian Seed and Turf Farm, while tee surrounds on 15, 16 and 17 had been hydroseeded.

Delays in getting the course's bore drilled and thus getting water on site meant that the first holes worked on were 15 and 16, solely due to the ability to access water from neighbouring St Andrews Beach (which was included in the original land sale). The 15th and 16th are both par fours and while considered by some to be the weaker of the course's holes (primarily due to the prominent apartments which flank the 16th that were constructed during the GCPL days), they each have their own unique features.

The 15th weighs in at 405m and is attacked from a series of spectacular elevated tees situated on one of the higher points of the course. The tee shot is down over a ridge, which has been softened and re-contoured during construction, and with a mid- to long iron required for the second shot it is likely to rate as one of the hardest holes on the card.

The 310m 16th, by contrast, is a relatively straightforward prospect off the tee, but it's the green site and its surrounds which make the hole. Nestled beneath a huge limestone ridge and framed by spectacular moonahs, you would be hard pressed to find a more natural green site.

About 30m in front of the green a mounded strip of vegetation runs the entire width of the fairway. Although the design initially called for this strip to be removed, Perrett and Geary were reluctant to simply bulldoze it and instead got the crew to clear out all the poor quality vegetation. What has been left is a wonderful natural feature which not only showcases the site's great array of indigenous vegetation but also adds significantly to the aesthetics and strategy of the hole (see main photo pages 8/9).

From 15 and 16, works then focused on the two par threes 14 and 17 which share one of the three double greens. These holes required significant earthworks and to that end a 25 tonne Moxy was brought in to assist. The 14th is 155m uphill with an elevation change of 3m, while the 17th is a 185m beast across a deep ravine. The 18th tee complex, near to the 14th tees, was also shaped during this

Construction of the 16th tee complex (left) and (above) the finished look. Tees will be Santa Ana couchgrass oversown with light rates of fescue

period, while in the first week of March the second of the double greens (1/13) was formed as well.

"To date the construction process has gone pretty smoothly and I am really happy with how things have taken shape," says Geary. "We're lucky in that a lot of the natural shapes are already there. The green site on 16 is pretty special and it was shaped in less than half a day!

"I wasn't a huge fan of the 15th and 16th holes to start with due to the apartments being so close, but now that we have been working on them I have come to realise the potential they have to be very good golf holes.

"The 14th and 17th holes have been the most challenging bit of the construction to date. We had to shift a lot of dirt and we also had to contend with two weeks of gale force easterly winds. You forget how windy it can get down here and it did create a few problems especially as we didn't have water to stablise the sand.

"It took nearly a week to shape that green and one of the challenges we had was that from the 14th tee there is a roofline which sits right in the line of view behind the green. Ross spent a lot of time trying to work around how we could minimise its impact on the outlook of the hole and we ended up having to lower the tees."

GOING ONE BETTER

The construction processes being employed at St Andrews Private will closely mirror those that Geary used to great effect when building St Andrews Beach. The greens and tees are simple push-up jobs using the abundant in situ dune sand (see page

Shaper Ronny Nyhuis puts the finishing touches to the 15th tee complex

12 for more on the make-up of the soils and greens construction method) and although not conforming to USGA spec, Geary knows from experience they will perform more than adequately.

The main difference, however, will be the manner in which the fairways are prepped and grassed. St Andrews Beach was line-planted with Legend couch, but the decision to use fescue means that the fairways will be drill-seeded or hydroseeded depending on their location.

Geary has also purchased a heavy duty BLECavator from the UK, a rotardarium style soil cultivator which will be used to prepare the seed bed. In one pass the machine is designed to cultivate the soil to a prescribed depth, pulverise soil clumps as well as bury stones and vegetative material. It then debris-screens the soil through adjustable tines, rakes the ground level and finishes by rolling the surface. As soon as irrigation is installed, the BLECavator will be put across the fairways after which they will be irrigated for 7-10 days to germinate as much weed seed as possible. A knockdown herbicide will then be sprayed before seeding proceeds.

"I certainly learnt a lot from the construction of St Andrews Beach and having the benefit of hindsight will make aspects of this construction a lot easier," says Geary. "We are applying a similar model to what we did next door and I'm quite confident that we'll do this a lot better and a lot quicker.

"I'm very proud of what was achieved at St Andrews Beach and I think with the site we have to work with and the team we have in place, St Andrews Private can be just as good, if not better."

Editor's Note: For all the latest photos and construction updates, visit the St Andrews Private blog – http://standrewsprivate.tumblr.com.

Right: The two par threes 14 and 17 boast a double green and have required the most earthworks to date

A TEAM EFFORT

Bringing a crew together has perhaps been one of the easier tasks John Geary (pictured) has had in the lead-up to the start of construction of St Andrews Private. With a dearth of new golf course developments around the country at present, Geary didn't need to advertise for staff and has had the luxury of being able to handpick a team of four qualified greenkeepers and four labourers.

The qualifieds are headed by **Glen McLeod**, former assistant superintendent at The National (Old Course), and fellow ex-National employee **Jason Kellet**. Complementing them are **Nick Fitzpatrick**, formerly of Royal Melbourne Golf Club and who for a period worked on the Old Course at St Andrews, Scotland, and **Tim Madder**, who was part of the original construction team at St Andrews Beach under Geary. Completing the line-up are labourers **Mick Klingenberg, Shane Long, Brenton Dwyer** and **Michael Robinson**.

"We've got a good mix of qualified guys and labourers," says Geary. "More than anything else, I was looking for guys who are passionate about what we are trying to achieve here. And that certainly comes across when you speak to these guys. They're not just here to make up the numbers. They have a similar to vision to what I have and want to be a part of developing a top class golf course."

The shaping team comprises industry veteran **Ronny Nyhuis** of Classic Links Construction and **Ben Chambers** and **Brad Willis** of Golf Shapes. Combined, the trio have years of experience working across Australia and more importantly the Mornington Peninsula (Nyhuis, for instance, was lead shaper on the Moonah Links Legends course).

"It is very much a collaborative effort," says Geary. "You've got to have a good team behind you and these guys have the runs on the board and know the potential that this land has. One of the things we are really conscious of is that every hole gets looked at as a group as well as from every angle to ensure we make the most of the natural features of the site.

"So far we seem to be working pretty well together. We've had some interesting discussions out on the course and we've had some wins and losses along the way. (Owner) Randal Shreeve has been fantastic in giving us the resources we need to make the project happen, so we certainly don't have any excuses."

Another key member of the team, who will come to prominence as the course starts to take shape, is **Joel Darlison**. Darlison was the revegetation coordinator under Geary at St Andrews Beach and such was his excellent work there Geary was keen to get him involved again. Together with assistant **Bridgette Herman**, Darlison has set up an onsite nursery which contains thousands of indigenous seedlings, ranging from wallaby grass, moonahs, sheoaks, cushion bush, coast tussock grass, dianellas and coast beard-heath.

"The landscape plan will be very similar in philosophy to St Andrews Beach," says Geary. "As part of the plan here we will be planting in the vicinity of half a million plants. Joel did an unbelievable job with the reveg work next door and it is great to have his expertise back on board."

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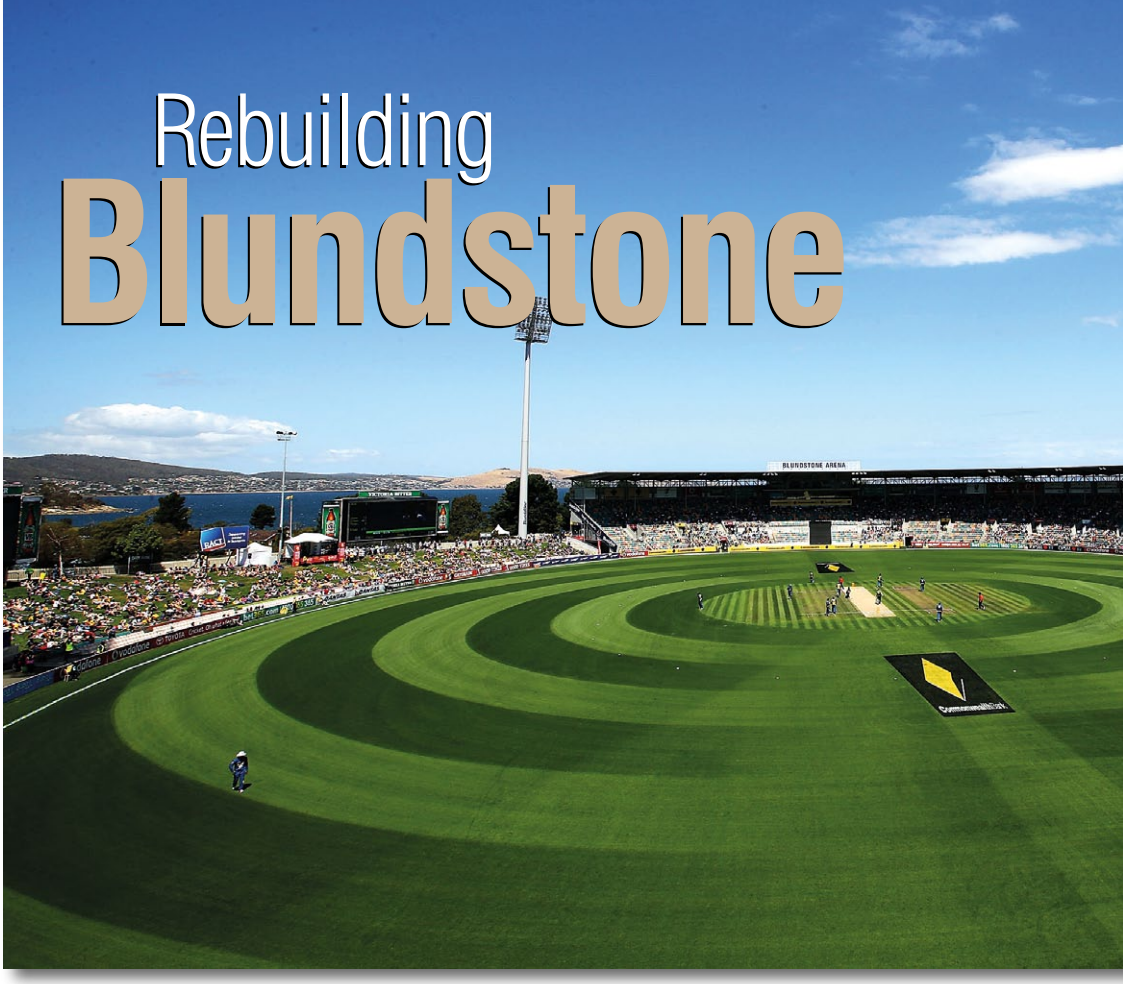
Rebuilding Blundstone



The new-look Blundstone Arena surface played host to a Test match and One Day International (pictured) against Sri Lanka this past summer and will host two of North Melbourne's home games in the 2013 AFL premiership

Last winter, Hobart's Blundstone Arena underwent a $450,000 resurfacing to improve conditions for both football and cricket. Head curator Marcus Pamplin looks at the project and some of the challenges faced in rebuilding the state's premier sporting arena.

In the years since arriving at Blundstone Arena (Bellerive) in Hobart, the need to undertake a major renovation of the oval became increasingly paramount. The *Poa annua* outfield wasn't ideal for cricket, demonstrating a number of inherent weaknesses. The turf would, at times, exhibit signs of severe stress, easily rip out due to a shallow root system, while high levels of thatch restricted water movement and nutrients reaching the roots.

As a result, the arena staff constantly had to handwater localised areas to relieve stress and put moisture back into the surface. In addition, the poor distribution uniformity of the oval's sprinkler system meant hand watering with a wetting agent was required. The wicket table had to be either watered by hand or a stand spray, both time-consuming practices. The wicket table also had organic layers from the continual dieback of dead root matter from the past 28 years.

While the cricket season had its challenges, the football season too was also proving a concern. The surface and profile were just scraping through the season on good management, combined with a bit of luck if it didn't rain heavily before or during a game. If we didn't regularly Vertidrain to relieve compaction and allow water movement, the oval would become a quagmire in no time.

There were several reasons for this. First, there was an organic layer of 80mm-100mm (fine sand and organic matter) just under the surface. This organic layer prevented water movement and stayed wet unless holes were punched through it. It also compacted badly, which restricted root movement and caused waterlogging. Under this layer was pure fine sand (90 per cent fine sand) which drained quickly but compacted.

The *Poa* was also not ideally suited for football. It stayed wet on the leaf longer because of its clumpy growth habit which caused disease. It was also not strong or tolerant of wear and large divots would pull up during games. Its massive seed bank which constantly rejuvenated was also an issue. So, despite the fact that the *Poa* presented well through grooming and cutting, the short answer was that it had to go if we were to present a viable surface that could meet the demands of both summer and winter codes.

I presented the above reasons to the Cricket Tasmania Board and they agreed to resurface the oval and install a new sprinkler system. Because of time and financial restraints, it was not possible to do a complete reconstruction of the profile and drainage (this would have been in the vicinity of $1 million-plus), however, as the drainage lines are 7.5 metres and there's pure sand beneath, the profile handles rainfall events well (a geotextile cloth covers the drainage and sub-base).

In order to be cost effective, the decision was made to seed rather than sod the ground, a saving of about $160,000. Another reason to seed instead of lay turf was so there wasn't a thatch problem straight away. The tender was put out to four companies with Turfdrain Australia chosen to undertake the resurfacing of the oval and Total Turfcare chosen to install the irrigation system. All up the final cost of the project came in just under $450,000.

PHOTO: MARK KING/GETTY IMAGES SPORT

SOIL PROFILE

Prior to the tender process, the oval's existing profile was analysed under the assumption that the top 50mm of dark brown organic matter (called Horizon A) was to be milled off and removed. The existing profile was made up of:

- **Horizon A:** 0-50mm (dark brown organic layer);
- **Horizon B:** 50mm-100mm (brown mineral and organic layer); and
- **Horizons C-H (50mm intervals):** 100mm-400mm (straight sand).

The process of analysis included:

- Assessing Horizon B for particle size distribution (to determine the properties of the upper rootzone layer);
- Blending samples from Horizons C-H for particle size analysis (to assess the properties of the straight sand profile);
- Blending Horizon B with Horizons C-H for particle size analysis (to assess the potential for blending topsoil into lower profile);
- An organic matter test of Horizon B (to determine organic v mineral content);
- A six-point hydraulic conductivity test on the blend of Horizons C-H (as specified in the second item above); and
- A consultant's interpretation of the results and recommendation of amendment (if any) to produce an acceptable rootzone soil material.

The 32-drop compaction tests for both the Horizon B and Horizons C-H samples showed that free drainage would continue to be observed in these soils under traffic. Surprisingly, in the C-H sample, drainage was impeded after 16 drops but free soil water movement resumed after 32 drops. This is common in fine sands where particles lodge together after 16 drops of the weighted hammer, but then the profile is shattered with continued impact and free drainage is again observed after 32 drops.

For the particle size analysis, the samples were very similar, apart from the fact that the Horizon B sample had 4.7 per cent organic matter content while the Horizons C-H sample had almost no organic matter (0.1 per cent). Both samples showed excessive fractions in the 'fine' particle grade (Horizon B was 45.2 per cent and Horizons C-H was 57 per cent) and because of this the turf was working harder to extract the soil water from the rootzone.

The adhesive forces at work in the soil caused the turf to show drought stress readily. The natural tendency for a turf manager, as a result, would be to compensate by over-watering. Practically speaking, fine sand shows wilting of the turfgrass faster than a more suitably graded medium sand. Retaining this sand profile would have resulted in overwatering and dieback in stressed conditions. It also meant other problems such as waterlogging, disease and *Poa* infestation.

SEARCH BEGINS

From these tests, conducted by Sydney Environmental and Soil Laboratory, the conclusion was made that a medium sized sand with very little fines was needed. Obtaining this type of sand in Tasmania was never going to be easy as a lot of the quarries are not set up to produce a USGA-type sand specification.

BLUNDSTONE ARENA COMPANIES INVOLVED

Irrigation
Total Turfcare
Rain Bird

Resurfacing
Turf Drain Australia
JB Hydroseed
Evergreen Turf
Strathayr

Testing/Consultancy
Sydney Environmental and Soil Laboratory
Living Turf

A cross section of the existing Blundstone Arena profile (left) and (below) an example of how easy the old *Poa annua* surface would pull up during coring

After spraying out the oval with Roundup and milling the outfield to a depth of 50mm (above), trenching of the Blundstone Arena surface (below) started on 23 July 2012

Initially, sands in the south of the state were tested but all were in the fine sand category (dune/beach sand). Several sands from the north of the state were then analysed. These were only marginally better and would cost more in cartage, almost double the price of those in the south. All of these sands were analysed to see if they would predominantly fit in the medium sized particle range, but the stumbling block was that they always had a lot of fine sand. When the quarries were asked to fine-tune their source they were unable to, or the cost to set up, or be bothered, seemed too hard.

So, after a year of searching and only six weeks away from starting the project we had the choice of three sands:

- 'D type' (the same as the C-H Horizon blend);
- A plastering sand which had medium sands in it as well as some coarse, but predominantly a lot of fine sand; and
- A sand from Beauty Point in the state's north which was similar to the plastering sand.

As we wanted to achieve a good result for the best possible price, the Beauty Point sand was ruled out due to transportation costs and it was no better than the plastering sand in the south. It was decided that the plastering sand was the best of a poor bunch. The 'D type' sand was far too fine and unstable and would have needed a stabilising product to be of any value and still would be very droughty and easily compacted – back to square one in other words.

The plastering sand was still not perfect, but after virtually begging to make the sand better, the quarry rearranged their operation and stopped other production and was able to substantially reduce the fines in the product. As a result, it became slightly coarser but we were willing to wear this. Ultimately the contractor for the reconstruction thought that it was a very good product. The improved plastering sand's analysis was as follows:

Sieve Size	% Passing	% Retained
4.75mm	100	0
2.8mm	100	0
2.0mm	99	1
1.4mm	94	5
1.00mm	83	11
0.71mm	62	21
0.50mm	40	22
0.30mm	18	22
0.15mm	2	16
0.075mm	<1	2

Also, as part of the reconstruction the top 20mm-50mm of the wicket table was to be removed. What was hoped for in this procedure was to remove the thatch layer in the pitches which were causing variable bounce as well as excessive drying in the outside pitches. The square would then be levelled to its original specifications. The original soil for the wicket square was from the north of the state, which we found was unavailable, so a soil from near Hobart which was compatible but with a little less clay content of 54 per cent was chosen.

IRRIGATION

The other significant aspect of the Blundstone Oval reconstruction was the installation of a new Rain Bird irrigation system. The previous system had many issues including:

- It wasn't uniform (we had a number of tangents installed to pick up dry areas);
- Sprinklers were not of a uniform model and weren't versatile for the climate and location;
- The system did not comply with fire regulations as they were not separate from this service and also domestic supplies; and
- Old piping was very close to the surface.

The new system contains Rain Bird 8005 Series sprinklers and six quick coupling valves around the boundary (all sprinklers individually controlled plus two QCs), there is separate watering for the wicket square and six soil moisture sensors have been installed. All lawns and practice facilities are centrally controlled and the whole system can be operated through a smartphone application.

BREAKING GROUND

The timing of the oval reconstruction was never going to be ideal. The schedule for cricket ended in late March and a few weeks later Blundstone Arena played host to the AFL's North Melbourne Kangaroos for the first time in April 2012 as part of the club's new arrangement, with a game also scheduled in July. In between this, Clarence Football Club played all its home games and trained at the oval before the scheduled start of irrigation works on 23 July.

To prepare the ground for the resurfacing, the oval was sprayed with Roundup at 3L/ha on 8 July 2012. Three weeks later the oval was sprayed again

As part of the oval reconstruction, the top 20-50mm of the wicket table was removed. In the end, 100mm of organic matter was removed and new wicket soil added (54 per cent clay content)

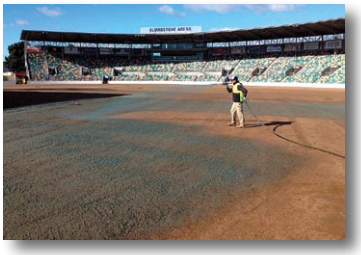
with the same rate but an accelerant was added to kill the *Poa*. Preparation of the manifolds of solenoids, PVC lateral pipes and sprinklers was all done prior to the starting date on site in the Southern Stand. The resurfacing finished on 13 August as we had to be ready for the first Ryobi Cup match on 31 October and a Sheffield Shield clash on 2 November, not to mention the Test match between Australia and Sri Lanka on 14 December.

Trenching started 23 July and the laterals had to be completed by 1 August so they would not impede the resurfacing of the ground. To isolate the system, two new mains (BFD) were installed along with a new 100mm ring main. While the ring main trench was open, a 100mm agi pipe was installed as well as media/IT conduit to run TV cables. Because of the trenching works, new cat cables had to be installed at both ends of the pitches to enable HD pictures for Channel 9.

Turfdrain started topmaking the surface on 30 July 2012 and the scope of works included;

- Surveying the field to establish existing levels and grades;
- Removing and disposing of the top layer (50mm) of the wicket table;
- Milling the outfield accurately to a depth of 50mm and removing existing grass and soil;
- Stockpiling existing soil and grass on site, outside the playing field;
- Rotary-hoeing the excavated surface;
- Blending the existing profile to remove layering prior to the addition of sand (180-200mm);
- Laser grading the field to ensure that the excavated surface mirrored the final surface grades;
- Replacing cricket wicket clay on the wicket table and laser grading. Initially 20-50mm (100mm at completion over 70m^3);

A 50/50 mix of RPR ryegrass/ Derby Extreme (450kg/ha) was hydroseeded (below). RPR was selected for its stoloniferous-like growth to help stabilise the profile and Derby Extreme for colour



Evergreen Stalok stabilising fibres were incorporated 70mm into the profile in run-ups and goal square areas

- Supplying and placing 1500t of selected growing medium on the outfield in preparation for the laser grading;
- Laser grading the field for a second time to match the existing perimeter and wicket table levels while creating an even depth of imported sand;
- Rotary-hoeing the field again to blend the imported sand with the existing soil beneath.
- Laser grading the surface again in preparation for seeding by Cricket Tasmania.

Overall, the resurfacing was excellent and brought the ground back to its original levels of 1985. In addition to the resurfacing, Evergreen Stalok stabilising fibres were incorporated 70mm into the profile in select areas – 10 metres north and south of the wicket square and also to both goal squares and offset goal squares. The fibres were put specifically in these areas to cope with high wear in the run-ups, especially in such a short grow-in period.

CHALLENGES

The main problems encountered during the reconstruction were inclement weather and the unknown profile of the wicket block.

As mentioned, the initial idea was to remove 20-50mm from the wicket table. We were expecting to remove any thatch or layers, but once the rotardarium got to 50mm, the actual layers could be peeled out by hand. A decision was made to remove all the layers of organic material until there was no debris and the general consensus was that the new soil would key into the existing soil in the block. Once the machine had reached a depth of 100mm this was treated as a sub-base and levelled to a 1 per cent fall east/west to mirror the finishing levels. The final topdress (dust) had Premier 2 mixed through so we could commence germination.

The whole resurfacing and irrigation was completed on 11 August ready to be hydroseeded by JB Hydroseed. The seed chosen was a 50/50 mix of RPR ryegrass/Derby Extreme (450kg/ha) mixed with a seaweed extract, wetting agent and Subdue Maxx. These varieties were mainly selected due to the stoloniferous-like growth of the RPR roots to help stabilise the profile and the Derby Extreme for colour.

The reason to hydroseed was because of the uncertainty of whether the sand could be dimple seeded without pushing the soil into mounds and the company had to be booked in advance, as well as to keep a smooth surface without wheel ruts.

The most important reason, however, was because of the weather. In Hobart, especially in August/September, the winds become very severe and range from 50kph on a good day to in excess of 100kph. It was important to keep the seed moist without the wind drying it out. The mulch in the hydroseed also kept the seed on the surface and the sand together in high winds. It was also important not to have sand blown onto the wicket square. After two days of hydroseeding, the seed was irrigated daily with a couple of cycles each day depending on the weather.

The ground had 11.5 weeks to grow-in before its first game. Initially the seed germinated in two weeks but over the next five weeks the rest of the oval grew slowly. The south was a lot thicker than the north end and the wings were thin, so there was a little bit of worry! The unevenness was put down to the mulch in some areas being too thick and the roots could not make contact with the soil for moisture and nutrients. Also, the soil temperature was only 9°C for 7-8 weeks of growth.

A decision was made after six weeks to dimple seed the oval at 200kg/ha to pick up the thin areas and pierce the mulch where it was too thick. The timing of the oversow was crucial so that the dimple seeder did not rip out the young grass. The oval improved greatly in the weeks after, but there were probably three areas which were still thin so the oval was sown again.

As the outfield was growing, the wicket block was fully covered in ryegrass after 4-5 weeks due to warmer soil temperatures. When the grass was strong enough, the initial roll was done with a cylinder mower, heavy cylinder mower and then a gradual weight increase with the roller as the season drew nearer.

We were fully ready for the wickets to be difficult to prepare on such a young table, especially at the beginning of the season and with the inclement weather we experienced. It will take time for the table to fully consolidate, but as the season progressed the wickets became better to play on, especially the second time they were used.

The wicket certainly got a lot of media attention this season, especially prior to the Test match, with predictions it might not last three days. It went on to hold out until the last session of the last day with Australia securing a 137-run win after bowling Sri Lanka out with 10 overs remaining! The fact that this is a brand new surface seemed to be conveniently forgotten by most sections of the press. Like a good wine, the table will improve with age.

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Shinboners Arden up

While the new-look Blundstone Arena in Hobart will be in top nick for the club's two AFL fixtures there in 2013, North Melbourne's spiritual home of Arden St also underwent a significant makeover during the AFL offseason. Melbourne Stadiums Ltd's Gavin Darby outlines the project which has provided one of the competition's oldest clubs with a state-of-the-art training ground.

As the football arms race continues to push the boundaries in all areas, training surfaces, or the players' key place of employment, has probably been neglected somewhat while capital investments have been focused on front of house areas, offices, gyms and all manner of recovery type facilities.

Arden St oval in North Melbourne was certainly one venue well overdue for some investment with players working on a surface lacking continuity in every aspect – grass species, irrigation, organic levels – which subsequently provided large variations in player interaction characteristics such as hardness and traction.

That all changed for one of the competition's oldest and most spirited organisations in the North Melbourne Football Club (NMFC) this year. Following the redevelopment of their own high quality building infrastructure in 2009, the football club, led by then progressive chief executive Eugene Arocca, acquired a Federal Government grant for the redevelopment of the oval. Melbourne Stadiums Ltd, which is responsible for the management of Etihad Stadium, entered an invited tender process and was awarded the contract to undertake a full reconstruction of the oval in late 2012.

The Arden St oval forms part of the North Melbourne Recreational Reserve, owned by the City of Melbourne with the oval leased by NMFC. The reserve also encompasses the North Melbourne Pool and North Melbourne Recreation Centre which houses a gym, basketball court, community huddle and the Victorian Fencing Centre.

Federal funds were granted to construct a surface that allowed increased community use of the oval by the general public and organised sports such as lower levels of Australian Rules football including amateurs, juniors and women's competitions. The City of Melbourne plans to complete the precinct by developing the last remaining sector of the site on Fogarty St with a futsal court and outdoor fitness type course in the near future.

UPSIZING AND REDESIGNING

The key criteria for the reconstruction was an all weather surface capable of supporting maximum use by the wider community while maintaining a high quality surface year round for the NMFC.

Further to that, the existing oval was small (a total area of about 17,000m^2) compared to the club's principal match day venue Etihad Stadium which covers an area of 19,640m^2. The project involved a complete demolition of the surrounding infrastructure and a full reconstruction of the playing surface to similar dimensions of those at Etihad Stadium.

The original concept involved the expectation that we would encounter some low level (Category C) soil contamination as is common on most inner city parks. The intent therefore was to maintain all soils on site in a cut and fill plan with only trenched material from the drainage and irrigation lines being disposed of offsite.

Within the first week of starting the works however, we encountered high level contamination Category B soils, which come with disposal costs in

excess of $1000/tonne. Given we were anticipating excavation quantities of approximately 400-500 tonne this was not an option that would work within our given budgets.

Work ceased for several weeks while a redesign was undertaken to minimise the requirement for any trenching or excavation of contaminated areas. At this juncture we also engaged an EPA accredited auditor to conduct a site review of our works and develop an onsite management strategy of the contaminated soils as well as an ongoing environmental management plan for the site.

The revised and final design was a field with a flat plane running goal to goal and a 1:150m fall across the field. There is a 100mm gravel layer in which Megaflo drains and irrigation are installed and above that there is a 300mm sand layer sodded with big rolls of unwashed Santa ana couchgrass.

CUTTING AND FILLING

By way of an overview of the process and works completed, the existing upper organic layer of some 80mm was removed from the oval and stockpiled to be used later in capping and interface works around the perimeter. Once the organics were removed, the remaining soils were used in a cut and fill plan that involved moving approximately 2500m^3 within the site to form the new sub-grade.

The flat plane meant that we only needed to trench in a main drainage line on one side of the oval which in conjunction with the use of Megaflo flat panel drainage significantly reduced our trenching requirements and subsequently the quantity of contaminated soils.

The main line connected a series pits on the western side to our outlet point, a century-old 750mm stormwater drain constructed with individual red bricks, which was physically located in the centre of Fogarty St. From these pits on the western side of the oval we ran 450mm Megaflo across the field perpendicular to the slope at 18.5 metre centres, with 170mm Megaflo laterals on a 45 degree angle at 7m centres. A total of 1003m of the 450mm and 2963m of the 170mm Megaflo products were installed.

The project also called for a 2m wide concrete path to encompass the oval as part of the community 'access and use' requirements. This was constructed simultaneously with the drainage, 600mm wide spoon drain and a 1.2m high powder coated chain mesh perimeter fence.

The cut and fill to extend the oval also created the requirement for retaining walls on the eastern side in the north and south. The City of Melbourne required these walls to be constructed from bluestone matching the surrounding heritage of the area, a rather costly option.

A standard 7mm aggregate gravel layer of good quality was supplied by Burdett's and installed over the Megaflo drainage system and trimmed to grade before the irrigation layout was surveyed in. The irrigation infrastructure was then 'trenched' back into the gravel layer to sit on the sub grade, riding across the Megaflo system where required.

The irrigation system utilises a Rain Bird controller, valves and 8005 sprinklers in a block system with 3-4 heads per station. The system is well designed by Greg Sinclair (Rural & Turf Irrigation) to enable programming of areas in line with expectations of wear and or stress, with the corridor, centre square, two wings, four pockets and boundary all isolatable. All valves are located on the boundary directly off the ring main along with four

The Melbourne Stadiums Ltd arenas team (from left) Matthew Oliver, Marcus Saddington, Rob Swift, Michael Sangston, Danial Bridges and Gavin Darby. Oliver will oversee the new Arden Street oval as part of a five year maintenance contract with NMFC

Opposite page: North Melbourne's new-look Arden Street oval training facility was officially opened on 26 February 2013. The oval was sodded with Santa ana couchgrass and will be oversown with ryegrass during the cooler months

Once the existing top 80mm of the ground was removed, the remaining soils were used in a cut and fill plan that involved moving 2500m³ within the site to form the new sub-grade

QCVs. All valve boxes are buried 150mm below the surface and identified with a survey marker on the spoon drain.

Above the Megaflo, gravel and irrigation there is again a typical 300mm sand layer, in this case being a Rocla medium washed sand, with about 11,000 tonnes delivered, spread and trimmed to grade over a 10-day period. This was followed up by the incorporation of the common amendments – chook manure, Ca, starter type fertiliser etc...

LAYING THE FOUNDATIONS

Due to numerous reasons including financial, turf quality, installation speed and the desire to have a mature turf mat to provide immediate protection from heavy use, a somewhat unconventional decision was made to import unwashed turf. The turf was grown on a sandy platform very close to USGA specification, with very little sand making it through the harvest process.

The turf, supplied by broker GrassRoots Turf and produced to order by Bormann Turf in South Australia, was of a very good standard enabling us to comfortably install over 5000m² a day, with big rolls measuring 30m x 1m. The final day of turf installation was 21 December 2012 meeting our target of having the project grassed pre-Christmas.

Below: Megaflo drainage pipe was used across the oval. 450mm Megaflo was placed perpendicular to the slope at 18.5 metre centres, with 170mm Megaflo laterals on a 45 degree angle at 7m centres

Bottom right: A standard 7mm aggregate gravel layer of good quality was supplied by Burdett's and installed over the drainage system and trimmed

Since installation we have completed three mini-renovations at two week intervals, each one consisting of a light scarify/groom of the top 5-10mm in two directions, two passes with a PhantomCore to break through any potential layering of the unwashed turf and the application of 60 tonne of sand.

In conjunction with these light renovations, we also applied about 30kg N/ha on three occasions in addition to fortnightly foliar nutrition. We started applications of PrimoMaxx in January at half label rates but at fortnightly intervals and we also applied preventative applications of miticide.

Under the guidance of our environmental consultants, the contaminated soils that were identified and excavated as part of the main drainage trench have been stockpiled on site. Retention of contaminated soils on the site of origin in a safe and identifiable manner is considered best practice.

The stockpiles are in the form of mounds commensurate with existing mounding along Fogarty St, covered with a basic geotextile to act as an identification layer then capped with 300mm of clean fill, being the organic layer removed from the original oval, and grassed.

The entire North Melbourne Recreational Reserve was surveyed pre-works and a post-construction survey has quantified the impact of our works. It is most likely that the stockpiles will have the capping layer removed and be re-shaped in the future to form the sub base of the planned futsal and outdoor recreation area.

Despite the early delays and cost issues associated with the contaminated soils, the project was delivered on budget and NMFC started training twice a week from late February, a full month ahead of schedule with full training starting as planned from Round 1 of the AFL home and away season (NMFC play Collingwood in their opening match of the new season on 31 March). The new surface was official opened on 26 February by Hon. Simon Crean, Federal Minister for Regional Australia, Regional Development and Local Government.

TWO GRASS POLICY

Following the successful completion of the construction project, Melbourne Stadiums Ltd has entered into a five-year maintenance contract with

Above left: The key criteria for the reconstruction was an all weather surface capable of supporting maximum use by the wider community while maintaining a high quality surface year round for the North Melbourne Football Club

Above: A 300mm Rocla medium washed sand layer (11,000 tonnes) was delivered, spread and trimmed to grade over a 10-day period

NMFC. This is an opportunity for our entire team to get some vitamin D through the winter months as well as work in a different environment with different grass species and its own challenges.

As a result of this contract, we have promoted Matthew Oliver from our existing arena team at Etihad Stadium to manage the Arden St site on a daily basis and have replaced him at the stadium with Michael Sangston from Manuka Oval.

Our intent is to manage a two grass policy, oversowing the couchgrass with ryegrass annually in early autumn and then removing each summer. However, we are endeavouring to carry the couchgrass through its first winter to ensure it becomes well established and we will look to use the variety of tools currently available such as gibberellic acid and turf pigments to aid in presentation. We will use this winter also to trial a series of ryegrass varieties outside the boundary line to evaluate their performance amongst the Santa ana and our ability to remove them in the spring.

Our key reasoning behind choosing a two grass policy is to:

- Manage our available water resources in a responsible manner;
- Provide a quality, hard wearing, stabile surface year round by having a permanent couch base; and
- Ensure at the end of our contract period the surface can be handed over in the same condition it is today, a weed-free, high performance surface with optimal organic levels.

ACKNOWLEDGEMENTS

Like any project of this size there were numerous people and suppliers who helped bring the result to fruition, principally our head contractor TurfOne who completed all works to a high standard and worked in a fluid manner dealing with City of Melbourne requests and the contamination issues as they arose. Also thanks to turf consultant John Neylan for his guidance and timely interjections.

The finer details

Getting the construction phase of any turf management project, whether a simple tee reconstruction or full blown sportsfield upgrade, plays such a critical part in the ultimate success or failure of a project. In his latest ATM column, agronomic expert John Neylan looks at construction best practice and revisits the concept of integrated pest management.

Working in the turf industry is definitely one of continually learning about what works and what doesn't and this particularly applies to construction projects. Having been involved with several projects over the past 12 months, there have been many lessons learned with the most poignant being that attention to small details will make for a successful and relatively painless project. The timeless adage 'fail to plan, plan to fail' rings true for all turf projects and there are many important considerations that need to be factored in right from the start through to final delivery.

PLANNING

Committing time to planning is the key to success for any project or programme. As obvious as it sounds, there are many examples of where projects are rushed and there is insufficient time committed to sitting, thinking, discussing (read: arguing), producing a draft of the plan and specifications, reviewing and then finalising.

Being time poor is an often quoted problem for turf managers, however, when it comes to a new project time must be set aside to plan thoroughly, exploring all the things that could go wrong and the possible constraints on the project.

Many projects have an 'impossible' timeframe and an unrealistic expectation of the end product within the constraints of the due by date. This seems to be the way of modern life and can only be dealt with through detailed planning.

SPECIFICATIONS

The specifications and documentation for any project are crucial to the outcome of that project. The specification is a detailed set of requirements to be satisfied by the materials, design, product or service.

A specification is a type of technical standard that sets the parameters within which the project must operate. The more detailed the specification in terms of materials and process, the less opportunity for short cuts to be taken. It is also important to note that in times of dispute the specification will be the primary reference point when determining responsibility.

The specification must have a set of hold points at which the quality of work and materials is checked before works can proceed. These may be:

- Completion of base works;
- Installation of drainage (including trenching, gravel and pipework);
- Irrigation installation;
- Gravel installation;
- Rootzone installation (including properties); and
- Turf establishment.

The great weakness of any specification is how the project is then managed and adhering to the specification and the hold points.

CONSTRAINTS

Every project will be subject to some type of constraint whether it is known at the time of planning or occurs unexpectedly once the project starts. The constraints that have appeared in recent times include:

- Reduced supplies of the correct gravels and sands;

- Environmental impacts;
- Rock;
- Contaminated soils;
- Poor water supplies;
- Turf quality; and
- Conflicting advice from regulatory authorities.

These types of constraints are not new, however, taking the required time to assess the site of the project and thoroughly investigating each of the important elements means that you will be forewarned and then better able to plan.

SANDS AND GRAVELS

As mentioned above, in several areas of Australia the ability to source the appropriate sands and gravels is becoming more difficult. As pits become depleted or there are demands for materials by other industries, the specific needs for a turf project can be difficult to achieve.

It is not only sourcing the appropriate materials that meet the specification but also ensuring that the volume of material of consistent quality can be provided. If you are responsible for sourcing the gravel and sand, the process involves:

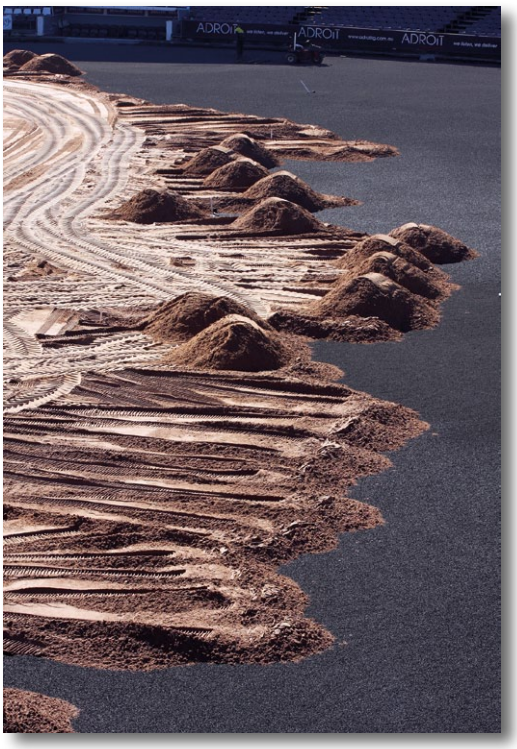
- Specifying the physical and chemical parameters of the sand and gravel;
- Collecting typical samples; and
- Testing the prospective materials in an accredited laboratory and then deciding on the best source.

Once the materials are selected, the preferred samples become the benchmark for the project. These benchmark samples are then the reference point for all future samples taken as part of the quality control process.

Testing throughout the project can be a challenge if the materials begin to drift outside of the agreed envelope. A problem that I have noted is that some material suppliers either do not understand the precise nature of the specification for turf projects or underestimate their ability to deliver materials of consistent quality throughout the project. In deciding on the supplier of materials it must include discussions with the supplier in terms of their understanding of the specification and whether they can deliver the tonnage required.

Many sands that the turf industry deals with are processed sands that may involve particle size manipulation through washing, sieving and blending. Blending materials can often be problematic, particularly where the characteristics of the raw materials are not clearly understood. Small movements in the silt and clay content in particular can have a dramatic effect on drainage and moisture retention. Consistency is the key.

If a principal contractor is employed to undertake the works it is not always possible to control the source of the materials. However, it should be requested that the contractor nominates the source of the materials and to provide a capability statement from the supplier in terms of experience and processes employed (including internal testing). Do not compromise on quality.



Left: It is not only sourcing the appropriate materials, such as sand and gravel, that meet the specification, but also ensuring that the volume of material of consistent quality can be provided

Opposite page: The basics of good construction have not changed. A detailed specification, thorough planning, selecting the correct materials and attention to detail are key elements to a successful outcome

WATER SUPPLY

Water is the limiting factor for most new projects. For example, a new golf course is likely to be remote from a secure water supply and will eventually be relying on stormwater collection, recycled and bore water and rivers. The key questions are:

- Is the water readily available?
- What infrastructure needs to be put in place to get the water to the site?
- What permits are needed? and
- Are there environmental constraints?

Almost invariably the water supply is left to last and the volumes required are grossly underestimated, particularly during the construction

Turf during hot weather can increase in temperature quite dramatically and will invariably result in scald marks and turf loss

Variations in the turf can make it difficult to achieve a consistent surface

and establishment process. When multiple areas on a site are being worked on and juvenile turf being established, there can be a substantial strain on the water source. Securing a sustainable water supply must be at the top of the list.

CONTRACTORS AND SUBCONTRACTORS

Selecting a contractor can be a stressful process, particularly if they are unknown and do not necessarily have a proven track record. A few points to consider and questions to ask:

- What projects have they undertaken and the size of the projects?
- What is the expertise of the staff employed?
- What equipment do they have?
- What subcontractors do they use (e.g. irrigation, grow-in)?
- Check out each company's work; and
- Interview prospective contractors and quiz them on the processes they employ.

From recent experiences, contractors tendering for work will often come up with alternatives for the construction of the profile, drainage layout, grassing options and irrigation. An experienced and well credentialed contractor can value add to the project and well-considered alternatives should be evaluated. However, if you have planned the project thoroughly and there are particular elements that are important to you, don't compromise.

Tender review is an interesting process and on large projects an experienced project manager can be useful in working through all of the elements and deciding if the costs quoted for each component are realistic. Prices that are at odds with what you may expect them to be or are dramatically different to other tenders could be:

- A genuine mistake;
- Misinterpretation of the specification;
- Reflects poor quality materials
- Due to the complexity of the work;
- Profit margins are too high.

Again the specification is very important in creating tight parameters that the contractors must work within when pricing the project. If there are discrepancies ask for clarification. The cheapest price may not provide the intended outcome.

> "The specifications and documentation for any project are crucial to the outcome. The specification must have a set of 'hold points' at which the quality of work and materials is checked before works can proceed."
> John Neylan

GRASSING

The quality of the turf and its establishment is both the most exciting part of the project (at last we have grass) and the most exasperating. The specification must describe the quality requirements of the turf, sprigs and seed, how they are to be established and maintained.

In my experience the quality and consistency of the turf can vary, particularly if it comes from different farms. The most likely variables are that the turf is not necessarily the variety specified and the condition of the turf is poor (i.e.: variations in turf density, health, thatch, weeds, purity etc...). The end product can be a patchwork effect with some areas establishing more quickly than others and then there is the variation in the appearance of the surface. It is essential to inspect the turf farms supplying the turf and the sprigs and to inspect them regularly in the lead-up to the project start.

The delivery of turf during hot weather can be a major challenge and must be on the truck for the minimum amount of time, delivered overnight or early morning and laid immediately (and watered). Turf during hot weather can increase in temperature quite dramatically and will invariably result in scald marks and turf loss.

Washed turf is used extensively on sand profiles and during hot weather it can provide considerable challenges. While it seems incredibly obvious, water is the absolute key to success. As soon as the turf is laid it must be watered and watering by hand is strongly advised. During the first week or so the turf and underlying sand must be kept moist at all times – is the irrigation system capable of providing the required amounts of water?

Washed turf certainly avoids any problems with contaminating the rootzone with incompatible soils, however, turf with a compatible soil backing does assist the establishment process. Even a thin layer of a compatible soil type will assist in retaining moisture which reduces the problems of transplant shock.

Whether grassing involves solid turf, sprigs or seed, a high level of fertility is essential. From recent experiences the fertility can drop off very quickly, particularly on sand profiles and regular fertilising with nitrogen, phosphorus and potassium is required to ensure recovery from transplant shock and the generation of root systems, stolons and rhizomes and to promote strong shoot growth.

The use of organic materials and specifically processed poultry manure assists the establishment process considerably. The use of liquid fertilisers appears to have minimal effect and granular, quick release fertilisers seem to be the most effective. On most sand profiles a base of a controlled release nitrogen source will provide a buffer against

leaching losses, however, the quick release fertilisers are considered to be more effective during the establishment process.

With the use of couch and kikuyu the presence of mites can be an insidious pest that will not kill the turf but can severely inhibit its development, particularly when establishing turf from sprigs.

HANDOVER

When to take over the completed works is a vexed question. Do you take it over as soon as possible or allow the contractor to maintain the turf until it is ready for play? There is no straight answer, however, in my experience the sooner the greenkeeping staff take over the turf management the quicker a playable surface is developed. Once the turf is planted/laid/seeded there can at times be a relaxation in the intensity of work, particularly if the contractor does not have a dedicated and experienced turf management team.

Allowing the turf management team to take over the works early often provides the opportunity for more of the 'fine-tuning' processes to be employed such as reducing cutting heights, increasing mowing frequency, dethatching and dusting that may not be reflected in the specifications for the grow-in period.

The basics of good construction have not changed. A detailed specification, thorough planning, selecting the correct materials and attention to detail are some of the key elements to a successful outcome. Once you have decided on what you want, stick to it and do not let price compromise the job.

UNDERSTANDING THE LIFE CYCLES OF INSECT PESTS

Over many years I have been fortunate to be able to lecture in the Diploma of Turf Management. It is both challenging and stimulating and it often gets you thinking about the topics you are teaching as well as their relevance. Last year I tackled the Managing Plant Health unit which is a topic I had not taken on before. Key components of it include insects and diseases and it was the former topic that proved to be most interesting!

As a group the students were generally familiar with the main insect pests, but from a practical point of view they had rarely experienced insects as a problem. On closer discussion it really came down to most golf courses employing preventative insecticide programmes with highly effective, residual insecticides.

So, what is the point of understanding pest life cycles and having more of an Integrated Pest Management (IPM) approach to controlling or minimising the impact of pests? In thinking about it further, it raises the question as to whether the preventative programme is warranted each year, has consecutive years of such programmes wiped out or dramatically reduced insect populations and what would happen if we did not apply the insecticides and monitored insect numbers. The simple answer is that an effective preventative programme takes some of the stress out of turf management.

As with the students, it is a good time to review what is being done in turf management within the context of an IPM programme and whether that approach is environmentally, socially and financially justifiable. With the environmental pressures on chemical use, IPM is a concept that is still relevant. So let's consider what's required.

The development of a reliable monitoring regime is the key to a successful IPM programme and provides the most effective means for minimising pesticide applications. Overseas research indicates that where successful monitoring programmes are implemented, chemical reductions in the order of 40-50 per cent can be achieved (NZ Turf Culture Institute, 1995). The implementation of a monitoring programme allows a strategic approach to pest

Consistently check and monitor the depth and health of the root system

There have been several recent examples of scarab larvae damage and ineffective control strategies employed because of incorrect identification

control to be taken where key areas are treated rather than blanket spraying. If nothing else, it provides a means of understanding the pests present and pest dynamics.

Monitoring is an ongoing process and provides early detection of a developing problem, location of the problem pests and pest population status. However, it takes time and effort to do it well. Monitoring turf areas will involve inspecting key turf areas regularly and not only recording insects but also weeds and diseases. Accurate and detailed records have to be kept including identification, location, numbers present and stage of life cycle (insects).

There has been several recent examples of scarab larvae damage and ineffective control strategies employed because of incorrect identification and a lack of understanding of the life cycle stage (i.e.: what instar is it). The Argentine scarab (*Cyclocephala signaticollis*) is one such example of a pest that has been incorrectly identified. It has a different life cycle compared to many of the other scarabs treated and the effects of most insecticides will have been depleted by the time the insect requires control. If they are at the 3rd instar stage the control options become even more limited.

Regular monitoring enables threshold damage levels to be determined. This is the challenging bit – what level of turf damage is acceptable before treatment needs to be initiated? Another key part of the IPM strategy is that if chemical treatment is necessary, treatments are restricted to the target area rather than blanket spraying, which will substantially reduce the amount of chemical used.

At the very least it is time to review what is being done on your turf area and whether a more environmentally approach to past management can be taken.

ONE OF THE BEST

The great part of working in the turf industry is the people that work in it. I am pleased to say that I have known and worked alongside one of the real gentleman involved in turf management – Mick O'Shannessy, who was featured in the last edition of Australian Turfgrass Management (***Small in stature, big in heart; Vol 15.1, pp22-26***). Following his retirement last year I was pleased to have lunch with him at one of our old haunts, Waverley Park football ground and it was as if nothing had changed.

Mick O'Shannessy

Waverley Park back in the early 1990's was a place that could either break you or make you and at times both in the same day. After some pre-season problems around that time, Mick was brought in to assist in getting the ground back on track. While I had worked with Mick previously, it was a great learning period for me working with one of the very best greenkeepers.

What Mick bought to Waverley Park was the golf course superintendent's eye for detail and a very strong work ethic. He was also very pragmatic and direct and you had to know how to support your argument. The way he operated made me realise how well trained and experienced golf course greenkeepers were and the understanding of the standards required for high level sport. On reflection, it is probably the broader base of experiences that a golf course greenkeeper is exposed to that allowed Mick to improve the playing surface the way he did.

Mick was involved with trialling couch overseeded with ryegrass as a playing surface when ryegrass was still the dominant turf surface and then helped to sell the concept of resurfacing the ground and installing a new drainage system to then AFL football operations manager Ian Collins. It was quite an experience to see two Carlton men of strong will and opinion set Waverley Park in a new and better direction.

From that period on Waverley Park became the premier surface in the AFL. Following the first season of couch/rye, the ryegrass was removed and a pure couch surface re-established. There was a lot learnt at that time in terms of what was the most effective herbicide, what was the level of damage to the couch, how long would it take to grow it back in and how to achieve a successful overseeding with ryegrass. It is interesting to note that these lessons are being re-learnt again some 18 years on!

In 1999 it was decided to end it all and the last official AFL game was played in 1999 between Hawthorn and Sydney in front of a sell-out crowd of 72,130. Mick moved on to Hidden Valley Golf & Country Club and with minimal resources, limited water and bitterly cold winters managed to develop a very good golf course. The presentation of the golf course was again testament to his hands-on approach to greenkeeping, pride in his work and eye for detail. All the very best in your retirement Mick!

- John Neylan

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Allan Shorland
Secretary Manager
The Metropolitan Golf Club

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Green grass

The Pulse quizzed superintendents on the role that organic stimulants and biological control agents play in the management of their turf surfaces and whether their use of such products had increased or decreased in recent times.

"The use of organic stimulants has always been part of my overall fertility programmes and biological control agents have been used sporadically with varying degrees of success.

Organic stimulants in my opinion have a role to play, it's just a case of working out which products are the pretenders and which ones are actually offering something. There are always new products and technologies appearing that make claims of efficacy. I have always sought products that are strongly seaweed based and scientifically proven, along with having been manufactured in an environmentally sustainable way. I use a liquid based seaweed product regularly throughout the year and granular seaweed products at renovations.

Due to the limited visual plant responses, it's difficult to quantify the impact that organic stimulants have. There is both enthusiasm and serious scepticism about organic stimulants, so do your homework on them and don't be tempted by the steak knives!

In regard to the use of biological control agents, one that I used many years ago was entomopathogenic nematodes for billbug control. This was very effective, particularly against billbug larvae. The other product was trichoderma, but its integration with certain fungicides that don't compromise its performance can be a challenge." **Steve Marsden, The Royal Sydney Golf Club, NSW**

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"I have used these products in the past, but honestly never noticed a great deal of gain. I am sure they do help, but our budget at present doesn't allow for their use. In saying this, I do use organic products and sea plants for nematode numbers." **Steven Jensen, Mirage Country Club, QLD**

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"Organic stimulants and biological control agents play an integral role in the management of our turf surfaces. One of our primary aims is to keep the turf health as close to nature as possible. This way it is able to withstand the stresses of machinery, golf traffic and a myriad of weather conditions and thus avoid the pitfalls of the roller coaster ride that is overly dependent on synthetic products to sustain.

Helping the plant acquire nutrition through natural means and ameliorating its defences is far preferred to having it on life support dependent on synthetic inputs. Sort of like 'You scratch my back and I'll scratch yours' or, to use a biblical metaphor, 'Give a plant some food and you have fed it for today; teach a plant to fish and you have fed it for a lifetime!'

Getting back on track, it is important that these biological/organic products are comparable in price, if not cheaper, as unfortunately in the end cost is king when working under tight financial constraints. Overall our use of these products has increased and the range of products on offer is vast. Trial and error along with information from company reps and fellow superintendents can help quickly narrow

"Over the last three years at Gold Creek Country Club I have been trialling a range of organic products on greens at renovation time and in a foliar programme over several months with mixed results. After a lot of research I have used a monthly biological control agent programme with the use of all organic products. The products range from beneficial fungi and bacteria to control disease, humic acid for a source of carbon and oxygen and soil conditioners for root development and nutrient uptake.

I have seen great results with only one application of fungicide applied to greens over the past four months and greens looking healthier with less stress patches from the 40 degree heat in January. I have also used entomopathogenic nematodes for the control of stem weevil in greens and surrounds for the last six months with great results. We have had no damage from stem weevil this season and have not used any insecticide which has been very good." **Scott Harris, Gold Creek Country Club, ACT**

down the field as to what is effective and will work in your particular situation." **Peter Jans, Sandhurst Club, VIC**

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"Personally I feel that most superintendents are a lot more conscious of what they are applying to the ground. We are fighting against Mother Nature all the time and you tend to find yourself using products such as biostimulants as the old chemical solution just isn't the best answer. Staff handling chemicals and the threat from EPA and members all make you head for an alternate solution." **Wayne Tickle, Ballina Golf Club, NSW**

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"Biostimulants and the like form part of an important maintenance strategy for greens here at Indooroopilly Golf Club. The benefit of supplying soil organics and bringing 'life' to inert sand profiles can't be stressed enough, particularly in the early stages of a green's development. There are many and varied products that incorporate biostimulants and it's a matter of finding the right one(s) that suit your situation, both from a monetary and result aspect.

I find using granular types at high rates when the greens are open, such as after renovation, the best way to boost percentages effectively. Then to follow up with regular liquid applications predominantly from some of the seaweed extract products ensures adequate levels are maintained within the profile, readily available to the plant. Synthetic fertiliser definitely has its role as well and in concert with organic biostimulants helps to ensure you have the best chance of meeting the plant and soil requirements most of the time." **Charlie Giffard, Indooroopilly Golf Club, QLD**

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"At Bardwell Valley, we can't put enough Kelpak (seaweed) out. The colour, length, density and branching of the roots is phenomenal. I put it out at every opportunity I can find. Especially before a hot weekend, I just hammer them with Kelpak. Guys who have been at the club for years cannot believe how deep the roots are, year round. The beauty of Kelpak is that you don't need to water it in, a problem with other organics, but the organics provide a really deep green colour. Doubtless, regular vertidraining, plenty of dolomite and good watering practices go a long way to enhancing root depth, but the Kelpak goes a long way to helping!" **Ben Evans, Bardwell Valley GC, NSW**

"These products play a huge role in our programmes at Camden Lakeside. The organic stimulants are part of a monthly regime on greens. Humic acid (Humax) and kelp are our two main forms. The kelp in particular I have found to be great in restricting nematode damage to a few of our greens. We find that applying the stimulants every month and with fertiliser every 3-4 weeks, the greens maintain a consistent and healthier plant throughout the whole month.

Applying our beneficial inoculums has also reduced the severity of our fungal diseases. *Bacillus subtilis, Pseudomonas putida, Trichoderma harzianum* and *Trichoderma koningii* are all beneficials we apply monthly to create a healthier soil environment. Our use of these products will continue at the current levels and the costs are competitive when considering the overall benefit to the greens and club.

We applied entomopathogenic nematodes from Ecogrow this year to our greens and tees, which is the first time I have used them. The stem weevil programme involved monthly applications made at dusk/dawn to greens. I was extremely impressed with this programme and, apart from spotting the occasional adult, no damage was evident to our greens all summer. The black beetle programme started just last week (mid-February) on all tees as our threshold levels were reached and we are awaiting results.

We believe these options are far friendlier to the whole dynamics of the club than chemicals (however not always practical and the need for chemical can play a part) and therefore we will be pursuing more biological controls as they become available in the future." **Dean Hopper, Camden Lakeside Country Club, NSW**

Indooroopilly Golf Club

superintendents and golf clubs course maintenance standards
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AGCSA agronomist Andrew Peart (right) and Wagga Wagga's Robertson Oval curator Brian Cattell discuss the ground during a recent NAB Cup pre-match inspection

PHOTO BY ADDISON HAMILTON (COURTESY OF THE DAILY ADVERTISER, WAGGA WAGGA)

Mix 'n' match

AGCSATech senior agronomist Andrew Peart comments on another summer of inspections conducted at regional sportsfields preparing to host NAB Cup AFL pre-season competition matches and looks at some of the issues facing community grounds in the lead-up to another football season.

For the vast majority of sportsgrounds in southern parts of the country, the late spring and summer period of 2012/2013 has proved to be challenging with warmer than average temperatures and very little rainfall. After the generally wet conditions experienced last summer and winter, curators have had to nurse their grounds through the excesses of summer and now face the prospect of the approaching football season and the many management challenges that presents.

As this edition of ATM was going to print, a number of regional venues around the country were gearing up to host matches in the AFL's pre-season NAB Cup competition. Among them were Wagga Wagga's recently reconstructed Robertson Oval, Mandurah's Rushton Park (WA), Renmark Oval (SA) and Wangaratta Sportsground (VIC). Such games provide a great opportunity for the local community to experience AFL football first hand and present a perfect chance for the local turf manager to showcase their ground.

At a time of the year when the grounds can be dry and hard, local turf managers put in a huge effort with extra renovations, increased cutting, attention to irrigation and monitoring surface hardness to meet these expectations. Each ground has its own unique circumstances, but as with any community sportsgrounds there are a number of general management aspects that curators need to consider in order to prepare their surfaces for the first bounce of the new season.

GRASS COMPOSITION

Many of the elite standard sports grounds throughout the country, with the exception of northern Australia, have chosen to maintain ryegrass as their primary playing surface all year round. While this (with the possible exception of Tasmania) is far more challenging than reverting grounds back to a warm-season variety, it is to some extent being 'forced' by the quality of the training facilities now expected in late October-early November.

For many grounds that have a couchgrass base that is oversown for the winter months, the end of September or early October is the ideal time for the removal of the cool-season grass. However, with some surfaces expected to be at premium quality for the recommencement of training in November, the possibility of the couchgrass obtaining a complete coverage is highly unlikely.

The decision by many turf managers has then been to leave the ryegrass and manage it through the summer. Although it does solve the short-term issue of not being able to provide a full grass cover in November, it does have a number of short-term and long-term disadvantages. Ryegrass requires far more irrigation than does the likes of warm-season grasses such as couch and kikuyu and without good rainfall there is enormous pressure placed on not only the availability of water but also the uniformity of the irrigation system.

DISEASE

Disease can be very detrimental to the overall playing surface and in severe cases can reduce the overall stability of the surface, especially in the case of predominantly ryegrass sportsfields.

Ideally, the playing surface should be applied with a preventative fungicide programme over the summer period, especially if diseases have been witnessed previously, however budgets may not permit. Therefore it is absolutely imperative that the surface is carefully monitored for the first signs of disease infestation. Unfortunately, the initial signs can be easily disguised and knowledge of the weather, overall nutrition and watering programme

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will help determine whether it is more likely to be disease rather than a nutrient deficiency, heat stress or drought stress. In addition to possibly obtaining a disease diagnosis, looking at soil moisture content may well provide a quick answer as to whether it is drought stress or a possible pathogen.

The use of the most appropriate turf registered fungicide may well limit the damage to a few isolated areas of reduced turf density rather than the loss of large areas of turf that require complete re-seeding or even worse re-turfing.

Disease, even with the most vigilant observations, can occur but it is the response to seeing those symptoms that is most important. It must also be remembered that even with a preventative programme in place the likelihood of disease is reduced, however, when the correct environmental conditions prevail, disease outbreaks may still occur.

PEST CONTROL

Along with disease incidence, the occurrence of a pest, especially curl grubs, whether they are black beetle larvae, scarabs or cockchafers, can be devastating to a playing surface. Again, ideally these are something that should have been addressed during late spring with an appropriate turf registered preventative insecticide.

Bird activity and/or droughty turf are generally signs of curl grub activity. Again, understanding the watering regime should indicate whether the droughtiness is from dryness or another ailment.

If turf is easily dislodged from the surface this is a sure sign of the presence of grubs. This can be confirmed by digging a few holes and scouring the plugs for the presence of grubs. If grubs are witnessed in numbers, then a decision must be made of the best course of action. Unfortunately, if they are mature larvae (3rd or 4th instar stage) then the best, and possible only alternative, is the use of entomopathagenic nematodes.

It may be the case that curl grubs have been the cause of the visual symptoms but by the time the scouring has taken place not many are observed. In this case it will be how quickly the turf can recover, with adequate fertility and irrigation the best remedy.

The other turf pest that is often witnessed on warm-season grasses, particularly couchgrass, is couch mite. This is particularly damaging on areas that are recovering from excessive wear where bare ground exists. Not only is the typical 'witches broom' effect evident, but also the lack of rooting from the couchgrasses nodes. While mite damage may not be as visually damaging as other pests it can severely slow the progress and vigour of couchgrass growth.

TOPDRESSING

A major issue associated with new grounds is their overall lack of surface smoothness. This is most often observed due to grounds not being satisfactorily

consolidated prior to turfing or stolonising. This often results in wheel ruts being created which is further compromised with subsequent fertiliser applications or any management activity undertaken on the 'soft' surface.

In some cases, prior to topdressing the surface can often improve with rolling. Rolling will by no means be a substitute for topdressing, but it can alleviate those deeper ruts that would be virtually impossible to correct with topdressing alone. Prior to rolling the surface should be heavily watered. Ideally a twin drum roller should be utilised rather than a single drum roller that is towed behind a tractor. The issue with this type of roller, especially on softer surfaces, is that the tractor tyres can leave depressions that are not removed by the roller, which defeats the purpose of rolling the surface. If the twin roller can be used in two directions (i.e.: north/south then east/west) it can alleviate any waviness that may develop in the surface.

The real key to any topdressing activity is to ensure that the playing surface to be levelled is actively growing so that the turf can quickly grow through the topdressing sand. On the day of topdressing ensure the turf is not wet from either

In response to increased training demands, some turf managers who oversow their couchgrass base with ryegrass are now managing the ryegrass through summer, rather than transitioning it out in spring and risking the possibility of a patchy surface as the couch comes out of dormancy

Bird activity and/or droughty turf are generally signs of curl grub activity. Understanding the watering regime should provide an indication whether the droughtiness is from dryness or another ailment

Even though a preventative programme will greatly reduce the likelihood of disease, when correct environmental conditions prevail outbreaks can still occur

overnight rain or irrigation. The best topdressing result comes from using dry sand on a dry surface. This will ensure that the sand can be worked into the surface with maximum efficiency in the quickest possible time. If the surface or sand is wet, then additional drying time will be required once the sand has been broadcast onto the surface.

It is also imperative that whatever device is used to broadcast the sand does not leave wheel indentations. Dedicated topdressing units spread the weight of sand within the hopper very effectively with multiple wheels, however, if this is not the case care must be taken not to overfill the machine.

Smudging the sand into the surface is just as critical as broadcasting it evenly. To simply broadcast the sand and then not smudge will not achieve any surface levelling. Topdressing must be smudged into the surface to ensure high spots are stripped of excess material and the low areas filled.

Depending on the amount of sand applied, some of the lowest areas of the ground may well be smothered with sand. While this is not ideal, follow up scratching of the surface may need to occur to ensure the turf underneath does not die. In an ideal world, multiple lighter applications should occur.

As with rolling, smudging should be undertaken in at least two directions to provide the smoothest surface. Even with initial smudging the majority of the sand will still sit above the surface, especially where there is strong turf density. If possible a light gate should again be dragged over the surface one or two days later after a couple of irrigation events.

Topdressing can also be required following a football season to level the playing surface, especially if it was a wet winter or there has been excessive disturbance to surface levels. The same procedure should be followed, but the topdressing may only need to be undertaken in certain areas of the ground rather than a blanket topdressing.

SCARIFYING

Warm-season grasses can be very susceptible to accumulating an excessive amount of thatch that can adversely affect the playing surface. While a reasonable amount of thatch is acceptable for surface hardness, surface traction and wear tolerance, an excessive amount is detrimental, causing surfaces to be too soft and potentially provide too much surface traction.

This scenario is often witnessed on heavily irrigated turf using effluent water or areas of the field that receive little usage. In these situations regular scarification is necessary. This activity, however, should only be undertaken while the grass is actively growing and it may only be necessary to undertake it in specific areas in an attempt to unify the surface. The outer or far side of the ground is often areas where this may apply to.

There have been situations where grounds have been scarified when the warm-season grasses are still coming out of dormancy and in some cases this has dramatically retarded their early season growth.

RESURFACING

On older playing surfaces, more dramatic renovations than just scarifying may be required to improve the playability of the surface due to excessive thatch accumulation. The Koro Topmaker is an ideal implement to remove the complete layer of thatch which may have accumulated over a short period of time. Before undertaking a process such as this, small test strips at differing depths should be trialled to ensure there are enough viable rhizomes or stolons for full recovery.

In more severe cases of excessive thatch accumulation it would be recommended to strip the entire surface back to the sand or soil level and re-grass. While this may be an extreme recommendation it will be the only real way to re-instate the drainage of the field and provide playing conditions that were reminiscent of when the surface was first constructed.

IRRIGATION

Irrigation uniformity is arguably the greatest issue relating to the uniformity of a playing surface over the summer months, especially in times of very low rainfall. Ideally, all irrigation systems should provide uniform distribution, but this is not always the case. Therefore, it is vital that hand watering is undertaken to maintain surface moisture uniformity during the summer months.

CONCLUSION

The ability to mix and match is the fundamental take home message in order to provide consistent playing surfaces. It is dependent on mixing the maintenance requirements to match the necessities of the playing surface whether caused by excessive wear, lack of wear or irregular irrigation. A consistent surface cannot be achieved by simply undertaking the same management regime over the entire playing surface, especially surfaces that receive the abnormal wear patterns that come with hosting football.

Mites can cause significant damage, particularly on areas that are recovering from excessive wear. Mite damage can severely slow the progress and vigour of couchgrass growth

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Royal Canberra Golf Club (pictured is the 18th) hosted the Women's Australian Open for the first time as part of Canberra's centenary celebrations

PHOTOS: BRETT ROBINSON

Open heat

The 2013 Women's Australian Open signalled the end of Michael Waring's near 17-year stretch as course superintendent at Royal Canberra Golf Club. As ATM editor Brett Robinson writes, the lead-up to the event proved to be one of the most testing periods of his career.

Michael Waring has faced numerous challenges as Royal Canberra Golf Club course superintendent over the years, but in announcing his departure shortly after hosting the recent 2013 ISPS Handa Women's Australian Open, he can reflect on what was perhaps one of the more difficult assignments of his tenure.

Hosting the LPGA Tour's season-opening tournament for the first time in the club's history from 14-17 February, it was always going to be touch and go having a cool-season grass course present in peak condition during the height of a Canberra summer. Recent summers had been kind to Royal Canberra following years of serious drought and despite hopes of that trend continuing, Mother Nature decided she would have the final say this time around.

The 2013 Open will be remembered for a number of things – Jiyai Shin's improbable chip-in for birdie on the 14th on Sunday to effectively clinch the tournament and the sparkling performance of 15-year-old Kiwi amateur sensation Lydia Ko (who shot an opening round 10-under 63 that included 11 birdies, an eagle, three bogeys and just two pars!) topping the list. For Waring and his team, however, it was the first six weeks of 2013 leading up to the tournament that will be most remembered.

After a warm and relatively dry December, the thermostat was well and truly turned up in January. As Australia officially recorded its hottest January on record (surpassing the previous record set in 1932), Canberra sweltered too. Twenty days registered maximums above 30°C degrees, with 10 of those above 35°C, including a maximum of 42 on 18

2013 WOMEN'S AUST OPEN TOURNAMENT PREPARATIONS

Greens: Bentgrass/*Poa annua*. Double cut with Toro Greensmaster Flex 21 walk-behinds at 3mm each morning, followed up with Toro 3250-D triplex mower with vibrating rollers. Single triplex cut in the afternoon with groomers engaged to minimise leaf area. First round stimpmeter reading 11.5.

Surrounds: Ryegrass. 13mm cut with Toro 3250-D triplexes;

Tees: Ryegrass. Championship tees cut with Toro Greensmaster 1000 walk-behinds at 12mm, non championship tees triplex cut;

Fairways: Ryegrass/*Poa annua*. 13mm, tee to green/green to tee with three Toro Reelmaster 5610 CrossTrax fairway units.

Total tournament staff: Approx. 35. Included Royal Canberra crew (normal number 23), several volunteers from nearby Canberra golf clubs (among them was Gold Creek Country Club course superintendent Scott Harris) and qualified greenkeeper Kegan Moseley who journeyed from Royal Queensland Golf Club. Six casuals also employed in the lead-up to the tournament to assist with preparations.

January (by comparison, the previous January only saw 10 days above 30°C with a maximum of 34). Not surprisingly Royal Canberra's *Poa annua* could only tolerate so much and as the Australia Day long weekend approached it finally decided it had had enough.

"It was a ferociously tough season," reflects Waring. "We usually get periods of heat and then a storm at the end to cool things down, but this year it just got hotter and hotter and stayed hot. The *Poa* simply gave up and started dropping out on the fairways and edges of fairways. We had five guys out handwatering greens and surrounds just to keep them alive. Although we added to our preventative spray programme and thought we had done enough to cover ourselves, we got hit with some extra weevil damage as well, but primarily it was heat stress.

"It was at that time when we only had a few weeks to go until the tournament. It was still really hot so there was little use trying to repair those areas because you knew it wasn't going to do much good. We had also sprayed the course earlier with Dimension to keep summergrass/crabgrass in check which obviously created a huge problem with getting seed to germinate.

"We started by spraying the surfaces with humic acid so that we could get a bit of seed germination. We brought a cement mixer and mixed in a green dye to our sand/ryegrass seed mixture which we used to divot those areas where the *Poa* had dropped out. The goal was that if the seed didn't germinate well, the dye would at least help to mask those affected areas."

With a change of weather expected, the divotting process started a few days before the Australia Day long weekend. However, Mother Nature soon intervened again and along with much of the eastern seaboard the nation's capital was hit by storms which dumped in excess of 40mm of rain in a very short period. As well as contaminating and washing out all of the course's clay-based bunkers, strong winds ripped through Royal Canberra's famed tree-lined fairways, leaving debris strewn everywhere.

"That Australia Day week was very hot (maximums constantly in the low to mid-30s), but we expected a bit of a change so we started to divot those areas," explains Waring. "Then we had that massive thunderstorm and not only did it wash away all the repair work we had done to that point, it washed out every bunker and left rubbish all over the joint.

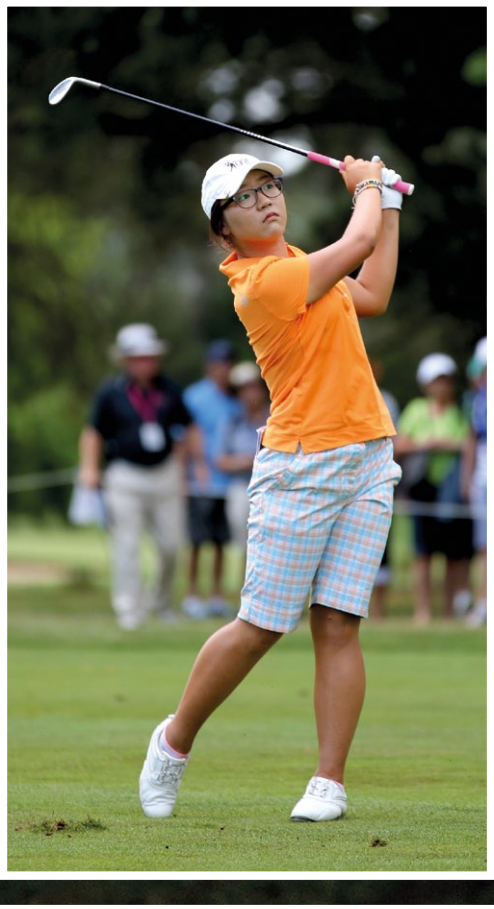
"We lost two days just cleaning up after that storm and we only got the bunkers back into play the Friday before the tournament. We had to clean all the silt and rubbish out of them, re-level the bases and put fresh sand on the faces. We had four blokes out of play for the best part of three weeks repairing them and we only finally got around to fly-mowing

CONTINUED ON PAGE 42

Shortly after the Open, Waring announced he was leaving Royal Canberra after nearly 17 years as course superintendent

Open season

The 2013 ISPS Handa Women's Australian Open at Royal Canberra Golf Club in mid-February doubled as the LPGA Tour's season opener. Boasting one of the strongest women's fields to assemble in Australia, world No.8 Jiyai Shin recorded a two-shot win over fast-finishing world No.1 Yani Tseng. Battling extreme heat in the weeks leading up to the tournament which caused significant turf loss, the Royal Canberra maintenance crew did a remarkable job to present the course for the event. ATM editor Brett Robinson was in Canberra to catch them going about their business.



All the focus at Royal Canberra was on 15-year-old Kiwi amateur sensation Lydia Ko who fired an incredible opening round 10-under 63. She eventually finished third

Kane Perry gives the 1st an afternoon triplex cut with groomers engaged

Teague Baldry cuts the15th tee at 12mm

Open volunteer and Gold Creek CC course superintendent Scott Harris rolls the 18th green

Royal Canberra's par four 10th

US professional Michelle Wie's distinctive putting style

Looking back up Royal Canberra's par five 1st

Long serving assistant superintendent Andy Heskett handwaters the 1st green

Mat Taylor on the long run up 18

Royal Queensland's Kegan Moseley was among a number of course volunteers to work during the Open

CONTINUED FROM PAGE 39

and whipper-snipping the surrounds and tongues at the start of tournament week.

"Fortunately we had a bit of a break in the weather after that storm and we had up to five guys out divotting fairways right through. We actually got some good germination but it was only up until 10 days out from the tournament that those areas started to thicken up."

While the majority of the affected areas were out of play, there were a few spots, such as the landing zones on 2, 7 and 9 and in the front of the 4th green, which did cause some concern. As a result, tournament organisers made the call at the start of the week to institute a clean and place rule across the whole course as those areas continued to recover.

As well as the climate causing significant *Poa* drop out, the local fauna did their bit to add to management headaches. Royal Canberra is home to a large population of kangaroos and in the height of January's dry spell they would congregate on the greens surrounds early morning and late afternoon and feast on the grass.

Below: Jamie Taylor gives the 5th fairway a cut ahead of the second round

Below right: The par four 14th gets an early morning 3mm shave

The surrounds proved particularly attractive as mowing heights had been pushed from their usual 35mm up to 51mm all through summer in order to protect them ahead of the tournament. Although that proved to be one of the best decisions Waring made, the subsequent gathering of kangaroos, particularly around the rear of the greens, meant there was a lot of turf damage sustained from kangaroo urine which also required repair.

"We certainly have some unique challenges at Royal Canberra," says Waring. "You've got to remember this is a cool-season course on heavy clay soils with a heap of trees – it's very different to other courses and has unique issues that other clubs don't have. In real terms, given what we experienced in January, I think we came out of it really well. The guys worked really hard in what were some pretty trying conditions.

"Could we have done anything differently? I can honestly say I don't think so. When we had the heat we put everything in place to come back from it at the right time. We needed a few things to go our way and we didn't quite get that with the weather, but we set in place what we could as best we could.

"I couldn't fault the greens. All our programmes worked well and they came up as I expected them to. They were rolling nicely at 11.5 for the opening round and the players were very happy with them.

"Compared to what they were like in December, the fairways were well short of where I wanted them, but given the January we had they were pretty much as good as I could have expected. I don't think that we could have changed anything to get a better result than we did."

Ko, who went on to finish third for the tournament after a final round 3-over, was complimentary of the work that the Royal Canberra greenkeeping staff had put in for the tournament and the challenges they had faced in the lead up. When asked in her post final round press conference what she thought about the course and its potential to host another Open, she commented:

"I think it's definitely a deserving course. Obviously I heard that the heat here was very incredible, really hot and the course was in very good condition for that, so definitely the greenkeepers and the staff have been working well (to present the course)."

Ko's prodigious talent wasn't lost on the Royal Canberra maintenance crew either. "We were paying particular attention to Lydia during the practice rounds," says Waring. "She is a freakish talent!"

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Now into its second year, the joint AGCSA-University of Melbourne study looking at the biodiversity and carbon benefit of urban golf courses continues to gather some interesting data. As part of the project, University of Melbourne team member Lee Wilson examined the quality of remnant vegetation on nine of the project's participating golf courses and how it compared to that found in nearby nature reserves.

Remnant refuges

Golf courses can make a substantial contribution to maintaining biodiversity in our cities as they often contain important patches of remnant vegetation. However, despite the fact that golf courses are some one of the largest patches of green space in urban areas, there is very little information about the types of remnant vegetation golf courses contain as compared to nearby patches of protected remnant vegetation in the surrounding urban landscape.

In 2012, I joined a research team at The University of Melbourne investigating the biodiversity and carbon benefits of urban golf courses and other green spaces throughout the south east of Melbourne. My role in this research group was to undertake a project that compared remnant vegetation on golf courses to remnant vegetation in nearby nature reserves.

This study is helping to improve our knowledge of how golf courses can, and do, provide habitat for indigenous plants and vegetation communities and the potential for restoration of remnant vegetation to improve vegetation quality and extent.

Within this study, vegetation surveys were conducted in patches of remnant vegetation on nine golf courses and in nine nearby nature reserves that contained similar remnant vegetation communities. The study area was restricted to within the 'Gippsland Plains' bioregion and the vegetation communities studied were classified as either 'grassy woodland', 'plains grassy woodland', 'heathy woodland' or 'sandy heathland'. Surveying areas of the same vegetation community on the nearby nature reserves provided insight into how golf courses could potentially restore or protect the remnant vegetation on their property.

For each survey, small plots (20m x 30m) were established and the name and abundance of every plant species present was recorded, and whether they were indigenous to that ecological vegetation community or non-indigenous. The nine golf courses surveyed were Victoria GC, Kingswood GC, Spring Valley GC, Peninsula Country GC, Frankston GC, Woodlands GC, Sandhurst Club, Settler's Run G&CC and Ranfurlie GC.

The diversity and abundance of the remnant vegetation communities located in golf courses was then compared to those in nature reserves and following the study three key findings can be presented. These are:

- Remnant vegetation on golf courses has a distinctly different composition to that in nature reserves;
- Site management history and size greatly influenced remnant vegetation quality; and
- The remnant vegetation on golf courses has high restoration potential.

COMPOSITION

Patches of remnant vegetation on golf courses and in nature reserves contained a similar total number of plant species. Among the golf courses, Victoria GC had the highest number of indigenous species (44) and Frankston GC had the highest percentage of indigenous species (60 per cent). Golf courses were found to have different vegetation community structure as compared to the nearby nature reserves.

In general, golf courses contained a lower diversity of indigenous species and a greater diversity of exotic (i.e.: non-indigenous) species. Of all the recorded species on golf courses, 44 per cent were indigenous and 56 per cent were exotic. In contrast, of the recorded species in reserves, 61 per cent were indigenous and 39 per cent were exotic (Figure 1). In addition, 33 per cent of the indigenous species recorded in the reserves were absent on golf courses and 44 per cent of the exotic

species recorded on the golf courses were absent in the reserves.

SITE SIZE AND MANAGEMENT HISTORY

The plant species present and the quality of the remnant vegetation at each golf course were strongly influenced by site land-use history, the area of the remnant vegetation patch and management practices.

Site history: Most golf courses are located on land that was used for other purposes prior to becoming a golf course, such as cattle grazing, agriculture and horticulture. Most of the nature reserves, however, had not been used intensively for other purposes prior to becoming a site for conservation.

A strong link was identified between the quality and composition of vegetation with site history. Not surprisingly, the reserves and golf courses that contained areas of high quality indigenous vegetation, such as Frankston GC, were located on sites that had not been used intensively prior to their establishment. These sites contained more indigenous plant species and populations of indigenous orchids such as Donkey orchids (*Diuris* sp.), Sun orchids (*Thelymitra* sp.) and Greenhood orchids (*Pterostylis* sp.).

The golf courses and reserves that had been used for other purposes contained more degraded vegetation (i.e.: they contained fewer indigenous species, more exotic species and few or no orchid species). It is likely that the impacts of grazing and agriculture led to the degradation of original indigenous vegetation. Although the vegetation is in poorer condition today, restoration activities such as revegetation with indigenous species will improve the quality of the vegetation over time.

Area of vegetation: A strong link was identified between the area of remnant vegetation and the composition of vegetation. Most remnant vegetation on golf courses is located in small, fragmented sections such as the areas between the fairways. In contrast, the vegetation in reserves is generally found in larger patches (lower perimeter:area ratio). Small, linear strips of vegetation are more susceptible to weed invasion and the loss of sensitive indigenous plant species due to changed environmental conditions and disturbance.

Management practices: The current management of golf courses and nature reserves strongly influence the quality and composition of remnant vegetation. On golf courses, common practices that can impact the remnant vegetation include routine clipping of trees and shrubs, mowing to the base of trees, planting non-indigenous species and leaving areas to seed and grow without intervention.

Areas of remnant vegetation that are left to grow without intervention can allow both indigenous species to re-establish, such as the coastal tea tree (*Leptospermum laevigatum*), and weed species to establish, such as sweet pittosporum (*Pittosporum undulatum*) and blackberry (*Rubus fruticosis*). These weed species can grow in very high densities and outcompete populations of indigenous vegetation. The competition between indigenous and weed species can lead to a decline in the quality of vegetation over time as indigenous species are lost.

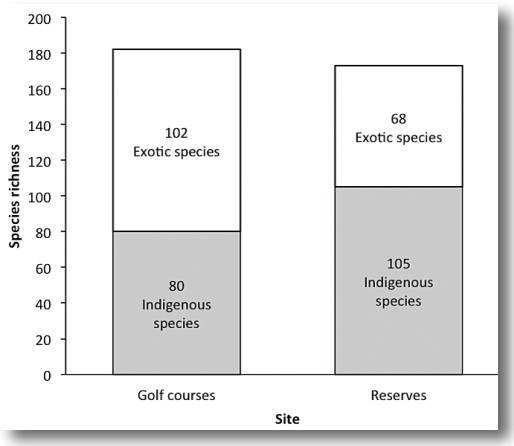

Figure 1. The number of plant species in remnant vegetation on golf courses and nature reserves within the surveyed areas

Opposite page: University of Melbourne researcher Lee Wilson compared patches of remnant vegetation on golf courses to those in nearby nature reserves as part of the biodiversity project

Golf courses and nature reserves that contained higher quality vegetation generally removed weed species, revegetated areas with indigenous species and used controlled fire to maintain vegetation health. Controlled fires are particularly important for natural heathland vegetation in areas containing sand-based soils. Fires maintain plant diversity by removing dense populations of indigenous and weed species and allowing other indigenous species to re-generate from seeds stored in the soil. I am confident that increased efforts in management practices that promote indigenous plant diversity would improve the quality of vegetation on golf courses.

RESTORATION POTENTIAL

Few patches of remnant vegetation on golf courses contained high quality or highly degraded vegetation. Most golf courses contained remnant vegetation that was moderately degraded but had a strong potential for restoration.

Most courses contained abundant populations of common indigenous species such as coastal tea tree (*Leptospermum laevigatum*) and bracken (*Pteridium esculentum*) and non-indigenous species

The study has shown that golf courses can play a significant role in the conservation of vegetation communities that are under pressure from continued urbanisation

Project team member and PhD student Alessandro Ossola measures the height of vegetation at Spring Valley Golf Club

Small 20m x 30m plots were established at nine golf clubs in Melbourne's south east and the name and abundance of every plant species present was recorded

such as panic veldt grass (*Ehrharta erecta*) and black nightshade (*Solanum nigrum*). Few species of orchids were recorded on golf courses. Frankston Golf Club was a remarkable exception and contained several populations of different indigenous orchid species. Most of the nearby reserves contained better quality remnant vegetation than golf courses.

However, the golf courses do have great potential for restoration. For example, at Victoria Golf Club some small areas of high quality vegetation were observed that appeared remnant but were actually the result of the club's re-vegetation programme (**see ATM Volume 12.5 'Victoria heads back to its roots'**) and weed removal practices.

SIGNIFICANT ROLE

From this study I am optimistic that golf courses can play a greater role in the conservation of vegetation communities that are under pressure from continued urbanisation, urban expansion and agricultural intensification around our cities. Restoration could be targeted at golf courses that before being established were not intensively managed.

All golf courses with remnant vegetation of any quality, no matter how small or large, can consider simple management interventions to maintain and improve vegetation quality, such as:

- The removal of non-indigenous plants (exotic weeds and species not locally indigenous);
- Allowing patches of ground layer vegetation to develop without mowing or chemical intervention; and
- Using periodic fire to ensure successful seed bank germination, as is practiced in nature reserves.

This study is a success if it is simply able to raise the awareness of the valuable patches of remnant vegetation within our golf courses and the simple and inexpensive management strategies that can greatly improve their quality and continued protection.

While this part of the project has come to an end, the research team at The University of Melbourne aims to further investigate the potential for remnant vegetation restoration within golf courses and, furthermore, the restoration of faunal biodiversity associated with better quality and healthy vegetation communities.

Editor's Note: See ATM Volume 14.4 (July-August 2012) for more about the AGCSA-University of Melbourne project and also some of the project's findings on insect biodiversity, written by project team member Luis Mata. Project leaders Dr Steve Livesley and Dr Caragh Threlfall will also provide an update of the project at the upcoming 29th Australian Turfgrass Conference at Twin Waters.

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Among the golf courses surveyed, Victoria GC (below) had the highest number of indigenous species (44), such as milkmaids (*Burchardia umbellata*, pictured right). In recent times the club has successfully undertaken a major revegetation programme

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Keeping it green

In 2012, the Victorian Golf Course Superintendents Association conducted two trials at Melbourne golf clubs to evaluate a range of products for reducing couchgrass winter dormancy, or at least improving its colour retention during this time. Researcher Phil Ford provides an overview of the trial and some of the results to emerge.

There are two quite separate reasons why couchgrass goes dormant over winter. The first is to avoid Winter Kill. This is where a sudden drop in temperature to somewhere between -5°C and -7°C causes the cell sap to freeze and expand, which splits open and kills the tissue in any foliage that is still active and green. Fortunately the vast majority of Australia wouldn't experience Winter Kill conditions. The second reason is simply to avoid trying to operate when conditions aren't suitable.

The two key environmental conditions that couch responds to are light and temperature. In winter, the poor light intensity and short day length means that couch is losing carbohydrate (CHO) each day, rather than gaining it. Couch needs a lot of sunlight each day to make CHOs by photosynthesis, but it also uses them each day to stay active.

If the amount of CHO produced each day from photosynthesis doesn't keep up with the amount of CHO used each day, it makes more sense for the plant to go dormant until the light intensity and day length increases. In dormancy, the plant only uses around 1 per cent of CHOs to stay alive compared to if it was actively growing.

The second important growth condition is temperature, which works in a different way. Each cell is enclosed by a cell membrane which is made from lipids (fats). Lipid activity is affected by temperature and by the degree of saturation of the lipid. Saturation refers to the number of cross-linking bonds in the lipid.

At high temperatures the lipids are active, which is good for cell activity, but if the temperature gets too high the lipid could become too fluid, and the cell contents could start to leak. The plant is able to adjust the lipid by saturating it more, which stiffens it up and stops it becoming too fluid. At low temperatures the lipids start to seize up and become inactive, which makes the cell processes slow and inefficient. The plant can decrease the lipid saturation, which frees it up more so it keeps working actively even at a lower temperature.

These lipid processes are genetically controlled, so couchgrass varieties differ in their ability to un-saturate their lipids in response to cold temperatures. Short-dormancy varieties can de-saturate their lipids and continue growing in cool conditions better than long-dormancy varieties.

The lipid processes are also affected by plant hormones. While a lot more research is required on how plant hormones work in turf and how they can be manipulated, it seems the main hormones involved in dormancy are two 'positive' growth hormones – cytokinin and gibberellic acid (GA) – and two 'negative' hormones – ethylene and abscisic acid. Auxin, by the way, appears to be mainly concerned with root growth in grasses and not dormancy.

Cold temperatures and stresses such as wear, drought or low nitrogen cause an increase in the negative hormones, which counteract the positive hormones. One effect of increased negative hormone and decreased positive hormone is that the cell membrane lipids de-saturate and become inactive and push the plant towards dormancy.

In theory we should be able to reduce couch dormancy if we try to accentuate the positives and eliminate the negatives. We should also be able

to work on dormancy at both ends of winter, by prolonging activity and green colour in the autumn and encouraging faster green-up in the spring.

KEEPING COUCH OUT OF DORMANCY

There are number of strategies that turf managers can employ to reduce couch dormancy:

Variety selection: Santa Ana, Legend, Wintergreen, Grand Prix and Winter Gem have a proven track-record for short dormancy in our climate.

Avoid stress: Traffic, soil moisture stress, nitrogen deficiency, sudden low mowing or herbicide application (even simple broadleaf herbicides) can all cause stress to couchgrass and cause it to enter dormancy early or retard spring green-up. Many of these stresses cause an increase in the negative hormones and a reduction in the positive hormones.

Plant hormone manipulation: Plants produce hormones in response to their environment and this can be manipulated to some extent. For example, when couch runners have a lot of ground to cover their GA levels naturally rise and the effect carries over as shorter dormancy the following winter. That's why couch dormancy is reduced on fairways that are new or were scarified the previous summer.

Stimulating growth with nitrogen also increases natural GA and cytokinin production, but nowadays we can also buy plant hormones off the shelf, either in organic form (e.g. seaweed products, which contain cytokinins and auxins), or in synthetic form. The ability to buy and apply plant hormones means we aren't bound by the natural processes in the plant.

In theory, products that increase cytokinin or GA should retard the onset of dormancy in autumn and speed up spring recovery. In practice, the only affordable and easily obtainable product to work with at the moment is GA.

The lighter green gibberellic acid plots (north-south and east-west) at the Kew Golf Club trial site on 29 June 2012

Opposite page: In 2012 the VGCSA conducted trials at Kew Golf Club and Riversdale Golf Club (trial site pictured) which focussed on the efficacy of various products to reduce couch dormancy

Carbon Trader plot (left) immediately after application on 3 September at the Riversdale trial site. It caused an immediate increase in foliage temperature of 2°C-3°C compared to the untreated plot (right)

Pigments: Another approach to couch dormancy is to mask it with a green pigment. Three products seem to be on the market at the moment – Par, Green Lawnger and Vision Pro. Quite a bit of research is being done in the US on this topic (Whitlark and Umeda, 2012). The pigment products artificially colour the dormant grass to make it look green, but the darker colour might also slightly increase leaf temperature.

Carbon products: There are a couple of black carbon products that have attracted attention in recent years. They probably reduce dormancy by increasing leaf temperature through a darkening effect. The higher temperature could keep the membrane lipids more active for a longer period in winter. Crumbed rubber and other black amendments seem to have a similar effect on increasing leaf temperature and reducing dormancy.

DORMANCY TRIALS

In 2012 the Victorian Golf Course Superintendents Association conducted a trial which focussed on various products on the market to reduce couch dormancy. Two trials were conducted, one at Kew Golf Club (superintendent Adam Robertson) in the autumn and one at Riversdale Golf Club (superintendent David Mason) in the spring.

In each case the products were simply sprayed out as single treatments on a chequerboard pattern, with some treatments applied in a north-south direction and other products in an east-west direction. This allowed various combinations of products to be tested and some treatments were applied in both directions so their effect at single and double rates could be assessed.

Applying treatments as single treatments like this doesn't allow the use of statistics, but the aim was simply to see which products seemed to work and for how long. Some people might call it a 'squirt trial', which is exactly what it was. The treatments were applied as a single 1.7m wide strip using a 12V pump and pedestrian boom spray delivering 1000L/ha water volume.

TRIAL ONE: KEW GC

The first lot of treatments were applied on a still-green Santa Ana fairway at Kew GC on 21 May 2012 and aimed to test how products might delay the onset of dormancy. The plot area rated 8 out of 9 for green colour at the time the treatments were applied.

The visual colour ratings for the main treatments are shown in Table 1. The greatest benefit was from gibberellic acid (ProGibb), which kept the couch reasonably green until the end of July (see photo page 49). The GA colour was a natural light green, not the darker green colour seen with iron or carbon or nitrogen effects.

Double rates of GA had no apparent increase in benefit either in greening effect or longevity, but also it didn't cause the couch to get leggy and upright, which can be a problem with excessive GA. The single GA rate was 75 grams of active ingredient per hectare, which works out to 187g ProGibb per

TABLE 1: VISUAL COLOUR RATINGS (KEW GC)*

	Colour rating (0 - 9)			
Treatment	**4-Jun**	**29-Jun**	**16-Jul**	**6-Aug**
Control (no products applied)	6	5	4.5	4.5
NPK liquid blend (15:1:12) at 1L/100m^2	5.5	5.5	4.5	4.5
Calcium nitrate (12%N) at 1.25kg/100m^2	6.0	5	4.5	4.5
Nitro-iron liquid blend at 0.4L/100m^2	6	5	4.5	4.5
Magnesium chelate: 30g/100m^2	6.5	5	4.5	4.5
Iron sulphate at 0.7kg /100m^2	7	5	4.5	4.5
Carbon Trader 0.55L/100m^2	7	5	4.5	4.5
Carbon Trader at 1.1L/100m^2	7.5	5	4.5	4.5
Powdered charcoal: 0.55kg/100m^2	7	5	4.5	4.5
Green Lawnger: 0.4L/100m^2	6.5	5	4.5	4.5
GA 75g ai/ha = 1.87g ProGibb/100m^2	6.5	6.5	6.5	5
GA 150g ai/ha or 3.75g ProGibb/100m^2	6	6.5	6.5	5
Fructose 2.5% conc. (0.25kg/100m^2 in 5L water)	6	5	4.5	4.5

*Treatments applied 21 May 2012

hectare (1.87g/100m^2), at a cost of $200/ha. (NB: The ProGibb product is 400g/kg (40%) strength, so the rate calculation is 75g ai/ha x 100 ÷ 40 = 187g/ha).

The application of Carbon Trader or the powdered carbon product caused an immediate darkening of the foliage and an immediate rise in foliage temperatures, as measured by an IR thermometer. In bright sunlight, the darker carbon-treated foliage temperature was in the range of 21°C-22°C, compared to an average of 19°C on the untreated control plots. This 2°C-3°C temperature rise doesn't seem much, but probably increases the activity of the cell membrane lipids enough to keep the cells more active and stave off dormancy.

By two weeks after application (4 June 2012) the carbon-treated strips were still slightly greener than the other treatments, but by 29 June 2012 there was no difference between the carbon treatments and the untreated control plots.

Green Lawnger provided no long-term benefit in this trial. The couch was quite green at the time of application, so the Green Lawnger pigment on top of that didn't stand out. By two weeks later (4 June) when the couch had started to lose a little colour, the Green Lawnger effect was not evident.

The fertiliser products also provided little benefit. The liquid nitrogen-iron product was unfortunately applied at double the label rate, hoping to increase the effectiveness of this treatment, but unfortunately it caused a burn, so no conclusions should be drawn from its colour ratings. It was expected that the fertiliser products might interact with the carbon or GA to get an extra benefit, but this wasn't evident.

Green Lawnger (right) compared to untreated plots, immediately after application on 3 September 2012 at the Riversdale trial site. The Carbon Trader and powdered carbon strips are towards the top of the photo

TRIAL TWO: RIVERSDALE GC

The second lot of treatments were applied in spring to a fairly dormant Santa Ana practice area at Riversdale Golf Club on 3 September 2012. The aim was to test how products might enhance spring green-up. The area was rated 3 out of 9 for colour at the time of application. The plots were assessed on 13 September 2012 (10 days after application) and again on 22 September 2012. By that second

TABLE 2: VISUAL COLOUR RATINGS (RIVERSDALE GC)*

	Colour rating (0 - 9)	
Treatment	**13-Sep**	**22-Sep**
Control (no products applied)	4	7
NPK liquid blend (15:1:12) at 1L/100m²	4.5	8
Calcium nitrate (12%N) at 1.25kg/100m²	4.5	8
Nitro-iron liquid blend at 0.4L/100m²	5	8
Iron sulphate at 0.7kg/100m²	5.5	8
Carbon Trader 0.55L/100m²	5.5	7
Carbon Trader at 1.1L/100m²	6	8
Powdered charcoal: 0.55kg/100m²	5.5	7
Green Lawnger: 0.4L/100m²	5.5	8
Par 15ml/100m²	5.5	8
Hi 5: 100ml/100m²	4	7
Largo: 100ml/100m²	4.5	7.5
GA 80g ai/ha = 2g ProGibb/100m²	6.5	8
GA 160g ai/ha or 4 g ProGibb/100m²	6.5	8
GA 80g ai/ha = 8ml GALA/100m²	6.5	8
Green Lawnger + GA combination	7	8.5

*Spring green-up trial, treated 3 September 2012

assessment even the untreated areas had greened up, so the main results to take notice of in Table 2 (above) are for 13 September.

Carbon Trader and the powdered carbon product caused an immediate darkening of the turf (see photo page 50) and an average 2°C increase in foliage temperature, similar to the Kew GC trial. Double rates of Carbon Trader caused an even darker colour and on some measurements a 3°C increase in foliage temperature. By 13 September the darkening effect from the carbon had nearly disappeared, but the double rate of Carbon Trader (110L/ha) resulted in the couch being noticeably greener than the control plots.

Green Lawnger (see photo page 51) and the other pigment product Par, provided an instant increase in colour, but didn't increase foliage temperature in the same way carbon did. By 13 September, however, both these green pigment products had resulted in better colour than the control plots. There was no measureable improvement from a combination of pigment (Green Lawnger or Par) and carbon, but there was a slight additional improvement in colour from the combination of Green Lawnger and GA.

The various fertiliser products provided some relatively minor improvements in spring green-up, but once again it was the GA that provided the most benefit. This time two different GA products were used – the 40 per cent strength granule Pro-Gibb and GALA which is a 10 per cent (100g/L) strength liquid product. Both were applied at a rate of 80g ai/ha, although there was also a double-strength application of the Pro-Gibb treatment.

On 13 September the GA treated plots were markedly greener than all other treatments. As Table 2 shows, the GA treatments rated 6.5 for colour, much higher than the untreated couch (rating 4) and higher than either the carbon or pigment products. There didn't seem to be any difference between Pro-Gibb and GALA.

> "From these trials there is no doubt that gibberellic acid was the most effective in delaying the onset of couchgrass dormancy in autumn and also hastening green-up in the spring."

The combination of Green Lawnger and GA was slightly ahead of GA on its own. The double rate of GA had no additional greening effect, but caused the grass to become noticeably etiolated (upright and spindly), which was undesirable. This was particularly noticeable on a small patch of kikuyu in the plots.

CONCLUSIONS

From these trials there is no doubt that gibberellic acid was the most effective of the products tested in delaying the onset of dormancy in autumn and also hastening green-up in the spring. There didn't appear to be any real benefit combining GA with other products. The GA rate of 75-80g ai/ha looks to be suitable at an estimated cost around $200/ha. The cost of GA was prohibitive in past years, but has come down a lot and will probably continue to fall.

The next question will be to assess a GA programme to see if couchgrass can be successfully kept green all winter. A possible programme would be an autumn treatment (probably in May, before the couch loses colour), a second treatment in July and a final treatment in August. This might not be effective in areas with a colder winter or more frosts, but there should still be benefit from either an autumn application or a spring application to reduce dormancy.

Another question with GA is its effect on winter disease. Many of the foliar diseases (e.g.: *helminthosporium* spp.) are probably related to leaf senescence as couch goes into dormancy, so reducing dormancy might reduce these diseases. However, GA might negatively interact with the growth regulator effect of propiconazole and possibly reduce its efficacy on spring dead spot. Only time and experience will tell.

ACKNOWLEDGEMENTS

The VGCSA thanks Adam Robertson and the Kew Golf Club and David Mason and the Riversdale Golf Club for their participation in the trials. Australian Turfgrass Management thanks the VGCSA and Phil Ford for allowing publication of this research.

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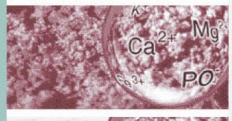


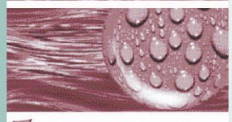
Soil Nutrient Analysis

Soil Physical Analysis

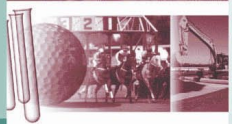
Plant Tissue Analysis

Disease Diagnosis

Nematode Diagnosis



Water Analysis



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Maryborough Golf Club is located in central Victoria and has been home to course superintendent Craig Mills for the past four and a half years. Pictured is the dogleg par four 7th

Maryborough Golf Club, VIC

After plying his trade on bowling greens in Melbourne for some 15 years, Craig Mills packed up the family in late 2008 and headed to Maryborough in central Victoria to take up his first course superintendent posting.

Superintendent: Craig Mills.
Nickname: Millsy.
Age: 40.
Years as a superintendent: 4.5.
Years as an AGCSA member: 4.5.
Association involvement: AGCSA, Victorian Greenkeepers Association.
Turf management career: Werribee Bowling Club (apprenticeship, 4 years); Yarraville-Footscray Bowling Club (head greenkeeper, 9.5 years); Maryborough Golf Club (superintendent, 4.5 years).

Tell us a bit about your background in turf management and how you came to be at Maryborough Golf Club. I started my apprenticeship at Werribee Bowling Club when I was 18 in 1991. I liked the idea of being a landscape gardener but during the recession we had to have there were not a lot of employment opportunities around. An apprenticeship at Werribee Bowling Club was advertised and despite being unsuccessful first time round, someone dropped out and I managed to get an interview and subsequently the job. From there my career in turf management took off. I was grateful to receive the Best Second Year Apprentice in Victoria Award in 1993 (I did my schooling through NMIT in Parkville).

After my apprenticeship I moved on to Yarraville-Footscray Bowling Club which ended up playing in the Premier League. During my nine-and-a-half-year term as head greenkeeper the club hosted a test match between Victoria and Tasmania and Premier League grand final for two years. We also hosted the Victorian Singles Champions of Champions.

After three-and-a-half years out of the industry, in 2008 Mark Eardley from K&B Adams called me asking if I was still interested in going bush and mentioned that Maryborough Golf Club was looking for a greenkeeper. After discussion with my wife I

OFF THE COURSE – CRAIG MILLS

Family: Wife Nicole and two children Zaden (8) and Marlo (6).
Past-times away from turf: Spending time with family and friends, camping, bonfires and fishing.
Favourite sporting team: Carlton Football Club.
What book are you reading now? The Girl in the Picture.
Golf handicap? 18.
Favourite golfer? Jason Day.
The best thing about Maryborough (aside from the golf club) is… the peace and quiet and no traffic. Coming up from Melbourne, we certainly appreciate the change of pace.
What do you do to get away from it all? Pack the trailer with camp gear and head off to some unknown destination with the wife, kids and Crikey! the dog (she's a 9yo kelpie/border collie). Sit and enjoy the true meaning of life and hopefully catch the ever-elusive Murray Cod.

decided to apply for the position and within four weeks we had relocated the family and started a new challenge.

How did you adapt to the change of roles and what challenges did you face? I had never worked on a golf course let alone be a superintendent and adapting from bowling greens to a golf course was a little daunting at first. I just had to take my time, keep things basic and settle into the role. Getting used to the spraying side of things took some time because I had never sprayed hectares, with boom sprays, at a time. When I calibrated the boom spray for the first time, which according to another employee had never been done, it was quite fun working out the calculations!

When I arrived in December 2008 the state was in serious drought. The first six months or so were extremely difficult with the years of drought having taken a significant toll on the golf course. Not a single green had a full cover of grass and fairways were rarely cut. Not a lot here resembled a golf course, except for the layout, but this is in no way casting aspersions on any past employees – things were just bloody tough!

Line-planting of Santa ana couchgrass had started on four fairways which was the first stage in revitalising the golf course. Four years later we now have Santa ana on all fairways and all bentgrass greens. The greens are relatively small, with six not visible from the tee, and fairways are reasonably tight. The golf course is over 100 years old and much of it was hand built on very ordinary ground. It initially had sand scrapes and opened for just six months of the year, but when they were converted to turf greens and with the help of recycled water coming on board, it became an 'all year' course. Just like anywhere, droughts hit hard and it can be quite hard to manage especially over the warmer months as water is always an issue.

Take us through your turf management operations there and how you have fine-tuned them during your time as superintendent? Now that we have fully grassed fairways and roughs we have introduced first and second cuts of rough. Before this, when fairways were cut it was tree-line to tree-line. The definition is now apparent.

We also needed to start a proper fertilising programme for the greens. Soil tests were conducted to find out the overall condition of the soil. I now use a three-tier fertilising programme which has been extremely successful. The greens look healthy, disease is less prevalent and we now have a full cover of grass on all greens. We also aerate the greens as often as possible with Humavator being applied to break up the black layer. I also groom and dust the greens as often as possible.

On the mechanical side of things, all machines needed the heads fine-tuned. With the help of my Director of Golf and volunteer Grant Sluce, we took our time in setting up each head so they would cut correctly. Our surrounds mower was used to cut tees which left unsightly grass clippings on the tee surface. We had a spare set of heads in the shed and converted our old greens mower into the tees mower. The last 12 months have been difficult with only one employee and we not only have to manage the course but two Santa ana bowling greens as well. Fortunately I have had the help of a wonderful band of volunteers.

Mills and his greenkeeping crew of Robert Bird and Josh Lacey are ably assisted by a core group of club staff and volunteers. Pictured from left are Graeme Melbourne, David Kleemann (general manager), Lacey, Bird, Dan Leddin (president), Mills, Geoff Newell, Grant Sluce (director of golf), Frank Dowling, Nev Fitzpatrick and Sandy McNaught

What are some of the major challenges facing Maryborough Golf Club both from a turf management and general club management perspective? At present the club is in the process of fully refurbishing the clubhouse as it is in need of an upgrade. Over the past 5-10 years membership has declined, but the course seems busier than this time last year. From a turf management perspective, we are now in the process of leasing new machines. The club has faced many challenges in recent times and with good planning and management from the Board we have met these head on. From my perspective it is an exciting time to be at Maryborough Golf Club.

Outline any major course improvement works completed in the past couple of years and

Maryborough's 11th green. The bentgrass greens are constructed with a sandy loam and maintained at 3mm

Line-planting of Santa ana couchgrass had started on four fairways when Mills arrived in late 2008. Four years later, all fairways now have a full cover of couchgrass. Pictured is the par four 3rd

highlight any ongoing or future works that the club is undertaking. Major works completed since I started here include the line planting of fairways, converting all tees (except the 10th) to Santa ana couchgrass and new drainage in bunkers (with the exception of one on the 1st). The 9th and 13th greens were converted to Santa ana couch some time ago, but I have since changed them back to bentgrass and made the greens bigger. The par four 17th has been changed to a 192m par three (men) and par four (ladies) due to a 22-lot housing development. All these changes have provided not only better playing conditions year round, but better financial outcomes for the club.

Water is obviously critical in the management of any golf course. How is Maryborough faring in the water management stakes? We struggle. At the time of writing this we have no recycled water due to problems at the treatment farm and as of 11 February 2013 we have had just 60mm of rain since August 2012. I am using town water for greens and tees two nights per week and spend many hours hand-watering greens. No fairways are being watered at this stage as town water simply costs too much.

Water management is most crucial in the lead-up to Christmas. We carefully monitor how much we use as we simply cannot afford to run out of water too early into summer. Blue green algae is a major problem. This can shut down water supply anywhere from one to seven weeks. That's when life as a superintendent becomes that little bit harder as you strive to keep the greens and tees alive.

We have a two megalitre retention basin on course which at present I use as a water source for the two bowling greens. We hope to have another two retention basins throughout the course in the near future which will give us access to more water. It is proving harder to access water in regional areas of the state.

Maryborough's par three 6th

Any special environmental considerations that you need to incorporate into the management of the course? As we use Class C recycled water, it has to be monitored and managed because of the high salt and phosphorous content. We have a Hydrosmart unit connected to the pipes from the pump shed which was kindly donated by Jeff Powell (Ballarat Golf Club). Salt issues and black layer in the greens need to be continually monitored.

The one product I couldn't manage my course without is... Water! We have done all that we can to drought-proof the course, but water is still needed.

What are some pros and cons of being a regional superintendent? In a nutshell, it's the lifestyle. Having the kids go to school 100m away is a bonus. Knowing the members well gives me constant feedback, whether good or bad. The cons, however, include being 'outside the loop' and not hearing from as many peers. Not having access to a constant supply of water is definitely a regional con.

Are expectations of course presentation and conditioning any less than that placed on your metropolitan counterparts? I would say they are. But the members and I want the golf course to be the best golf course that it can be. We do not have to cater for 200-plus rounds a day (those sorts of pressures aren't there), but we still need to prepare the course to the best of our abilities.

Do you have to be more resourceful as a regional-based superintendent? I think that regional superintendents definitely need to be a little more versatile given the locale. For instance, we do 90 per cent of our maintenance repairs. If we were to send our parts or machines away, it could take a week, or weeks, to return. We simply cannot afford that. As we do not have a mechanic we need to be mechanically minded.

If you could change one thing about your job as a regional superintendent what would it be and why? The only thing I would change is the amount of rainfall that lands on the course. It simply does not receive enough – or hasn't in 2012/2013!

How important are the relationships you have with other nearby country course superintendents/ trade reps? I am grateful for the relationship I

have with reps like Mark Eardley (K&B Adams) and Adam Bell (ITS). Their knowledge base is a tremendous help and they are always willing to answer a question or two and take the time to have a look around the course and bowling greens. I have a great relationship with other supers in the region and we are happy to share whatever knowledge we can.

Given your distance from the major metro areas, how do you make sure you keep abreast of the latest turf management techniques and methods? Any resources that you find particularly useful? All emails and magazines are of great benefit and very resourceful, especially articles on fixation in the soil and trials of Calsap! We've had problems with this because the calcium-magnesium ratio in the soil is not balanced. Talking with other superintendents in the region is also invaluable.

What have you got in your shed? John Deere 2500A greens mower (2), Toro fairway and surrounds mower, John Deere rough cutter, an old and tired Fergie, greens roller, Kubota front-end loader with spray unit, Toro bunker rake, John Deere Aercore and a small ride-on. We are in the process of leasing new machines, starting with the greens mower and the purchase of a Cushman with a boom spray. In a few years' time we are hoping for a shed full of newer machines. Our roughcutter once would have been trashed the most, but without decent rain in over three years it hasn't seen much work!

Do you think regional/country superintendents have a better work-life balance than their metro counterparts? No matter where you live, looking after a golf course/bowling greens is always hard work. As a work-life balance I feel it's the same, but the lifestyle is different. There are two sets of lights here so getting to work isn't a problem!

Favourite spot on your course? The 3rd and 7th tees – they are next to each other and it's fantastic looking down from the elevated tees down to the tree-lined fairways.

Most pleasing/rewarding moment during your time as Maryborough superintendent? When we finished line-planting the Santa ana. To see the transformation over four-and-a-half years was nothing short of amazing.

Name three golf courses that you would like most to visit and why? Forest Resort, Creswick (superintendent Kel Oswin), Ballarat Golf Club (Jeff Powell) and Neangar Park Golf Club (Brendan Brown). Yes, it may be a bit weird that I didn't choose Royal Melbourne, Augusta or St Andrews, but I often talk to these three superintendents and we have many things in common being located in the same region. I would like to see how they operate, their budgets, plans for their courses, how they irrigate and how they manage staff. I would then relate that to my course. Don't get me wrong though, I'd love to go to those other courses to see how the other half live.

Water management has been critical this past summer with Maryborough receiving just 60mm between August 2012 and mid-February 2013

AT A GLANCE – MARYBOROUGH GOLF CLUB

Where in Australia is Maryborough? Maryborough lies within Victoria's 'Golden Triangle'(apparently there is still plenty out there!) in central Victoria, only two hours from Melbourne and half way between Bendigo and Ballarat.

Course specs: 18 holes, 5639m par 70 (men) and 5140m par 72 (ladies). Fourteen hectares of maintained turf surfaces. We also have two Santa ana bowling greens.

Turf surfaces: Greens (bentgrass), tees/fairways/rough (Santa ana couchgrass).

Members: 94 full, 46 restricted, 70 country, 74 veterans, three juniors, 24 family and four summer members.

Annual rounds: Competition rounds per week – 150 (7800 per year); June tournament – 350 rounds over five days; 1500 green fee rounds; 300 pennant, 300 charity days and 100 Holden scramble rounds.

Major tournaments: June tournament – this is our 100th! Holden Scramble and Havilah Day.

Staff structure: Craig Mills (course superintendent), Robert Bird (greenkeeper) and Josh Lacey (1st year apprentice).

Course management budget: $65,000pa

Climate: Mediterranean (warm summers/cool winters). Annual rainfall for 2012 was 444mm (BOM). From 21 December 2012 to 15 February 2013 Maryborough recorded just 2.8mm of rain.

Soil types: There is a small sand profile in the fairways, but being gold country, quartz and iron stone are prevalent. Greens have been constructed with a sandy loam.

Water sources and irrigation system: 56 megalitres of Class C recycled water (if available we can use up to 75ML). Toro Site Pro 3.1.

Cutting heights: Greens 3mm, surrounds 9mm, tees 7mm, fairways 11mm, rough 2", first cuts 20mm, 2nd cut 30mm.

Renovations: We topdress and Vertidrain once a year in October. We do as much aerating as possible of tees, greens and surrounds. We groom and dusting the greens but nowhere near as frequent as I would like due to our small staff.

Major disease pressures: Fusarium and dollar spot! We spray preventative, but if there is ever an outbreak, all greens and surrounds get sprayed.

The National Turf Education Working Group is growing increasingly concerned by the inconsistencies appearing in the number of hours different training organisations are delivering the units of competency in turf management courses

Killing time

In the second of a continuing series of articles examining the current state of the Australian turf management education system, the National Turf Education Working Group looks at the increasing threat to the amount of training hours students are receiving at TAFE due to state government intervention and funding cutbacks.

What if a training provider was teaching a unit of competence (a subject) in half the time as another for the same unit? Several questions would no doubt be asked – are they covering the information in as much detail, are the lecturers more competent, are the students brighter or simply is the state government only funding half the hours?

The Australian Qualification Framework is a national policy that regulates qualifications in Australian education and training. It supports national standards in education and training and sets the standard for the delivery of training by Registered Training Organisations.

A Sports Turf Management student should be able to complete part of a qualification in one state or territory and transfer the completed units to another, whereupon they can finish the qualification. Training should be uniform as it is a national curriculum and needs to cater for a mobile workforce.

Unfortunately, each individual state government applies its own funding model and as we are starting to see TAFE colleges are being left to try and deliver uniform quality training within reduced hours. The National Turf Education Working Group (NTEWG) believes that the whole turf industry should be made aware of this threat to training hours which is due to a decrease in government funding.

Already the group's concerns are highlighted by some of the inconsistencies appearing in the number of hours that are used by different training organisations to deliver the units of competency. The tables opposite show the units which make up both the Certificate III in Sports Turf Management and Diploma in Sports Turf Management and the hours each unit is taught in each state.

As is clearly evident in the 'Install Irrigation Systems' unit within the Certificate III in Sports Turf Management, Queensland and Victoria get 10 hours more teaching than New South Wales and 30 hours more than Western Australia. As an industry that values water so highly, it seems amazing that trainees in the West, one of the hottest and driest states, receive less than half the amount of irrigation training as a Queensland or Victorian student.

Overall, Certificate III students in the West are completing their training in half the time as their interstate counterparts. This drops to nearly

WHAT IS THE NTEWG?

The National Turf Education Working Group (NTEWG) is a collection of representatives from the sports turf industry (AGCSA, Sports Turf Association, TGAA, various state superintendent and bowling greenkeeper associations) and Australian turf educators. The group was originally established in 2003 to review educational pathways and to establish an industry-supported training standard throughout Australia.

Meeting twice a year, the group not only works toward maintaining uniformity and quality in turf training and delivery, but is responsible for developing national delivery and assessment guides, teacher and student learning resources and providing feedback on the national curriculum. The AGCSA acts as the secretariat for the NTEWG with Simone Staples the group's principal contact – (03) 9548 8600 or email simone@agcsa.com.au.

Certificate III in Sports Turf Management		NSW	Qld	Vic	WA	ACT	SA
AHCOHS301A	Contribute to OHS processes	50	50	50	20	50	50
AHCIRG302A	Install irrigation systems	60	70	70	30	70	70
AHCMOM304A	Operate machinery and equipment	20	40	40	35	30	40
AHCPCM301A	Implement a plant nutrition program	40	60	60	30	60	60
AHCPCM302A	Provide information on plants and their culture	100	70	70	40	70	70
AHCPMG301A	Control weeds	70	70	70	30	70	70
AHCPMG302A	Control plant pests, diseases and disorders	70	80	80	35	80	80
AHCTRF301A	Construct turf playing surfaces	80	90	90	30	90	90
AHCTRF302A	Establish turf	60	60	60	30	60	60
AHCTRF303A	Implement a grassed area maintenance program	70	60	60	24	60	60
AHCTRF305A	Renovate sports turf	50	60	60	20	60	60
AHCWRK313A	Implement and monitor environmentally sustainable work practices	40	50	50	50	50	50
AHCDRG301A	Install drainage systems	50	50	50	30	50	20
AHCIRG306A	Troubleshoot irrigation* Transport, handle and store chemicals or other elective	40	50	50	30*	50	50
AHCSOL401A	Samples soils and interpret results* Prepare and apply chemicals or other elective	60	60	60	30*	70	70
	Total hours	**860**	**920**	**920**	**464**	**920**	**900**

three times less for the Diploma in Sports Turf Management. Diploma students in the West undertake a total of 399 hours compared to 1150 hours in Victoria, Queensland and South Australia.

The tables show the discrepancies in nominal hours between the states, however, the differences are much broader with some TAFE's under pressure to cut student contact hours (i.e.: class time) to save money even further. In NSW this is becoming particularly concerning with at least one TAFE cutting almost the equivalent of 12 months off the prescribed three year course in an effort to save money. And this with no warning or industry consultation.

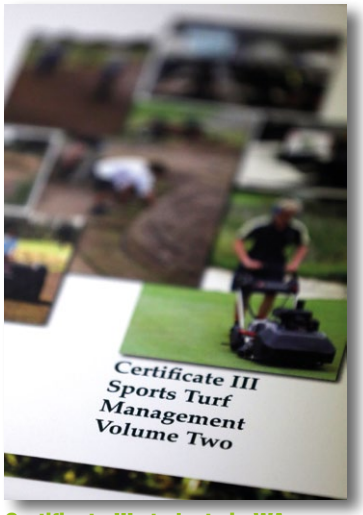
There has been a push to get more trades people into the turf management industry, but the answer is not dumbing down or reducing the time it takes to become qualified. More dialogue is needed between the turf industry, training providers and the state authorities in setting the hours assigned to deliver each unit of competency.

Measures also need to be put in place to ensure that training providers deliver those hours. A state or territory training council does not have the capacity to make such determinations without industry and experienced training provider input.

The NTEWG encourages all industry members to make informed decisions when choosing where to gain training. It recommends that industry practitioners should:

- Take into account the length and depth of the training provided;
- Make sure that the training organisation is using the Sports Turf Management Delivery and Assessment Guides (available through the AGCSA website - www.agcsa.com.au/education), which are minimum standards set down by our industry;
- Check that students have access to the NTEWG resource work books;
- Confirm that the TAFE college sends representatives annually to the National Turf Teachers Validation Meeting, so that national uniformity is maintained; and
- Ask how many hours of training will be delivered by qualified teachers and how many hours will be work site assessed.

The future of the turf industry relies on the training of our students. Be proactive in choosing a training provider and if you are not happy with the level of education being given, advise your industry association or the NTEWG.



Certificate III students in WA are completing their training in half the amount of hours as their interstate counterparts. This drops to nearly three times less for the Diploma in Sports Turf Management

Diploma in Sports Turf Management		WA	Vic	NSW	Qld	SA
AHCCHM501A	Develop and manage a chemical use strategy	50	80	50	80	80
AHCPCM501A	Diagnose plant health problems	45	120	100	120	120
AHCSOL501A	Monitor and manage soils for production	24	120	140	120	120
AHCTRF501A	Plan the establishment of sports turf playing surfaces	40	150	160	150	150
AHCBUS501A	Manage staff	35	140	100	140	140
AHCBUS508A	Prepare and monitor budgets and financial reports	60	140	100	140	140
AHCIRG502A	Design irrigation system maintenance and monitoring programs	30	80	100	80	80
AHCMOM501A	Manage machinery and equipment	40	90	60	90	90
AHCOHS501A	Manage Occupational Health and Safety (OHS) processes	30	90	50	90	90
AHCWRK505A	Manage trial and/or research material	45	140	100	140	140
	Total hours	**399**	**1150**	**960**	**1150**	**1150**

RAIN BIRD RELEASES R-VAN HAND-ADJUSTABLE ROTARY NOZZLES

Above and right: Rain Bird's R-VAN nozzles combine the benefits of rotary nozzles and variable arc nozzles into one product

AGCSA Silver Partner Rain Bird has unveiled its latest irrigation product which features both the efficiency of rotary nozzles and the versatility of variable arc nozzles. The R-VAN product line features the world's first hand-adjustable rotary nozzles, doing away with the need for specific tools to make necessary adjustments out in the field.

Mike Wendel, product manager for Rain Bird rotors and rotary nozzles, says that the R-VAN has come about from feedback and consultation with contractors and landscape designers who were asked what they liked and disliked about other adjustable rotary nozzles currently available on the market.

Along with their easy adjustment, R-VAN nozzles combine the benefits of rotary nozzles and variable arc nozzles into one package. A low precipitation rate reduces run-off and erosion, making R-VANs a good choice for sloped landscapes and compacted or clay soils. A high level of distribution uniformity, thick wind-resistant streams and larger water droplets ensure efficient performance, even in the most adverse conditions. They are also compatible with all models of Rain Bird spray bodies and a wide variety of risers and adapters.

"Retrofitting standard spray nozzles with R-VAN Adjustable Rotary Nozzles can reduce flow rates by up to 60 per cent and improve water efficiency by up to 30 per cent," says Wendel. "It's a relatively easy up-sell opportunity for contractors who want to help their customers use less water but still maintain healthy, aesthetically-pleasing landscapes."

The R-VAN product line currently includes two colour-coded models – the black R-VAN1318 with a radius of 4.0m-5.5m and the yellow R-VAN1724 with a radius of 5.2m-7.3m. Each model's arc is adjustable from 45 to 270 degrees and both come with a three-year trade warranty.

For more information about R-VAN Adjustable Rotary Nozzles, visit www.rainbird.com/RVAN or Freecall 1800 424 044. Watch the YouTube video at http://www.youtube.com/watch?v=FyNXr34XS0w

RAIN BIRD TRAINING WORKSHOPS

Rain Bird Training will be holding a series of irrigation workshops throughout Australia from April through to July. These technical classes will be focussed on irrigation and golf course control systems and the company's new Maxicom central control system.

The workshops focus are designed as a practical introduction to irrigation for those involved in golf clubs and sports facilities, horticulture, agriculture, shire councils and the landscape industry.

Week-long sessions on general irrigation and golf course control systems will be held in Sydney (15-19 April), Melbourne (6-10 May), Darwin (20-23 May), Perth (10-14 June), Adelaide (8-12 July) and Brisbane (8-12 July). Maxicom training classes will be held in Melbourne. The dates and venues will be announced closer to each workshop date.

To register call Rain Bird on 1800 225 512 or visit www.rainbird.com.au and click on the 'Irrigation Training' tab.

JOHN DEERE TEAM CHAMPIONSHIP QUALIFIERS CONFIRMED FOR 2013

Qualifying rounds for the 2013 John Deere Team Championship have been announced and will be conducted around Australia and New Zealand from April through to July. John Deere dealers are calling for nominations for the 2013 event, with the first qualifier set to tee off at Fox Hills Golf Club in Sydney on Monday 15 April. The other qualifiers will be held in Perth (Lake Karrinyup CC, 4 June), Adelaide (Mt. Osmond GC, 10 June), Townsville (Townsville GC, 5 July), Brisbane (Redcliffe GC, 8 July), Melbourne (Settlers Run G&CC, date TBC) and Bowral (venue and date TBC). Two qualifying events will also be held in New Zealand – North Island (Tauranga GC, 26 April) and South Island (Ashburton GC, 13 June).

Qualifying round winners will go through to the grand final where they will be hosted by John Deere, with airfares, two nights' accommodation and meals all included as a part of the prize. Golf clubs are encouraged to form a team comprising their course superintendent, club manager and a committee member and contact their nearest John Deere Golf dealer to secure a spot in the regional qualifying rounds.

For more information about the John Deere Team Championship, contact Rene Lubbers at John Deere on 0419 707 434.

THE R&A GETS COURSES ON TRACK

A free new online system that helps golf courses manage themselves more sustainably and efficiently has been launched by The R&A. Called CourseTracker - www.coursetracker.org - the new system was unveiled at the British and International Golf Greenkeepers' Association (BIGGA) 2013 Turf Management Exhibition in Harrogate.

CourseTracker is designed for golf course managers and club secretaries to record the income derived from the course and what is spent on its maintenance. The secure system allows golf clubs to monitor their performance over time and identify strengths, weaknesses and areas where savings can be made.

CourseTracker also enables golf clubs to anonymously benchmark their performance against that of other clubs of a similar size in their country. It produces performance reports for the use of course managers and club secretaries and can be used to aid decision making.

The R&A's Director – Golf Course Management Steve Isaac said: "There is more pressure than ever on golf clubs to make the right decisions to manage golf courses sustainably, efficiently and cost effectively. CourseTracker can help them do that through recording, monitoring and reporting their activities and inputs.

"CourseTracker is free, completely secure and can enable clubs to compare their performance with other clubs of a similar size and situation. The aim is to give clubs more information and understanding of their course maintenance activities to enable them to improve performance."

R&A
WORKING FOR GOLF

INDUSTRY APPOINTMENTS AND ANNOUNCEMENTS

KNIGHT RETURNS HOME TO HEAD UP NEW ORGANICS COMPANY

Well known expatriate golf course superintendent **Phil Knight** (pictured) has returned to Australia after nearly 19 years of working overseas to start up his own company – Long Paddock Organic Solutions. The former superintendent of The Lakes Golf Club, who has consulted and managed at golf related sportsturf facilities in 11 countries over a 40 year period, is now based out of Guyra, NSW (near Armidale) and his new company will be the major distributor for Charlie Carp organic fertilisers.

Liquid Organic Base as well as 100 per cent Natural Organic European Carp formulations will be sold under Knight's own Long Paddock Sportsturf Range brand. Long Paddock Organic Solutions has exclusive distributorship rights for sales and marketing of the Long Paddock Sportsturf Range within Australia and throughout the world. Knight will also be the major distributor for the Charlie Carp brand of products throughout NSW and Queensland. The Long Paddock Sportsturf Range will be commercially available from mid-March 2013. Knight can be contacted on 0408 533 090 or email longpaddockorganicsolutions@gmail.com.

ANNAN SWITCHES TO TERRITORY ROLE WITH SIMPLOT PARTNERS

AGCSA Bronze Partner Simplot Partners has added to its technical team with the appointment of **Garth Annan** (pictured) in early February. The Newcastle and North Coast turf amenity sales and technical specialist has joined as the company's new NSW territory manager, making the switch across from Nuturf where he held a similar role. Annan can be contacted on 0488 760 173 or email garth.annan@simplot.com.au.

SIMPLOT PARTNERS®
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SACCO JOINS ETP

Melbourne-based Endeavour Turf Products has appointed **Daniel Sacco** (pictured) to the newly created role of turf consultant. Sacco, who started his new role in mid-February, joins ETP from his position as turf manager for open space and sports field surfaces with Urban Maintenance Services. This role saw him involved with facilities such as Victoria Park at Collingwood. Sacco has also held past positions as head groundsman of the Maroochydore Multi Sports Complex and Epping Soccer Stadium. Sacco can be contacted on 0499 992 189 or email daniel.sacco@etpturf.com.au.

SCAIFE MAKES THE SWITCH

NSW-based Maxwell & Kemp started 2013 with a few staff changes, welcoming former Bonnie Doon Golf Club course superintendent **David Scaife** (pictured) and bidding farewell to **Alain Dupuis** who has resigned after four years due to personal reasons. Scaife, who surprised the industry in December 2012 by stepping down as Bonnie Doon superintendent after more than 10 years, started as a sales and technical representative for Maxwell and Kemp in early January. Scaife can be contacted on 0423 566 571 or email dscaife@maxwellkemp.com.au.

NEW FACES AT LIVING TURF

And in keeping with superintendents switching across to the trade, **Tony Fogarty** (pictured) departed Club Catalina Country Club after a 34 year period in mid-January to start as a technical sales representative for Living Turf. Fogarty, who was also an AGCSA board member up until his departure from Catalina, will service the NSW South Coast, Canberra and surrounding regions and can be contacted on 0407 100 401 or email tfogarty@livingturf.com

Fogarty is one of three new faces at Living Turf in recent times with **Wayne Ryder** and **Callum Marsh** also being recruited to head up the company's push into the Queensland turf market. Ryder (technical sales) can be contacted on 0407 500 101 or email wryder@livingturf.com. Marsh (logistics and sales support) can be contacted on 0409 200 700 or email cmarsh@livingturf.com

NORTON GETS NOD AT DLF

New Zealand-based DLF Seeds appointed **Oliver Norton** (pictured) as turf sales manager late in 2012. Norton makes the move across Tasman after a stint as a technical representative with Maxwell & Kemp supplying and servicing the Queensland sports turf industry. Norton, who is based in Auckland, can be contacted on 021 413 605 (from overseas +64 21 413 605) and by email on@dlfseeds.co.nz

Following the Australia Day storms that lashed southeast Queensland, the effectiveness of natural turf in reducing sediment loss was clearly evident. At left is the 'bare earth' plot (note the sediment collected in the outfall bay), while right is the 'full turf' plot showing no sediment

In control

Turf Australia's new erosion and sediment control facility at Redlands is helping to demonstrate to the building and construction industry that natural turf is a far more effective and sustainable option to prevent soil erosion.

Turf Australia
Grow Green
www.turfaustralia.com.au

Turf Australia is calling on the building and construction industry to adopt natural turf as a more effective way to protect sediment loss and runoff from construction sites. In its bid to educate the building and construction industry on preventing erosion and contamination of waterways and local communities, Turf Australia has partnered with Horticulture Australia Limited to fund the Erosion and Sediment Control Demonstration Facility in Redlands, QLD.

The facility, which is overseen by Shane Holborn (BioScience Australia) and has been operational since last spring, demonstrates research findings from a two year study by Dr Robert Loch, assessing the effectiveness of turf in combating soil erosion and controlling sediment run-off, compared to other materials currently being used in construction.

"Erosion control is essential in keeping the ground from moving during heavy rainfall," says Turf Australia president John Keleher. "This occurs when bare ground is exposed, leaving nothing to prevent the earth from literally washing away.

"This is an issue right across the country. Homeowners risk losing parts of their land to the effects of soil erosion and communities face contaminated waterways and streams. The building and construction industry, local government planners and landscape industry professionals must ensure sustainable measures are put in place."

The facility simulates overland waterflow of 200mm/hr, showing the movement of sediment following heavy rainfall events. In an unsurfaced area of 80m^2, the equivalent size of the average backyard, 484 kilograms of sediment is lost.

The demonstration shows natural turf is more effective than any other material, such as silt fencing, hydro mulch, silt socks and coir logs. In heavy rainfall, natural turf proved to be one hundred times more effective in preventing erosion than bare soil, also proving to be a crucial tool for sediment control.

Government regulations recognise the importance of soil erosion and sediment control measures, issuing hefty fines for not meeting these regulatory requirements.

"Sediment control slows down and stops dirt that has already moved, while preventing pollutants such as pesticides and excess fertilisers from entering our streams and waterways," says Keleher.

"It's important that the construction industry, local governments and landscape professionals recognise cheaper, artificial options are a false economy, requiring ongoing replacement and maintenance. Natural turf should be recognised as much more than an aesthetic contribution to property development. It is the most natural, sustainable and effective solution to prevent soil erosion."

Building and construction groups, as well as corporate bodies are encouraged to attend the facility to see the research in action and gain an understanding of the importance of turf in property development. The facility hosts open days and private events can be booked through the Turf Australia website www.turfaustralia.com.au.

The facility now also has its own dedicated Facebook page www.facebook.com/pages/Erosion-and-Sediment-Control/250427301723607 which will be regularly updated with videos, photos and erosion-related articles. A series of videos has also been recently uploaded by Holborn onto YouTube which provide an overview of the facility (http://www.youtube.com/watch?v=owif7vzEqTo) as well as some of the specific demonstrations of the various erosion control materials.

PHOTO COURTESY OF ASTC

The Erosion and Sediment Control Facility at Redlands assesses the effectiveness of turf in combating soil erosion and controlling sediment run-off, compared to other materials currently used such as silt fences, hydro mulch, silt socks and coir logs

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PERENNIAL RYEGRASS

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GCSAQ

Bundaberg Golf Club superintendent Sean Stuchbery lost all his possessions when floods ripped through his home in January

As a precaution, Indooroopilly Golf Club evacuated its maintenance facility when the Brisbane River rose again in late January

Many golf clubs between Brisbane and the Gold Coast were hammered over the Australia Day long weekend. Pictured is some of the flood damage at Windaroo Lakes

'As I write this the heat of summer has well and truly arrived and the word on everyone's lips is when is it going to rain?' Well, that's how I started my report in the last edition of ATM and although it took until the end of January, things certainly changed for the worse. There were many club's buying water to keep their greens alive, which is almost incomprehensible in south east Queensland during summer.

ATM editor Brett Robinson did a fantastic job of covering the subsequent flood events that occurred at many golf clubs throughout the state in the AGCSA's weekly email newsletter The Cut. And speaking of first class, there are few words to describe the generosity of the wider turf community in their assistance for Bundaberg Golf Club course superintendent **Sean Stuchbery**. The chips were certainly down for Sean who lost his home when the Burnett River broke its banks, but he and his family's spirits were certainly lifted with the fantastic support they received.

On to more pleasant things, the Queensland Golf Industry Awards were presented at Jupiters Casino on the Gold Coast in early March. The GCSAQ presented three awards on the night and we are proud to announce the following winners:

2012 SUPERINTENDENTS ACHIEVEMENT AWARD

Sponsored by Chesterfield Australia /John Deere
Winner: Dean Henderson (Palmer Coolum Resort)
Dean has been superintendent at Coolum since 2009 and was responsible for the grow-in of the newly designed holes at the course in the face of some extremely inclement weather. Despite that and with the Australian PGA Championship looming large, it went off without a hitch that year.

The recent new ownership of the Sunshine Coast resort has resulted in further challenges for Dean with staff reductions and operational controls enforced. Despite this, the course Dean produced throughout 2012 and then for the Australian PGA Championships could only be described as outstanding. The greens for the past two championships have been perfect and are testament to Dean's professionalism and commitment to his craft. Dean received a number of nominations for this award, including a glowing reference from the resort's general manager.

2012 SUPERINTENDENTS ENVIRONMENT AWARD

Sponsored by Bayer
Winner: Dave Morrison (Windaroo Lakes GC)
Dave, the GCSAQ treasurer, was actually nominated by Logan City Council which is the first time we have had a nomination from outside the turf community. Dean has been working alongside the council in a collaborative effort to improve environmental performance at Windaroo.

With a small staff and limited funding, Dave has undertaken numerous environmentally responsible initiatives including;

- A weed eradication project along the riverbank and in course waterways;
- A water quality improvement project which involved water quality testing and treatment;
- The removal of an ibis colony to improve both water quality and aesthetics of the course; and
- A revegetation project in specific areas to reduce erosion and improve aesthetics.

In the council's own words, "Dave has vastly improved the environmental value of the golf course and has gained much knowledge of the same". Considering Dave has a staff of just four, the decision to undertake such works is to be commended, although after suffering some major damage in the recent floods he might have wished he had raised the levee bank a bit!

2012 SUPERINTENDENTS INDUSTRY RECOGNITION AWARD

Winner: Jon Penberthy
Jon has been a stalwart of the Queensland industry since arriving from Melbourne in the 1980s. A long stint as superintendent at Gainsborough Greens was followed by some time in the same role at Tewantin Noosa before joining the turf research team at Redlands Research Station.

Throughout his time in the industry Jon served on the committee of the GCSAQ, including stints as secretary and president, and also served on the AGCSA Board as treasurer. Jon is one of the most likeable people you could meet and has made a lasting contribution to our industry.

PETER LONERGAN
PRESIDENT, GCSAQ

STA ACT REGION

Here in the ACT region we have enjoyed great conditions for growing warm-season grasses but very challenging for cool-season grasses. It is the centenary year here in Canberra and as a result we are hosting some major sporting events.

You would have read earlier in this edition that Royal Canberra Golf Club (course superintendent **Michael Waring**) hosted the 2013 ISPS Handa Women's Australian Open from 14-17 February. All the staff worked tirelessly preparing the course and despite the challenging lead-in the course looked a treat on the ABC telecast.

The Prime Minister's XI cricket match against the West Indies was the first game to be played under the brand new lights at Manuka Oval. The lights were sensational and should ensure we host many more major cricket matches here in Canberra. The pitch and outfield were a credit to **Brad Van Damme** and his staff. There was no time to rest however as they quickly turned around and hosted an international between Australia and the West Indies on 6 February, the first international cricket match to be held in Canberra under lights.

On Friday 19 April Canberra Stadium will be hosting the first ever Rugby League test to be played here between Australia and New Zealand. Canberra Stadium is of course home ground of the Canberra Raiders (NRL) and ACT Brumbies (Super 15) and once again will showcase the terrific sporting venues here in Canberra.

The STA ACT is pleased to announce that the candidates for this year's ACT Living Turf Apprentice Greenkeeper of the Year are:

- **Thomas Jones** (Bermagui Country Club)
- **Luke Jorgensen** (Federal Golf Club)
- **Matthew Beckman** (Turf Management Australia)

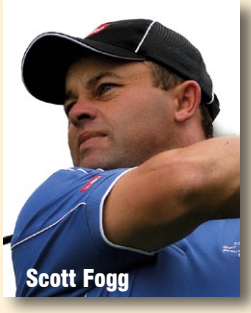
The annual STA ACT Golf Day will be held this year at Gold Creek Country Club (superintendent **Scott Harris**) on 9 April and the annual turf seminar has been scheduled for Wednesday 24 July. We have a great list of speakers and topics lined up including **John Neylan** (growth inhibitors), **Michael Waring** (course preparation for the Australian Women's Open), guest speaker **John Odell, Phil Ford** (winter wear on couch coming out of dormancy) and **Brad Van Damme** (light installation and preparation for the ODI match at Manuka Oval.)

DANNY HULL
COMMITTEE, STA ACT REGION

BIRDIE BLITZ SEES FOGG FINISH RUNNER-UP AT GCSAA CHAMPIONSHIPS

2012 Toro AGCSA Golf Championship winner **Scott Fogg** finished runner-up at the 2013 GCSAA National Championship played at Torrey Pines in San Diego in early February. The Queanbeyan Golf Club course superintendent and current AGCSA champion posted a two round total of 148 to finish tied for second at four over the card, just one shot off victor Charles Costello. It is the best finish by an Australian superintendent in the event.

After an opening round 77 on Torrey Pines' South Course, venue for the 2008 US Open and which the week before had hosted the PGA Tour's Farmers Insurance Open, Fogg fired a closing round one-under 71 to nearly force a playoff. Fogg's 71 was the second best score of the day, only bettered by defending GCSAA champion Michael Stieler who shot two-under for the day to also finish tied for second.


Scott Fogg

Playing off +1, Fogg found the conditions tough for the opening round, shooting a five-over 77. Beginning the final round four shots off the lead, Fogg got off to an ominous start with double bogeys on two of his first three holes. But birdies on the par five 6th and 9th holes steadied the ship before he sunk a 20-foot par on the par 3 11th which saw him just one over after the first nine holes.


Torrey Pines' South Course hosted the GCSAA championships

Fogg went on to post two more birdies on the 16th and iconic par five 18th, the latter being one he will keep in the memory banks. "In the second round we played the same Sunday pins that they played for the Tour event the week before. The pin on 18 was cut down by the water and I hit the green in regulation and made two good putts. I'll remember that for some time."

With the leaders in the groups behind starting to falter, Fogg went close to snatching one final birdie on his last hole (the 2nd) but could only manage par to finish tied with Stieler and San Diego-based superintendent David Buckles on 148 (four-over). Fogg will now go on to defend his Toro AGCSA Golf Championships title at Twin Waters Resort (superintendent **Gary Topp**) in June.

NSWGCSA

New NSWGCSA president Martin O'Malley

The start of 2013 brought with it some major changes following the departure of **Craig Molloy** as NSWGCSA president. Craig informed the board in late January that he had accepted the position of general manager at Shortland Waters Golf Club, which he started on 4 February.

As a result, incumbent NSWGCSA committee member and Lynwood Country Club course superintendent **Martin O'Malley** was appointed mid-February as interim president which will be confirmed at the association's AGM to be held later this year.

Martin has been Lynwood Country Club superintendent for the past five years and prior to that was at Riverside Oaks for 12 years, including nine as assistant and three as course manager. O'Malley joined the NSWGCSA in 2009 and has been handling the Environment portfolio since that appointment. Martin will carry on from Craig with the roll out of the NSWGCSA Environmental Minimum Standards programme to all NSW golf courses.

As a result of change in presidency, there has been a small reshuffle of the remaining NSWGCSA committee positions. The new-look structure is:

- **President:** **Martin O'Malley** (Lynwood CC – Environment)
- **Secretary:** **Ryan Fury** (Killara GC)
- **Treasurer:** **Steve Jacobsen** (Carnarvon GC – Environment)
- **Committee:** **Malcolm Harris** (Northbridge GC – Education and Awards); **Matthew Goodbun** (Newcastle GC – Newsletter); **Stuart Hall** (Asquith GC – Advertising, Sponsorship and Merchandise); **Dennis Grounds** (Club Catalina CC – Field Days); **Shane George** (Shellharbour – Field Days) and **Alison Jones** (Administration, Membership and Environment).

The NSWGCSA Board of Directors encourages members to consider nominating for the NSWGCSA committee. This provides a fantastic opportunity to learn more about the golf industry as well as giving back to your fellow associates. The association has administration support for all directors and interested members are urged to contact any of the board members or admin@nswgcsa.com.au

ALISON JONES
ADMINISTRATION OFFICER, NSWGCSA

NZGCSA

Lochiel Golf Club in Hamilton will play host to the 2013 NZGCSA Golf Championships

While our trans-Tasman cousins have had a tough time of it this past summer, most of New Zealand's golf courses have also been battling some extreme weather conditions. Courses in Auckland, Christchurch and the Hawkes Bay region have received only single digit amounts of rainfall over the last 3-5 months, while others have received above normal rainfall.

Looking ahead in 2013, the NZGCSA is finalising its awards programme. The NZGCSA Excellence Award, supported by John Deere, is in the final stages with three superintendents being judged on their golf course management skills. The winner will receive a $5000 education grant.

Closing date for nominations for the NZGCSA Environmental Award, supported by PGG Wrightsons, is 31 March and the NZGCSA committee encourages all members to apply for this prestigious award. The award is judged by the NZGCSA and with the change in format this year both the club and course superintendent will benefit financially from taking out the award.

It has also been a busy time for all regional associations with most having their AGMs and finalising the year's programmes. The big event, however, will be on 17-18 June when the various sectors of the turf industry gather for the New Zealand Turf Conference and Trade Show in Hamilton.

We are very fortunate to have secured course superintendent **Richard Forsyth** from Royal Melbourne Golf Club and **Dr Thom Nikolai** from Michigan State University (USA). These two speakers have a huge amount of knowledge between them both practically and in research. Headlining some of the other sessions are:

- **Will Bowden** (SSDM)
- **Leo Barber** (Paraparaumu Beach GC)
- **Dr Henk Smith** and **David Wells** (Syngenta)
- **Dr Phil Ford** (University of Ballarat)
- **Mark Hooker** (Royal Auckland GC)
- **Peter Frewin** (AGCSA)

RYAN IRWIN
PRESIDENT, NZGCSA

STA WA

In 1971, when Prime Minister, the Hon. Malcolm Fraser paraphrased George Bernard Shaw with that famous clanger 'Life is not meant to be easy', he left off the remaining part of the line which was "But take courage, it can be delightful". From this we know two things – politicians rarely tell the whole story and secondly 'No s**t Sherlock!'

I'm sure many of my compatriots about this sunburnt country of flooding rains have simply delighted in their struggles against the elements during the last few months. Here in the West a nice drop of rain would actually be delightful, a steady downpour would even be considered mildly fantastic. I don't want to insult my friends in the East, but you really do seem to be having all the fun these days.

Besides weather events, 2013 is certainly shaping up to be memorable. The STA WA committee is busy trying to organise and confirm a number of events for the coming 12 months. As I was writing this we were about to head off and enjoy our belated end-of-year social gathering at the WACA ground on 19 February for a day at the cricket.

Already confirmed is the 2013 WA Turf Seminar scheduled for 17 July at the Rise Function Centre in Maylands. This is the biennial seminar that will showcase findings from the University of Western Australia's turf industry research projects as well as other noted speakers and topics affecting the WA turf industry. The guiding theme for this seminar will be looking at the direction and preparedness that government and industry are applying as we anticipate the challenges of climate change.

We are also organising a few workshops and another seminar, with details of these to follow.

TONY GUY,
PRESIDENT, STA WA

SAGCSA

2013 started very dry and warm in most parts of South Australia. There are many clubs around the state that have very low water supplies and being forced to water essential areas only. But that is the industry we're in and we tend to make most of tough situations.

Our first meeting for the year has been changed from the Barossa Valley Golf Club to Flagstaff Hill Golf Club in early March. Long serving course superintendent Gary Day will host the day, starting with golf in the morning, followed by a course inspection, machinery demonstration and lunch. We hope to see as many members as possible to this day and to events throughout the year.

BARRY BRYANT
PRESIDENT, SAGCSA

STANZ

As we move towards autumn in New Zealand we can reflect on what has been a challenging hot and dry summer across much of the country. The lack of rainfall in conjunction with intense periods of heat (for New Zealand standards) has put many of our turf areas under significant pressure leading into autumn and winter sports.

STANZ has a busy season planned with the highlight being the biennial conference that will be returning to the Claudelands Convention and Exhibition Centre, Hamilton from 17-18 June 2013. The New Zealand Turf Conference and Trade Show 2013 will feature:

- A new two-day conference format with optional extra activities;
- Four keynote speakers and over 15 breakout sessions in each sector group;
- A two day trade show; and
- Combined Earlybird rates for both conference registration and accommodation.

For more information and to register your interest in attending this event visit http://www.turf2013.co.nz

IAN MCKENDRY
CHAIRMAN, STANZ

ON THE MOVE

Glenn Beauclerc: Departed as superintendent Palmer Colonial Resort, QLD in late 2012.

Chad Dawe: From superintendent Mt Lofty Golf Club, SA to superintendent Willunga Golf Club, SA.

Steve Gaze: Departed as superintendent of Wollongong Golf Club, NSW to take up a position in the mining industry.

Dennis Grounds: From superintendent Young Golf Club, NSW to superintendent Club Catalina Country Club, NSW.

Paul Irvine: From foreman, East Course, Royal Melbourne Golf Club, VIC to superintendent Howlong Country Golf Club, NSW replacing departing superintendent Brett Skinner who has left the golf course industry.

Craig Molloy: From superintendent to general manager Shortland Waters Golf Club, NSW.

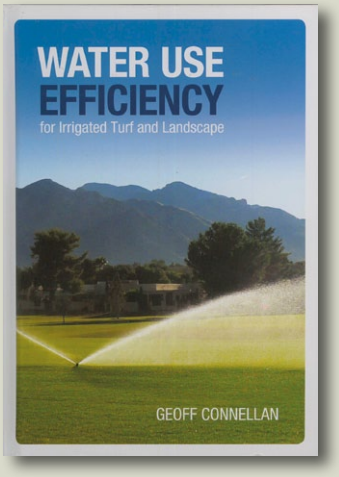
Brendan Warby: Departed as superintendent Highlands Golf Club, NSW to start up his own laser levelling business – Highlanders Laser Services.

WATER USE EFFICIENCY FOR IRRIGATED TURF AND LANDSCAPE

By GEOFF CONNELLAN
CSIRO PUBLISHING, 2013
RRP: $140

As southern Australia again experiences a period of very dry weather, we are once more reminded of the importance of water management in the urban environment. Geoff Connellan's new book 416-page **'Water use efficiency for irrigated turf and landscape'** released this February comes at an opportune time when turf and landscape mangers are again having to assess the effectiveness of their water management.

Connellan has been involved with turf and urban horticulture water management for over 30 years. As a researcher, educator and consultant he has published numerous papers on water management, irrigation design and water use efficiency. The AGCSA has used Geoff's expertise to undertake water management workshops and to provide resource materials for the Water Initiative website (http://water.agcsa.com.au/). 'Water use efficiency for irrigated turf and landscape' is an excellent compilation of this vast knowledge and experience.



The book covers all aspects of water management from the source to the plant rootzone and will be a valuable reference for turfgrass managers, agronomists, horticulturists, students, engineers and irrigation designers. Major topics include managing a sustainable water supply, water use efficiency, calculating water demand, system design, water quality, irrigation performance evaluation and water management planning.

This book is written from an Australian perspective and provides a thorough examination of irrigation in an arid and often unpredictable environment. The first chapter on sustainable water use and water use efficiency sets the philosophy of the book and compliments the futuristic chapter on climate change and how it could affect irrigating turf and landscape areas into the future.

This technical book is very comprehensive with numerous tables, figures and diagrams to assist the reader to understand the concepts presented. It is in effect a 'one stop shop' reference on all aspects of irrigation, whether it is for landscape, lawns, trees, sportsfields, racetracks or golf courses.

The book also contains many references and tables of information that can be used as a 'ready reckoner' whether you are planning a new irrigation system or better understanding an existing system. The book has several worked examples and step by step guides and checklists that assist the reader to work through what can often be a complex and confusing subject.

There is a very good section on water sources for irrigation including rainfall harvesting and stormwater runoff, including useful guides as to how to calculate the potential volume of water that can be realistically collected. The book also discusses recycled water and grey water, water quality and the specific management requirements when managing different water sources. While irrigation design is a specialist area, the chapter on irrigation design is detailed and will be very useful in assisting the turf and landscape manager to ask the right questions when undertaking a new irrigation project.

Best Management Practice irrigation principles are outlined and their implementation in open space turf and landscape situations explained. The water management planning template provides a detailed guide as to how to evaluate what practices are currently being undertaken and to identify the key areas for improvement.

Water continues to be a precious resource and critical in turf and landscape management. 'Water use efficiency for irrigated turf and landscape' is strongly recommended. **– John Neylan**

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Mark Jennings & Jim Waring with the Box Hill Golf Clubs Lowara Hydrovar pump set

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- Mark Jennings Superintendent Box Hill Golf Club

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