

Turfgrass



VOLUME 18.2 MAR-APR 2016

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2016 Women's Australian Open

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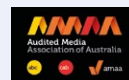
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LEAD STORY: 2016 Grange a great vintage – ISPS Handa Women's Australian Open review 6

Major tournament golf made a spectacular comeback to Adelaide in mid-February when The Grange Golf Club hosted the 2016 ISPS Handa Women's Australian Open. Huge galleries coupled with unprecedented player feedback on the tournament and the conditioning of the course made for a memorable week, with The Grange setting the bar high for the likes of Royal Adelaide and Kooyonga to follow in the coming years. ATM editor Brett Robinson caught up with The Grange course superintendent Richard James on the eve of the tournament to look at his preparations and the high level of presentation achieved. As part of ATM's Open review, we also head west to check out the fourth ISPS Handa Perth International which was once again held at the immaculately presented Lake Karrynup Country Club.

COVER

The Grange Golf Club: Looking from behind the 9th green of the West Course with the 3rd in the distance. **Photo:** Brett Robinson.

FEATURES



Best of Bothe worlds 18

In 1998 Stuart Bothe left the small Victorian township of Nhill and landed in Naples, Florida to embark on an internship through Ohio State University. Some 18 years later Bothe is ensconced Stateside and for 12 of those has been superintendent at Vanderbilt Country Club. ATM also checks in with Fiji-based ex-pats Ryan Markwell, Corey Finn and Steve Lalor in the aftermath of tropical Cyclone Winston.



To rebuild or not rebuild? 26

The prospect of having to rebuild one, a few, or all of the putting greens on a golf course is never popular because of the major disruptions to play and course operations, not to mention the cost. But as USGA agronomists John Foy and Larry Gilhuly write, many agronomic factors must be considered first before contemplating such a major project.



Cutting edge 42

USGA agronomists Brian Whitlark and John Daniels discuss optimising mower unit set-up which can have a profound impact on the health, quality and playability of putting greens.



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GRASS-ROOTS WITH JOHN NEYLAN Indian summer 36

On two occasions over the last few months ATM columnist John Neylan has travelled to India to provide agronomic advice and training to local greenkeepers. Here he looks back at his time on the subcontinent and also discusses some of the preventive programmes sports turf managers can put in place to prepare their grounds for the rigours of winter play.



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Contributors to Australian Turfgrass Management Journal Volume 18.2 (March-April 2016)

Brendan Allen (NZGCSA); Stuart Bothe (Vanderbilt CC, USA); John Daniels (USGA); Bruce Davies (NTEWG/CIT); Dennis Dewell (STA SA); Corey Finn (Laucala Island Resort, Fiji); John Foy (USGA); Peter Frewin (AGCSA); Larry Gilhuly (USGA); Stuart Gill (NSWGCSA); Neil Graham (GCSAWA); Tony Guy (STA Australia/STA WA); Danny Hack (Bairnsdale GC); Scott Harris (STA ACT); Richard James (The Grange GC); Steve Lalor (Natadola Bay Golf Course, Fiji); Ryan Markwell (Denarau Golf & Racquets Club, Fiji); John Neylan (Turfgrass Consulting and Research); Andrew Peart (AGCSATech); Kellie Rose (STANZ); SMP Images; Richard Stephens (Turf Australia); Trevor Strachan (Lake Karrynup CC); Ben Tilley (GCSAQ); David Warnaar (Warrnambool GC); Brian Whittark (USGA); and Garry Woolard (STA Vic).

A super's work is never done

Tournaments are always an exciting time and certainly rate as one of the most enjoyable aspects of my role as editor of Australian Turfgrass Management. Being up at first light to see superintendent and crew in action is extremely rewarding and the coverage ATM subsequently gives to such events hopefully goes a little way to recognising the huge effort that is put into showcasing a course for the game's elite.

While the players, spectators and officials can see the crew going about their course preparations – cutting greens, fairways and tees, raking bunkers, hand-watering greens – it's the behind the scenes stuff outside of the course environment that most are oblivious to. Although having a fair idea of what a superintendent has to put up with, I got a first-hand reminder of the diverse nature of a superintendent's role while sitting down to interview The Grange Golf Club superintendent Richard James a day out from the start of the 2016 ISPS Handa Women's Australian Open in February.

Having already put back the interview by an hour so he could attend a meeting and then quickly complete the payroll for his staff that week, in between hastily scoffing down his lunch and answering my inane questions over a two hour period, on 10 occasions James either took a phone call or had an unannounced visitor to his office seeking his advice or assistance. Whether it was a bogged ute, dealing with course set up issues or discussing preparations ahead of the opening round, it was intriguing to see James in full flight. What was most impressive, however, was the good grace, calmness and humour with which James handled every single interruption or demand of his time, exemplifying the professional nature which is the hallmark of the modern day course superintendent.

Anyone who saw first-hand the surfaces presented at The Grange for the Open would attest they were immaculate and in this edition we dedicate a number of pages to covering the event and the fantastic job James and his team did. We also head West to check out another successful ISPS Handa Perth International where Lake Karrynup again presented superbly thanks to the efforts of superintendent Trevor Strachan and his crew.

To end on a sombre note, it was sad to hear the news of the sudden passing of former Robina Woods superintendent Mark Jarzabek in February. A number of former industry colleagues, including past AGCSA president Jeff Gambin and Board member Jon Penberthy, attended his funeral and were shocked to learn he had battled depression.

Mental health issues are so prevalent throughout society and the increasing demands being placed on course superintendents and turf managers has meant its incidence in our industry is on the rise. It is something that the AGCSA and other turf associations are proactively addressing by educating members, but at the end of the day it comes down to an individual level – about being vigilant and not being too proud to seek help.

As Phil Beal, superintendent at one of the most high profile golf clubs in Australia, eloquently stated in our lead article in the last edition about his own personal mental health battles in recent times, just to be able to talk openly and honestly about your troubles is so cathartic and helped him to process the mire of thoughts and feelings he was experiencing.

One of the endearing qualities of our industry is the mateship and camaraderie among its members and having one another's back. If you or someone you know of is struggling then it's important to reach out to colleagues, family and friends or call an organisation like Beyond Blue. The most important thing to remember is that you're not alone and that there is help out there. Enjoy the read...



Brett Robinson, Editor



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Yelverton adds to class line-up for Melbourne conference



Golf Australia

While the calendar would indicate that summer is behind us, some of the temperatures and weather events being experienced around the country suggest that summer is happy to continue into a fourth month. Swan Hill in Victoria has seen maximum temperatures hovering around 40 degrees for the first week of autumn, while up north the wet season has come late to some regions thanks to the remnants of tropical Cyclone Winston.

I had the pleasure of attending the Golf Industry Show (GIS) in San Diego in early February where I was fortunate enough to sit in on a couple of sessions presented by speakers who have expressed interest in travelling to our event in coming years. It is wonderful when people *approach us* to make the trip to Australia to present, such is the reputation that the Australian Turfgrass Conference carries on the international stage.

For those that may not have been to San Diego, it is a great city and this year, with southern California experiencing significant drought, the weather for visiting delegates was perfect. It was also great to catch up with those Australians who made the trip this year and while there were only about a dozen practitioners there was a large contingent from the trade. One of the highlights of the week is the opportunity to catch up with ex-pat Australian superintendents working around the world. Keep an eye out for a couple of articles

in this and coming editions of ATM; ex-pat articles always prove popular reading and the upcoming features should not disappoint.

As reported in the previous edition of ATM, Mike Richardson will not be presenting at the 32nd Australian Turfgrass Conference in Melbourne. I am pleased to confirm that we have secured **Professor Fred Yelverton**, extension specialist with the Centre for Turfgrass Environmental Research and Education at North Carolina State University. As many would be aware Fred is a semi-regular visitor to Australia and spoke at our conference in Brisbane in 2006.

Fred is one of the world-leading researchers regarding the management and control of *Poa annua* and I am sure he will be greeted with many questions from delegates looking for some quality

advice and the 'silver bullet'. I had the pleasure of catching up with both Fred and his fellow Melbourne conference keynote **Dr Frank Rossi** at the GIS and they are both very much looking forward to the trip in June. And just as a heads up, be sure to keep an ear and eye out for more news regarding one of our guest speakers as we get closer to the conference.

In other news regarding the conference, I am pleased to advise that **Golf Australia** has come on board as a principal partner for the event. As the peak body for golf in Australia

it is pleasing that they are willing to contribute to the education of those that prepare the courses



Professor Fred Yelverton



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on which golfers play. Thanks must go to chief executive officer **Stephen Pitt** and golf development director **Cameron Wade** for their support in this partnership; it is greatly appreciated.

While on the subject of conference partners, I would also like to thank those companies that have signed on as major sponsors – **HybridAg, Jacobsen, Nuturf, Rain Bird, Syngenta and Toro**. This year in the trade exhibition, which as usual is free to enter, there will be free educational sessions on the Wednesday and Thursday. Our major sponsors will be presenting on the trade exhibition stage and it will give the opportunity for all that attend to not only see what is new in the industry but also hear from our industry leaders.

Finally, as this edition of Australian Turfgrass Management goes to print, the AGCSA Board will be meeting where the Strategic Plan will be formally adopted. A part of the strategic direction is to 'enhance member engagement through the use of social media'.

For those Twitter users out there, you are probably aware that @AGCSA2 has been active since August 2015 and we have developed a good following. I am pleased to advise that you will also now find me on Twitter @AGCSACEO. Twitter is a fantastic medium to get news out to the industry and given I rarely partake in alcohol it should be pretty safe! I look forward to making contact in the 'Twittersphere' at some stage.

I look forward to catching up when our paths next cross and please feel free to contact me at any time if you have an issue or suggestion; any feedback is greatly appreciated. 🍷



The Tru-Turf (top) and Brandt (above) stands at the Golf Industry Show in San Diego

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2016 Grange a great vintage

Major tournament golf made a spectacular comeback to Adelaide in mid-February when The Grange Golf Club hosted the 2016 ISPS Handa Women's Australian Open. Huge galleries coupled with unprecedented player feedback on the tournament and the conditioning of the course made for a memorable week. ATM editor Brett Robinson caught up with course superintendent Richard James to look at his West Course preparations.



Seven minutes and 25 seconds. The mobile phone of Richard James, course superintendent at The Grange Golf Club in Adelaide, vibrates and flashes on his desk. Interview recording stops. On the other end is The Grange general manager Barry Linke. Crowds for the 2016 ISPS Handa Women's Australian Open Pro-Am have



been bigger than expected so there is talk of having to rope off another fairway on the East Course to cater for the traffic come the weekend. They discuss exit points and managing wear on the turf.

James then explains what he will be doing to those holes after the tournament – “They’ll look a bit crusty after all that traffic but I’d rather them dry and crispy than wet and muddy. We’ll get the Vertidrain out there early next week, open them up and give them a feed. They’ll come back pretty quickly.” The tournament hasn’t even started and already James’ mind is on the aftermath.

23 minutes and 13 seconds. Phone rings again; it’s Josh from the clubhouse. Recording paused. “Do I know how to move a parked car?” James repeats the question aloud. His eyes roll. Someone has parked their car in front of three others. With a wry smile James replies, “I can bring the front end loader up but I don’t think they’d like the result. Might have to get in a tow truck.”

38 minutes and 47 seconds. It’s Adam from Golf Australia. Recording halted – a third time! James chortles. Add another bogged ute to the week’s tally! “I’ll send Reece up with the bobcat.” The bobcat has had its biggest workout in months – its record so far for the week stands at four bogged utes and a truck. After hanging up James recalls an incident earlier in the week when one of the ABC TV guys, god bless him, got bogged in a sandy area by the women’s 3rd tee, despite having been told not to drive in that area. After being pulled out by one of James’ crew and instructed WHERE TO DRIVE, he proceeds to



PHOTOS: BRETT ROBINSON



Main photo: The Grange Golf Club's West Course was a picture for the 2016 ISPS Handa Women's Australian Open

Above: The 2016 event was the first time the Women's Australian Open had returned to Adelaide since 1994. Pictured is the 6th

Bottom left: The Grange superintendent Richard James could afford himself a smile with the excellent level of presentation achieved

drive forward and straight back into where he was bogged just moments earlier. "Don't get me started on the TV guys," says an exasperated James. "Don't get me started..."

43 minutes and six seconds. It's Golf Australia again. Bugger this, the voice recorder can keep running! Qantas want to erect a marquee on the 18th. Can you come and supervise? "I'm busy at the moment. Give me 30 minutes." James hangs up and comments, "Well, at least they called first and didn't just start banging stakes into the ground!"

48 minutes even. A Golf Australia official walks into the office. "Excuse me, do you know anything about a rules officials meeting?" James points him in the direction of the maintenance staff lunchroom which has been commandeered last minute for a rules briefing.

52 minutes and 44 seconds. It's the big boss – Golf Australia tournament director Trevor Herden. "Better take this one," smiles James. A discussion ensues about whether the huge sandy waste areas along the 1st and 3rd holes of the West Course will be played as bunkers. Yes they will; the boys will be rapt, not. "Do you want some definition on the back edge?" enquires James, harking back to the World Amateur Teams Championship in 2008 when The R&A requested that James and his crew go out with shovels and create a lip on the back edge of these areas. "No, just prepare them as you would normally," Herden replies. Phew, small win there.

66 minutes and 12 seconds. It's Golf Australia again regarding the Qantas marquee. "Tell them to go and have lunch and I'll get there as soon as I can."

67 minutes and 56 seconds. "Right, that's every Golf Australia official with a phone that's rang me in the past hour, but you're the most important mate," laughs James. There's silence for a few seconds

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Drazen Vincekovic cuts the 8th green. The Penn A1 greens were maintained at 2.8mm and stimped in the mid-11s

before James speaks slowly and deliberately, “So, let me get this straight. The pine needles that were originally there that *you* asked for us to *take away*, you now want *back* there. No worries mate, all good, we’ll get onto it.”

75 minutes and eight seconds. It’s Herden again but this time he comes striding into James’ office. “Hope I’m not interrupting,” he grins. “What’s the plan after the Pro-Am?” he enquires of James. “We’ll cut everything except the greens, unless you want us to,” James responds wryly, already knowing what the answer will be. “No,” Herden smiles knowingly back. “Will you get everything done in the morning?” “Yes, no worries. We’ve got four fairway units now – Jacobsen have come through with a demo unit so we’ll be flying,” says James. “Excellent!” says Herden before striding back out.

80 minutes and five seconds: James grabs one of his crew who has had the misfortune of walking into the office at the wrong moment, instructing him to go out and assist the Qantas marquee guys.

122 minutes 45 seconds. Recording stops, interview over, finally. “The phone hasn’t rung for 40 minutes Richard, what’s up?! Is it dead? Thanks

mate, really appreciate your time; reckon that’s the longest interview I’ve ever conducted with a superintendent!”

The above is just a two hour snapshot of Richard James’ week during the 2016 ISPS Handa Women’s Australian Open which landed at The Grange Golf Club in Adelaide from 18-21 February. It perfectly highlights just what a superintendent has to contend with when tournament golf comes to town, but in reality it’s not too far removed from what is now perhaps one of the most highly diverse roles in golf course management.

Even in the hour leading up to the interview with Australian Turfgrass Management, as the biggest name in women’s golf Lydia Ko was striding the West Course fairways during the Pro-Am, rather than following her around James was in front of his computer sorting out that week’s payroll for his crew. A superintendent’s work is never done, even when you’re about to host the most prestigious tournament in Australian women’s golf!

“It’s just what we do,” says James, who has also managed to hastily consume a baguette and answer some pretty inane questions from a turf journo in

2016 ISPS HANDA WOMEN’S AUSTRALIAN OPEN – THE GRANGE GC



The Grange foreman Jeff Gillies syringes the 7th green and collar after the opening round

Superintendent: Richard James.

Previous tournament experience: Seven Jacob’s Creek Opens at Kooyonga (as assistant superintendent and member of groundstaff); 2008 World Amateur Team Championships (Eisenhower and Espirito Santo trophies); 2008 and 2014 Australian Amateur Championships; 2015 Astor Trophy (formerly known as the Commonwealth Trophy, the Astor Trophy is contested once every four years between the best amateur women among Commonwealth nations).

Key senior staff: Rowan Daymond (senior assistant), Brad Ayres (second assistant) and Jeff Gillies (foreman/3IC).

Turf: West Course – Penn A1 greens, Santa Ana couchgrass tees, fairways and surrounds with small percentage of common couch; East Course – Penn A4 greens, Santa Ana elsewhere.

West Course Open set-up: 6037m, par 72. Hardest hole for the week – 15th. Easiest hole for the week – 13th.

Crew: Normal Grange crew for 36 holes is 22, including James and two mechanics. Crew was

increased to 24 at renovations last September then a couple of casuals added a month out from the tournament. Starting tournament week, nine volunteers from Kooyonga (2), Royal Adelaide (2), Flagstaff Hill, Adelaide Shores, Mt Osmond, The Dunes Port Hughes and Links Lady Bay joined, bringing total tournament crew numbers to 34.

Preparations: Greens double cut in mornings only (up and back on the same line) at 2.8mm (normally 3mm for members). Stimped around the mid-11s during the tournament. TDR moisture probe and Tru-Firm measurements recorded throughout the tournament. Collars were walk mowed at 6mm (no stripe) and tees walk mowed at 6mm (striped). Fairways, which are normally cut at 10mm for member play, were taken down to 9mm for the tournament and pattern cut (two angles). Fairway shapes were identical for the tournament. Tee surrounds cut at 15mm and roughs 57mm. All bunkers hand-raked (faces broomed) including the big waste bunkers on the 1st and 3rd holes. Greens/collars syringed in afternoon if required.

Did you know... The 2016 Open proved to be a fitting finale for Grange crew member Kane Pedler. Within hours of the Open concluding, Pedler flew out to the US to start an internship through The Ohio Program. Pedler, who originally hails from Renmark, SA, has taken up a placement at Robert Trent Jones Golf Club, the crew of which also has the honour of taking care of the putting green at the White House. During his time there he is set to volunteer at the 2016 US Open at Oakmont Country Club and the Quicken Loans National PGA Tour event at Congressional Country Club in June.

between dealing with the above disruptions and distractions. "It's a real diverse role and you have to be adaptable. You've got to be able to communicate with someone like Trevor Herden as well as a 17-year-old first year apprentice who is new to the job and never worked a tournament before.

"There's such a diverse range of people that you have to deal with and problems you have to solve. You've seen how many phone calls I've taken just now. I guess the young guys on the crew see you on the phone all the time or in the office, or out driving around seemingly not doing much, but there is so much more to it than just the turf.

"Ultimately what is most important are the playing surfaces and the golf course, but to be honest this week most of my time has been taken up dealing with other stuff rather than the turf. That's where all the planning comes to the fore and having good senior staff, guys like Rowan (Daymond, senior assistant), Brad (Ayres, second assistant) and Jeff (Gillies, foreman). They are so critical to what we do. They're across everything that's out on the course and I know they'll be looking at things the way I do. You couldn't do something like this without those guys."

SPECTACULAR RETURN

By the time little-known Japanese professional Haru Nomura was holding aloft the Patricia Bridges Bowl after a stunning final round seven-under 65 to



win the Open by three shots, all the above issues had been long forgotten. Along with members and club staff, James and his crew were enjoying the accolades that were flowing from all corners on the magnificent job they'd done in showcasing just how good The Grange Golf Club is.

Golf Australia's decision to bring the Open to Adelaide, the first major golf event the state capital has hosted since the last Jacob's Creek Open in 2007, ended up quite the masterstroke. The Adelaide golfing public turned out in their droves and more than 30,000 spectators flooded the course over four days, setting an impressive benchmark for nearby Royal Adelaide and Kooyonga to meet when they host the same event in 2017 and 2018

A nice way to spend a glorious Adelaide afternoon

CONTINUED ON PAGE 12



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The Grange Golf Club in Adelaide set an impressive benchmark for future tournament hosts Royal Adelaide and Kooyonga when the West Course held the 2016 ISPS Handa Women's Australian Open in February. ATM editor Brett Robinson snapped the crew in action.

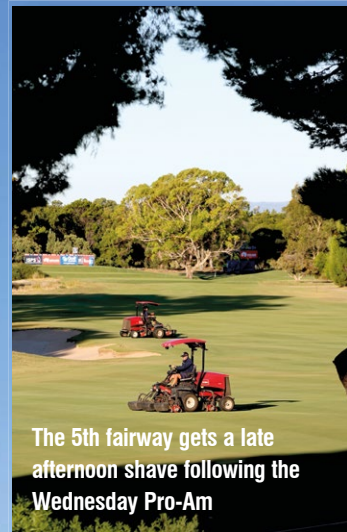


Back on the map

Above left: The Grange's second assistant Brad Ayres takes Tru-Firm measurements ahead of the second round

Above: The West Course was redeveloped some 10 years ago under the auspices of Michael Clayton

Main photo: The 9th green on the West Course with the 3rd hole in the background



Top: Charlie Nielsen cuts collars on the 7th

Above: Looking back up the 15th from behind the green. Greens were brought down from 3mm to 2.8mm for the tournament

The 5th fairway gets a late afternoon shave following the Wednesday Pro-Am

Right: Senior assistant Rowan Daymond sets the pin on the 6th



Orange and red working in harmony on the 17th



Michael Bullard hand mows the 7th tee at 6mm



CONTINUED FROM PAGE 9

respectively. The level of presentation achieved by James and his crew was second to none and the result of some meticulous planning and skilled execution in the months leading up to the event.

Although it was officially announced in mid-November 2015 that the Open was heading to The Grange, James' preparations for the Open essentially started back in September when he undertook his usual course renovations. Having 36 holes at his disposal, James has the luxury of being able to undertake some thorough renovations with minimal disruption to the membership. The same programme has been in place on both the West and East courses over the past 3-4 years, with the club adjusting its golfing programme to fit it in. Given that the end result speaks for itself in improved playing surfaces, The Grange membership has readily accepted it.

Doing one nine at a time over a one week period in tandem with a contractor, James scarifies all the Santa Ana fairways at 15-20mm then cores and rubs the material back in. Tees are also scarified while the surrounds are given a light vertimow. The Penn A1 (West Course) and A4 (East Course) greens are also cored and verti-mowed, although this year James dropped the latter given they were a little thin coming out of winter as he had run them lean to assist in suppressing *Poa annua*.

Following a successful renovation, the focus was then all about plant health and getting some density into the turf surfaces so that they could be worked hard in the six weeks after Christmas. To that end James put out a couple of granular fertiliser applications (about 150kg/ha) and followed those up with foliar tank mixes when required.

"We set up a plan from roughly 15 weeks out, starting with our renovations which is what we would have done in a normal year anyway," explains James, who is in his ninth year in charge at The Grange. "We put out an extra granular application on some holes that were a little slow coming back from renovations, but we also skipped a planned application prior to Christmas because it wasn't needed.

"We fed the fairways up with a couple of granular feeds after renovations but from then it was mainly different tank mixes of foliar over the top for colour along with PGRs right through. We got the fairways sucked right down, probably more than what I had intended, but they were good. We also did some extra verti-mowing on them to fine the Santa Ana down.

"On the greens we went a bit more intensive with our brushing and dusting in the lead-up to Christmas than we would normally. We also dropped the height from 3mm down to 2.8mm and they fined out nicely. We used some light rates of Primo as well as some paclobutrazol for *Poa annua* control, but we stopped that reasonably early.

"The only issue we had outside the norm were ants. They initially started coming up in the surrounds and then spread throughout the course which is quite rare for us. We normally wouldn't have sprayed but given we had the tournament we went out with an application of fipronil. Historically we don't have a lot of insect trouble, especially on the greens, but we also had a little bit of black beetle which we had to keep on top of."

With the surfaces right where he wanted them come Christmas, that enabled James to ramp up their presentation in the six weeks leading up to the tournament. Mowing regimes were intensified with the fairways (which were pattern cut at two angles)



Mt Osmond volunteer Mike Shannon hard at work in the bunkers

cut five times a week, up from the usual three. With the density of the greens spot on, from a month on they were exclusively walk-mowed, as were the tees, with James bringing members of the crew in on the weekends to cut greens. The rollers were left in the shed for the majority of the time as it was made clear early on that firmness wasn't a priority, rather smoothness and ball roll were the focus.

Hosting a tournament at the back end of summer can always be fraught with danger and Adelaide, being the driest state capital on the driest continent, has had some horror runs in recent years. While this summer was another typically dry and warm one, compared to past summers it wasn't as brutal which

James was rather thankful for. Indeed, when the club held the Australian Amateur in 2014 and Astor Trophy in 2015 there were heat delays.

December was certainly warm with 18 days of plus-30 degree heat and a total of seven days over 40, including a top of 43.2. January was warm too with 19 days over 30, but a monthly rainfall total of 52mm, including a 35mm fall on the 29th and 30th proved extremely timely. Come the tournament cooler temperatures prevailed and despite a warm final round, conditions were magnificent which certainly helped to attract some large galleries.

CONTINUED ON PAGE 16

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Pride of the west

WORDS: BRETT ROBINSON. PHOTO: SMP IMAGES

The 2016 ISPS Handa Perth International was something of a trip down memory lane for course superintendent Trevor Strachan.

Above: The course maintenance crew headed by Trevor Strachan (centre, kneeling) again had Lake Karrinyup Country Club in immaculate condition for the 2016 ISPS Handa Perth International

Below: A change to a February timeslot helped to attract the tournament's strongest field since its inception in 2012

If there is one course superintendent in Australia who knows how to prepare a golf course for tournaments it's Trevor Strachan. Regarded as one of the industry's preeminent turf managers, Strachan has played an influential role in many of the great tournaments held in Western Australia over the years. You can go back to his time at The Vines Resort, a course he constructed, when it hosted the string of Vines and Heineken Classics in the 1990s along with the Johnny Walker Classic which was held in 2003 at his current club Lake Karrinyup.

Despite a hiatus following the demise of the Classics in the mid-2000s, since 2012 Strachan and his crew at Lake Karrinyup have been back in the tournament spotlight each year with the advent of the ISPS Handa Perth International. As with those earlier tournaments Strachan and his crew have never failed to deliver a quality product and ask any of the players or Tour officials what their lasting impressions of Karrinyup are, and it's not only the layout but the superb conditioning.

After being held in October for the 2012, 2013 and 2014 tournaments, in 2015 it was announced that the tournament was moving to a February timeslot. The principal reason for the change was

to attract a higher calibre field given that many of the leading European Tour players would be in either Malaysia or the Middle East the week before. Indeed, the field that lined up in 2016 was probably the strongest the \$US1.75 million event has seen and it included World No. 21 Louis Oosthuizen who would ultimately go on to win by a stroke.

For Strachan the switch to an end of summer timeslot took him back to the days when he prepared The Vines and Lake Karrinyup for the Classics. Hosting a tournament at the end of summer was certainly a far different prospect than hosting one in October and it was almost a mirror opposite in terms of managing the Penn G2 greens and Wintergreen couchgrass tees and fairways.

"It was certainly a bit different to previous Perth Internationals, but possibly a little easier too," says Strachan of the 2016 event. "It was almost a reverse. In October the bentgrass is always going to be in better condition, whereas with the couchgrass you are pushing it harder to get it up for a tournament coming out of the cooler months. This time it was the other way around; the couchgrass was always going to be in great condition due to the time of year, whereas we had to nurture the bentgrass a little bit more through the heat of summer.

"We scarified and cored the fairways back in November and scarified the tees and couch collars back to dirt and they all came back beautifully. With just a bit of extra cutting in the lead-up to the tournament they presented extremely well. We were even lightly vertimowing tees a few weeks out from the tournament because we knew they'd bounce back quickly. So it was probably a little easier leading up to this year's event. We didn't seem to be on such strict timeframes as the course, the couch in particular, was already up and running and in a very good position."

Karrinyup's greens were certainly put to the test over what was yet another typically hot and



PHOTO: SMP IMAGES

very dry Perth summer. In the weeks leading up to the tournament Perth suffered a heatwave with the mercury dipping below 30 just once between 3-20 February, while between 7-10 February the state capital sweltered through four consecutive days of 40-plus temperatures. Despite those temperatures, the brutally hot easterlies that can often accompany such heat weren't as pronounced and the greens got through relatively unscathed.

The heatwave did, however, mean that Strachan was unable to dust that week and together with not being able to dust the greens as regularly as he would have liked earlier in the season, it meant the greens were not quite as firm as he would have hoped come the tournament. Despite that, they still presented superbly and rolled true and after double cutting and double rolling the greens at the start of tournament week and stimping 13'6", they ended up consistently between 12'6" and 12'8".

During the tournament the rollers were consigned to the sheds and the greens were double cut in the morning at 2.5mm (down from 2.75mm at the start of the week). For the second cut in the morning brushes were put down, with the brushes also down for the single cut in the afternoon. The fairways were pattern cut at 8mm while the tees were at 6mm. Due to the time of year irrigation was more closely monitored but Strachan says the perched water table greens really came into their own and held their moisture well.

"I was very pleased with the way the course presented," says Strachan, who put on four additional staff in January to assist with tournament preparations. "The only thing that was probably harder this time around was the fact that we didn't have any volunteers, so we had to be a bit smarter in how we went about our preparations.

"Fortunately most of the guys have done three or four of these events now so know what is required. During the first couple of Perth Internationals there was always someone on the two-way every 30 seconds, but now it's almost silent out there and you sometimes wonder what's going on and whether they're in their right spots. But they know what to do and have that experience which is invaluable. They're a great crew and everything ran smoothly and the player feedback was very positive."

The accolades did indeed flow and at the conclusion of the tournament Oosthuizen commented: "They (Ernie Els and Ian Baker-Finch) told me I was going to love the golf course and I do. It's such a great track and it's one of my favourites so I'll definitely be coming back." American Peter Uihlein was also glowing and afterwards tweeted: "Awesome time in Perth at LKCC @PerthIntl, best track of the year and amazing support from the fans. All ready (sic) looking forward to coming back!"

Earlier in the week Uihlein commented in a press conference that playing Lake Karrinyup was "always a treat" and that it was "one of my favourite courses." "It is an Alister MacKenzie course, and



we don't really get that many courses in America. Obviously we've got Augusta and then Cypress, but we don't really get to play his courses that often. It's always a treat when you get to play them. I think that's why I enjoy it so much because it's just a fabulous golf course."

However, it was perhaps Queenslander Matt Guyatt who summed up the feeling among the players the best: "Thanks Lake Karrinyup for another awesome week! You remain one of the premier courses in Australia for mine!"

While the immaculately prepared turf surfaces were as always a major talking point, it was a slightly furrer critter that stole the limelight early in the week. Tee markers at major golf events these days have become a vehicle through which to promote a city or state hosting the event or the major sponsor. In Australia in recent times we have seen Melbourne's famous trams on the tees at Royal Melbourne for the World Cup of Golf, while the Emirates Australian Open has model A380s.

For the Perth International, the tournament organisers decided to use Western Australia's quirky marsupial the quokka and as such the Karrinyup crew had a veritable zoo of stuffed toy quokka tee markers housed in the maintenance facility. Not surprisingly it didn't take long for a few crew members to take some liberties with the quokkas as they were put out each morning.

"Yes, they were quite a talking point and the boys certainly had a bit of fun with them," laughs Strachan. "I'm sure you can use your imagination. I think we had chocolate bullets scattered around a few of the tees before one of the rounds. But in all seriousness, I thought they were a great touch. It's all part of hosting a tournament these days and it was a great way to promote something unique about the state." 🦘



PHOTO: SMP IMAGES

Irrigation was a much greater consideration this time around



The quokka tee markers were quite the talking point at this year's Perth International



The Adelaide golfing public turned out in their droves and more than 30,000 spectators flooded the course over four days

CONTINUED FROM PAGE 13

WORLD CLASS

As well as the spectators responding to the event, the feedback on the course from the players was overwhelming as well. Many took to social media to congratulate The Grange, with Royal Adelaide member and touring professional Stephanie Na tweeting her appreciation of the work that James and his team had put in: "Awesome work @ RichJames74 & crew. Course in tiptop form! GR8 feedback from all players". Katherine Kirk summed it up succinctly with this tweet – "Thx for an amazing event. Course... world class!" Such feedback was very well received and went a long way to reaffirm in James' mind that they had delivered on their promise to showcase their course to the best of their ability.

"It was great to have a tournament of this stature back in Adelaide and great to see it so well supported," sums up James. "It was fantastic for the state and it was a real collaborative effort between the three clubs to get it here. Just to have major golf back in South Australia was a huge positive for the club and also a great challenge for the crew. All the guys were really excited and while there was a lot of extra work involved, they really stepped up and should be extremely proud of their efforts.

"I was very satisfied with the standard of presentation we were able to produce. Probably the thing that pleased me most was that all our planning and the timelines we aimed for fell into place. In the lead-up to Christmas it was all about concentrating on plant health and density and getting the turf into a position which would enable the guys to present

the course in the best possible condition. All the way along we hit all our targets of where we wanted to be and it meant that in the six weeks leading up to the tournament we were able to fine-tune the surfaces and achieve the level of presentation that we did.

"For me, I was involved in a number of Tour events during my time at Kooyonga under Steve (Newell, superintendent), but this was my first 'in charge' so to speak. It was certainly challenging being responsible for it all and it was great being a part of a successful event. Hopefully we've helped to promote the club, the course and golf here in South Australia and with a bit of luck we might see it back here." 🙌

Tom Schott trims bunker edges on the 8th. Attention to detail was a hallmark of The Grange crew's preparations for the 2016 Open





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Vanderbilt Country Club in Naples, Florida has been home to ex-pat Australian course superintendent Stuart Bothe since 2003. Pictured is the 5th



Best of Bothe worlds

In 1998 Stuart Bothe left the small Victorian township of Nhill and landed in Naples, Florida to embark on an internship through Ohio State University. Some 18 years later Bothe is ensconced Stateside and for 12 of those has been superintendent at Vanderbilt Country Club which recently underwent a \$3 million renovation.

Golf and turf has always been a part of my life from as early as I can remember. Growing up in the small country town of Nhill in the Wimmera region of Victoria (population of around 2500 people) my career started after leaving high school when, in March 1989, I acquired an apprenticeship with my father's (Graham Bothe) instant turf company 'Boats Ezy-Gro Instant Turf'.

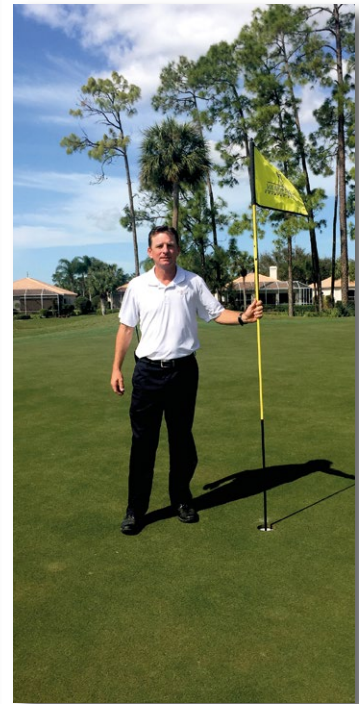
We worked very well together and he taught me the basics of running a business and how to grow turf successfully. It was a smaller type turf production company that began to grow larger over the years with deliveries eventually going all over Victoria. Among the varieties we grew were tall fescue/bluegrass blends and Santa Ana couchgrass.

During my apprenticeship I travelled down the Western Highway monthly to Melbourne to complete my educational training at Northern Metropolitan College in the turf department which had great teachers with a wealth of experience and knowledge. Just to name a couple, Gary Thomas and Phil Ford stood out to me as being very passionate about passing their knowledge on to students and that's where I become very motivated to pursue a career in the golf course industry. I was also heavily involved in all sports – football, golf, tennis, water skiing and basketball which I really enjoyed.

After successfully completing my apprenticeship, the local Nhill Golf Club was about to undergo a major renovation and build 18 USGA spec greens along with new tees, bunkers and irrigation to greens and tees. My father was heavily involved with the club's plans to move forward with the renovation which presented me a great opportunity to progress my career as well.

The club needed a 'greenkeeper' (as we were called back then) to look after the newly constructed greens that were to be seeded with Cobra bentgrass as well as the rest of the golf course daily duties. After working with the construction of the course, I was offered the position at the club which I gladly accepted.

This was my big start in the golf course industry and wouldn't have happened without my father's direction, inspiration and help. Growing grass for playability purposes was a new challenge for me and this made it much easier with my father's guidance. The fact that we were both avid golfers, in fact the whole family was, meant the job was very much a natural progression. My mother Gwen would take me golfing with her when I was very young and not old enough to play alone and I was always around the golf club a lot as my father helped out with the upkeep of the course.



After taking on an Ohio State University internship in 1998, Stuart Bothe has plied his turf management career in Naples, Florida including 12 years at Vanderbilt

TRAVEL BUG BITES

I continued at Nhill Golf Club for five years and was feeling the itch to move on to a course that was being built or under construction. My apprentice at the time, Marcus Ridgewell, came back from trade school with a brochure on an international internship with Ohio State University. I looked through the brochure and made a few phone calls to Mike O’Keeffe who runs the programme and quickly became very interested in travelling overseas to work on a golf course.

I enrolled in the programme and was accepted to go to the US in March 1998 to a Greg Norman Golf Course Design resort that had just begun construction. The course was to be named Tiburon (Spanish for shark) located in Naples in the south west of Florida. The climate was similar to Cairns in Australia which suited me perfectly as I was considering a move to Queensland at the time.

Leaving with an opening mind and wanting to learn as much as possible while in the US, I arrived in Naples without knowing what to expect. Little did I know that there would be other interns from all around the world working at the many other golf courses in the area. Remarkably, Naples boasts around 140 golf courses all within a 60 kilometre radius.

On my very first day I was greeted with a ‘G’day mate!’ from David Dore-Smith who I would be working with. An Australian, in Naples!?! What were the odds of that! Hailing from Melbourne, David had been in the USA for 12 months and transferred to Tiburon for the construction experience as well. This made it very easy to settle into the surroundings as there was quite an international intern base in Naples at that time, so lots of golf and other festivities where a common trend.

Working and seeing a course construction had been a long held goal of mine and to be involved with building 36 holes was quite an experience. Many long, dusty days were endured but the experience was priceless. The superintendent at Tiburon, Matt Fancher, was my mentor to the big stage of golf course construction and maintenance. Matt passed on his knowledge to me willingly as he could see I was here to advance in my career. Matt made me one of his spray technicians when the course opened in 1999 which would give me a great opportunity to work closely with the superintendent. Grass types at Tiburon (1998-present):

- **Greens:** Flora Dwarf (now converted to TifEagle)
- **Approaches:** Tifdwarf (now converted to Celebration, aka Riley’s Super Sport)
- **Tees and fairways:** GN1 couchgrass

The recent renovation saw the Vanderbilt fairways converted from 419 bermudagrass to Celebration (aka Riley’s Super Sport)





Between April and August 2015 Vanderbilt Country Club underwent a \$3 million renovation

During my time at Tiburon I acquired an extension on my visa and was able to stay there to work the first Shark Shootout hosted by Greg Norman in Naples. The PGA Tour event (now known as the Franklin Templeton Shootout) is held in December to finish the year off, with Norman inviting 24 Tour pros for the three day 54-hole event.

Preparing for the Shootout started months before the event and it got crazy in the final three weeks with bleachers and concessions stands going up everywhere and huge trucks and cranes running over turf and cart paths. It's one of the easier events to prepare for in that there are only 24 players but even still it got the adrenalin pumping when it finally teed off. There's just something unique about PGA Tour players coming to town to play on your course – a definite 'must experience' for any turf manager.

Matt Fancher was a huge part of my success at Tiburon and he showed me the importance of setting up a golf course for high-end clientele. Attention to detail was so important and he had great schedules and procedures to follow to make

sure the course was ready on a daily basis. With a staff of over 50 working at Tiburon, planning each day ahead of time was critical.

This is the part where the girl comes in. During my time at Tiburon I met Valerie Porto who now is my wife and mother of our two boys Nicholas and Anthony, aged 7 and 10. We have now been happily married for 13 years and on our last trip back to Australia in 2014 the boys got to experience the sights of Australia more. As Valerie is an American citizen I applied for and was granted a Green Card for the USA. This enabled me to become the first assistant at Tiburon and during that time I was involved in four Shark Shootouts and later became project manager for the new nine hole construction on the Black Course to complete Tiburon's 36-hole facility.

IN CHARGE

After what can only be described as six fantastic years at Tiburon, in late 2003 I literally moved three miles down the road after being appointed course superintendent at Vanderbilt Country Club.

Vanderbilt CC is an 18-hole golf course with 800 homes, four swimming pools and six tennis courts. It is a private gated community with country club style amenities. The course, designed by Gordon Lewis, was built in 1998 and had TifEagle greens, 419 bermudagrass tees, fairways, approaches and roughs and a maintenance staff of 20. On arrival at Vanderbilt CC the course needed some TLC to get it back into prime playing condition.

Here in Florida golf is very seasonal with the winter months busy and the summers lighter in terms of golfer traffic. Only 25 per cent of the community here are year round residents with the other 75 per cent living in the northern states and mid-west.

Due to fewer golfers, the summer months are when we do our entire major cultural practices to the course, such as aeration, verticutting, heavy topdressing, scalping and other selected course projects. Vanderbilt's course is closed 44 days throughout the summer months for these purposes. From May to the end of October we are closed every Monday for maintenance and have three other weekly closures in June, July and September.

During the summer of 2015 the golf course was completely renovated under the guidance of golf course architect Kipp Schulties. Kipp worked with the Couples Group and Jack Nicklaus before starting his own design group. The renovation saw the routing of the course stay the same with the main focus on greens complexes, irrigation, tees and bunkers.

The course was closed on 5 April 2015 with Show Turf Construction the main contractor. The course was sprayed with Roundup/fusillade three times to kill off the existing 419 bermudagrass. Things get very hectic the first week in construction and your head spins a lot because of the amount

Aerial shot taken by Bothe's drone of the 12th hole being sprigged with Celebration (Riley's Super Sport)



of different procedures starting all at once. But after that things settle down and you get into a groove as everyone knows where they are going and what they are doing.

It's essential to have contactors that know what they are doing and strive to make the project a success through excellent workmanship. Having an experienced shaper who is on the same page as the architect is also key and can really make or break a project.

During the reconstruction we made our greens bigger and more receptive for our cliental which are usually retired and over 55. The new greens average 6500 square feet (approx. 603 square metres) compared to 5300ft² (approx. 490m²) and have more depth than before.

In Florida we have a wet and dry season like northern Australia with annual rainfall up to 75 inches (1900mm). Given this, drainage was a key focus for the renovation with perfected surface runoff areas on greens. Each green has three areas where surface runoff can escape to a catch basin. All greens had the standard 4-inch pipe installed 10-12 feet apart with a 4-inch layer of pea gravel. Twelve inches of an 85 per cent sand/15 per cent peat moss greens mix was then spread over the gravel.

As everyone knows it is important to get the greens mix consistent so we probed each green hundreds of times to ensure the correct levels were achieved (plus or minus 1 inch variation). Our



shaper was instrumental in this process. Irrigation followed with new Toro Infinity sprinklers installed with HDPE pipe on a two wire system (no controller/satellites) along with Lynx software. Just under 1000 sprinklers were installed.

As part of the renovation we decided to make a change to turf varieties, replacing the 419 bermudagrass on fairways, tees, approaches and roughs to Celebration (known as 'Riley's Super Sport' in Australia). All tee surrounds and green surrounds, drain basins and bunker surrounds were sodded. We used 73 semi-truck loads of sod

Vanderbilt's 9th green being sprigged with TifEagle

CONTINUED ON PAGE 23

REDESIGN. RENOVATE. RESTORE. REPOSITION. REBRAND.



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EX-PAT SUPERS CLEAN UP IN WAKE OF CYCLONE WINSTON



Some of the damage sustained at Denarau Golf & Racquet Club in the wake of Cyclone Winston which smashed into Fiji on 20 February



"The bulk of this work took three days and then starting Wednesday we had 50-60 guys going through the course removing branches and debris from the tees, greens and fairways and piling it up in the rough. We also had five guys with chainsaws, a backhoe and truck going hole by hole, cutting up any of the larger trees that had fallen across cart paths to not only allow easier access for the clean-up crews but also to get golfers back out. The team worked from 6am until 10pm and by lunchtime on Thursday 25 February we had 18 holes open.

"We went four days without mowing anything so the grass was out of control especially in the rough. We eventually cut greens five days after the cyclone and the following day we managed to get a couple of guys onto the rough mowers. The clean-up of branches and debris around the course continued for the next week and a half and then we started to tackle the bunkers and return them to normal.

"In the second week of March we were out fertilising greens, fairways and tees, trying to replenish the nutrients that had been flushed from them with all the rainfall we had. With the 220mm we had during the cyclone our monthly total for February was 448.5mm."

For New Zealander Finn, Cyclone Winston compounded what has been a very difficult start to life on the exclusive Laucala Island. Arriving from Doha Golf Club where he was assistant superintendent under former AGCSA Board member Robin Doodson, Finn has also had to battle a lack of water all summer.

"I arrived here in November and it has been a pretty tough start to be honest," says Finn. "The island has changed a lot in character as a result of the cyclone and I would estimate there's something like 5000-10,000 trees that have been damaged. Fortunately all the crew were okay but some of them lost their homes on the neighbouring islands.

"The past week and a half (early March) has been focused on getting the greens and tees cleared and we seem to be getting on top of this now. We are just focusing on getting play areas up and running and I would estimate this will take my 31 staff around four months. Every day is pretty much the same – four chainsaws head out and cut and the rest of the guys are cleaning up. A team of Australian tree climbers and tree doctors have been brought in from Queensland and they are assisting the resort and will help me in the near future also."

The life of an ex-pat can at times be portrayed as somewhat glamorous and exotic, but Fiji-based superintendents Ryan Markwell and Corey Finn may beg to differ. On 20 February, Category 5 tropical Cyclone Winston made landfall on Fiji bringing with it winds up to 285kph which caused widespread devastation. It was the strongest tropical cyclone to hit Fiji on record, with 43 people killed and many thousands left homeless.

For Markwell and Finn it was a rude introduction to superintendent life in Fiji, both having literally taken on their respective roles in late 2015. Markwell is superintendent at Denarau Golf & Racquet Club, 45 minutes west of Nadi, while Finn manages the David McLay Kidd designed course on Laucala Island, the exclusive private resort of Red Bull co-founder Dietrich Mateschitz. Laucala lies out in the northern division of the Fiji islands and the eye of Cyclone Winston reportedly passed just 50km to the south.

Not surprisingly both courses suffered extensive damage and both Markwell and Finn and their crews, which are made up of local Fijians, have been working around the clock to get them cleared and back in play. Denarau, one of Fiji's prime tourist destinations, took a direct hit from the cyclone and Markwell says the initial focus was on getting the resorts back up and running.

"The course and surrounding resorts took a fair beating from the cyclone and drenched with rain (220mm) from the storm that followed," says Markwell, who was due to renovate greens the day after the cyclone hit. "We had extensive damage with a lot of our big rain trees and coconut trees pretty much ripped from the ground, but fortunately there wasn't too much damage to greens or tees.

"The last couple of weeks have seen the place transform back into a golf course again and the contractors that have come in have done a fantastic job. The first few days of the clean-up saw all the golf maintenance crew helping clean the grounds at the Sheraton, Sheraton Villas and the Westin Resort as these are our main source of income.

Natadola Bay Golf Course on Fiji's south coast, home to superintendent Steve Lalor, escaped major damage but received a good topdressing of beach sand, as shown on the 4th



CONTINUED FROM PAGE 21

(550,000ft², 5.1ha) throughout the project with a cost of \$0.36 per square foot installed. All other turf areas were sprigged (tee tops, fairways and roughs). The TifEagle greens were grown in at 30 bushels/1000 and Celebration sprigs at 800 bushels/acre. We also increased bunkers from 72 to 85 on the course giving them more character and showing off the faces more.

Construction was completed on 12 August 2015 and after a successful grow-in the course was reopened on 1 November. All up the project cost \$3 million and from a personal point of view was tremendous to be involved with. While it's a great experience, reconstruction does involve a lot of dedication and passion as you feel compelled to be there all the time when it's under your supervision. Putting a great team together for construction is imperative to being successful and fortunately we had a very good team assembled for this project.

STATESIDE SUPER

Being a superintendent in America can be quite demanding at times like anywhere, but with high budgets comes high expectations. Like any course, communication to the members is a must and this is one area that I have devoted a lot of time to.

Members want to know what is going on around the course and what's coming up. It's so much



easier to communicate with members now through email, electronic newsletters, Facebook, Twitter and other forms of social media. It's a great tool to get updates across to members, but once you start you must keep on it as they expect to be regularly updated.

One way that I updated members who were away for the summer throughout the construction process was weekly/bi-weekly updates through an electronic newsletter which was emailed to all members. I purchased a DJI Phantom 2+ drone so I could take pictures and video of the different phases

The renovation has seen Vanderbilt's greens increase in size from an average of 490m² to about 600m²

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With an annual rainfall of nearly 2m, drainage was a key focus of the Vanderbilt renovation

to give the members an experience from the air that I couldn't get with a camera on the ground.

This was a huge hit with the members to experience the construction from an aerial view and it gave them a real appreciation of the progress that was being achieved. The drone was also a great tool for doing before and after videos. Prior to the construction I took 'before' videos of each hole and can now compare them with after construction videos to see the changes that have been made. These aerial views are priceless. I also used the drone to take aerial pictures of greens drainage after completion, the best as-built you could get from 100 feet up!

If anyone has a major construction project coming up I would highly recommend getting a drone. Not only are they a fantastic way to record your project, they are also a lot of fun – just don't crash it though! Another way to keep the members involved was monthly course tours. That way they could be up close to the project with explanations given of each phase and the processes involved.

GETTING INVOLVED

Having been in America now since 1998 and a superintendent for 12 years, I thought it was time three years ago to get more involved with the local

GCSAA chapter known as the Everglades Golf Course Superintendents Association (EGCSA). I became a board member because I love my career and what it brings to me.

I am currently vice president of the association and will be president in July 2016. Yes it's extra work, but it's a great organisation to meet great people at a high level in our industry. I would encourage anyone that loves this industry to do the same in your state as you will be amazed the benefits and networking it can bring.

Another way I keep in touch with our industry is by attending local chapter meetings, the GCSAA conference and Golf Industry Show and keep up with regular posts through my Twitter account @stuartbothe. Twitter has become very popular over here and it's a great way to connect to others to see procedures, get updates, show ideas and keep up with what others are doing.

It's not for everyone, but I like that who I follow or who follows me are in the golf industry in some shape or form, so you basically only have turf things being posted. If that's an interest of yours then I wholeheartedly recommend to get on board. You can see what is going on all over the world and you can keep in touch with industry changes and trends.

In finishing up, being a superintendent in America has been more than a dream of mine and to live it out I have been blessed with good people around me. Fortunately there is a very strong community of ex-pat Australian superintendents in Florida who are at very high profile clubs similar to mine and who have their own success stories to tell.

Among them are Brooke Maxwell (Pelican Marsh Golf Club, just three miles away), David Dore-Smith (Copperleaf Country Club), Matthew Tacilauskas (Palm Beach Country Club), Mark Reid (The Breakers Hotel & Spa Club) and Blair Kirby (Admirals Cove Country Club). Over the years we have all become great friends and enjoy getting together for a beverage and reminiscing about the home land. 🇺🇸

Below right: Bothe's baby – the Phantom DJI 2+ drone which he purchased prior to the course reconstruction

Bottom right: Located in Naples, Florida, Vanderbilt is one of 140 golf courses within a 60km radius

Below: Bothe currently manages a course staff of 19 at Vanderbilt



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There are multiple factors that can cause putting greens to fail or not meet expectations. Decision makers should exercise proper due diligence and conduct a methodical evaluation of the agronomic and architectural characteristics of greens complexes before undertaking a putting green reconstruction project

Many factors must be considered before undertaking a putting green reconstruction project write USGA agronomists John Foy and Larry Gilhuly.



Excessive organic matter accumulation and upper rootzone layers can be a deadly combination

To rebuild or not rebuild?



The prospect of having to rebuild one, a few, or all of the putting greens on a golf course is never popular because of the major disruptions to golfers and course operations and the cost.

There are multiple factors that affect turf growth, putting green performance and the type of conditioning that can be provided and a basic understanding of these factors, along with accurately assessing whether or not there are options other than complete reconstruction, will be reviewed in this article. If it is determined that agronomic weaknesses and/or architectural limitations cannot be overcome without rebuilding, course decision makers will be provided with additional information on what to do next.

GROWTH REQUIREMENTS – SUNLIGHT

The game of golf is played on grass. In order to provide consistent, good-quality putting green conditions (i.e., smooth, true ball roll and appropriate speed) a dense, healthy turf cover must be maintained. While there are differences in the agronomic requirements to maintain healthy bentgrass, couchgrass or *Poa annua*, there is one common denominator – they all must have sunlight.

For healthy growth and optimum performance of bentgrass, couchgrass and seashore paspalum, a minimum of eight hours of direct sun must be provided. *Poa annua* has better shade tolerance but still needs several hours of direct sunlight to ensure dense, healthy turf cover.

Conducting a sunlight assessment on poorly performing putting greens is the first step in evaluating key factors that affect green performance. Today there are high-tech options like mobile apps, light meters and contract services that can accurately

evaluate if sufficient sunlight is being received and identify exactly where tree and vegetation removal needs to be performed.

A couple of additional turf growth limiting factors associated with trees and dense vegetation near putting greens are restricted air movement and competition from feeder roots. The impact of restricted air circulation across cool-season turfgrass putting greens during periods of high temperatures and humidity has long been recognised. When air circulation is restricted, higher turf canopy and soil temperatures develop, which negatively impacts general turf health and increases the potential for disease outbreaks. However, because of its poor shade tolerance, the impact of restricted air circulation on couchgrass has been overlooked for many years.

Tree feeder roots can extend outward a distance equal to or greater than their height. The fine feeder roots of a large, mature tree directly compete with turf for available nutrients and moisture and can significantly impact a large portion of a nearby putting green. Tree root pruning is a simple and effective means of alleviating this problem.

GROWTH REQUIREMENTS – INTERNAL DRAINAGE

While height of cut is not the total answer to providing smooth ball roll and medium-fast to fast green speeds, regular close mowing of putting greens is necessary for providing consistent, good-quality conditioning. However, regular close mowing does exert significant mechanical stress on turf and negatively impacts root system development. Thus, it is extremely important that the growing medium, or rootzone, is not also a growth-limiting factor.

Like sunlight, all turfgrasses also require water.



Yet the persistence of excessive moisture in the upper rootzone is just as detrimental to turf health as a lack of moisture. The persistence of excessive moisture results in displacement of soil oxygen content. When soil oxygen content becomes too low, turfgrass root systems literally begin to suffocate which can ultimately lead to turf death.

It has long been recognised that a sand-based rootzone is best for putting greens and sports fields because a sand with the majority of the particles in the medium to coarse size range provides the desired balance of macro (air-filled) and capillary (water-filled) pore space to support healthy root systems and turf cover.

Sands with an appropriate particle size range also are more resistant to compaction. Foot and equipment traffic both result in the progressive build-up of soil compaction, which negatively impacts porosity, moisture infiltration and gas exchange.

An additional concern is the build-up of thatch and organic matter in the upper rootzone that occurs over time with all turfgrasses. The negative impacts of a persistent, moisture-saturated upper rootzone caused by excessive organic matter accumulation or distinct layers on turf health has been well documented.

Another diagnostic measure for determining if organic matter accumulation is a primary limiting factor is to submit samples to a physical soil testing laboratory. The test results can be used to decide if changes in maintenance practices and programmes can be made to modify and improve rootzone conditions. Submitting intact core samples from representative putting greens for complete physical analysis of the entire profile is also recommended if there are additional concerns regarding putting green performance.

Core aeration and sand topdressing are the main cultural management practices for reducing and controlling organic matter accumulation and compaction. Although aeration is one of the most disliked cultural management practices, modern aeration equipment can effectively modify and improve upper rootzone performance characteristics.

Based on field experience, using coring tines that area at least 0.5 inch in diameter is recommended when rootzone modification and improvement is a primary objective. Along with ensuring removal of an adequate amount of material, using larger-diameter coring tines facilitates incorporation of topdressing sand and the ability to completely backfill aeration holes. In addition to heavier topdressing applications in conjunction with core aeration, regular, light applications of topdressing sand (dusting) is a very important practice that helps manage organic matter accumulation through dilution.

Sand injection is another cultural management practice that has been gaining popularity. Sand injection causes less surface disruption compared to traditional coring, but it is able to incorporate a large quantity of material into the rootzone and increase dilution of organic matter accumulation.

The channels or columns of sand that are created by sand injection also increase moisture movement into the lower portion of the rootzone. Sand-injection equipment can have an effective operating depth of 9 to 11 inches and can be used as an alternative to deep-punch or drill-and-fill operations.

However, while sand-injection and deep-aeration operations are options for rootzone modification at a greater depth, they are not a substitute for standard putting green coring. Furthermore, it may take several years of sand injection, drill and fill, and aeration to produce the degree of modification needed to realise a significant and permanent improvement in putting green performance.

Adequate internal or subsurface drainage is another very important consideration, especially in regions where frequent and, at times, heavy rainfall occurs or poor-quality irrigation water is being used. If moisture infiltration below the upper rootzone is restricted, the persistence of a saturated profile will occur, depleting soil oxygen content.

Poor putting green performance or failure can be the result of several factors





Unrestricted surface drainage from putting greens must be maintained to ensure a healthy turf cover and consistent performance

Furthermore, when irrigation water that contains moderate to high levels of salts is being used, preventing the build-up of toxic levels of salts in the primary rootzone is an ongoing management concern. Effectively leaching salts out of the rootzone is extremely difficult to impossible without subsurface drainage systems.

Before the introduction of the USGA's Recommendations for a Method of Putting Green Construction in 1960, greens were rarely, if ever, built with subsurface drainage systems. As already discussed, it is possible to modify and improve internal drainage of the upper rootzone of older soil-based or push-up type putting greens.

However, when subsurface drainage is severely restricted or non-existent, there inevitably will be times when it is difficult to maintain both healthy turf and desired playing conditions. Even in the decades after the introduction of the USGA's construction recommendations, putting greens have been built without subsurface drainage because of the belief that it was an unnecessary additional cost.

Advances in the procedures and materials used to install subsurface drainage systems in existing putting greens have been made over the past 10 to 15 years. The very precise methods being used to excavate trench lines, install small-diameter drainage pipe, backfill the trenches and replace the previously removed sod are producing marked

Low-cut putting greens must have adequate sunlight for the persistence of dense, healthy turf. Conducting a sunlight assessment should be one of the first steps in evaluating the agronomic factors affecting putting green performance



improvements in internal drainage and can be completed quickly with minimal disruption.

There are a few key points to note where subsurface drainage is installed into existing putting greens;

- The best results are being achieved at courses where a good sand topdressing programme has been in place for several years combined with deep-tine or drill-and-fill aeration programmes.
- It is recommended to work with a physical soil testing laboratory to determine the most appropriate material for backfilling drainage trench lines. If the backfill mix does not have sufficient moisture retention, the drain lines will dry out rapidly.
- It is further recommended to continue with deep-tine or drill-and-fill aeration after installing subsurface drainage.

GROWTH REQUIREMENTS – SURFACE DRAINAGE

Surface drainage is as important, if not more important, than internal and subsurface drainage. Even with USGA greens that have sand-based rootzones and subsurface drainage systems, surface depressions or low-lying perimeter areas where surface drainage is blocked will experience problems.

When water is trapped and concentrated, the upper rootzone will remain saturated for extended periods of time and turf failure ultimately can occur due to anaerobic conditions. Increased disease, algae and black layer problems also are commonly experienced on putting greens with poor surface drainage.

OTHER AGRONOMIC CONSIDERATIONS

Other factors that affect green performance and need to be evaluated are the base turf cover, water quality and irrigation coverage and control. The first question to answer is whether or not the base turf is the best-adapted for the average and extremes in weather conditions of the area.

Over the past two to three decades, several new turfgrasses have been introduced with improved environmental stress tolerance and pest resistance. There also are varieties or cultivars that have finer leaf blades, greater shoot density and are able to tolerate lower heights of cut. These characteristics help ensure that putting green conditioning can meet current day standards on a consistent basis. However, the need to convert to a better-adapted base turf does not mandate complete reconstruction.

Again, a lack of water can be just as detrimental to turf health as too much water. Even in regions that receive moderate to high rainfall annually, supplemental irrigation of putting greens is necessary and is one of the most important basic turf-management practices. The water requirements of very low cut putting greens are distinctly different from those of higher cut surrounding turf areas.

An irrigation system audit is another recommended step for determining what adjustments, changes or upgrades to the irrigation system could be performed to maintain healthy turf and desired conditioning.

Deficiencies in irrigation system coverage and control alone rarely would be justification for putting green reconstruction. However, if the use of a poor-quality – e.g., high salt content – water source becomes necessary, reconstruction could be required. Along with conversion to a more salt-tolerant turfgrass, having increased rootzone porosity and subsurface drainage is essential for being able to effectively manage and prevent the build-up of excessive salt levels.

ARCHITECTURAL CONSIDERATIONS AND LIMITATIONS

Golf course architects of yesteryear could never have imagined that the game would become as popular as it has, or that there would be the dramatic increase in putting speeds.

Modern-day superintendents have many turf management tools available that can help compensate for the negative impacts of traffic wear and damage. Yet, there still are agronomic limits when managing small greens – (i.e., greens that on average are less than 5000ft² – approx. 460m²) especially when more than 20,000 rounds are played annually.



Sometimes, enlarging small greens is feasible but, more often than not, expansion projects are as disruptive and expensive as reconstruction. Problems are further compounded when ingress and egress traffic around putting greens is limited by bunkers, mounds and the location of cart paths.

Along with aggressively managing traffic to spread it out over as much area as possible, measures like relocating bunkers and cart paths and softening mounds can help alleviate traffic issues. However, these measures are not the total solution to the problems experienced on small greens with heavy play.

Additional problems arise when fast to very fast speeds are maintained on putting greens that have pronounced surface contours. There is a direct



A thorough agronomic assessment to determine the possible reasons for poor and inconsistent performance must be made before the thought of reconstruction can be entertained

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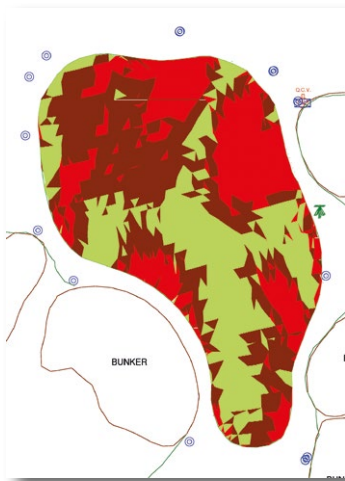


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A computer-generated survey of the iconic 15th green at Kingston Heath Golf Club in Melbourne as part of its recent minor reconstruction showing slope percentages (green shading 0.000% to 3.500%; brown 3.500% to 5.000%; red 5.000% to 15.000%)

relationship between putting green speed and the slope of an area that can be used for hole locations. When fast to very fast putting speeds are maintained on highly contoured putting greens, the amount of usable area for hole locations is reduced, resulting in more concentrated traffic, wear and damage problems.

There are no rules regarding hole locations and thus there is no such thing as an 'illegal' hole location. The USGA has, however, recommended the following as general criteria for hole locations: "An area two to three feet in radius around the hole should be as nearly level as possible and of uniform grade. In no case should the hole be located in tricky places or on sharp slopes where the ball can gather speed. A player above the hole should be able to stop the ball at the hole."

In consideration of the fast to very fast green speeds now being maintained at many courses, an 8- to 10-foot radius around the hole with a consistent slope would be more appropriate. In the article, 'Putting Green Speeds, Slopes and Non-Conforming Hole Locations', golf course architect Jerry Lemons introduced the Maximum Slope for Green Speed graph (Figure 1). This is an excellent tool for determining the number of reasonable hole locations and the amount of usable surface area of putting greens. If it is found that there are fewer than seven or eight hole locations available at the speed that is routinely maintained, turf quality as well as golfer enjoyment will be adversely impacted.

Assessment of hole locations can be performed with a stimpometer to measure speed and a 4-foot long digital level that has a per cent slope readout function. Also, there is a high-tech option of digital laser scanning and three-dimensional computer modelling of putting green surface contours. After shooting thousands of points across the putting green surface, data from a laser scanner is used to do a slope analysis and provide colour-contour maps and hole location diagrams. This information is very useful in determining the architectural speed limit of the putting greens.

Interestingly, in the past few years reconstruction projects have been undertaken because golfer demands or expectations exceeded the speed limit of existing greens. The ability to digitally scan and precisely reproduce surface contours to a tolerance of plus or minus 0.25 inch has eliminated one of the main obstacles of rebuilding putting greens with historical significance.



Figure 1. The combination of maintaining fast to very fast green speeds on putting greens with pronounced surface contours results in reduced area for hole locations and increased problems caused by concentrated traffic and wear damage

DETERMINING NEED AND WHAT COMES NEXT

The following is a brief review of what comes next when putting green reconstruction is deemed necessary:

- **Selecting the method of construction, materials and grasses:** While there are options, the USGA's Recommendations for a Method of Putting Green Construction have been the industry standard for over 50 years. A key component in the construction of USGA greens is first identifying and then testing rootzone and drainage layer materials.
- **Selecting a qualified golf course architect:** A golf course architect is a very important member of a putting green reconstruction project team. Once the scope of work is determined, the architect will prepare a detailed set of plans and specifications that can be used by construction contractors to bid on the project. If an architect is not already working with a course, course officials should prepare a short list of potential candidates and arrange for them to visit, review the course and participate in an interview to provide a summary of their ideas for addressing problems and improving the greens.
- **Selecting a construction contractor:** A major project like putting green construction is vastly different from routine course management and thus is almost always best handled by a qualified and experienced construction contractor. In addition to the golf course architect, area courses that have recently been through similar projects and word-of-mouth can be sources of information about local contractors.

CONCLUSION

There are multiple factors that can cause putting greens to fail or not meet expectations. In consideration of all of the negatives of putting green reconstruction – like the disruptions to course operation and associated costs – decision makers should exercise proper due diligence and conduct a methodical evaluation of the agronomic and architectural characteristics of each green complex before undertaking a reconstruction.

The necessity of putting green reconstruction can only be determined once every possible reason for poor and inconsistent performance has been addressed. At that point, it is time to bring together a team of experts to plan and implement a reconstruction project that will ensure successful achievement of short- and long-term goals.

REFERENCES AND ACKNOWLEDGEMENTS

A full list of references can be obtained from the AGCSA. This article has been reprinted with permission from the USGA and originally appeared in the Green Section Record, Vol 53 (19), October 2, 2015. 🍷

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Toro Turf Tour

Royal Adelaide Golf Club holds a unique place in the Australian golfing landscape. Its layout is quirky, the club is fiercely traditional and is renowned for its spectacular terrain and superbly presented turf surfaces. Set to celebrate its 125th anniversary in 2017, it was the great Alister MacKenzie who really put Royal Adelaide on the map after visiting the course for a few short days back in 1926. During that trip he recommended a raft of changes to the original design of Gardiner and Rymill, with the end result being the likes of the short par four 3rd and the Crater hole (11th) which rank among some of the classic holes in world golf.

Since November 2011 Royal Adelaide has been under the custodianship of course superintendent Nathan Bennett. Schooled at Metropolitan Golf Club before stints at Moonah Links and The Sands, Torquay, Bennett has honed his craft over more than 20 years and has quickly left an indelible mark since arriving in South Australia. Anyone who has visited Royal Adelaide in recent times will attest that course conditioning has never been better and together with the work of the club's appointed course architect Tom Doak, Royal Adelaide is undergoing a renaissance.

Playing a key role in Bennett's course operations is Toro which is not surprising given the company's national headquarters are less than a 10 minute drive away. Royal Adelaide's association with Toro goes back many years and the club was actually one of the first in Australia to install the Site Pro



irrigation control system back in the 1990s. Since taking over the reins at Royal Adelaide, Bennett has further cemented that relationship and over the past four years has instituted a machinery turnover programme which is paying big dividends out on the course.

There are many reasons why Toro is a great fit for Royal Adelaide, but for Bennett

there are a few key points why he and the club choose red. "I've used a variety of turf equipment over my career, but what separates Toro from everyone else is their service and back-up," says the 39-year-old. "You're dealing direct with Toro Australia, not a sales company that's just there to sell you a piece of equipment and say see you later. Toro is prepared to do whatever it takes to help you out and they're about serving and looking after their customers for the long-term. And that's what draws people from the industry."

"From an operator point of view – and you ask any of my crew – Toro equipment is very comfortable to use and the versatility is magnificent. What's more, Toro is always looking at ways to improve their machines and are always open to feedback and suggestions from superintendents."

"The other big thing for me and the club is that Toro is a massive supporter of

Over more than 20 years in turf management, including the last four as superintendent at Royal Adelaide Golf Club, Nathan Bennett has come to rely on the quality of Toro machinery as well as the company's exemplary after sales service and back up



Course: Royal Adelaide Golf Club, SA Superintendent: Nathan Bennett

The Groundsmaster® 3500-D rough mower's free-floating Contour™ Plus cutting decks allow mowing of undulating terrain without scalping, providing a superior level of finish



the industry which I think we sometimes forget about a little. The way Toro backs the industry, whether it's through the annual conference, state association days and award sponsorships, is second to none."

RED ON GREEN

Given the high level of course presentation expected at Royal Adelaide, Bennett's Toro arsenal gets a thorough workout week in week out. The predominantly G2/Seaside/Penncross/Highland bentgrass greens are exclusively walk-mowed with a fleet of seven Toro Greensmaster® 1000s (Bennett will be upgrading these to Greensmaster® Flex™ 2100s in the coming year) while the tight, native couchgrass fairways are immaculately taken care of by two Reelmaster® 5510s.

During the recent summer, Bennett demoed Toro's revolutionary new Reelmaster®

5010-H hybrid fairway unit, the industry's first and only fairway mower with a true hybrid drive system that matches the performance of comparable 5-gang fairway mowers with an average of 20 per cent better fuel efficiency. The 5010-H utilises a Kubota 24.8hp diesel engine in concert with an in-line motor generator and a self-recharging 48-volt battery pack to provide seamless power to the vehicle and cutting units. The combination comprises Toro's patented hybrid power delivery system called PowerMatch™.

"We demoed it for about a fortnight over summer and the boys just loved it," says Bennett. "I think hybrid mowers are the way things are headed and after using it I think we'll look at upgrading to one. It's quieter, it seems to be a lot smoother and the fact that the cylinders are running separate to the hydraulics means there is no loss of power when there's a load on or you're going uphill. It's a fantastic machine."

Along with the club's Workman utilities which are forever out and about on the course, another workhorse of the Royal Adelaide fleet is the Greensmaster® TriFlex™ 3400. Aside from greens and fairways, all the fine cut turf areas – tees, surrounds, approaches – are taken care of by three TriFlex™ 3400s triplexes.

Greensmaster® TriFlex™ mowers have been designed to take precision cutting to a new level. Adopting the proven Flex suspension, the cutting units float freely over contours and undulations (of which there are a lot at Royal Adelaide) resulting in a superior quality of cut and after-cut appearance. A redesigned clipping capture system maintains

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- 3 x Greensmaster TriFlex 3400
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a consistent gap between the basket and reel to ensure maximum grass clippings collection for a cleaner and healthier cut, while the increased transport speed (16kph) allows operators to stay ahead of golfers.

"The TriFlex™ is a great machine and another example of Toro's ongoing progression with its machines and improvements regarding mower technology," says Bennett. "It can go anywhere, is versatile, operator comfort is great and it's so easy to work on. The tool-free, quick-change cutting units make servicing fast and easy and the lift-gate footrest provides easy access to the middle cylinder for maintenance."

Other Toro equipment that make Bennett's operations run smoother include the versatile and highly manoeuvrable Workman HDX utility, which also doubles as a topdresser, as



Royal Adelaide recently demoed Toro's revolutionary Reelmaster® 5010-H hybrid fairway unit

Toro Turf Tour

Course: Royal Adelaide Golf Club, SA **Superintendent:** Nathan Bennett



“From an operator point of view – and you ask any of my crew – Toro equipment is very comfortable to use and the versatility is magnificent.”
 – Nathan Bennett

well as the Groundsmaster® 3500-D triplex rotary rough mower. Although not cutting a lot of rough, where they do the 3500-Ds free-floating Contour™ Plus cutting decks allow mowing of undulating terrain without scalping and provides a superior level of finish compared to an out-front rigid deck mower. Also taking Bennett’s eye is the recently procured ProCore® 648 pedestrian corer which he is hoping to employ more out on the course in the coming months.

“All our Toro fleet is great for general course maintenance, but the one machine I’m really looking forward to using more is the ProCore 648,” says Bennett. “It’s probably the newest piece in our fleet and going forward I can see it playing a significant part in our operations. Having the ability to mini-fine greens more often with minimal disruption and target compacted areas will have a huge benefit, especially in regards to improving turf health across the course.”

BEATING THE HEAT

Being located in the driest state on the driest continent, water management is also a critical aspect of Bennett’s operations. While lucky to have an abundant supply of excellent quality water, by no means does that mean he is any less judicious in its application. Around six years ago the club upgraded



The Greensmaster® TriFlex 3400™ is a real workhorse of the Royal Adelaide fleet

the majority of its irrigation infrastructure, hardlining fairways to improve definition of the fine cut turf areas but to also achieve greater efficiencies in distribution.

That latter aspect has been further enhanced with the club recently upgrading to the Lynx® central control system which has been developed specifically by Toro to help superintendents and turf managers address the unique challenges and changing priorities they face every day in regards to irrigation. With Lynx, superintendents now have all of their essential irrigation information readily available in one place, conveniently combined into a single, intuitive interface.

“The useability of the Lynx system is incredible,” says Bennett. “It provides you with so much information yet is so simple to operate – it’s all there for you on the screen. We are much more accurate with our watering now and we can select individual sprinklers and areas and put the water where we want it. It’s so easy to set up and adjust programmes too. It really is a great system.

“In line with this we have also installed TurfGuard sensors into two greens which

enables us to measure moisture and temperature in the profile at both a high and low point. While we don’t use it to set our irrigation programmes to, the sensors provide a great guide as to what’s happening in the profile. Some of the data we are seeing is quite surprising, especially how hot soil temperatures can get and the depth to which we water. It is becoming a very valuable tool.”

OPEN FOCUS

Although hosting nine Australian Opens throughout its history – only The Australian, Royal Melbourne and Royal Sydney have hosted more – Royal Adelaide has been out of the tournament spotlight for a while; however that is all set to change come 2017.

To celebrate its 125th anniversary, the club will host the Australian Women’s Open which made a spectacular return at The Grange Golf Club this year. Bennett and the club are looking forward to entertaining the game’s top female golfers and Toro will be front and centre assisting them to present Royal Adelaide in world class condition.

“We are very excited to be hosting the Open,” says Bennett, who prepared Moonah Links for two men’s Opens during his time there as an assistant. “The last Open Royal Adelaide held was in 1998 and we also had the Eisenhower Trophy in 2008, so for major tournament golf to return to the club is great. We are looking forward to putting Adelaide and the club back on the map.” 🍷



Royal Adelaide recently upgraded to the Lynx® central control system

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TORO

Oxford Golf Resort near Pune, India sprawls across 55 hectares of land that is surrounded on three sides by the spectacular Sahyadri hills



In recent months ATM columnist John

Neylan has travelled to India to provide agronomic advice and training to local greenkeepers. Here he looks back at his time on the subcontinent and also discusses some of the preventive programmes sports turf managers can put in place to prepare their grounds for the rigours of winter play.

Indian summer

Golf course architect Phil Ryan, of Pacific Coast Design (PCD), has worked extensively in India since 1992 and over this time has been intimately involved with the Indian golf industry. Phil has always been a strong advocate for training local greenkeepers and reducing the reliance on ex-pats, and to this end he asked me last year whether I was interested in taking on a consultancy/technical education role in India. The immediate reaction was yes, but in thinking about it later there was a fair amount of doubt as to whether I could do it.

In 2007 I was fortunate to attend a golf conference in India with then AGCSA president Jeff Gambin and NSW Golf Club superintendent Gary Dempsey. It was an intriguing adventure as we tried to take in all the crowds, sounds, smells and mystique of this booming country. At that time turf management was beginning to change and develop and there was a yearning for more technical knowledge.

Following Phil's offer and thinking back on 2007, I thought that there was an interesting challenge for me and it would provide a good opportunity to get out of my comfort zone. I wrote about this aspect of developing a career a few issues ago (ATM 17.5). As you get older you tend to get a bit less adventurous, but on this occasion I decided to take my own advice!

One factor that gave me a high level of confidence was that PCD director (India), Vincent Pinto, would be there as my mentor and interpreter and to guide me through the cultural sensitivities of India. I cannot overemphasise the importance of Vincent's help in creating a good co-operative working relationship. Vincent has had extensive experience in golf development across India and was project manager at Oxford Golf through from inception, golf construction to post-two years opening and in charge of management/maintenance.

Since agreeing to assist Phil, I have made two visits to India, the first in November 2015 and the most recent in February 2016 to the Oxford Golf Resort and Delhi Golf Club.

OXFORD GOLF RESORT

The golf course at the Oxford Golf Resort was designed by PCD and opened in 2009. It is an 18-hole 6419 metre (par 72) layout. PCD have master planned 'The Oxford' golf resort as part of the larger Knowledge City Project which includes a university and township set among nearly 400 hectares laid out along a magnificent valley near the city of Pune. It is a beautiful and serene getaway. Pune is about 2.5 hours from the international airport in Mumbai.

The course is built on 55 hectares of land that is surrounded on three sides by the Sahyadri hills that give it a stunning backdrop, especially as you drive down the hills with the course lying down below you. Mr Soelekar, the founder and chairman of the Oxford Group, has been the driving force behind the golf course and is also current president of the Indian Golf Union.



Oxford Golf Resort's magnificent seashore paspalum fairways. Oxford is wall-to-wall seashore paspalum

The climate in Pune is well suited to maintaining warm-season grasses with the average maximum being 27-38°C with the minimum being consistently in the 20s with 11°C being the lowest average minimum. Water and regular rainfall is critical to life and the annual monsoon is a much-anticipated event. From June to September most of the annual rainfall occurs with about 700mm falling during this period. The monsoon did not arrive as was expected last year and water shortages have become a major concern.

The golf course is wall-to-wall seashore paspalum and its presentation is spectacular. The attention to detail is meticulous from the mowing practices, maintaining bunkers, weed control and irrigation. The staff consists of the senior management team of course superintendent Sanjay Kulkarni, senior assistant Atul Pawar and assistants Amruta Pawar and Sameer Vidhate.

There are 36 golf maintenance staff responsible for mowing, fertilising, irrigation, spraying etc. as well as up to 60 casual labourers from the local village who are responsible for maintaining the bunkers, hand watering etc. There are a large number of women from the local village working on the golf course which has been a significant part of the social inclusion initiative undertaken by the golf complex.

The best part of the day for me, as I was staying on-site, was to do a pre-breakfast tour of the golf course. There is tremendous pride undertaken in the work being undertaken and it was always fun having a 'chat' with the operators about what they were doing. A nod and a smile go a long way. Possibly the most daunting part of my time at Oxford was to

meet with the staff and to speak to them about my observations. This was interpreted and conveyed by Vincent. It also came with a few questions that really tested the mettle.

The golf course has many elevation changes as it was routed through the valley and rocky outcrops. In many locations there was a significant amount of rock that had to be removed while constructing the greens. Because of the nature of the site there are areas of the golf course that provide challenging microclimates with steep cliff faces providing shade and reducing air flow. Probably the greatest shade issue is provided by a row of eucalypts! That's surely a common theme!

The golf course has a water supply with a pH up to 8.5 which has affected the soil chemistry and the ability to grow a strong and healthy root system. The pH of the water has also affected the soil physical properties which have also affected root growth. The golf course has recently ordered a sulphur burner which is expected to greatly improve water quality.

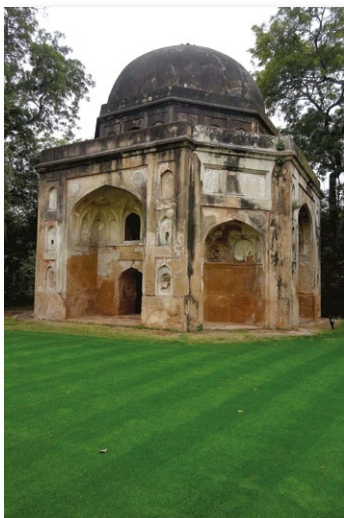
Irrigation management has been one of the areas that the turf maintenance team has been working on in better understanding the water requirements of the seashore paspalum and the implications for the quality of the playing surfaces. The turf management team has made great use of a recently purchased FieldScout TDR moisture

Because of the nature of the Oxford site, there are areas of the course that provide challenging microclimates with steep cliff faces providing shade and reducing air movement





◀ A large number of women from the local village carry out maintenance jobs including bunker raking and hand watering at Oxford. This is a significant part of a social inclusion initiative undertaken by the complex



Delhi Golf Club is routed through an ancient burial site where the tombs of forgotten Moguls provide a stunning backdrop

From left to right: PCD's Vincent Pinto tests bunker sand suitability the Indian way; John Neylan with the team at Oxford Golf Resort and John Neylan providing training to local greenkeepers at Oxford



probe and they have made significant strides in improving the depth and density of the root system. The importation of specialist wetting agents has also assisted in managing localised dry spot and the overall quality of the turf surfaces.

In January 2016 the golf course took possession of a new fleet of Toro equipment and they now have all the gear for maintaining the very high level of presentation that is required. It is interesting to discuss various aspects of course maintenance and where I would often suggest the use of a machine there was frequently an alternative method put forward that utilised the large labour force. It is about there being a job for everyone and everyone having a job – social inclusion at work.

DELHI GOLF CLUB

The Delhi Golf Club dates back to at least 1930 and possibly earlier with the club having a trophy dating back to 1911. The course consists of the 18-hole championship Lodhi Course and the nine-hole Peacock Course.

It was following WWII that the government of the day prevented the neglected course (due to the war) from being developed as housing and it now provides a green wedge in the middle of one of the most highly urbanised cities of the world. Delhi city has a population of about 11 million with the urban/metropolitan population at about 16 million. At times you feel like everyone is on the road at once! The golf course undoubtedly provides an oasis in the middle of what appears to an Aussie agronomist as utter chaos.

The Delhi Golf Club has hosted numerous tournaments including the Indian Open which it

will again host this year as a European/Asian Tour event. The Indian Open was fostered by renowned Australian golfer Peter Thomson who won the championship three times. Several Aussies have gone on to win the event including Graeme Marsh (twice), Ted Ball, Brian Jones and Stewart Ginn.

The golf course was remodelled by Thomson in 1977-1978 and since that time there has been additional remodelling and reconstruction of greens take place. Phil Ryan has redesigned the picturesque Peacock nine which is due to open in late March. While the Delhi Golf Club is a private members course it has to cope with around 100,000 rounds a year.

The golf course is routed through an ancient burial site where the tombs of forgotten Moguls provide a spectacular backdrop to the golf course. There are a number of significant monuments on the golf course dating back some 1200 years and the golf course has provided a means of preserving these significant artefacts.

The Mogul Empire was an empire based in the Indian subcontinent, established and ruled by a Muslim Persianate (Persian speaking) dynasty that extended over large parts of the Indian subcontinent and Afghanistan. The golf course plays an important role in maintaining a significant, and for a time, a forgotten period of history.

Delhi's greens are Tifdwarf, which are very well presented and maintained at about 4mm. The fairways consist of a beautiful native *Cynodon* sp. called doob (also doub) grass and appears superior to the Tifway seen at other courses. The golf course is managed by course manager Yadvendra Shah, deputy course manager Bhupendra Singh and assistant course manager Virendra Kumar.

The turf management team have to maintain the course around the golfing traffic and this is done through having Mondays as a golfer free day and by sending out large teams late in the day to undertake the necessary maintenance. The main golfing season is from October through to March at which time the warm-season grasses are dormant and there is minimal growth and recovery. Consequently over this period there is considerable effort put into repairing divots and pitch marks.

As the golf course is carved through what was once jungle, an injudicious slice or hook takes you into dense vegetation and snake country. Trees surround several greens which impact on



turf maintenance, however, the trees are protected under various environmental laws and any thinning or clearing requires permission from the appropriate government departments.

The Delhi region has an extreme climate with a winter minimum temperature of 2-4°C (with a 20°C max) where the *Cynodon* sp. goes into dormancy for about eight weeks. In summer, temperatures can regularly reach a blistering maximum in the mid-40s and combined with a two-month wet season provides a very hot, wet and humid climate.

In the lead up to the Indian Open there has been a large amount of work undertaken, including renovating fairways, re-grassing bunker faces, repairing high traffic areas, spiking and dusting greens and controlling localised dry spot. In addition, the European Tour requested the collars of greens and the tournament tees be overseeded with ryegrass. This was at relatively short notice and the maintenance team has done a great job getting it established in the collars while play continues on (the tournament tees were closed). The club has also purchased a new fleet of Toro equipment which will assist the maintenance team in achieving the high standards required by the golfers.

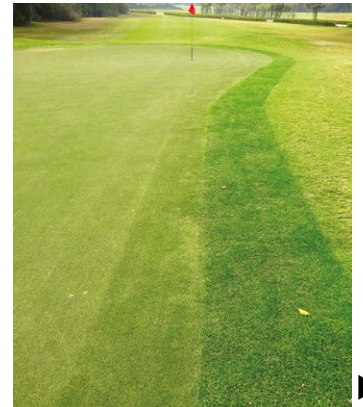
The Peacock course is a short course but it is a beautiful layout through a heavily treed landscape. A notable aspect of Delhi Golf Club is the abundant bird life throughout both courses with peacocks and buzzards being most prominent. The peacocks



strut around as if they own the place (which is true in many respects) and can quickly trash a perfectly raked bunker or track glyphosate across a green from a spot where weeds had been treated. Every golf course has its own charm, beauty and challenges. 🙌

Above: One of the many exotic residents at Delhi Golf Club

Right: Delhi Golf Club hosts the European/Asian Tour Indian Open and recently it was stipulated they overseed the native couch collars with ryegrass



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PREVENTATIVE PROGRAMMES TO GET YOUR GROUND THROUGH THE RIGOURS OF WINTER



A good turf cover going into winter is extremely important

While many sports fields are struggling to get through what has been a hot and dry summer, we need to be thinking about how we are going to prepare them for the winter months. The effects of a hot and dry summer can weaken the turf sward, even where warm-season grasses are used, resulting in a turf that is less able to survive the ravages of a wet and cold winter.

The winter months coincide with the major football codes of rugby, rugby league, soccer and AFL and each of these impose a high level of wear and turf damage at a time when grass growth is slow. The popularity of the football codes are such that most municipal sports fields are used most days of the week for a combination of training and matches. The work load on winter fields is usually far greater than for summer sports and consequently there is greater turf damage. In some recent sports field audits and a review of the usage, it is not uncommon to have the use increase by 2-3 times.

Traffic and wet soils can cause a dramatic deterioration in the quality of the turf surface due to reduced infiltration rates and aeration porosity. When the soils become saturated and muddy the turfgrasses become coated with soil and partially buried and irreparable damage can be caused.

How can wear and the damage it causes be managed at a time when growth is slow and soils are wet? Based on recent sports field audits, some of the key factors identified that minimised turf damage involved a combination of relatively simple factors including;

- Ensuring there is good soil permeability and drainage. In the late summer and early autumn, deep aeration is essential for relieving compaction and providing for improved infiltration and drainage.
- Where a sports field has a sand slit drainage system hollow coring in the late summer will make sure the slits have a high infiltration rate.
- Grow as much grass on the wicket table as possible pre-winter season and keep it as dry as possible throughout the winter.

- Having a strong turf sward going into winter. The strength, density and health of the turf sward will go a long way to ensuring the surface gets through the rigours of winter. On warm-season grasses fertilise late in the summer and lift the cutting height as early as possible. The aim is to produce a dense turf with maximum biomass. Checking there is good soil moisture is also important in ensuring the warm-season grass can get maximum benefit from the fertiliser.
- A fertiliser application high in phosphorus and potassium and moderate in nitrogen in early autumn will provide improved root, stolon and rhizome strength before going into dormancy. The P and K plays a role in minimising the effects of root diseases such as spring dead spot in warm-season grasses. Soil tests should be taken in late summer and the phosphorus and potassium levels adjusted as required.
- Controlling winter weeds and particularly *Poa annua* is an often poorly understood management practice. Where warm-season grasses are maintained it is important to apply a pre-emergent herbicide in the late summer and then to follow up with repeat applications. Recent research through the Sports Turf Association has shown that post-emergent control has become more difficult and therefore using pre-emergent herbicides is the best option.
- Check for scarab larvae activity in the summer. Areas of stressed turf could be due to insects. Have a dig and get them identified.
- A programme of regular aeration throughout the winter will greatly assist in minimising the rate of turf damage. When there is a dry spell of weather and machinery can be used without damaging the surface – punch some holes!

The big one, however, is controlling use. This is almost the impossible dream, but managing sports fields through this time requires a great deal of coordination among administrators, coaches and turf managers. The first step in controlling traffic on a sportsfield is to educate the facility users about the advantages of distributing wear rather than concentrating it, especially in late autumn and early winter when turfgrass growth is reduced.

As a general rule, the industry standard for hours of use for a natural turf field is between 14-18 hours per week but only where the field is a well-drained sand-based construction that is well maintained and in good condition (MCC, 2010).

Managing municipal sportsfields is a challenge due to high use and limited budgets. However, preventative programmes that set up the field for the rigours of winter will pay for themselves with better and safer surfaces and less repair in the spring.

- John Neylan

Where a sports field has a sand slit drainage system, hollow coring in the late summer will make sure the slits have a high infiltration rate





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Cutting edge

USGA agronomists Brian Whitlark and John Daniels take to the workshop to look at mower unit set-up and its influence on achieving quality putting surfaces.

Optimising mower set-up has a profound impact on the health and quality of putting greens. Golf courses, by and large, are judged based on the condition of their putting greens with every golfer enjoying putting on uniform surfaces that roll true. A dense, healthy stand of turfgrass that is smooth and consistent should be the goal for all golf facilities, regardless of budget.

Some may think that golf courses operating on a shoestring budget do not have the resources to produce and maintain quality putting surfaces – this is not necessarily true. All golf courses can maintain smooth surfaces for golfers to enjoy when the agronomic staff makes a commitment to quality. Part of that commitment is recognising that equipment set-up can have a significant impact.

The one agronomic practice performed on putting greens with the greatest frequency is mowing. Maintaining sharp, precisely adjusted putting green mowers is essential to produce quality putting surfaces. Whether your course is public or private, high budget or low budget, this principle should never be overlooked.

University research and numerous field observations have demonstrated the profound impact mowers have on turfgrass quality. In a 2004 study at Michigan State University, researchers concluded that “proper maintenance of the mowing equipment can have just as significant (if not more) of an impact on green speed as lowering the mowing height.”

Proper mower set-up (i.e., sharp reels and bedknives with slight reel-to-bedknife contact) is critical to cleanly cut fine turf blades. Dull reel blades and bedknives will rip and tear leaf blades, leaving a white-to-brown appearance across a putting surface and leading not only to an unsightly appearance but also increasing turfgrass stress.

Mowing with dull bedknives and reel blades leave plants more vulnerable to attack from disease and insects than mowing with sharp blades. Using sharp equipment leads to smoother greens and research conducted at the Bridgewater College in Cannington, England showed that sharp equipment is more fuel efficient.

STAYING SHARP

When a reel blade passes the bedknife it should be able to easily cut a single sheet of 20-pound office paper. There are a variety of methods used to produce sharp reels and bedknives, but it is critical that green mowers cut paper across the entire width of the reel every time they leave the maintenance facility. A discussion on the pros and cons of the various grinding strategies is outside the scope of this article; however, it is important to note that every operation should be flexible and consider a variety of strategies to maintain sharp reels and bedknives.

For guidance on whether to maintain relief on reel blades, consult with your mower manufacturer. Mower manufacturers typically recommend that the reel blades be maintained with a 20- to 40-degree

Above: Whether your course is public or private, high budget or low budget, maintaining sharp, precisely adjusted putting green mowers is essential to produce quality putting surfaces

relief angle. Maintaining relief on reel blades reduces the width, or land area, of the blades and results in less metal contacting the turf, sand and bedknife, reduced mower fatigue and reduced fuel consumption.

It also is important to maintain a top face angle on the bedknife of 3-6 degrees for green mowers to properly eject grass clippings into a basket and minimise the contact surface area with the reel blade. The front face angle (i.e., the presentation angle) should be maintained at 11-15 degrees to properly stand up turf blades before cutting.

Maintaining sharp edges on the bedknife and reel between heavy grinding is critical for consistency. Techniques like front facing the bedknife and backlapping have fallen out of favour in some regions, but their benefits should not be discounted. Backlapping removes burrs and creates a honed edge that mates the reel and bedknife. As a guideline, if the mower will not cut paper after backlapping for 4-5 minutes, it is time for grinding.

So what other mower characteristics do you need to monitor daily to be successful?

HEIGHT OF CUT (HOC)

The tolerance for error in HOC should be no greater than 0.001 inch from one side of the reel to the other. At today's low mowing heights, there is no room for error. Fortunately, there are several popular tools available that measure HOC. The tools are outfitted



with either an analogue or digital dial indicator capable of measuring HOC to the one-thousandth of an inch. HOC gauges also may come with magnets that help hold the tool to the mower, reducing human error associated with applying pressure to the gauge during the measuring process.

The HOC set at the maintenance facility, also called the bench setting, is only part of the story. Effective HOC, the actual mowing height in the field, is more relevant. The bench setting reveals little about the effective HOC on a green, which can be determined with a prism gauge. There are numerous factors that influence effective HOC:

- **Fixed-head versus floating-head mowers:**
Often, fixed-head mowers will cut at least 0.020

Sharp mowing equipment will produce a cleaner surface with fewer uncut leaf blades compared to mowers with dull reel blades and bedknives

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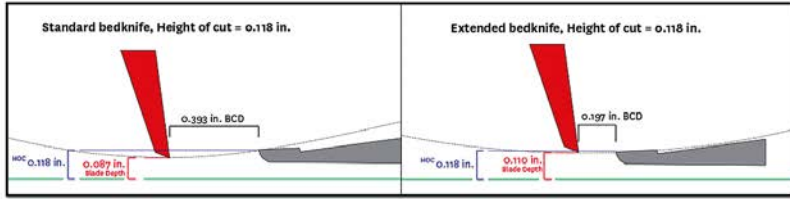
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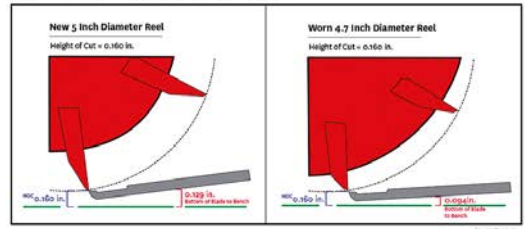

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Standard And Extended Bedknife



Influence By Reels Of Different Diameter



Left: Utilise an extended bedknife to reduce the aggressiveness of a mower; Right: When reel diameter decreases from 5 to 4.7 inches as it wears, mower aggressiveness decreases. Source: Baroness

inch lower than floating-head mowers. The weight of the floating head mowers is dispersed among three rollers – the front and rear roller on the cutting unit and the rear drive drum. The weight of fixed-head units is only spread across the front roller and the drive drum.

- **Bedknife angle:** The more aggressive the mower is set-up (i.e., the steeper the angle of the bedknife and the greater the distance of the bedknife behind the centre point of the reel) the lower it will mow. When switching from a less aggressive to a more aggressive bed bar (aka bedshoe or bottom blade) the bench HOC should be set approximately 0.015 to 0.025 inch higher to achieve the same effective HOC.
- **Front roller style:** Smooth front rollers, even when weighted, will cut less grass than a light-weight, grooved front roller. Additionally, a small-diameter front roller penetrates deeper into the turf than a large-diameter roller and yields a lower effective HOC.
- **Frequency of clip (FOC):** The frequency of clip can vary significantly among mowers and may influence the effective HOC. The FOC will be discussed in greater detail later.
- **Weight of attachments:** Increasing the number of blades per reel not only increases FOC but also increases reel weight. A mower with a 14- or 15-blade reel (i.e., a heavier reel) often will cut 0.010 inch lower than a mower with an 11-blade reel. Grooming or brush attachments add weight to mowers and will contribute to lower effective HOC. Often, it is suggested to set the bench HOC 0.010 inch higher when outfitting a mower with a brush or groomer.
- **Bedknife length:** An extended bedknife decreases mower aggressiveness and effective HOC. The length of an extended bedknife (i.e., the distance from the back edge of the bedknife to the cutting edge) can be as much as 0.200 inch longer than a standard bedknife.

- **Reel diameter:** A mower with a new reel will cut up to 0.020 inch lower than a mower with a worn reel. As the reel diameter decreases with normal wear and sharpening, the angle of the bedknife decreases to remain in contact with the reel. As the angle of the bedknife decreases the effective HOC will increase over time.

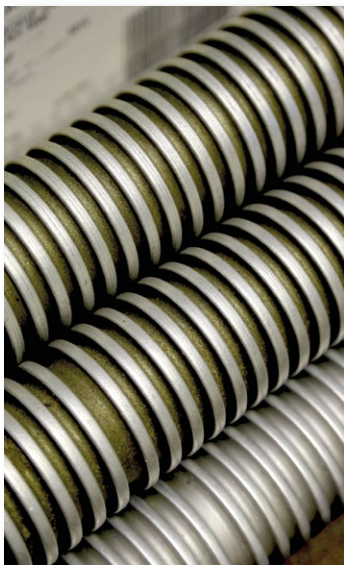
- **Operators:** The pressure of an operator's hands can increase the effective HOC, especially when using a fixed-head mower with a lightweight front roller or when mowing up slopes. The frequency at which an operator empties the catcher also can have a significant impact.

Although this list is not all-inclusive, it clearly shows that there is more to consider than just bench setting. Therefore, it is important to avoid comparing the bench setting HOC from one course to another.

REEL-TO-BEDKNIFE CONTACT

The proper distance between a bedknife and reel is debatable. Most manufacturers suggest a clearance of 0.0005 to 0.0020 inch between bedknife and reel blades – often referred to as light contact. A feeler gauge or strip of paper should be used to ensure uniform clearance across the width of the bedknife. No contact (i.e., greater than a 0.0030-inch clearance between reel blades and bedknife) is not suggested because it tends to shred and tear leaf blades as opposed to cutting them scissor-like.

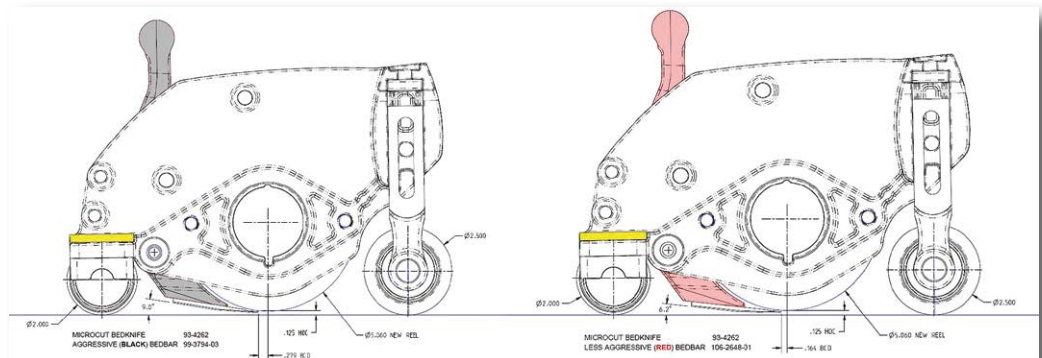
In the previously mentioned Iowa State University study, a sharp mower with light contact produced turf with better visual quality, more chlorophyll content, less mower injury and less ethylene production when compared to a sharp mower with no contact. Heavy reel-to-bedknife contact can result in rifling, whereby a wavy wear pattern develops on the reel and/or bedknife. Rifling ultimately requires grinding the reel and replacing the bedknife.



Smooth front rollers, even when weighted, will cut less grass than a light-weight, grooved front roller

An aggressive bed bar (left) places the bedknife further behind centre (0.279 inch) and at a steeper angle (9 degrees) when compared to a less aggressive bed bar on the right. The less-aggressive bed bar places the bedknife closer to the centre point of the reel (0.164 inch) and at a shallower angle (6.2 degrees).

Source: Toro



CONTINUED ON PAGE 46

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Grooming or brush attachments add weight to mowers and will contribute to lower effective height of cut. Often, it is suggested to set the bench HOC 0.010 inch higher when outfitting a mower with a brush or groomer

CONTINUED FROM PAGE 44

REEL SHAPE AND ROLLER BEARINGS

Reel sharpness, HOC and bedknife-to-reel contact should be checked and adjusted before every mowing. Additional mower characteristics like roller and reel parallelism and shape and the condition of roller and reel bearings should also be periodically checked.

A cone-shaped reel (i.e., when one end of the reel is a larger diameter than the other end of the reel) most often occurs when mowing following regular topdressing events. The helical shape of reel blades causes sand to be thrown to one side of the reel, creating inconsistent wear and eventually a cone-shaped or tapered reel. The trailing edge (i.e., the right side of the reel when viewed from the front) often wears three to four times faster than the leading edge (the left side) of the reel.

As a guideline, the front roller should not have more than 0.001 inch of 'play' when measured with a HOC gauge. For quality of cut and accurate grinding, the rollers must be parallel to the reel and the reel must be round.

The most important aspect of managing green mowers is to fully engage and commit to mowing with sharp, accurately adjusted equipment on a daily basis. To maintain precise, accurate HOC and optimal mower performance, equipment technicians must check and adjust every mower before every use.

Maintaining sharp mowing equipment and properly setting HOC and reel-to-bedknife contact

Superintendents are encouraged to experiment with double mowing on one green for extended periods (i.e., six to eight weeks) and compare green smoothness, green speed, effective HOC and turf stress to greens that receive single mowing



are important concepts of a successful mower set-up. Additional factors like mower aggressiveness, frequency of clip and mowing technique also affect mower performance.

AGGRESSIVE SET-UP

An aggressive mower setting is created by positioning the bedknife further behind the centre point of a reel – referred to as increasing the behind centre distance (BCD) – and increasing the bedknife angle in relation to the ground, causing the reel blades to dip deeper into the turf canopy.

With an aggressive setting, reel blades are positioned below the top edge of the bedknife (typically 0.03 to 0.04 inch below the cutting point of the bedknife) so that they help collect grass blades and push them up against the bedknife for cutting. A non-aggressive, flatter-attitude setting is achieved when the bedknife is positioned very close to the centre point of the reel (i.e., the BCD is short). With a non-aggressive set-up, reel blades may only pass 0.008 inch or less below the top edge of the bedknife. The table opposite lists the BCD and bedknife angle settings of four commonly used mower manufacturers.

For example, an aggressive setting with a BCD of 0.4 inch and a 7-degree bedknife angle will effectively cut lower than a less-aggressive setting and, more importantly, may improve the cut quality, leaving less uncut leaf blades according to reports from the field. To date, research data does not support that an aggressive setting will enhance turf quality or surface smoothness.

Nonetheless, superintendents are encouraged to experiment with more aggressive mower set-up on one or two greens for several months to evaluate the pros and cons. An aggressive mower also will increase the reflective appearance of the turf – i.e., striping. However, proceed with caution as an aggressive mower set-up will have greater potential for scalping, especially during periods of peak turf growth.

There are several methods that can be used to modify mower aggressiveness:

- Change to a black bed bar on Toro green mowers. At a cutting height of 0.125 inch, the BCD and bedknife angle when using a red bed bar are 0.164 inch and 6.2 degrees, respectively. At the same HOC, a black bed bar increases the BCD to 0.279 inch and the bedknife angle to 9 degrees.
- Add a spacer to raise the rear roller on Toro green mowers. Adding one spacer to shim up the rear roller increases BCD from 0.164 to 0.276 inch and bedknife angle from 6.2 to 8.8 degrees.
- Change to a black bed bar and raise the rear roller. Some superintendents have found that switching to a black bed bar and shimming up the rear roller offers the best quality of cut. Jay Willis, superintendent at Glen Eagle Golf Course

in Tennessee, has used this strategy with great success on TifEagle greens.

- Simply raising or lowering the HOC will change BCD. A good rule of thumb is that BCD will increase or decrease by half of the change in HOC.
- A mower can be set up less aggressively by switching to an extended bedknife. For example, Baroness offers two 'offset' bedknives that decrease BCD from 0.393 inch (standard) to either 0.295 or 0.197 inch.
- A mower with a worn reel will be less aggressive than a mower with a new reel. When a reel wears from 5 to 4.7 inches in diameter, the angle of the bedknife decreases by about 27 per cent at 0.160 inch HOC.

TOPDRESSING – AGGRESSIVE OR NON-AGGRESSIVE SET-UP

Mowers quickly can become dull by picking up excessive amounts of sand following topdressing. Some superintendents feel that by switching to an aggressive setting, their mowers pick up less sand in the days immediately following topdressing. Subscribers to this theory describe non-aggressive set-ups as being analogous to a flat scoop shovel that slides along the putting green surface, easily picking up sand.

However, there also are reports of aggressive mowers picking up more sand than non-aggressive

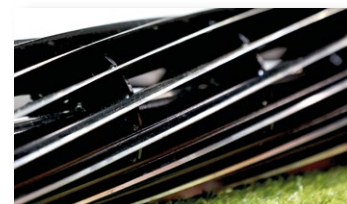
Manufacturer	Behind Center Distance (inch)	Bedknife Attitude (degrees)
Toro*	0.164	6.2
Jacobsen**	0.140	7.3
Baroness***	0.393	9.0
John Deere****	0.096	1.1

*Red bedbar with Microcut Bedknife **Championship Bedknife ***Standard bedbar with 18G 1.5 Bedknife ****QA5 cutting unit with Low Cut Bedknife. These values are based on a 0.125 inch HOC and the thinnest available bedknife from each manufacturer

mowers following topdressing. Recently, Dr. Thomas Nikolai (Michigan State University) and Dr. John Sorochan (University of Tennessee) completed studies that show increasing BCD causes mowers to harvest more grass and more sand. In both studies, approximately 69 per cent more sand was collected by an aggressive mower with a BCD of 0.393 inch when compared to a non-aggressive mower with a BCD of 0.164 inch.

Tom Langworthy, senior programme manager with The Toro Company, reports that a similar trend was observed in recent side-by-side trials of aggressive and non-aggressive mowers in Japan. Intuitively, this makes sense because as the bedknife is set more aggressively, reel blades dip deeper into the turf canopy and act like a vacuum brush that sweeps up sand particles at or near the surface.

In October 2015, a side-by-side study was conducted at three golf courses in Phoenix, Arizona to test whether an aggressive mower set-up would harvest more or less sand than a non-aggressive set-up. At each course, fixed-head and floating-



Increasing the number of blades per reel not only increases frequency of clip but also increases reel weight



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◀ All golf courses can maintain smooth surfaces when the agronomic staff makes a commitment to quality. Part of that commitment is recognising that correct equipment set-up does have a significant impact on the final product

The most important aspect of managing green mowers is to fully engage and commit to mowing with sharp, accurately adjusted equipment on a daily basis. To maintain precise, accurate HOC and optimal mower performance, equipment technicians must check and adjust every mower before every use.

head mowers were outfitted with aggressive and non-aggressive bed bars. The mowers with an aggressive bed bar were set at a higher bench HOC to match the effective HOC of the mowers with non-aggressive bed bars.

Sand topdressing was applied to the test greens and followed by light brushing and evening irrigation. The day following topdressing, an equal surface area was mowed with each mower set-up. When the sand was separated from the clippings and weighed, it was clear that the floating-head mower with an aggressive bed bar harvested more sand than the floating-head mower with a non-aggressive bed bar.

However, interestingly, the fixed-head mower with an aggressive bed bar harvested less sand than the fixed-head mower with a non-aggressive bed bar. It is important to note that this study was not replicated; therefore, it was not practical to statistically evaluate the results.

Clearly, there are different and compelling arguments in support of both aggressive and non-aggressive mower set-ups. However, one point is clear – evaluating an aggressive or non-aggressive mower adjustment will require months, if not longer, to properly weigh the pros and cons of either set-up.

DOES FOC MATTER AT LOW HEIGHT?

The clip rate is defined as the forward travel distance between shear points. The shear point is the moment the reel blade passes the bedknife. Therefore, a shorter distance between shear points increases the frequency at which grass is clipped, or cut. To calculate FOC, divide mower ground speed in inches per minute by the product of reel revolutions per minute (RPM) and the number of blades per reel. Four mower factors influence FOC:

- **Ground speed:** The slower the ground speed of a mower, the less distance a mower will travel between shear points, resulting in a higher FOC.
- **Reel diameter:** If number of blades per reel remains constant, a larger-diameter reel will have a lower FOC than a smaller-diameter reel.

- **Reel speed in RPM:** The faster a reel spins, the higher the FOC.
- **Number of blades per reel:** If ground speed remains constant, increasing the number of blades on a reel reduces the distance travelled between shear points, resulting in a higher FOC.

Most manufacturers suggest that a FOC equal to the HOC is ideal. What remains unclear is how higher FOC impacts putting green smoothness, green speed and turf health. Some superintendents report that at higher FOC rates, ball roll and green speed are similar to double cutting greens at lower FOC rates. But, does higher FOC increase stress on turf? Some are of the opinion that reel blades will contact turf leaves multiple times before cutting at very high frequencies of clip, causing turf injury by stripping excessive tissue from leaf tips.

A study at Michigan State University in 2012 evaluated three different frequencies of clip – 0.100, 0.126 and 0.149 inch per clip – at three mowing heights. Over the course of three months on a creeping bentgrass green, no statistical differences were found in green speed, disease incidence or clipping yield – although clipping yield was trending higher with the faster FOC.

In another study, Dr. Frank Rossi (Cornell University) reported that a faster FOC (i.e., 0.090 compared to 0.165 inch per clip) resulted in significantly lower turf quality ratings when averaged across four months due to higher incidence of anthracnose. Neither frequency of mowing (i.e., single or double mowing) nor FOC (i.e., 0.090, 0.130 or 0.165 inch per clip) significantly increased green speed when mowers were set at 0.100-inch HOC. However, cut cleanliness was significantly better at the higher FOC.

AVOIDING BEDKNIFE SCALPING

At very low heights of cut, a mower may scalp as a result of the bedknife gouging the turf or reel blades being set too low into the canopy. The height at which a mower may scalp varies.

A guideline to help avoid bedknife gouging is to maintain at least 0.030 inches of clearance between the bottom of the bedknife and the effective HOC. For example, if a bedknife is 0.080 inch thick at the cutting point, the effective HOC should be no less than 0.110 inch to avoid scalping. At very low effective heights of cut – e.g., 0.070 inch – the bedknife being used should be no thicker than 0.040 inch. As such, many courses exclusively use the thinnest bedknife offered by manufacturers on greens mowers. At very low mowing heights, even the thinnest bedknives are ground to a thickness of 0.035 to 0.045 inch to avoid bedknife gouging.

DOUBLE CUTTING

It is widely accepted that mowing multiple times will remove more grass. Double mowing also provides the ability to attack leaf blades from multiple directions, which can limit the likelihood

of developing grain. It is theorised that double mowing will increase shoot density and promote a more upright growth habit, thus improving surface smoothness. Many double mow to reduce the amount of uncut leaf blades left after mowing and increase green speed.

University research on the benefits of double mowing has been mixed. Work at Cornell University indicates that double mowing does not result in faster green speeds. However, researchers at The Ohio State University found that double mowing significantly increased green speed, especially when double mowing with groomers.

Work at Rutgers University showed a significant increase in ball roll distance and an occasional reduction in anthracnose severity when putting greens were double mowed versus single mowed. Likewise, researchers at Clemson University saw a three per cent increase in green speed from double mowing when compared to single mowing.

Through personal observation in the field, the second cut of a double mowing may lower the effective HOC by 0.005 to 0.010 inch. Multiple days of double mowing will further reduce the effective HOC. During the 2015 U.S. Senior Open Championship at Del Paso Country Club in Sacramento, California, the effective HOC was 0.100 inch before double mowing. After three days of double mowing, the effective HOC reduced to 0.080 inch without changing the bench HOC.

Superintendents are encouraged to experiment with double mowing on one green for extended periods (i.e., six to eight weeks) and compare green smoothness, green speed, effective HOC and turf stress to greens that received single mowing. A long-term evaluation is needed to determine if the additional labour and fuel required to double mow on a frequent basis is worth the improvement in putting green performance.

CONCLUSION

The information in this article is offered to encourage golf course superintendents in any region with any budget to engage in meaningful discussions with equipment managers to optimise mower set-up and ultimately improve the quality of putting surfaces. Experiment with fixed-head and floating-head mowers, set up your mowers more aggressively, try a higher FOC on one or two greens and allow for a minimum of six to eight weeks to evaluate the results. Above all else, commit to consistently mowing with sharp, accurately adjusted equipment.

REFERENCES AND ACKNOWLEDGEMENTS

A full list of references can be obtained from the AGCSA. This article has been reprinted with permission of the USGA Green Section Record. The original article appeared in GSR Vol 54 (3) February 5, 2016. 🙏



At very low effective mowing heights, use the thinnest bedknife available or grind the bedknife to a thinner thickness to provide enough clearance between the bottom of the bedknife and the ground

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Bairnsdale Golf Club is undertaking a two-stage project to physically remove couch and kikuyu from its greens and replace with new bentgrass

Bairnsdale Golf Club

Course: Bairnsdale Golf Club, Vic.

Superintendent: Danny Hack.

Summary of works: To eradicate all couch and kikuyu encroachment in the course's greens.

Bairnsdale Golf Club is located approximately three hours east of Melbourne in the Gippsland region of Victoria and is a small yet proud club. We currently have just three greenkeeping staff, including myself, who look after the 18-hole course along with two Tifdwarf bowling greens. To put things into perspective, the course budget for 2015-2016 is \$72,000.

Aside from our daily course maintenance duties, we undertake numerous projects throughout the year to keep the course in the best possible condition. One of the biggest projects recently started to improve the condition of the course is the eradication of couch and kikuyu encroachment in the greens. The aim of the project is to physically remove all infected turf areas and replace with new bentgrass around each green, where possible reinstate original greens shapes and to create bentgrass greens, collars and couch surrounds.

Couch and kikuyu was installed around most greens many years ago and unfortunately was let go too far and it started to get into the bentgrass areas. As any superintendent knows once this happens it only gets worse over time.

Despite many different techniques and chemical experiments to remedy the issue, these were

ultimately unsuccessful and the problem kept getting worse and worse each year. It was put to the club that the only way to get some control back and completely eliminate the problem was to spray out the infected areas, remove and relay new turf.

After a few years of knockbacks, the go ahead was finally given and plans were put in place to begin what could easily be described as a major undertaking for a small club with a small budget.

SCOPE OF WORKS

The project is in its first year and it is hoped to be completed over a two year period. The first challenge was to find a time during the year within the golfing calendar that would suit to undertake these works. The club hosts its annual Pro-Am event in April followed by its club championships and it wanted to have the course in a good shape without any interruptions around this time. There was also the Christmas period to think about, turf availability and the weather conditions to consider.

While arguably not the ideal time to grow in new bentgrass, it was eventually decided to complete stage one in December/January 2016 over a six week period, which was then broken up into week blocks to complete a section at a time.

The club had committed to budget to buy in 480m² of turf from Anco Turf in Melbourne. This is half the amount required to complete the project. The plan is to do the same again next year subject to budgets. The worst case scenario is that if the club doesn't budget for new turf then the on-course nursery will be the source of turf for stage two. This however will mean the project may take three years to complete.

In our continuing look at minor project work being undertaken by AGCSA members, Bairnsdale Golf Club superintendent Danny Hack looks at his club's efforts to remedy couch and kikuyu encroachment in their greens.

To start with all areas in stage one received two applications of herbicide (fusillade/glyphosate/carfentrazone) in mid-December spaced 10 days apart. The week starting 4 January saw the first area prepared with works completed in 120m² blocks. This was purposely done as the course staff were picking up two-pellet loads of turf from Melbourne each week and transporting them back to Bairnsdale. This was a challenge but the staff were fantastic and took a turn without complaint.

Doing it in this manner saved the club a lot of money and more importantly I was able to control where the turf went and when I exactly needed it. It meant there was no pressure on the preparations as there was still the rest of the course to maintain as well as the bowling greens.

Preparations for each area (a total of four areas were completed as part of the first stage) were as follows:

- Sod cut area twice up to depths of 100mm-120mm depending on depth of couchgrass;
- Remove all debris;
- Add new soil and compact;
- Final levels;
- Soil amendments; and
- Turf laying.

The major challenge in executing the project was the time of year the new bentgrass turf went down, but extra hand watering overcame this to a point. The biggest problem faced was half way through January when the irrigation pumps went down for three days due to various reasons. At the time it was 30-plus degrees and there was 240m² of new turf down and it did look pretty ugly for a few days. Thankfully some timely rainfall saw the turf recover okay.

Another issue the club will face going forward is keeping out the couch from the new bentgrass areas. It would be a major issue if the club was back to the same point in 5-10 years' time. There will be a maintenance plan put in place containing various techniques. The main part of that plan will be sod cutting the green perimeters every two years or as required and replacing with turf from the club's onsite nursery.



Top left: Affected areas were sod cut twice up to depths of 100mm-120mm depending on the depth of couchgrass

Left: The end result will see improved playability of Bairnsdale's putting surfaces

POSITIVE FEEDBACK

With the first stage of the project completed, the early results have been encouraging and feedback from the members has been positive. The new and old turf has blended in well. At the time of writing this article there has been no rainfall for 35 days so the new turf has been managed very cautiously until the weather breaks. To that end, the turf is being cut 1-2 times per fortnight at 8mm, watered daily, fertilised weekly and dusted fortnightly.

There has been no pressure to get the new turf down to greens height which has and will make a huge difference long-term to the health of the turf. The heights will come down gradually over time.

The most satisfying part of the project so far is the realisation that all the planning and logistics has paid off and that pretty much everything went to plan. There are some challenges ahead with getting the turf to mature and blend in and manage what will be two different types, but to have 50 per cent of the couch/kikuyu out of the greens is a great start.



Despite many different techniques and chemical experiments to eradicate couch and kikuyu over the years, mechanical removal became the only option to fully remedy the problem

Editor's Note: If you have any minor project work that you would like featured in ATM Journal, contact editor Brett Robinson on (03) 9548 8600 or email brett@agcsa.com.au

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Residing on Victoria's famed Shipwreck Coast, Warrnambool Golf Club is a picturesque coastal course which has recently been elevated into Golf Australia's top 100 courses rankings list. Superintendent David Warnaar takes ATM inside his maintenance operations.

Above: Warrnambool Golf Club has been home to course superintendent David Warnaar for the past three-and-a-half years. Pictured is the 4th

Superintendent: David Warnaar (42).

Family: Wife Melanie (my high school sweetheart, married 18 years), two boys Dom and Liam.

Years as a superintendent: 7.5 years.

Association involvement: AGCSA (eight years), VGCSA and USGA.

Turf management career: Wodonga Country Club (apprenticeship, five years); Tocumwal GC (three years); Commercial Club, Albury (assistant, four years); Wangaratta Golf Club (superintendent, four very happy and successful years); and the picturesque Warrnambool Golf Club (superintendent 3.5 very satisfying years).

Qualifications: Turf management apprenticeship and Diploma, both through Wodonga TAFE. Level 5 Training and Assessment at Wodonga Tafe. Level 5 chainsaw operation encompassing all facets of difficult and dangerous tree felling. Sustainable Horticulture course studying beneficial fungi and bacteria and the use of humates and other organics.

Where in Australia is Warrnambool Golf Club?

The home course of PGA Tour professional Marc Leishman, Warrnambool Golf Club is located on the western side of Warrnambool, a coastal town in south west Victoria at the end of the Great Ocean Road. It is in the heart of Australia's Shipwreck Coast and to recognise that our 4th, 5th and 6th hole holes form what is known as 'Shipwreck Bend'. The club itself was established in 1895 but only moved to its current location in 1927. Through the 1980s the club regularly hosted the Victorian PGA Championship and was recently elevated into Golf Australia's Top 100, sitting proudly at 89.

How did you get into turf? I couldn't say I jumped into the turf industry with any amount of certainty. I

was halfway through Year 12 in Wodonga not really knowing what my next move would be when my best friend's brother was tragically killed in a car accident. His name was Julian Panozzo and he was a very talented 3rd year apprentice turf manager at Wodonga Country Golf Club. I attended the funeral and during it I was asked by his father to take his son's job. I felt flattered and didn't really know what to say.

I didn't think anything more of it, thinking he was emotional and probably saying the same thing to all the young blokes at the funeral. But the next afternoon I received a call from the president of the club and was asked to attend an interview at Mr Panozzo's request. The interview went well and before it was finished the president said 'Well son, if you're good enough for Albee Panozzo to recommend you, you're good enough for us. When can you start?' And from there my career in turf management began.

How did the job at Warrnambool come about and what do you like most about being the superintendent there?

My family and I had been looking for a sea change for a while and I had put the feelers out and asked a few sales reps to keep an ear out and let me know if they caught wind of any jobs by the ocean. It was Mick Ogden from Oasis, who I have been friends with for a long time, who rang me and told me of the possibility that Mark Thompson was going to move on from Warrnambool and that I should give him a call.

I rang Mark to find out a little more about the club, the course, the staff and the job. Mark was very helpful and it all sounded to be a good fit. I then travelled down for the weekend to see the town and play the course. When the job came up I had my

application and resume in the mail the very same day. Warrnambool has turned out to be golden for us; we love it here and the people and the members of the club are great. It would be very difficult to move on from here, so we have just started building a new house on the outskirts of town.

Give us an overview of Warrnambool GC and some of its unique characteristics. The course itself is set into the coastal dunes with holes laid out across, around and through them. Trees grow sideways and take on twisted shapes. Many of the tees are elevated and landing zones tight, requiring accuracy with the driver. The greens have character and there are not too many straight flat putts to be had. Sand scars are scattered over the course, while well placed bunkers protect the greens and wider fairways. There are several vantage points around the course that provide golfers with spectacular visuals of the famed coastline, the dunes and back towards town.

What are some of the unique features about Warrnambool GC from a turf management perspective? Warrnambool is mild through winter getting no frosts and rarely does it get below 5 degrees, so we get little to no dormancy from our native couch or kikuyu. We have no summer grass at all – it just doesn't grow here – and the winter grass is controllable. Apart from the odd bit of capeweed and some small patches of clover, we rarely need to spray herbicides. Probably the most unique feature is the wind, from both a working and golfing perspective. It can be vicious and bitterly cold.

Is it an easy/hard facility to manage? It is an easy facility to manage I have found with the help of great committees and the cooler climate. We have a great modern irrigation system, an excellent water supply and an excellent mix of turf varieties.

Take us through your turf management operations there. What changes have you implemented during your time? Since starting here the biggest change to our practices has been the move towards beneficial fungi and bacteria (see more about this on page 54) and the wider use of organics. This has made our facility much more sustainable and has led to major cost savings. We also put a plan in place as soon I arrived to turn over machinery more regularly so that we had a modern fleet with less down time and less money being spent on parts and repairs. We now have after three and half years almost every machine replaced with some extras purchased as well.

Many of our old staff had to be retrained in the basics of greenkeeping and machinery operation. Now we have great staff who have a much more vested interest in the golf course and the career they are creating. I have also set in place maintenance

controls to ensure thatch levels do not creep up and to ensure our greens are consistent year round. We try to keep the greens as close to 10.5 feet on the stimpmeter as possible and I stimp them at least three times a week.

What other maintenance changes are you wanting to/planning on introducing? This year we reconstructed our first green complex – 10th – since I have been here and the plan is to continue to do a green a year until they are all done. We have a great architect in Ross Perrett and he works in well with our club. His designs will take the course to another level. This new green, which is due to open at the end of March, has been seeded with a browntop bentgrass called Arrowtown, while the surrounds are an Arrowtown/fine fescue mix. The plan is to convert all the greens to Arrowtown.

What are some of the major challenges facing Warrnambool GC both from a turf and club management perspective? I think sustainability is the challenge that our whole facility faces. I think if you're not becoming more sustainable and if you're not dropping your budget without dropping your standards then all golf clubs and their staff are in trouble. My aim every year is to do a better job than the year before and do it for less money. You will never hear me complaining about a shrinking budget because I see it as my goal. And I think course superintendents who can achieve this are making themselves much more relevant and indispensable.

How is Warrnambool GC faring in the water management stakes? We have a good water supply but we have to constantly evaluate, negotiate and manage not only our supply but our usage. We have a genuine water budget that we need to follow at times, but each year we seem to be improving our supply situation and I am learning more each year about the environment down here, our soil types and the turf's needs.



Holes 4, 5 and 6 are known as Shipwreck Bend in homage to the course's location on Victoria's famed Shipwreck Coast

CONTINUED ON PAGE 55

The Warrnambool GC crew (from left) Dom Warnaar, superintendent David Warnaar, Lachie Kenna and Ian Macdonald



AT A GLANCE – WARRNAMBOOL GOLF CLUB



The 2nd hole at Warrnambool Golf Club

Course specs: 5796m. Greens total 1.3 hectares, tee boxes 1ha, fairways 11ha, roughs and carries 10ha. Most of the course is surrounded by dense tea tree, bearded heath and black moonah. The greens are a bent/*Poa* mix so we put a lot of time and effort into controlling seed head. Fairways are predominantly kikuyu, except for 2, 5 and 10 which are a mix of native couch and fine fescue. Tees are a similar mix.

Members: Over 850 members.

Annual rounds: 52,000.

Annual course budget: \$500,000.

Staff structure: David Warnaar (superintendent), Dom Warnaar (4th year apprentice), Lachie Kenna (3rd year apprentice) and Ian Macdonald (casual groundsman).

Climate: The environment in Warrnambool is mild. Our maximum average summer temps are between 23-25, while minimum average winter temps are around five degrees. Our rainfall average is 892mm per year. The big factor here is the wind – the yearly average is 20kph.

Soil types: Greens are native sand push up constructions. Fairways are varied – some are pure native sand, some are a real dark loam, while a few holes have underlying sandstone. The fairways on 8, 10, 11, 12, 14, 17 and 18 are constructed over what used to be wetlands so this has meant during winter these were extremely wet areas. Two years ago we installed new drainage through all these areas which has remedied this problem.

Cutting heights/regimes: Greens are currently cut at 3.8mm 5-6 times a week and we roll between two and three times a week. Our greens consistently run at 10.5 on the

stimpmeter and we have identified this as the speed which our members are most happy with. Tees and fairways are cut at 12mm two times per week and Primo is applied regularly over all playing surfaces.

Renovations: Last year we invested in a new Vertidrain which has made renovations a much simpler process. We renovate the greens once a year (September) five weeks out from the club champs and solid mini-tine them twice more as required. We generally use a 15mm tine and attempt to get in as much organics into the profile as we can. I have used our dune sand two years previous but last year we used a custom blend with loads of organics in it and achieved remarkable recovery.

To me renovation time provides the opportunity to pack the soil profile with as many beneficial fungi and bacteria as I can. So while the core holes are open we spray products containing mycorrhiza, trichoderma and bacillus and water in by hand. We then topdress, followed by an application of TX10 which contains fertiliser, more mycorrhiza fungi and wetting agent.

Major disease pressures: The common diseases in my first two years here were anthracnose, winter fusarium and, on occasions, dollar spot would come up on some greens but mostly in the surrounds. In my first few years I was being proactive with fungicides, however, I have never put a lot of faith in the process as I believe you are attempting to prevent disease with what is essentially a poison. And it's expensive!

Midway through 2014 I attended and completed a sustainable horticulture course in South Australia, in an attempt to learn

more about effective plant health and disease prevention using beneficial fungi and bacteria, as well as organic nutrition. During the course I learned basic and easy brewing techniques which I started using to great effect.

I now apply upwards of 30 applications of different beneficial brews and products each year and only rely on fungicide as a last resort. These brews and products are cheap, effective and can be incorporated into our nutrition programme and tank mixed easily. This process has seen a massive reduction in my costs in both fungicides and fertiliser.

A side benefit that I wasn't expecting is the natural wetting abilities of the fungi and bacteria, so I now spend less on wetting agents as well. I still have fungicides as a back-up if and when required and since making the change to beneficials rather than fungicides I have only had to make two fungicide applications in 18 months.

Nutrition management: Greens are fertilised every three weeks, following the theory of light but regular. This ensures we don't get flushes of growth and helps keep *Poa* levels down. I do keep the nitrogen levels low and we use predominantly foliar applications as we can tend to lose a lot to leaching otherwise. I do give them two good granular feeds a year, one at renovation time and one during autumn. Fairways and tees are the same – two good granular feeds a year then foliar feeds every month.

Primo is used in conjunction with our fertilising and many of our foliar sprays are organic. The beneficial fungi and bacteria applications are once again tank mixable with our fertilising and it is just incorporated into sprays when the timing suits.

We have one dam which holds approximately four megalitres and we are supplied water through a milk factory owned by Fonterra. We have a great relationship the local water authority Wannon Water with whom we have a contract to receive 80ML of water from. The water we get from Fonterra is milk condensate, the quality of which is very good.

We have a Toro Site Pro system, Toro 830S heads around all the greens and two rows of the same sprinklers down each fairway; the tees have Toro T7 heads. The pump station is a four pump multistage station and is capable of running around 20 fairway sprays at a time. The best thing about the irrigation system is having it linked to my iPhone and iPad; I can't say how easy it makes life.

The one product I couldn't manage my course without is... That's easy – my golf clubs! I think playing and enjoying golf is the key to enjoying my role as a superintendent. Playing golf on your own course regularly means you see first-hand what your members are seeing and you're seeing it from their perspective. It also helps you relax and it means you get to enjoy the fruits of your labour and in turn you take more pride in what you do. I feel as though I get as much out of a round of golf as I do out of two days at work, in terms of finding out what needs attention and what's in good condition.



What are some pros and cons of being a regional-based superintendent? The cost of living and the lifestyle are the two major factors in the favour of us supers outside the cities. I think our members are probably friendlier and more understanding of the type of work we do and the scope of our role.

Are expectations any different? Expectations are generally higher in the cities because the members are probably paying a lot more for their memberships. And city courses would on average have higher budgets and more staff so once again that would raise expectations. But I think expectations are higher every year at every course; it's just a fact of life in the career we have chosen.

This year saw the first green complex – the 10th – reconstructed. The plan is to continue to do a green a year until they are all completed

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◀ The new revetted bunker on the 10th

What are some of the more unusual things you have had to do as a regional course super? There have been occasions when I have been asked to inspect members' lawns, but recently someone, who shall remain nameless, asked me over to advise him on how to remove a heap of weeds. Upon inspection he had about 10 large capeweed in his front yard. He said he had tried everything to get rid of them but nothing could knock them out. I laughed a little on the inside when I asked if he had tried pulling them out with a weed puller and he said "Really?! Will that work?"

What have you got in your shed? Jacobsen Eclipse 322 hybrid greens mower; two old Toro 3250 greens mowers for tees; set of R&R grooming heads; Tru-Turf roller; Jacobsen LF4677 7-head fairway mower; Toro Sidewinder with rotary heads for tee surrounds and first cut; Toro 360 rough mower; Toro 1750 MultiPro spray unit (brand new); John Deere FEL; John Deere Gator; ClubCar utility vehicle; Cushman Turf Truckster with core harvester; two small tip trucks (one is registered); 2 Toro Flex 1000 walk behinds; Turfco topdresser; Vertidrain 7215; and Ford Ranger work vehicle.

What's your favourite piece of machinery and why? Our new 1750 MultiPro from Toro is our latest and greatest, but I'm quite rapt in our Jacobsen

Eclipse hybrid ride-on greens mower. It would be my favourite because it is so user friendly, uses next to no fuel, has an automatic brake so you can just jump off and on it without touching a thing and all the safety switches are automatic. The digital screen and user features mean you can adjust everything on the machine from the seat except the height of cut. (The frequency of cut adjustment is the best feature of them all). And it is the easiest mower to operate I have ever driven.

For our next major purchase I am hoping we can get a Toro Reelmaster 3555-D for around the greens and aprons. We currently use our fairway mower and it's just a little oversized for the job. Our next scheduled purchase is a new work vehicle.

Best advice you have received about being a course superintendent/greenkeeper. A former greens chairman from Wangaratta Golf Club, Ian Rees, once said to me after a greens meeting, 'David, when you come to a greens meeting remember you're the only qualified person in the room and we chose you because we have faith in you. So you just tell us what you want and what you're doing and we will support you.'

What do you think is the most challenging aspect of a superintendent's role today? Keeping staff interested and happy is probably the most challenging part of the role. You want everyone to enjoy their role as much as you do, so keeping the tasks challenging and varied is important, as is keeping everything fair. The odd golf trip is good for morale or a BBQ here and there for lunch. But at the end of the day some people love working with you and love their career and some people don't. So you can only try, and so we do!

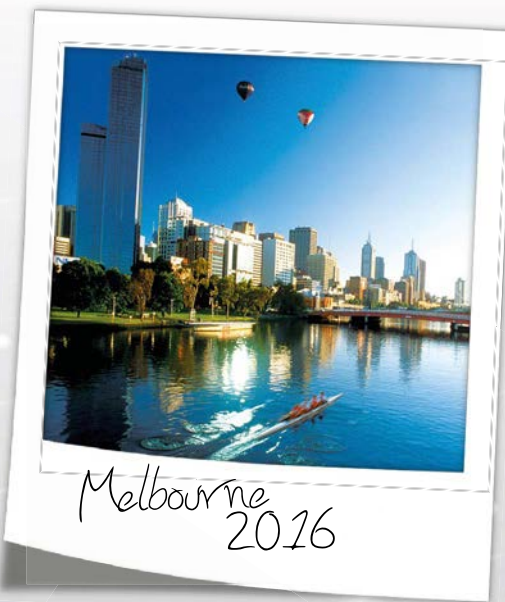
What gives you greatest job satisfaction? A happy greens committee generally, but hearing positive feedback from golfers is something I think we all enjoy. Hearing the apprentices speak positively about their job is also a great thing.

Most pleasing/rewarding moment during your time at Warrnambool? I have had a lot of proud moments at Warrnambool. We have achieved a lot in three and a half years but the most pleasing or rewarding isn't a moment – it's the people I have met, the friends I have made and the great people I get to work with. 🌿

Below right: The new 10th green has been converted from a bentgrass/*Poa annua* mix to Arrowtown browntop bentgrass

Below: Warrnambool's 5th hole. While the fairways are predominantly kikuyu, three holes including the 5th, are a mix of native couch and fine fescue





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JACOBSEN'S APAC AWARDS RECOGNISE AUSTRALIAN DEALERS AND STAFF



Above: ADE Turf Equipment's Tim Coram (right) receives the APAC Customer Care Award from Jacobsen's Jason King

Above right: Mike Foskett (centre) receives the APAC Regional Sales Manager of the Year Award

Below: Ray Grech (centre) receives the APAC Outstanding Service Award



A GCSA Gold Partner Jacobsen has acknowledged its Australian dealers and staff at the company's 2016 Awards Ceremony held during the recent Golf Industry Show in San Diego. ADE Turf Equipment (Victoria), McIntosh and Son (Western Australia), Ray Grech and Mike Foskett were all recognised for their role in growing the Jacobsen brand in Australia.

Collecting the APAC (Asia Pacific) Customer Care Dealer of the Year Award was Melbourne-based ADE Turf Equipment, with Tim Corman accepting it on behalf of the company. McIntosh and Son, Jacobsen's dealer for Western Australia, was also recognised for its 25 years loyal service to the Jacobsen brand.

In presenting ADE's award, Ransomes Jacobsen's customer care director Jason King noted that the company had demonstrated the importance of working closely with their customers.

"ADE embraces new technology and provides clear and concise information to the manufacturing facilities in the USA and UK via the customer feedback process," says King. "Recognising the importance of training, ADE not only invests in their own technicians' development through factory training, they also provide training for their customers. In an environment where staff retention is challenging, ADE provides their technicians with

a structured career path to reward loyalty and advancement within the company."

Queensland-based Jacobsen product support manager Grech received the APAC Outstanding Service Award for his dedication to dealers in SE Asia, Australasia and Pacific Islands. Grech joined Jacobsen in 2010 and King commented in presenting the award that Grech was well recognised as an industry expert and 'go to guy' for golf course technicians.

"I first met Ray nine years ago and today he continues to support his territory and remains a well-respected industry expert and member of our APAC team primarily looking after Australia and New Zealand for technical support. He thoroughly deserves this recognition."

The final award went to Foskett who was presented the APAC Regional Sales Manager of the Year Award by APAC managing director Chuck Greif.

"Mike is the consummate groundscape professional and previously worked for our dealer in Western Australia before joining Jacobsen in June 2013," says Greif. "He has been associated with the golf industry for over 20 years and in the past two and half years has done a superb job growing our brand in Australia, New Zealand and the Pacific Islands."

CHEMCHINA ACQUIRES SYNGENTA

In the biggest corporate takeover by a Chinese company in history, China National Chemical Corporation (ChemChina) announced in February that it had agreed to buy Swiss agrochemical and seeds company Syngenta for \$US43billion.

ChemChina, which is headquartered in Beijing, possesses production, R&D and marketing systems in 150 countries and regions. It is the

largest chemical corporation in China and its main businesses include materials science, life science, high-end manufacturing and basic chemicals, among others. In a letter to its customers shortly after the announcement, Syngenta said it was excited about the opportunities ahead but that it was business as usual for the time being.

"The terms of this agreement will enable Syngenta to retain its name, its management, its



broad portfolio and geographic presence. Syngenta will remain headquartered in Switzerland and is committed to continue company operations to ensure it will be business as usual for our customers, business partners, employees, shareholders and the communities we serve.

"ChemChina have committed to the highest governance standards and explicitly endorsed our Good Growth Plan, Code of Conduct and our culture and values. This is covered by contractual commitments in the transaction agreement and means that Syngenta will remain Syngenta.

"We are excited about the opportunities this agreement is expected to create, including confirmation of our commitment to long-term investment in the research and development of new technologies across seeds, traits and crop protection to enhance productivity for agriculture and our customers. Equally important, it will allow you to continue to benefit from multiple choices and competition within the sector, a sector which has recently seen considerable consolidation.

"We remain committed to providing you technology offers and services that add value to your business and we will continue to focus on earning your confidence and support to partner with Syngenta. Your Syngenta account manager will not change as a result of this agreement and he/she is available to answer any questions you may have about this Syngenta shareholder ownership change."

GLOBE GOES SILVER



Globe Growing Solutions and Equipment Solutions have committed to AGCSA Silver Partner status for 2016. Paul Jackson, general manager of both Globe Australia businesses, confirmed the sponsorship arrangement in late February which encompasses AGCSA membership, advertising and marketing through the likes of Australian Turfgrass Management and AGCSA website, as well as inclusion at the upcoming 32nd Australian Turfgrass Conference Trade Exhibition in Melbourne (19-24 June).

"Globe Australia is both proud and excited about formalising our relationship with the AGCSA for 2016," says Jackson. "We invest heavily in the turf industry and our partnership with the AGCSA will enhance our core commitment to the turf and horticultural industry in Australia.

"Globe Australia appreciates more than most that Integrated Turf Management (ITM) is paramount for success in turf management. Globe Australia understands that successful turf managers look at all the tools available when managing their turf; this includes specialty agronomy products and

INDUSTRY APPOINTMENTS



E-PAR RECRUITS TOVEY

Former STA Victoria president **Nathan Tovey** (pictured) has been appointed as the new e-par area manager for Victoria. Tovey took up the role full-time in March and is based out of Melbourne.

"We are excited that Nathan has joined our team, bringing his extensive experience and leadership skills," says e-par general manager Ben Gibson. "Nathan's commitment to the turf industry is second to none and I am really looking forward to the influence his appointment will have in Victoria".

Tovey is happy to be returning 'home' to the turf industry and joining the e-par team: "When I spoke to e-par and understood their strategic plan and how they want to influence positive change in the industry I knew it was the right place for me. I am looking forward to meeting the e-par members in our state and helping them simplify their compliance challenges". Tovey can be contacted at nathan@epar.com.au or on 0448 055 062.



MCGEARY JOINS ENDEAVOUR TURF PROFESSIONALS

AGCSA Trade member ETP-Turf (Endeavour Turf Professionals) has appointed recognised turf consultant

David McGeary (pictured) as its new senior turf consultant for golf and turf nationally.

McGeary has been a turf consultant and associated with the golf turf industry since 1989, following eight years as a research scientist with the Victorian Department of Agriculture. McGeary has

extensive experience in all facets of golf and turf consultancy, with special reference to on-site problems solving, disease diagnostics, golf course and sports field audits, construction design, formulation of tenders and construction supervision. McGeary arrives at the Melbourne-based company after an extended period with Sportsturf Consultants and can be contacted on 0457 193 387.

In other news related to ETP-Turf, after 10 years operation and in line with the new appointment of McGeary, the business has changed its business name to Endeavour Turf Professionals Pty Ltd. This minor change is in line with ETP-Turf's transition to a nationally focused turf consultancy and agronomic services business. For more information about Endeavour Turf Professionals visit www.etpturf.com.au.



MARSHALL NEW QLD TORO REP

Former AGCSA Claude Crockford Environmental Award winner **Ben Marshall** (pictured) has been appointed Toro's new area sales manager for golf equipment in southeast Queensland.

Marshall has been associated with the golf turf industry for the past 20 years and comes to the AGCSA Platinum Partner from The North Lakes Golf Club, where he held the position of superintendent for the last five years. Marshall, who replaces Ben Cavanagh, is based in Toro's Banyo office and can be contacted on mobile 0400 868 383.

If your company has any new appointments or announcements, contact ATM editor Brett Robinson brett@agcsa.com.au



◀ **The new Eastern Golf Club on the outskirts of Melbourne was Greg Norman Golf Course Design's 100th course opening**

innovative equipment. Working within the business units of Globe Growing Solutions and Equipment Solutions, we have a broad range of specialists sharing their knowledge so that we can provide quality information, enabling our customers to make sound agronomy and business decisions.

"Our teams had a very successful year in 2015 that has allowed us to review our activities in 2016 and partnering the AGCSA simply made sense. Our partnership with the AGCSA is not only great for our people, our partners, and our customers but also all AGCSA members. Our customers benefit directly by our investment in the industry association and our partners benefit as the products that we represent will receive greater exposure."

Throughout 2016 Globe Growing Solutions will be featuring its key exclusive partners such as the Andersons, Amgrow and Brandt among others. Equipment Solutions is the direct importer and Australian agent for a number of key turf equipment brands such as Blec, Dakota, Lastec, 1st Products and Thatchaway. Equipment Solutions also has a regional relationship with Tru-Turf rollers.

For more information regarding Equipment Solutions and Globe Growing Solutions please visit www.equipmentsolutions.com.au and www.globegrowingsolutions.com.au

GREG NORMAN JOINS AS AGCSA BRONZE PARTNER

In addition to the Globe Australia announcement, high profile golf course design and construction company Greg Norman Golf Course Design (GNGCD) also signed on as an AGCSA Partner, taking up Bronze level status.

Established in 1987, GNGCD is recognised as one of the premier signature golf course design firms in the world with 100 courses opened across 34 countries in six continents. Notable for his environmental stewardship, Norman's "least-disturbance approach" design philosophy creates golf courses that blend with their surrounding environment and enhance the properties' natural features. Norman is personally involved with every step of the design process from walking the virgin site, to planning and construction to opening day.

"We recently celebrated a momentous occasion with the opening of our 100th golf course at Eastern Golf Club in Yering, Australia," says Norman. "Celebrating this milestone in Australia gave me particular satisfaction, so I am thrilled to partner with the leading organisation in our industry in the country I care so much about.

"The AGCSA is such a valuable resource for those involved in the golf course maintenance industry and Greg Norman Golf Course Design is proud to support the association and its members. This is the start of a tremendous partnership and we look forward to working with the AGCSA in all capacities in the years to come and expanding the GNGCD footprint in Australia.

A key focus for GNGCD in Australia is their ReDesign programme with a 'renovate, restore, reposition and rebrand' approach. Since many golf courses lose their unique character and original strategic elements over time, as well as sustainability, it is GNGCD's mission to update these courses to higher design standards while focusing on capital expenditures and lowering future operating costs. The GNGCD competitive advantage is the ability to differentiate in the market by leveraging the global power of the Greg Norman brand and creating value for clients in the design-build arena.

"I take seriously the legacy we create in designing and developing each golf course. GNGCD is committed to building lasting relationships with our clients and making a global impact by creating courses that withstand the test of time."

For more information about Greg Norman Golf Course Design visit www.gngcd.com.





PARTNER RECOGNITION PROGRAMME

Support those organisations who support your association

Thank you to all the partners who help the AGCSA provide members with the greatest programmes and services the industry has to offer.



TAFE teachers and industry representatives gathered at Holmesglen TAFE in Melbourne last December for the national validation meeting



Chair of the National Turf Education Working Group, Bruce Davies, provides an update on the current state of turf education, including the proposed changes to the Sports Turf Management training package.

Package changes

Training in Sports Turf Management is undergoing a review with the training package that has been in place for the past four years being updated. Draft qualifications and units of competency have been submitted to the Department of Education and Training for endorsement by the Australian Industry and Skills Committee. This endorsement is currently underway and is due to be completed by the time this edition of Australian Turfgrass Management Journal is printed.

The update to the training package has brought in some minor changes to the structure of the turf qualifications as shown in the table below. Important changes to the structure of the qualifications are:

- **Certificate II:** The same number of electives remain with the unit 'Participate in environmentally sustainable work practices' being replaced by 'Assist with soil or growing media sampling and testing' as a core unit.
- **Certificate III (Trade):** An increase from 15 to 16 units, bringing turf into line with other horticultural sectors. This is a good thing as it gives the educational providers the ability to offer a broader learning experience. The increase in the number of electives could potentially

negate the value of 16 units. Unscrupulous education providers could potentially make the five electives all irrigation, thus narrowing the learning experience. The unit to drop out as a core is 'Apply environmentally sustainable work practices'.

- **Certificate IV:** A move from seven to eight electives as the unit 'Develop workplace policy and procedures for sustainability' becomes an elective.
- **Diploma:** Little to no change.

Looking over the qualifications generally, there has been a worrying trend to remove the environmental units from the core (compulsory) units. This means that potentially turf students could move through all levels of training (Cert II to Diploma) without any exposure to a unit which specifically concentrates on the environment. Hopefully this lack of emphasis on the environment does not come back to bite the industry in the future through an environmental mishap. This is another point turf managers should be talking to their education providers about.

It is good to see that all of the units of competency have been written in a new simpler format. There is a greater emphasis on the importance of 'evidence' in the assessment requirements. This evidence is broken into performance evidence and knowledge evidence. This has further highlighted the importance of the 'workplace – on the job' component of training at all levels.

Education providers will be relying more than ever on the strong relationships they have with local

TABLE 1. 2016 TRAINING PACKAGE CHANGES

Qualification	Old package	New proposed package
Certificate II	15 units incl. 5 electives	15 units incl. 5 electives
Certificate III (Trade)	15 units incl. 3 electives	16 units incl. 5 electives
Certificate IV	12 units incl. 7 electives	12 units incl. 8 electives
Diploma	10 units incl. 6 electives	10 units incl. 6 electives

industry. Employers will need to be more involved in the training of their employees. The three way partnership of learner/employer/educator will be more important than ever.

NATIONAL TURF EDUCATION WORKING GROUP

The National Turf Education Working Group (NTEWG) was established in 2003 with the aim of maintaining high quality and uniform education throughout the country. It is comprised of industry representatives from the turf associations (golf, sports turf, bowls, amenity turf) and educators from each state. The group meets twice a year to work on the teaching materials, Delivery and Assessment Guides and, most recently, the new training package.

The group next meets as part of the 32nd Australian Turfgrass Conference in Melbourne on Monday 20 June. The focus will be on the implementation of the new training package. As always it will be important to have a strong representation from industry and the working group encourages educational representatives from the turf associations to please put this date in their diaries.

Looking toward the future there is a need for an increase in accessibility to higher levels of training. Accessibility to Diploma level training in regional areas has decreased over the last decade and we have also seen the demise of post-graduate studies at the University of Sydney. With the increase in online training delivery options, hopefully the industry educators and associations can come up with some innovative accessible educational programmes at these levels.

TURF EDUCATORS' CONFERENCE

Turf educators from around the country have a validation conference in December each year. The aim is to validate the training that each of the institutes is providing. It is also an important opportunity to work as a united group on training resources and delivery strategies.

Last year in Melbourne the group updated Delivery and Assessment Guides to take into account the new training package. This group and the National Turf Education Working Group are integral to maintaining quality education in turf across the country. This type of gathering of industry educators is a rarity in vocational training and a real strength of our industry.

Acknowledgment must be made to those industry associations (AGCSA and STA) and sponsors Bayer for making this conference possible. The TAFE's that host these events also should also be recognised. Jim Porter, Liz Jansz and the team at Holmesglen TAFE did a fantastic job in 2015, with the 2016 meeting to be held at Kurri TAFE in December. The following educational institutions where represented In Melbourne:

- Canberra Institute of Technology
- Holmesglen Institute – Waverley
- TAFE SA – Urrbrae
- Melbourne Polytechnic – Fairfield
- Challenger Institute of Technology – Murdoch
- The Gordon – Geelong
- North Sydney Institute – Ryde
- Hunter TAFE – Kurri Kurri
- TAFE Illawarra – Yallah
- Wodonga Institute of TAFE
- TAFE Queensland – Brisbane

One of the main discussion points of the group over the past two years is the possibility of the AGCSA moving into the education delivery market, by either becoming or aligning themselves with a Registered Training Provider (RTO). This has the potential to change turf education delivery dramatically across the country, with some educators being cautious about the sharing of tools and resources and others believing it will make quality sportsturf management education more accessible to those not currently serviced by turf industry focused RTOs.

CHOOSING YOUR EDUCATION PROVIDER

With the opening up of vocational training delivery in recent years to private providers, the industry has more choice than ever as to where they send their people for training. Here are some questions you should be asking training providers to help you make an informed choice on where to go:

- Do the educators have strong industry involvement and links?
- Is the training delivered to the minimum standard set out by the national Delivery and Assessment Guides for turf training?
- How many hours of face-to-face delivery are being offered?
- Do the educators attend the National Turf Educator's Conference?
- Does the training include a broad range of competencies?
- How much interaction is there with other students?
- What training facilities, machinery, turf surfaces, equipment do they have?

For more information about the National Turf Education Working Group please contact either myself bruce.davies@cit.edu.au or AGCSA events and education manager Simone Staples simone@agcsa.com.au 📧



The annual gathering of industry educators is a rarity in vocational training and a real strength of the Australian turf industry

National Turf Education Working Group chair Bruce Davies from Canberra Institute of TAFE addresses the National Turf Educators' Conference last December

The Hills Golf Club in Queenstown hosted the BMW ISPS Handa New Zealand Open in March



Another summer season has drawn to a close with our major tournaments being held in early March at Remuera Golf Club (Holden New Zealand PGA Championship) and The Hills (BMW ISPS Handa New Zealand Open).

Thankfully the cricket season is over and Kiwis can now look forward to a long period of sporting dominance in another code that not much of the world plays! Winter also sees the chance to recharge energy levels, get to conferences and training sessions and to assess what went well (and what didn't). We're also entering the time of the year where we recognise industry achievement.

With that in mind, the NZGCSA is delighted to announce the new NZGCSA Parkland Excellence Award sponsored by Parkland Products. The award for 2015 is to be judged in early 2016 with the presentation to take place at the NZ Sports Turf Conference in Auckland in June. This is the premier award in NZ golf turf and the recognition the winner receives is significant, as is the winner's prize of \$NZ6000. In an important new development, a runner-up prize of \$NZ3000 will be offered for the first time.

The finalists will be judged by NZGCSA life members **John Humphries** and **Nigel Lloyd**, with the criteria focus on having consistently produced outstanding playing surfaces, while managing relationships with staff and stakeholders in a highly professional manner.

The Industry Excellence Award exam was also recently held with top industry-wide trainees invited to sit the exam. This is the premium achievement possible for turf trainees and provides them the opportunity to showcase themselves to be among the very best in the NZ sports turf industry. It is also the gateway to compete in the NZGCSA Graduate of the Year Award sponsored by PowerTurf.

Ben Finn (Paraparaumu Golf Club), **Daniel Rutherford** (Kauri Cliffs Golf Club), **Lance Shaw** (Royal Auckland Golf Club) and **Scott Dunkerley** (Karori Golf Club) successfully gained the minimum

of 60 per cent required to pass this difficult exam. They and their trainers deserve great credit for their achievement.

GRADUATE OF THE YEAR 2015

The NZGCSA Graduate of the Year 2015 (sponsored by PowerTurf NZ) was held in late November at Titirangi Golf Club in Auckland. The contest was extremely close with **Scott Dunkerley** prevailing. The final was made up of marks carried across from the Industry Excellence exam results, along with practical components of golf course management that the judging panel felt that the finalists would encounter in the next steps of their turf management careers. Congratulations go to the four other finalists Ben Finn, Daniel Rutherford, Lance Shaw and **Brad Leathard** (Pakuranga Golf Club).

As winner, Scott received a trip sponsored by PowerTurf NZ to the 2016 US Golf Industry Show in San Diego. A special thanks goes to the judges **Steve Hodson**, **Marty Burger**, **Greg Swafford** and **Terry Sullivan**, and also to **Kellie Rose** from Primary ITO for her support and mentoring of this year's finalists.

Jacobsen has also extended its generous sponsorship of the NZ Future Turf Managers' Initiative (FTMI). The 2016 FTMI has been expanded to eight recipients and the criteria widened to capture a broader range of possible applicants.

NZ TURF CONFERENCE

Planning is nearing completion for the 2016 NZ Sports Turf Conference which is to be held in Auckland at Sky City Convention Centre from 27-28 June 2016. Details are still to be finalised, with updated information being made available on the NZGCSA website (www.nzgcsa.org.nz) or www.turfconferenceandexpo.co.nz.



2015 NZGCSA Graduate of the Year
Scott Dunkerley

BRENDAN ALLEN
PRESIDENT, NZGCSA

The STA held its free OH&S seminar on 9 March at Holmesglen TAFE. The day started with a light breakfast which provided the delegates a chance to socialise with each other. Kicking proceedings off was **Mike Tyrrell** (WorkSafe) who spoke about workplace safety before Ben Gibson (e-par) spoke about leadership in safety. Following Ben was **Garry Price** from Toro, who together with Dawn Mowers were our event sponsor.

After morning tea **Ryan Poole** from Pace Occupational Health gave a presentation on manual handling and exercise programmes. Our last presenter was **Jerry Charlton** from IPOS who spoke about sports ground management duty of care.

The STA Vic has a new website – <http://vicsportsturf.asn.au/> – so please get on and take a look. We are also asking all members to email their updated contact details to Jan Fenton vic@sportsturf.asn.au.

In 2016 STA Victoria has received nominations from college participants to represent STA Victoria in the National Sports Turf Graduate of the Year Award which will be presented at the 32nd Australian Turfgrass Conference in June in Melbourne. This award is designed to recognise students who have excelled in their studies whilst also identifying potential leaders in the sports turf industry.

To be considered for this award, candidates should;

- Have successfully completed their Certificate III in Sports Turf Management in 2015;
- Be employed to prepare sports fields, wickets, bowling greens or racetracks;
- Display passion and commitment for the industry.

STA Vic is once again sponsoring the Environment & Lifestyle Awards at Holmesglen TAFE and this year's nomination is **Liam Kirkman** (Pitchcraft) for the "2015 Outstanding 1st Year (Turf) Apprentice".

Key upcoming STA Victoria dates include:

- STA Vic Sportsfield & Wicket Seminar: 20 July, AAMI Stadium. Planning is underway and feelers are out to secure a compelling speaker.
- Cricket Curator Seminar: Early September (date and venue TBC)

The Board of STA Victoria would like to wish everyone all the best for 2016; I am sure that there will be many challenges to deal with throughout the year.

GARRY WOOLARD
COMMITTEE, STA VIC



STA Victoria recently unveiled its new-look website

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Summer is now officially over although you wouldn't think it with temperatures well above average indicating we are not quite at the point of being able to breathe a sigh of relief as yet.

According to the Bureau of Meteorology, rainfall was above average in Sydney during summer and January the wettest since 1988, with several severe thunderstorms causing strong winds, heavy rain, and flash flooding. An East Coast low caused heavy rain in early January, with a three-day total of 239 mm at Frenchs Forest. Several thunderstorms also impacted Sydney in December, with severe storms on the 16th causing major damage in southeastern Sydney, including a tornado at Kurnell which brought with it a maximum wind gust of 213 kph, the strongest gust ever recorded in NSW. In contrast, February was dry across the Greater Sydney region, with only one day recording heavy rain anywhere in the city.

Preparations for our first annual trade show at The Vintage Golf Club (superintendent **Steve Harris**) in the Hunter Valley are in full swing. The NSWGCSA committee visited the site in early March to have a look at logistics and to iron out any potential issues.

We are all very excited at the prospect and with many industry representatives already showing their support, the two day event looks like it will go off with a bang. We are very appreciative of the support that is being shown by the industry suppliers and I'd like to take this opportunity to personally thank them.

I had a meeting with representatives of the GMA, PGA, Golf NSW and Jack Newton Junior Golf in February where we discussed the next 12 month plans for each association. It was great to meet with these guys and the NSWGCSA looks forward to building a closer relationship with them in the future. One discussion of interest was the possibility of amalgamating all the associations' awards nights which will hopefully gain some legs.

STANZ

As always the weather is playing a large part in the seasonal challenges facing the New Zealand sports field sector. We are in an El Niño weather pattern so turf managers around the country, especially in the north and east were bracing for drought conditions again this summer.

However, the increased incidents of tropical cyclones that are also part of the El Niño pattern have definitely been a factor this season resulting in generally good levels of rainfall instead. So our turf managers have swung from drought readiness to fighting disease, especially on cool-season grass fields, with melting out causing many a headache.

Our new look magazine was released last month which everyone should have received. We are happy with the look and hope it reads well for our members, but as always we need more submissions for the 'Around the traps' section. We would love to hear from more superintendents or their assistants regarding their golf course operations.

I'd like to take this opportunity to remind all courses that membership to the NSWGCSA is free for apprentices. We currently only have 11 apprentices on our database so it would be great to see more sign up. Being a member of your state association is a great way to keep in touch with education information and what is going on in your industry near you.

McLeod Training should have by now visited all golf courses to transfer student details from the now defunct Active Training to their own books. Hopefully this will be a smooth operation and training can commence as soon as possible. The main stumbling block at this point seems to be retrieving student transcripts, so if you don't yet have a transcript please contact McLeod Training and they will be able to look into it for you.

Interviews for the NSWGCSA Apprentice of Year Award will take place at the end of March and on behalf of the committee I would like to congratulate the following finalists:

- Mitchell Gibbs (Bankstown GC);
- Jackson Coultts (Bonnie Doon GC);
- Harry Caine (Port McQuarie GC);
- Beau Currey (Forster Tuncurry GC); and
- Zachery Doevendas (Crescent Head GC).

The winner will go on to represent the NSWGCSA in the final of the AGCSA Graduate of the Year Award, presented in partnership with Toro, at the Australian Turfgrass Conference in Melbourne in June.

STUART GILL
PRESIDENT, NSWGCSA

The cricket curators have adapted well to the challenges of El Niño and our most recent series against Australia saw outstanding cricket surfaces prepared for the Black Caps' 2-1 victorious campaign in the Chapple Hadlee trophy against our old foes in the Baggy Green. The less said about the Test series the better, but congratulations to Australia on their well-deserved series victory and new ranking as No.1 Test team in the world!

KELLIE ROSE
CHAIR, STANZ

ON THE MOVE

ROB ARISTIA: From foreman Yarra Yarra Golf Club, Vic to assistant superintendent Spring Valley Golf Club, Vic

SHANE BAKER: From superintendent Araluen Golf Resort, WA to assistant superintendent Sea View Golf Club, WA.

CRAIG CLARKE: Appointed superintendent McLeod Country Golf Club, Qld replacing Phil Boag.

MICK CORNISH: From superintendent Mackay Golf Club, Qld to facilities manager Cazaly's Stadium, Qld, replacing the retiring Rod Kade.

JUSTIN DOYLE: Appointed superintendent Twin Creeks Golf Club, NSW.

NICK LAUNER: From assistant superintendent Murray Downs Golf & Country Club, Vic to assistant superintendent Metropolitan Golf Club, Vic.

SHANE PHILIP: Appointed superintendent Mackay Golf Club, Qld.

I'm sure that many eastern state readers regularly hear their Western Australian turf industry counterparts wax on about the relentless summertime struggle to match irrigation to evaporation, all the while constrained within the very strictly limited allowances set by the Department of Water between 1 September and 31 May every year.

The continuing drying climate within the south west of WA is beginning to bring to a head the stark reality that all users of this shared resource need to be accountable for how efficiently they make use of their allocation. Like many things in life, hardships can be better coped when everyone is on an even playing field. However, it appears that the same authorities seeking to influence further restrictions do not appear to be making much ground towards improving their own efficiencies; some challenging times ahead in the West.

Recently members of the WA turf industry came together for two events. It was 12 months to the day when the UWA Turf Industry Research Facility again held its annual Open Day on 18 February. About 60 members from the local government, private, commercial and educational sectors were greeted at the Shenton Park site with a coffee and muffin thanks to the generous sponsorship of Baileys Fertilisers. Ably supported by field technician Gauss



Azam, Associate Professor Dr Pieter Poot explained to those assembled the recent progress of the current soil amendment research project.

The following Wednesday, a small and relaxed group of about 30 STA WA members met at the turf shed of Challenger Institute of Technology for a BBQ breakfast. For a few years now the STA WA executive has been very keen to connect the amazing resources of education (TAFE) and experience (turf managers) with the upcoming new generation (students) into an incredibly empowered and respected combination. It all begins with just a simple conversation. The Open Day breakfast also helps provide the perfect opportunity to thank the efforts of our brilliant turf team at Challenger in Murdoch.

The UWA Turf Industry Research Facility held its annual Open Day at Shenton Park on 18 February

TONY GUY
PRESIDENT, STA WA

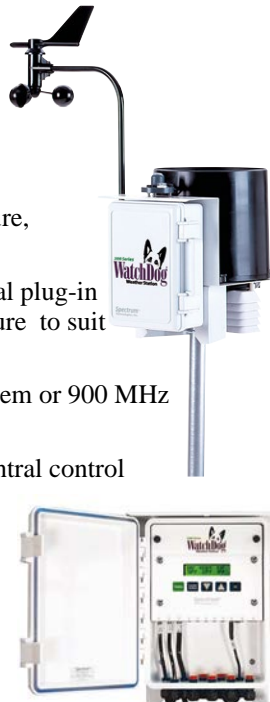
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STA ACT REGION



A super cell storm smashed Queanbeyan Golf Club in February bringing with it golf ball-sized hailstones

All turfs in the ACT and surrounding region have been very happy with the above average rainfall from Christmas and into January, with most areas receiving over 100mm for the month.

In saying that, Queanbeyan Golf Club superintendent **Bryan Kelly** could have done without the 'super cell' storm that descended on his course at around 5pm on 11 February. As the



accompanying photos show, the storm produced golf ball-sized hailstones which caused plenty of damage to the greens and course in general.

The STA ACT committee is pleased to announce that the STA ACT Living Turf Graduate of the Year is **Caleb Swinbourn**. Twenty-two year old Caleb will now go to the Australian Turfgrass Conference in Melbourne in June to compete with other state representatives for the coveted Toro AGCSA Graduate of the Year Award.

Caleb is currently employed by Complete Turf and Landscape (owned by former Royal Canberra superintendent Michael Waring) and undertook his apprenticeship at Capital Public Golf Club. Congratulations also goes to **Beau McFarlane** who will represent the ACT region in the National Sports Turf Graduate of the Year Award.

The annual STA ACT Golf Day has changed dates so as not to conflict with the NSWGCSA Ambrose Day. Our day will now be held on Monday 16 May at Federal Golf Club (host superintendent **Mark Thomson**) and this year will see up to \$800 in prizes along with a hole-in-one prize of \$5000! Please put the day in your diaries and start organising your team of four.

SCOTT HARRIS
PRESIDENT, STA ACT

STA SA



December in Adelaide produced some very hot days with several above 40 degrees in weeks of above average temperatures. The challenge presented to sports turf managers was to keep standards at an acceptable level while enabling competitions to continue. It is a credit to our various superintendents and their staff that this was achieved despite the challenging conditions.

Happily the weather in January and the early part of February was kinder. We had a couple of bursts of soaking rain which certainly changed the appearance of some of the drier surfaces. A number of soccer grounds are not used much from November through to early February and these certainly benefited from low impact during the hottest part of the summer. Unfortunately for the turf quality, these grounds are about to be hammered.

One challenge for sports administrators, councils and governments is to provide sufficient facilities so that as many people as possible can play on reasonable standard surfaces. With rapidly increasing numbers of participants, this is difficult.

Members and sponsors of STA SA kicked off 2016 with a meeting at Norwood Oval on 8 March. It was good to return to the home of the SANFL's Norwood Football Club after several years and a full report will be presented in the next edition.

Further STA SA events are planned for May which will focus on water and irrigation, a possible social Saturday in April and the annual full day seminar and AGM at Adelaide Oval in August.

DENNIS DEWELL
COMMITTEE, STA SA

Summer has peaked and is now on the wane and hopefully this heralds a moment for everyone to catch their breath before the next seasonal change kicks in after Easter. What a shame it would be to redefine one of the most commemorative long weekends on the calendar into just another hurdle that marks the next round of sporting fixtures or the start of a seeding/spraying programme.

Chin up! For many reasons our job still remains the envy of a lot of professions (until they see the pay scale that is!). I know a lot of people that work in air-conditioned offices pine for the opportunity to work outdoors. Not only that, more often than not they are envious of the way much of our work provides an instant return in job satisfaction and how we have such structured control over achieving longer term goals.

It can be an interesting exercise to ask friends that work in different professions for their definition of acceptable timeframes for when the boss needs something done a) as soon as possible, b) when you're ready, and c) soon. I have found that for a number of office workers all these timeframes usually fit within the same workday, but for many of my colleagues they can all be often calculated by the day, week or even month long timeframes.

Regardless of how many colour markers the boss sticks up on the wall calendar, hopefully he or she has put a big circle around the second last week of June. We are all looking forward to meeting again between 19-24 June for the 32nd Australian Turfgrass Conference and Trade Exhibition at the Crown Entertainment Complex in Melbourne.

The AGCSA has pulled the rabbit out of the hat again by flying in the ever-popular Dr Frank Rossi from Cornell University in New York State. He has just been awarded 'Man of the Year' by the New York State Turf & Landscape Association, which is an amazing reference towards what hopes to be a brilliant speaking session at the conference.

Early in the week a highlight of the conference is the Syngenta President's Dinner. This is the event that celebrates the selection of our National Sports Turf Graduate of the Year. The awarded recipient then goes on to be Toro Australia's guest of honour on a fully-funded trip to the USA, attending the company's major Sports Grounds and Fields Forum. I wish all of our 2015 Sports Turf Graduates from all STA regions the best of luck.

TONY GUY
PRESIDENT, STA AUSTRALIA

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Industry Recognition Award recipient Rod Cook (right) with GCSAQ president Ben Tilley



Superintendent Achievement Award recipient Mick McCombe with Living Turf's Dave Morrison



E-par Environmental Award recipient Kelvin Nicholson with GCSAQ board member Shaun Cross



Maroochy River's Stuart Campbell won the Assistant's Recognition Award

More than 400 people attended the Queensland Golf Industry Awards held on 10 March at Jupiters Casino on the Gold Coast. It was a fantastic night with the GCSAQ recognising its high achievers across five categories.

INDUSTRY RECOGNITION AWARD

Rod Cook from The Grand Golf Club was the very popular recipient of GCSAQ's Industry Recognition Award. 'Cookie', as he is affectionately known by his industry colleagues, is one of Australia's most highly respected superintendents having spent over 35 years in the industry, including stints as assistant superintendent at Indooroopilly GC, superintendent at Mcleod Country Golf Club and for the past 19 years as superintendent at The Grand.

Rod has overseen the presentation of courses for many high profile events including the 2001 Australian Open at The Grand, the first Open to be held outside a state capital. He has also served on many industry education committees and held the positions of committee member, treasurer and president of the GCSAQ.

Rod has given his time to assist other golf courses to improve their facilities and through his commitment has become one of the leading practitioners in the industry. He is regarded as an outstanding mentor to many up and coming superintendents and has given many years of support and guidance to the GCSAQ.

SUPERINTENDENT ACHIEVEMENT AWARD

A strong field of finalists was named for the GCSAQ's Living Turf Superintendent Achievement Award including the likes of **Mick Kelly** (Toowoomba GC), **Jason Lavender** (Riverlakes GC), **Phil Soegaard** (Lakelands GC) and **Todd McNamee** (Coral Cove Resort). However it was **Mick McCombe** from Maleny Golf Club who received the award for his superb work establishing the Sunshine Coast hinterland course.

In a little over a year since he was recruited as Maleny Golf Club's inaugural superintendent, Mick has played a pivotal role in transforming a weed-ridden, largely abandoned dairy farm into a nine-hole operational golf course which is receiving high praise from members and visitors.

Mick demonstrated a capacity to interpret the design of golf architect Graham Papworth and to influence the ongoing bulk earthworks already underway on his arrival. He was able to work with and add value to the volunteer engineers and surveyors who were directing the local earthmoving contractors. This required considerable skill, tact and dedication to win over these older teams and to gain the confidence and support of Papworth. He assumed responsibility for reversing some of

the construction errors and effectively assumed leadership of the team for the final shaping of the greens, tees and transition of pastures into fairways.

Above all, his personal capacity to work with and motivate volunteers and contractors has played a huge part in constructing a good golf course in a short time frame and with a modest budget. His ability to collaborate with Paul Spencer, a top golf agronomist, early in the construction phase, has assisted the club in avoiding some of the errors encountered by much larger and well-resourced golf clubs in construction and turf management of the greens.

Mick has led by example, skill, relevant knowledge, extensive experience and hard work. He has earned and enjoys the full confidence of the club's management committee, its various sub-committees and members. This respect is entirely based on the positive outcomes by Maleny Golf Club's affable and unassuming course superintendent.

As winner of the Living Turf Superintendent Achievement Award, Mick will represent the GCSAQ in the final of the AGCSA Excellence in Golf Course Management Award.

E-PAR ENVIRONMENTAL AWARD

Pacific Harbour's **Kelvin Nicholson** received the E-par Environmental Award. During his 11 years at the Bribie Island course Kelvin has seen it grow into a wonderful natural layout that fits into the environment seamlessly. The club's vision is for the course to continue to blend in with the natural beauty of Bribie Island and promote the preservation of the native flora and fauna throughout the community to achieve a facility that all visitors to the island can enjoy. The course has now become home to many species of birds and wildlife including kangaroos, wallabies, bandicoots, echidnas, emus, lizards and snakes.

As the course sits between a National Park and Marine Park, Kelvin is very restricted on what type of fertilisers and chemicals he can use. The club currently tracks water movement through the site and is required to monitor the water that is discharged into the canal system which in turn flows into the Pumicestone Passage. Water nutrient levels are monitored and controlled so as to not adversely affect the water quality in the canals.

Pacific Harbour is also home to the endangered Wallum froglet which is sensitive to fertiliser applications, especially phosphorous. The club promotes the use of organic products for its agronomic programme to reduce the impact on the Wallum froglet.

Kelvin trains all his staff on the importance of environmental stewardship and constantly updates them on their responsibilities. The club has also

implemented the e-par system into the workplace and uses it on a daily basis to keep all their WH&S and environmental management on track.

In winning the award Kelvin receives a three day study tour to the Royal Sydney and The Australian gold clubs to observe their environmental practices.

ASSISTANT'S RECOGNITION AWARD

Stuart Campbell from Maroochy River Golf Club beat home fellow nominees **Joel Leth** (Indooroopilly GC), **Richie Flesser** (Lakelands GC) for the GCSAQ Assistant's Recognition Award. Stuart was nominated for recognition by superintendent Pat Pauli for his work in the establishment of the new Maroochy River course. He has been an integral part of the course establishment prior to opening with responsibility for all the permanent and casual staff, herbicide application programmes and WH&S meetings.

Pat states that one of Stuart's many strengths is his attention to detail which is a key criteria in the presentation of a new golf course. He has great rapport with the staff and currently organises daily staff schedules and weekly work programmes. Pat also admires Stuart's ability to offer management suggestions while also willingly implementing Pat's decisions even if they differ from his own views. This is a key attribute for a harmonious working relationship between a superintendent and his assistant.

As the winner of the award, Stuart will receive an opportunity to work with Ogilvy, Clayton, Cocking, Mead during the reconstruction work being undertaken at Peninsula Kingswood Golf Club in Melbourne.

APPRENTICE OF THE YEAR

The 2015 GCSAQ Apprentice of the Year, sponsored by Toro, went to **Ashley Hill** (Arundel Hills GC) who beat home fellow finalists **Jake Tobin** (Lakelands GC) and **Rohan Fryer** (Townsville GC). Ashley finds himself at the top of his class after completing his four years of training to obtain his Certificate III in Sports Turf Management. He has applied himself at three distinctly different golf course facilities to gain a vast variety of skills required to be a successful young turf manager.

With glowing references from his previous and current superintendent mentors, this aspiring young superintendent not only applies himself on the golf course but did so also in the classroom. Gaining five credits and four distinctions, it comes as no surprise he was also nominated by his training provider for his academic achievements and task leadership.

Congratulations to all our winners and good luck to Ashley, Mick and Kelvin in the finals of the AGCSA Awards in June.

BEN TILLEY
PRESIDENT, GCSAQ



Ashley Hill from Arundel Hills won the GCSAQ Apprentice of the Year Award

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The GCSAWA committee is looking at ways to improve attendance at its education seminars and golf days. A survey will be going out to all members shortly to get their feedback on a number of issues. A common theme seems to be that many superintendents find it difficult to get time away from their courses, especially during the spring and summer, with winter obviously the best time to hold our golf and walk 'n' talk days.

Jason Kelly (Royal Fremantle) is doing a lot of work planning a golf programme that will hopefully see numbers increase. The GCSAWA Super Series will be reduced and include some rounds from major days such as The Toro Cup and Trade Challenge. A calendar will be sent out shortly with dates between April and September, so it would be great if members can free up some time to attend.

The committee is also finalising its education days for 2016 with the following topics and workshops earmarked:

- Wetting agents;
- Irrigation workshop;
- Chemical and spray workshop (one north and one south); and
- Excel spreadsheet training.

Thanks must go to the GCSAWA committee which does a tremendous job in putting back

something to make our industry better. **Neil Jones** has recently come on to the committee to assist with apprentices and communicate with TAFE, so we look forward to his involvement and input.

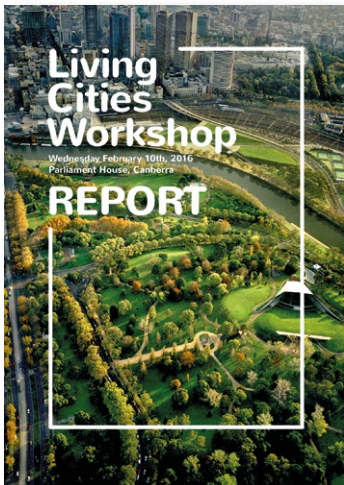
The WA Golf Industry Awards was again held at the Burswood Casino on Friday 11 March. As in previous years, it is a great night for the whole of the golf industry to recognise its high achievers and the GCSAWA was delighted to be involved and present the following awards:

- **Superintendent of the Year and Environmental Award:** Nick Kinley (Hartfield CC)
- **Apprentice of the Year:** Steve Lindley (Meadow Springs GC)

Trevor Strachan once again hosted a very successful ISPS Handa Perth International in late February, the first time the event has been held at that time of the year. Lake Karrinyup Country Club was as always in immaculate condition and showcased to the wider golf industry the world class standard of presentation that our members and practitioners are capable of. The feedback from the players was extremely positive and congratulations must go to Trevor and his team on another sensational effort.

NEIL GRAHAM
PRESIDENT, GCSAWA

TURF AUSTRALIA

On 10 February over 50 organisations representing urban planning, infrastructure, utilities and greening sectors converged on Canberra to develop key policy recommendations for the Australian Government's 'Cities Policy' position paper

On 10 February over 50 organisations representing urban planning, infrastructure, utilities and greening sectors converged on Canberra to develop key policy recommendations for the Australian Government's 'Cities Policy' paper.

The positive impacts that green infrastructure, including natural turf and lawns, has on our cities and urban areas was widely recognised. Reduced health and energy costs, increased retail, a sense of community and social equity along with many significant environmental benefits are outcomes that communities and governments want.

A five point National Living Infrastructure Plan was developed by the workshop participants to help ensure green infrastructure investment underpins a more sustainable, resilient and productive development of our cities and urban areas. The five point plan includes:

- **1. National Living Cities Fund:** Establishing an investment fund for the implementation of green infrastructure projects across Australia.
- **2. Living infrastructure as an asset class (or our equivalent):** Aimed at having green infrastructure formally recognised by Treasury as an asset class to be valued during business case development for major federally funded projects.

- **3. Local government green infrastructure package:** A national incentives package would be created and delivered through local government to elevate the priority of green infrastructure strategies.

- **4. National Green Streets and 'Grey to Green' pilot programme:** Seeking to redefine the role and design of road corridors that express the full potential of environmental, social and economic benefits from green infrastructure strategies, as well as the active retrofit of grey infrastructure to green infrastructure.

- **5. Minimum SITES ratings for federally-funded projects:** Building a culture of comprehensive landscape assessment and strategy development in all federally funded infrastructure projects.

The workshop participants, including Turf Australia, agreed to work together and form a Living Cities Alliance that will promote green infrastructure investment throughout Australia.

RICHARD STEPHENS
BUSINESS & INDUSTRY DEVELOPMENT
MANAGER, TURF AUSTRALIA



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- Kauri Cliffs
- La Pointe
- Mangawhai
- Matarangi
- Muriwai
- Napier
- New Plymouth
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- Omokoroa
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