



Irrigation in the Land Down Under

SUPERINTENDENTS
THROUGHOUT AUSTRALIA
FACE AN ARRAY OF
CHALLENGES IN THEIR
EFFORTS TO MANAGE AND
CONSERVE WATER USE

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EDITOR IN CHIEF

DARREN WILSON MAINTAINS turfgrass in Western Australia, the largest state in Australia and one of the driest regions on a continent that has the distinction of being the most parched inhabited land in the world.

It's an understatement to say Wilson, the golf course superintendent of Wembley Golf Complex in Perth, Australia, faces challenges when it comes to irrigation management and water conservation at the 36-hole public facility, which Wilson says is the busiest in the country with 175,000 rounds last year.

And the challenges continue to mount. Inflow to Perth's reservoirs has decreased by two-thirds over the last 30 years because of reduced rainfall, according to news reports. Wilson, whose two courses are irrigated with water drawn from an underground bore, says rainfall is down to about 23 inches from the annual average of 34 inches per year. It's also down for the first six months of this year — the total rainfall for January to July this year was 14.6 inches; the average for the period is 21.6 inches.

“The rainfall has been down so the level of the under-

ILLUSTRATION BY: ISTOCK INTERNATIONAL INC.; PHOTO COURTESY: WEMBLEY GOLF COMPLEX

ground bore is dropping,” says Wilson, who irrigates 176.5 acres of the 301 acres that comprise Wembley.

If the aquifer that supplies water to the bore gets too low, there won't be enough water to irrigate crops, let alone golf courses.

Western Australia is not the only region of the country in a water crisis. Daryl Sellar, a former golf course superintendent in Australia who's now the director of Turfwise Consulting in South Australia, says catchment areas in populated areas throughout the country are under increasing pressure, and water restrictions have been implemented.

“It goes without saying that water has always been a precious resource, but with the increase in population and drought conditions throughout most of the populated areas of the country for the past five or six years, our vulnerability has really hit home,” Sellar says. “This has placed enormous scrutiny

on all water consumption, with the federal government working toward developing a comprehensive information base for all water sources.”

Only 8 percent of the water used for golf course irrigation comes from potable supplies, which means restrictions have affected only a small number of clubs severely, Sellar explains. However, 35 percent of courses rely on rivers, storm-water runoff, groundwater and dams, which drought conditions have also impacted. About 25 percent of courses use recycled water.

In addition, “a combination of social conscience and community pressure has seen most clubs regulate their water use and at times sacrifice course presentation,” Sellar says.

Wilson, who has been in the industry for 20 years, knows what he's up against, and he has embraced the ways and means of irrigating responsibly to save water. Wilson has cre-

ated a manual detailing his irrigation management plan. Under the heading, “Golf Course Water Management Goals,” Wilson lists his priorities:

- achieve high water-use efficiency;
- produce high-quality playing surfaces with minimum supplementary watering;
- minimize impact of watering practices on the environment;
- achieve sustainability in water management;
- constantly strive to save water; and
- keep water usage with license application allocation.

Wilson taps his experience to make the proper watering decisions. His mantra is: “Just enough water.”

“We irrigate very lightly,” he adds. “We hand-water the greens a lot, but we don't irrigate the greens every night. Sometimes, we just go out and irrigate the hot spots.”

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Underground water is pumped to this irrigation dam where it's treated and used to water turf at the Wembley Golf Complex. The dam also poses a hazard for three holes.

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In 2005, Wembley installed a new irrigation system, a computerized-control model featuring aquifer-monitoring probes. The new technology has helped the course save water, as has Wilson's use of wetting agents, which he says have cut water use on the course by 15 percent.

Wilson's friend and fellow superintendent, Glenn Cross, shares his water management goals. Cross is superintendent of Mount Lawley Golf Club, a private club in Perth. Four years ago, Cross met with the decision makers at his club to discuss the writing on the wall that was the waning water supply.

"We looked at the things we could do to minimize water use," Cross says.

Mount Lawley is permitted to irrigate about 1 million gallons an acre per year. The course is not permitted to increase its area of irrigation. If the course is forced to decrease its area of irrigation, Cross is prepared to do so.

"We can certainly reduce our water when that time comes," he says, noting the course is comprised of 244 acres, of which 79 are irrigated.

Cross recently regrassed the golf course's fairways and tees from common couch (a warm-season Australian turf) to Santa Ana couch, a variety requiring less irrigation. Santa Ana, a fine-leaved grass, requires frequent watering during establishment but tolerates drought well once it's established.

Wilson and Cross aren't concerned about water cost, but they are concerned about water availability. Wilson says only 3 percent of golf courses in Perth use potable/drinking water for irrigation. Most



Glenn Cross and Darren Wilson, golf course superintendents in Perth, Australia, are constantly educating themselves about water management and conservation.

of the courses draw groundwater from aquifers. Wembley pays an annual licensing fee of \$3,000 to extract water. But Wilson watches what he uses, like a state trooper watching for speeding cars in a construction zone, so as not to go over his allotment.

In August, it was raining in Western Australia, where it's winter and the rainy season. If the rains come during the rainy season, then Wilson says it's possible golf courses could get by with only a little irrigation during the season. But the problem is it doesn't always rain like it should during the rainy season, and the irrigation system must be tapped more often.

"If it doesn't rain for a month, which it has done before, you can get into trouble," he says.

There's talk by regulators of halting homeowners and golf courses from irrigating turfgrass for two months in 2010. Wilson

says golf courses are negotiating certain exemptions to the rule, such as watering in pesticides or watering greens if they're in danger of dying.

Wilson says he's not overly concerned about not watering for two months in the winter, but he would be greatly concerned if the restrictions were imposed during Australia's summer.

"[The government] can call a restriction whenever it wants to for water conservation," he adds.

Sellar says alternatives to tapping into the potable water supply, such as desalination, have been implemented around the country. Storm-water harvesting schemes have also been introduced along with increased use of recycled water for non-human consumption use. They are great initiatives, but at a cost.

"The golf industry is now coming to the realization that water is now a precious *and* costly resource, with many clubs having to prepare themselves for increases in supply costs, whether in the form of direct fees, licenses, infrastructure cost sharing, or increased pumping costs through harvesting, storing and recovering water," Sellar says.

More Irrigation Abroad Online

Additional "Water Wise" coverage featuring views from around the world can be found at www.golfdom.com, including:



- Golf great **Gary Player** (above) says the United States, including golf courses, uses too much water.

- Water conservation no big deal in Japan.
- Going the fescue route in the Channel Islands.

While government regulations on golf course irrigation are getting stricter, Sellar believes they will get even tougher in time.

“Thankfully, I think the industry as a whole is pretty well placed to handle these regulations,” he adds.

What will golf course irrigation in Australia resemble in 10 years? For starters, Sellar believes potable water will no longer be allowed for use unless no other supply is available.

“The community pressure on the use of our water supplies will increase, and society will demand alternatives be found to meet the needs of sporting facilities such as golf courses,” he says.

But Sellar takes a glass-is-half-full view to such a situation. “We have a good track record in the sustainable use of recycled wastewater, and we will be communicating that loud and clear in the years to come so that golf courses can secure access to these water sources and continue to provide the social, economic and environmental benefits of which they’re capable,” he says.

Sellar says there’s enormous pressure on Australia’s six state governments to capture and reuse storm water. The problem is most rain falls in the winter throughout much of the populated areas of Australia, and the water is needed in the summer. Hence, there’s a need for enormous space for storage and treatment of the rainwater.

Sellar believes golf courses could provide valuable land for such projects within urban areas, and they’ll be viewed as critical partners in the process.

“This will come with commitments and obligations for the golf clubs involved, but the benefits will leave them with little choice,” Sellar says.

It’s an understatement to say golf course irrigation is undergoing a transformation in the land down under. ■

The Aussie Challenge: Decreasing Water Use While Upgrading Playing Conditions

Australian turfgrass consultant Daryl Sellar says the golf course industry has gained respect among the country’s six state governments and the federal government for its aptness of irrigation. The golf industry has been proactive in developing a profile of its water use after the Australian Golf Industry Council (AGIC) identified water as the greatest threat to the game.

Sellar says superintendents in his country have always strived for more efficient water use on their courses. They’ve had various motivations to do so, including:

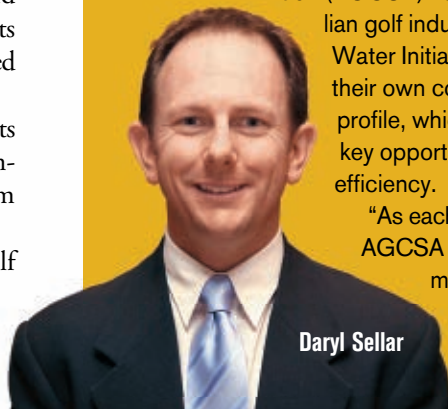
- to achieve the quintessential firm, fast Australian golf course;
- to promote the most desirable grass species;
- to manage budgets that take into account pumping and water costs;
- as an acknowledgement of their obligation to manage water wisely;
- diminishing water quality;
- diminishing water supply as more people utilize the same resource.

Simultaneously, golfer expectations for quality playing surfaces have continued to increase, Sellar says. Hence, superintendents have adopted the following measures to manage water use while providing top conditions:

- use of soil wetting agents and similar technology;
- managing soils more intensively through variable depth aeration, renovations and amendments;
- converting to more appropriate turf species;
- removal or transition of *Poa annua* greens to improved bentgrass varieties;
- upgrading irrigation systems, from the controller to the pump station to the sprinkler head, to develop greater efficiency;
- investing in water-recycling systems at maintenance facilities;
- introducing climatic-based irrigation scheduling;
- treating water prior to application to improve water quality and reduce its negative impacts on soils; and
- injection of products into the irrigation system to reduce the need for additional watering in of products.

Sellar says the Australian Golf Course Superintendents’ Association (AGCSA) has taken a lead role within the Australian golf industry by developing an online National Water Initiative, which allows courses to develop their own comprehensive water management profile, which will help them identify and prioritize key opportunities to improve water-management efficiency.

“As each club develops its own profile online, the AGCSA will be able to demonstrate the commitment of the golf industry to best practice water management through continuous improvement,” he adds.



Daryl Sellar