

Golf

Benefits to the Environment



The conservation and management of our natural resources is of vital importance - and golf has a significant role to play in this important endeavour. Golf can benefit the environment and the social wellbeing of its participants. This document serves to highlight the environmental benefits of well-designed golf courses and promote golf as a leader in sustainable sport and business.

Well-designed golf courses can:

- Preserve open space and remnant vegetation within both rural and urban environments
- Promote indigenous flora and fauna and the Australian landscape experience
- Protect and act as wildlife sanctuaries
- Utilise, treat and enhance water resources
- Rehabilitate degraded landscapes
- Improve air quality and moderate heat
- Protect topsoil from degradation
- Beautify the environment and aid community education

1. OPEN (GREEN) SPACE

GOLF COURSES PRESERVE OPEN SPACE AND REMNANT VEGETATION, AND PROTECT AND ENHANCE FLORA AND FAUNA WITHIN BOTH RURAL AND URBAN ENVIRONMENTS ACROSS MORE LAND THAN 60,000 SCG'S!

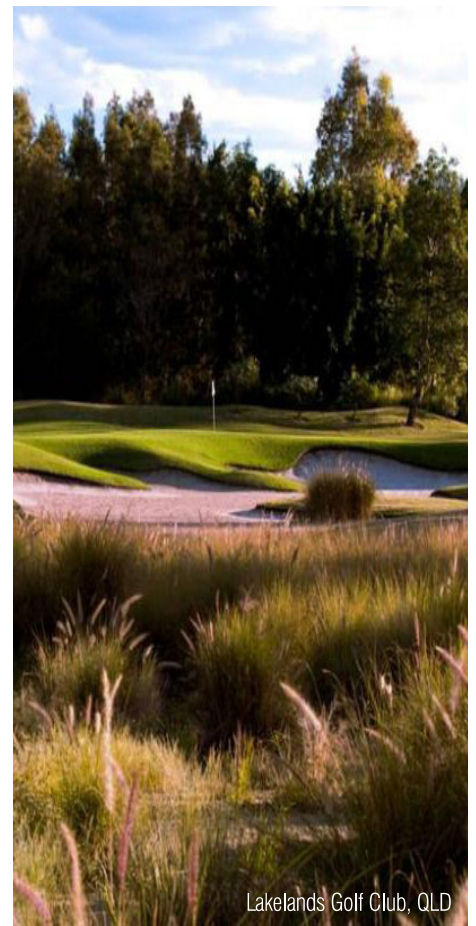
Australia boasts some 1,500 golf courses of which a large number occur within urban environments, occupying approximately 100,000 hectares of land. This is an area similar to that of greater Melbourne, (or more than 60,000 SCG's!) and a substantial area preserved as open space at a time when parks and gardens are constantly under pressure from development. Remnant indigenous vegetation found within many of our golf courses serves to protect the gene stock of our floral heritage. Golf courses are compatible with contiguous green belts and other land uses such as sporting reserves, wildlife sanctuaries, wetlands

and forests and often link up broader pedestrian path networks. In this way golf courses preserve, protect and enhance flora and fauna. Golf Courses also serve as a 'buffer' between sensitive natural environments, and residential and industrial areas.

2. A DIVERSITY OF AUSTRALIAN LANDSCAPES

GOLF COURSES PROMOTE AND PROTECT THE INDIGENOUS FLORA AND FAUNA WHICH IS A CRITICAL PART OF BIODIVERSITY, AND THE UNIQUE IDENTITY OF THE LANDSCAPES ON OFFER FROM NORTHERN QUEENSLAND, CENTRAL AUSTRALIA TO OUR SOUTHERN TIP.

The Australian landscape is not easily defined or typified. Across our vast continent, the climate, topography, flora and fauna varies considerably. It ranges from the extreme intensity of the centre, to the tropical abundance of the far north and the coastal heath in the south - the landscape's character and form are constantly changing. Australians and visitors to our country are afforded the opportunity to experience the Australian landscape, wherever they might be, whilst enjoying a round of golf. The importance of cultural, rural and historic landscapes should be recognised and managed appropriately.



Lakelands Golf Club, QLD

A PLACE TO CALL HOME

Golf courses create a value greenspace and wildlife corridor for native Flora and Fauna. On average, golf courses contain a greater proportion of Australian native plants and more trees per hectare, than Residential areas.

Golf courses support, on average, a greater abundance and species richness of many invertebrate groups, including beetles (Coleoptera), bugs (Heteroptera) and native Australian Bees when compared to residential areas and other local greenspaces such as parklands common in urban environments.

Of particular environmental significance, is that a Study by Melbourne University in 2015, found that golf courses also support a greater abundance of key beetle and bug groups, including Carabid beetles which are used globally as indicators of ecosystem health, and predatory bugs that play a key role in insect pest control.

Cover Photo: Barwon Heads Golf Club, VIC. Photo: Gary Lisbon



Gold Creek Country Club, ACT

THE BIRDS AND THE BEES

In a Biodiversity study undertaken by Melbourne University in 2015, golf courses stood head and shoulders above other green spaces for their contribution to habitats to flora and fauna. When compared to residential areas and nearby nature reserves, golf courses on average supported a greater number of different bee species, and consistently supported a greater diversity of bird species than nearby residential areas or urban parks.

In fact, the study found that golf courses supported almost twice the bird breeding activity of any residential and small park areas!

2015 Bio-diversity Study, Dr Caragh Threlfall, School of Ecosystem and Forest Sciences, University of Melbourne.

Photo: AGCSA



3. BIODIVERSITY

SOUND TURF, ENVIRONMENTAL AND LAND MANAGEMENT PRACTICES MEANS THAT GOLF COURSES ARE HIGHLY IMPORTANT ECOLOGICALLY, RICH IN BIODIVERSITY OF PLANT AND ANIMAL SPECIES, AND ACT AS WILDLIFE SANCTUARIES PROTECTING FLORA AND FAUNA.

Golf Courses provide a unique opportunity to create wildlife sanctuaries within their corridors and boundaries. These land masses can preserve and enhance a rich variety of; native birds, native animals, fish, insects and plant life thereby enriching the ecology of the region. Amongst the fairways golf courses house significant areas of natural landscape consisting of natural grasses, trees, shrubs, wetlands and waterbodies. Careful management actively promotes desirable habitat via sound practices such as weed and pest control to eliminate

competition on the more delicate endemic species. In broader terms golf courses act as important 'links' of green space across a region, particularly in an urban context, thereby providing vital wildlife corridors.

4. UTILISE, TREAT AND ENHANCE WATER RESOURCES

GOLF COURSES PLAY A SIGNIFICANT ROLE IN THE CONSERVATION OF WATER, THROUGH EFFICIENT USE OF TREATED WASTE WATER AND GREY WATER, AND ACTING AS A NATURAL FILTER OF STORMWATER AND GROUND WATER RECHARGE

Turfgrass, together with the natural landscape trap sediment and pollutants before they enter common waterways. The containment of water on site helps in flood control and filtration whilst contributing to the recharge of aquifers and ground water which may otherwise pollute nearby waterways.

The reliance on potable water to irrigate a golf course is an issue gaining increased attention. Golf Courses face the reality that when striving for greater sustainability they must not only seek alternative water sources but more effective water usage /management practices. As the costs of potable water rise there is an economic incentive to supplement potable water. Where feasible, golf courses can offset their potable water usage by the use of alternative water sources including; effluent, harvested or stormwater catchments – and there are around 1,400 courses across Australia doing so. Filtering effluent and stormwater through a golf course ultimately reduces the pollution and sedimentation of our oceans and waterways. The use of secondary treated effluent has the added advantage of supplying much of the nutrient requirement needed to maintain 'quality' turfgrass, lessening the need for chemical support.

A SUCCESSFUL RESULT FOR GLENELG

Glenelg Golf Club's ground-breaking aquifer storage and recovery project (ASR), was undertaken in 2011 and assists in minimising water consumption, and future-proofing the club's irrigation needs.

The concept of the Glenelg Golf Club ASR involves;

- The harvesting/collection of stormwater
- Treating it to a quality that meets Environmental Protection Agency (EPA) requirements for injection into the underlying aquifer
- Storing it in the aquifer until it is required for re-use on course irrigation

The primary objective of the scheme for Glenelg Golf Club was to secure a high quality water source for the course for the foreseeable future, and interest in the environmental benefits of reducing stormwater outfall to the ocean and replenishing the depleting Adelaide Plains aquifer.

The scheme has been successful on a number of fronts;

- The quality of water has assisted turf management with salinity levels typically around 500mg/L compared to natural ground water being between 1200 and 1900mg/L.

- Local wetlands have enhanced with Bird life increasing and becoming more diverse with the health of the wetlands.
- Secured a relatively economical high quality water supply, with whole of production cost approximately \$800/ML (compared to recycled water that is very variable but in excess of \$1000/ML and potable water at approx. \$3500/ML).

The project has been successful not only on reducing water consumption, however generated significant interest in environmental management resulting in numerous tours by local schools to educate them on the club and water conservation technology.



Lake Karrinyup Golf Club, WA

5. ENVIRONMENTAL REHABILITATION

GOLF COURSES CAN FACILITATE THE REHABILITATION OF DEGRADED LAND PROVIDING A VIABLE AND SUSTAINABLE LAND USE WITH WIDE ENVIRONMENTAL AND COMMUNITY BENEFIT.

Regularly occupying poor or degraded landscapes, golf courses assist in reversing degradation and providing management resources to the land for rehabilitation. Often economic limitations make it difficult to rehabilitate scarred and degraded landscapes such as landfill, quarries, tip sites and barren rural land. Golf courses provide a viable and sustainable use for land degraded over time by intensive use or mismanagement. Golf courses can contribute

BREATHE EASY

Did you know that a 15m² (50' x 50') area of Turfgrass, produces enough oxygen in a year to sustain a family of four. This means that the average golf course green (1,800m²) produces enough oxygen annually to sustain 480 people.

Or to put it another way, the average golf course (80 Acres, or 323,749m²) produces enough oxygen annually to sustain over 85,000 people!

University of Maryland, Environmental Science and Technology, October 2018

to the reinstatement of the natural process of a healthy environment by reconditioning degraded sites and restoring natural systems, significantly benefiting communities in providing a new use for this land with wide environmental, biodiversity and educational benefit.

6. IMPROVE AIR QUALITY AND MODERATE HEAT

THE AVERAGE GOLF COURSE SUSTAINS ENOUGH OXYGEN FOR AROUND 85,000 PEOPLE. TURFGRASS AND VEGETATION ALSO HAVE THE EFFECT OF REDUCING THE HEAT OF AN AREA – CRITICAL IN URBAN ENVIRONMENTS.

Vegetation has the unique capability of improving the quality of air we breathe as well as producing it. Photosynthesis is a process



Royal Hobart Golf Club, TAS



Glenelg Golf Club, SA

TURF PROTECTION

Research shows that without ground cover such as turfgrass, up to 85% of rainfall from storms will erode soil, causing run off into creeks and streams rather than soak into the soil and be available for plant growth.

An added benefit of turfgrass, assisting to control water's erosive power.

"Saving Soil", NSW Department of Primary Industries

whereby carbon dioxide is consumed by the plant, converting it into oxygen. The average golf course sustains enough oxygen for around 85,000 people. Turfgrass and trees also have the effect of reducing the heat of an area. Planting around buildings and carparks provide the dual benefits of a more comfortable environment, whilst reducing cooling costs.

7. PROTECTING LAND DEGRADATION

WITHOUT GROUND COVER SUCH AS TURFGRASS UP TO 85% OF RAINFALL FROM STORMS WILL ERODE, CAUSING RUNOFF INTO CREEKS AND STREAMS

The degradation of soil appears in many forms such as acidification, salinity and erosion. Topsoil is vital in not only maintaining an environmental equilibrium but also in practical and economic terms for building materials and farming. However, as with all natural resources it must be managed in a sustainable manner. Vegetation plays a significant role in the sustainable management of soil. Vegetation, particularly turfgrass, successfully controls water's erosive power. A dense root and shoot system creates an organic thatch layer that filters and slows surface water runoff.

VEGETATION STRATEGIES AT PENINSULA-KINGSWOOD

Indigenous vegetation provides a Golf Course with a sense of place. It ensures courses all around the world have a unique look and feel...a parkland course in California will look different to the heathland of London, or indeed the sand belt of Australia. The sand-belt is renowned for its native grasses and low growing heathland plants, and combined with a unique bunker style helps give the region its unique appearance. The 144 hectare site at Peninsula-Kingswood is one of the largest

of any of the sand belt courses. Over time large areas off the fairway became infested with weeds - while other areas had been revegetated with non-indigenous varieties.

Recent initiatives have seen significant improvement to native vegetation. Detailed mapping and ecological assessments were undertaken, and thirteen different EVC zones were identified across the site. Seeds and cuttings were collected from site and around 500,000 cells were propagated by a number

of local nurseries. In addition to propagation, many thousands of heathland varieties from elsewhere on site were translocated across the site. A range of techniques were employed to remove weeds from heavily infested areas, including regular controlled burns, weed management and manual control of non-indigenous varieties. The result is a site with the largest and most diverse examples of indigenous vegetation anywhere on the sand belt.



Peninsula Kingswood Golf Club, VIC



Alice Springs Golf Club, NT



8. AID ENVIRONMENTAL AND COMMUNITY EDUCATION

GOLF COURSES PROVIDE THE OPPORTUNITY TO ENRICH THE ENVIRONMENT BY HOUSING A DIVERSE AND RICH ECOLOGY AND SERVE AS A VALUABLE RESOURCE IN TERMS OF EDUCATION FOR SCHOOLS AND COMMUNITY INTEREST GROUPS

Golf Courses can provide the opportunity to enrich the environment by housing a diverse and rich ecology. Significant ecosystems such as wetlands provide a valuable resource in terms of an education facility for golfers and interest groups alike. The habitat qualities of wetlands sustain many varieties of migratory birds, native animals, fish, insects and plant life. Guided walks educate and alert participants to the environmental issues within the golf course as well as within the broader context of the region.

INNOVATIVE USE OF WATER AT THE BARWON HEADS GOLF CLUB

The Barwon Heads Golf Club uses an innovative combination of both reclaimed water and storm water harvesting to irrigate its fairway, rough and tee areas.

In 1999 the Club, along with the then newly developed 13th Beach golf club, sourced class 'C' reclaimed water from the local water

treatment plant. Later, in 2006, the Club built a Reverse Osmosis system to further improve water quality.

The water is stored in an 11.85 mega-litre lined storage facility, and in 2006, following the development of new residences nearby, storm water from a new residential development was diverted to the Golf Course.

A retarding basin was artfully integrated with a new Par 3 course which allowed for the 1 in 100 year flood event. Subject to rainfall levels each year, up to 10 mega-litres of storm water per year is available for re-use on the golf course and aids in the protection of the adjacent wetland system

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The Australian Golf Industry Council

