Advancing Agricultural Industries Programme

Australian Turf Industry Stocktake Report

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Kiri-ganai research

September 2007

AUSTRALIAN TURF INDUSTRY STOCKTAKE PROJECT, 2007

ABOUT KIRI-GANAI RESEARCH

Kiri-ganai Research Pty Ltd is a Canberra based consultancy company that undertakes consultancy and analytical studies concerned with industry performance, natural resource management and sustainable agriculture. Our strength is in turning knowledge gained from markets, business operations, science, research and policy into ideas, options, strategies and business plans for industries and businesses.

Kiri-ganai Research Pty Ltd
GPO Box 103
CANBERRA ACT 2601
AUSTRALIA
ph: +62 2 62956300 fax: +61 2 62327727
www.kiri-ganai.com.au

Project team

The project was managed by Kiri-ganai Research Pty Ltd. The project team comprised Ken Moore, Dr Richard Price, Michael Williams and Judy Andrews. Ken Moore is the principal author of this report. Michael Williams of Mike Williams & Associates Pty Ltd facilitated the Stocktaking Workshop in Melbourne on 27 June 2007, and the Setting Directions Workshop on 13 August 2007 in Sydney.

Acknowledgements

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- The Project Steering Committee comprising Robert Davey, Ray Moir, Greg Miller, Lynn Davidson, Suzanne Shearer, John Lloyd, Jennifer Medway and David Simpson for their oversight of the project and input to the report.
- The authors of publications, articles and reports reviewed by the project team whose information, knowledge and insights are acknowledged and greatly respected in building a complete picture of the Australian turf industry.

Disclaimer

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REPORT SNAPSHOT

Turf: a natural part of Australian life worth promoting

- ⇒ Turf is part of everyday Australian home, recreational, sporting and aesthetic life.
- ⇒ It is a natural surface that surpasses all other ground covers for many utilitarian, recreational, environmental and visual purposes.
- ⇒ The turf industry has evolved along with the Australian economy since European settlement.
- ⇒ As an industry, turf is poorly understood in the community and its role in the Australian economy, society and environment is vastly under-appreciated and unheralded.
- ⇒ In an era of heightened environmental and health awareness, the industry has an outstanding opportunity to demonstrate its environmental and social (including health) credentials to Australians.
- ⇒ In recognising this opportunity, the industry has identified the need for a national turf communication and marketing strategy.

Giving voice to the turf industry

- ⇒ There are well-developed representative structures across all sectors of the turf industry.
- ⇒ The capacity of the industry to undertake the work to quantify its value, to effectively promote this to the Australian community and establish itself as an influential voice, depends upon all parts of the industry acting together as a united voice for the turf industry. In recognising this, the industry has agreed to establish an alliance across the industry's value chain to advance the interests of the whole turf industry.

Recognising environmental realities

- ⇒ Access to water for irrigation is the lifeblood of turf, and the availability of reliable water is a priority issue for the industry's sustainability.
- ⇒ There is a strong public misconception that turf and green space are high water users.
- ⇒ The reality is that the industry has a positive story to communicate about the availability of new turf varieties that use less water, the health and social benefits of turf, and its development of a range of non-potable water sources including the use of recycled water.
- ⇒ Building on this momentum, the industry has agreed to prepare and maintain a national industry-wide water strategy.

Listening to the consumer and investing in innovation and professionalism

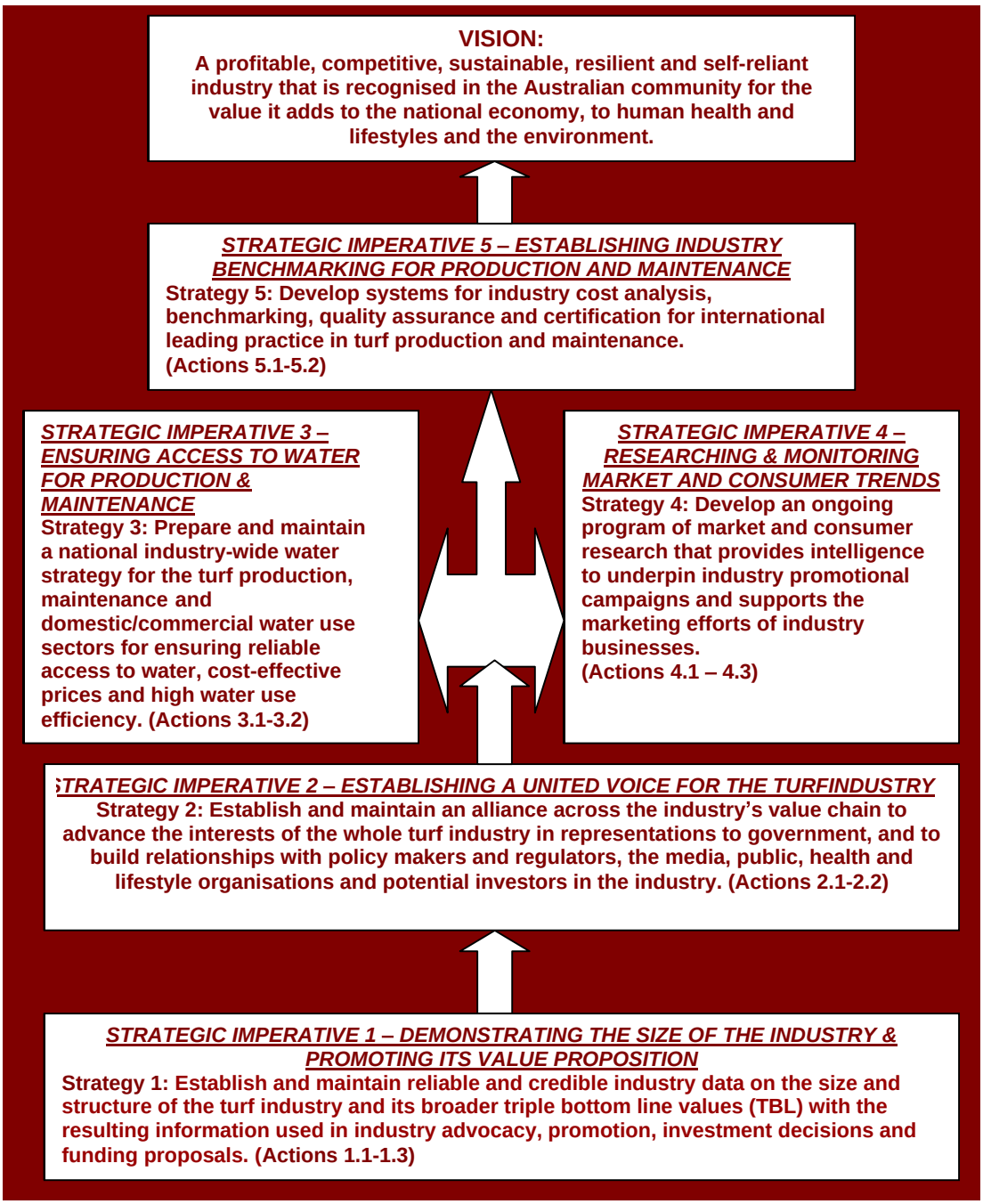
- ⇒ Growth in population and in residential and commercial developments, rising wealth and real disposable incomes, and increasing demand for instant services and quality products requires innovation across the turf industry.
- ⇒ The turf industry recognises that to remain competitive, continual improvement in performance has become a hallmark for individual businesses, sectors of industries and employees.

⇒ To remain at the forefront of best practice, the industry has agreed to develop an ongoing program of market research and to develop systems for industry benchmarking, quality assurance and professional certification.

⇒ The introduction of a national turf levy in October 2006 represents a major step in building the industry's capacity for innovation.

Responding to the challenges and opportunities outlined in this snapshot, the Australian Turf Industry has developed a vision for the future, supported by five strategic imperatives.

Figure 1: Strategic imperatives for the Australian turf industry



EXECUTIVE SUMMARY

The Australian Turf Industry Stocktake

This project was funded by the Department of Agriculture, Fisheries and Forestry for Turf Producers Australia Limited (TPA) under the Advancing Agricultural Industries Programme. It provided the opportunity for the turf industry as a whole to work with the Government and independent industry analysts to identify the issues and actions it must address now for a sustainable future.

The following paragraphs provide a summary of the key Stocktake findings relating to each strategic imperative[1] and the associated strategies and specific actions that the industry will implement to address the imperatives.

Supporting information for the Stocktake findings is provided in Part A of the report. Part B outlines a range of considerations that will assist the industry in designing, planning, funding and implementing the strategies and actions.

The strategic imperatives are numbered in priority order. It is envisaged that action will be taken on imperatives 1-3 over the following year with full implementation within three years. Implementation of imperatives 4 and 5 is envisaged within five years.

It is acknowledged that the industry's organisations have limited human and financial resources. Implementation of the agreed Stocktake strategies and actions will, therefore, require support from appropriate funding programs.

The report identifies a number of areas of potential support that could be explored by the industry. In some cases, collaborative initiatives between organisations may provide another source of funding where there is a common purpose.

1. Demonstrating the size of the industry & promoting its value proposition

Turf is a natural surface that surpasses all other ground covers for many utilitarian, recreational, aesthetic and environmental purposes. It is part of everyday Australian life as home lawns, sporting fields, parks and open areas in built landscapes.

Increasingly, it is being recognised as an environmental product for dust suppression, erosion control, cooling, oxygen generation and carbon sequestration.

The industry has evolved along with the Australian economy since European settlement. Its development has reflected changes in population size and demographics, urban living, incomes, wealth and lifestyles.

[1] Strategic imperatives are broader actions that are absolutely necessary for the future prosperity of the industry.

Today, a large modern industry exists to grow, supply and maintain turf for consumers, and to service the businesses involved in these activities. As an industry, turf is poorly understood in the community and its role in the Australian economy, society and environment is vastly under-appreciated and unheralded.

In order to validate turf's status as a major Australian industry, this Stocktake Project has identified that the first priority for the industry is to collect the data to quantify the size and economic value of the turf industry nationally, and in each State. The data required includes the gross value of output across all turf sectors,[2] the number of businesses or organisations involved in turf production and maintenance, total industry employment and the total area of turf in Australia by use.

Associated with this priority, is the additional requirement to quantify or describe the industry's complete triple bottom line.[3] With heightened environmental and health awareness amongst Australians, governments and businesses, the industry has an outstanding opportunity to demonstrate its environmental and social (including health) credentials.

The Signposts for Australian Agriculture project, managed by the National Land & Water Resources Audit, may provide a model for the turf industry to compile data on its economic, social and biophysical contribution to Australia.

The industry has identified the need for a national turf communication and marketing strategy to promote to the Australian community the industry's value proposition. The strategy would also address the misconceived images of turf, and create brand recognition amongst consumers of turf as a natural, healthy and attractive product that improves lifestyles and wellbeing.

As a result of this Stocktake Project, the industry has agreed to the following strategy and actions to address Strategic Imperative 1.

Strategy 1:

Establish and maintain reliable and credible industry data on the size and structure of the turf industry and its broader triple bottom line values (TBL), with the resulting information used in industry advocacy, promotion, investment decisions and funding proposals.

Industry actions:

1.1. Prepare a project proposal for measuring the gross value of output across all turf sectors, the number of businesses or organisations involved in turf production and maintenance, total employment and the total area of turf in Australia by use.

1.2. Specify, resource and undertake the research necessary to quantify and/or describe the TBL value of the whole of the Australian turf industry,

[2] Gross value of output must be measured in accordance with definitions and measurement methodology of the Australian Bureau of Statistics to ensure comparability with other industries.
[3] The triple bottom line refers to the economic, environmental and social (including health) values of turf to society.

and establish a 'value proposition' for the industry that reflects its true worth to Australia.

1.3. Design, resource and undertake a national turf communication and marketing strategy that promotes the industry's value proposition in the community, addresses the misconceived image of turf, and creates a distinct brand that builds sustainable increases in demand for turf.

2. Establishing a united voice for the turf industry

There are well developed representative structures across all sectors of the turf industry including growers, maintenance businesses and organisations, turf sports facility managers, and parks and leisure organisations. In addition, allied industries and service sectors have established representative structures. This includes landscape contractors, mowing contractors, landscape architects, irrigation companies and the nursery and garden industry.

The capacity of the industry to undertake the work to quantify its value, to effectively promote this to the Australian community and establish itself as an influential voice with governments and the community, depends upon all parts of the industry acting together as a united voice for the turf industry.

The next step in the development of the industry's structure is, therefore, to establish an alliance across the industry's value chain. The purpose of the alliance will be to advance the interests of the whole turf industry and present a united voice in advocacy to government, and to build relationships with regulators, the media and public.

As a result of this Stocktake Project, the industry has agreed to the following strategy and actions to address Strategic Imperative 2.

Strategy 2:

Establish and maintain an alliance across the industry's value chain to advance the interests of the whole turf industry in representations to government, and to build relationships with policy makers and regulators, the media, public, health and lifestyle organisations and potential investors in the industry.

Industry actions:

2.1 Establish an alliance for the turf industry across its production, maintenance and service sectors to address industry-wide issues.

2.2 Turf Producers Australia to lead the implementation of the strategies and actions agreed in the Australian Turf Industry Stocktake report in collaboration with other turf industry sectors.

3. Ensuring access to water for turf production & maintenance

Access to water for irrigation is the lifeblood of turf growing and maintenance, and the availability of reliable supplies at cost-effective prices is a priority issue for the industry's sustainability.

The industry is being seriously hampered by the restrictions on outdoor water use that apply in State and Territory jurisdictions. A strong public misconception has developed that turf and green space are high water users, and 'legitimately' the first target in water restrictions.

Contrary to this misconception, new turf varieties use less water and many are highly drought tolerant. In addition, the industry has a record of successfully improving water use efficiency in turf production and maintenance, and in developing non-potable water sources including recycled water.

The industry has identified its third strategic imperative as ensuring access to water for turf production, maintenance and domestic/commercial turf users. A pathway to this outcome will be through proactively establishing effective planning and management of available water resources, improving the efficiency of irrigation practices and adopting reliable accounting systems for water used.

This action will assist in establishing an influential voice for the industry in water management decisions at national, state and regional levels. It will be undertaken through a process that engages the key water regulators, policy makers, irrigation water providers and irrigation suppliers.

As a result of this Stocktake Project, the industry has agreed to the following strategy and actions to address Strategic Imperative 3.

Strategy 3:

Prepare and maintain a national industry-wide water strategy for the turf production, maintenance and domestic/commercial water use sectors for ensuring reliable access to water, cost-effective prices, and high water use efficiency.

Industry Actions:

3.1 Prepare a proposal for the development of a turf industry water strategy that engages key water regulators, policy makers, irrigation water providers and irrigation suppliers.
3.2 Produce and maintain data on the industry's water availability, use and irrigation practices across the turf production, maintenance and domestic/commercial water use sectors.

4. Researching & monitoring market and consumer trends

Associated with the requirement for the industry to promote its environmental and water use credentials and the industry's value to Australia, is an ongoing need for the industry to research and have an in-depth understanding of its markets.

Continuing drought, evidence of climate change and the implementation of water restrictions have raised the concern of consumers about water use and this has impacted on the demand for turf. There are also ongoing

demographic, lifestyle and dwelling changes that are impacting, both positively and negatively, on the industry's markets.

With effective promotion of the benefits of turf, the industry has the opportunity to capitalise on the growth in population in urban areas, the strong growth in residential and commercial developments, rising wealth and real disposable incomes, and the increasing demand for instant services and quality products.

For example, the availability of low input and low maintenance turf has the potential to cater for an apparent trend to more 'time-poor' consumers. Similarly, the cooling and softening attributes of turf make it an attractive product for use in contemporary indoor/outdoor styles of landscaping involving smaller yards and increased use of hard materials.

In recognition of the market opportunities, and to counter any threats to the demand for its products and services, the industry has identified its fourth strategic imperative as researching and monitoring markets and consumer trends.

The establishment of the national turf industry levy in October 2006 provides the opportunity to implement an ongoing program of data gathering and market analysis to underpin industry promotional campaigns and business marketing.

As a result of this Stocktake Project, the industry has agreed to the following strategy and actions to address Strategic Imperative 4.

Strategy 4:

Develop an ongoing program of market and consumer research that provides intelligence to underpin industry promotional campaigns and supports the marketing efforts of industry businesses.

Industry Actions:

4.1 Specify the terms of reference for market and consumer research that can be funded through the turf R&D program under Horticulture Australia Ltd.
4.2 Examine the need to incorporate quality assurance, ethical advertising and consumer services into industry marketing strategies aimed at adding value to sales.
4.3 Design a member-based web system that regularly presents market research results and market intelligence on trends in turf markets and distribution channels.

5. Establishing industry benchmarking for turf production and maintenance

Continual improvement in performance to remain competitive in our modern global market economy has become a hallmark for individual businesses, sectors of industries and employees.

In addition, the industry accepts that it needs to instil confidence in consumers for the products and services it offers via quality assurance and producer or seller certification.

In some areas, the industry is moving to international leading practice through environmental management systems such as 'e-par', which has been extensively adopted for golf courses through the sponsorship of the Australian Golf Course Superintendents Association.

Through 'e-par' and other approaches, the industry is making major progress in practices for handling and applying chemicals and fertilisers, moving to integrated pest management and adopting more efficient irrigation practices.

Similarly, legislative requirements have meant the adoption of effective systems for managing occupational safety and health (OHS) through the various sectors of the turf industry.

Another aspect of an industry best practice approach is the introduction of cost and profit benchmarking for turf production and maintenance. The Stocktake Project has identified the need for gross margin analysis for large, medium and small turf growers, improved cost accounting and the introduction of simple cost benchmarking for growers to compare their performance against industry benchmarks. Cost benchmarks could also be applied to turf maintenance, which would address cost pressures being experienced by this sector of the industry.

As a result of this Stocktake Project, the industry has agreed to the following strategy and actions to address Strategic Imperative 5.

Strategy 5:

Development of systems for industry cost analysis, benchmarking, quality assurance and certification for international leading practice in turf production and maintenance.

Industry Actions:

5.1 Investigate the scope and attributes of an appropriate cost, price, profit and operational performance benchmarking system for adoption by turf producers and the turf maintenance sector.

5.2 Develop a practical approach to industry quality assurance and certification for turf production and maintenance businesses against a background review of international leading practice.

Other stocktake considerations

Research & Development

While Australia does not have universities dedicated to turf research such as in the USA, a number of institutions around Australia support research programs. This includes the Department of Primary Industries and Fisheries' Redlands Research Station in Queensland, the University of Western Australia's Turf

Research Program, the University of Sydney's Plant Breeding Institute at Camden and smaller, but important turf research activities through the University of Melbourne and the University of Queensland. With increasing competition between industries for research funding, an important issue for the industry is to ensure existing R&D capacity is strengthened. In addition, research activities and funding needs to be focussed on industry priorities, and resources used efficiently and effectively, free of unnecessary duplication.

The introduction of a national turf levy in October 2006 represents a major step in further building R&D capacity and resources. To progress industry R&D, the R&D plan now needs to be updated as a five year plan from 2008-2013 and R&D expenditure focussed on the strategic imperatives 1, 3, 4 and 5 as identified in this Stocktake report.

Environmental services

The turf growing, maintenance and parks and leisure sectors of the industry identified the carbon sequestration, oxygen generation and cooling attributes of turf as potential opportunities for the industry, as markets in environmental services develop. With the increasing community concern about global warming and climate change, the industry considers that developments in carbon or emissions trading need to be monitored for opportunities that may allow industry participation.

PART A: INDUSTRY STOCKTAKE

1. PROJECT BACKGROUND

1.1 The Industry Stocktake Project

This project is an Industry Stocktake funded by the Department of Agriculture, Fisheries and Forestry for Turf Producers Australia Ltd under the Advancing Agricultural Industries Programme. The purpose of an Industry Stocktake Project is to help the industry better understand the factors that are influencing industry change and to enable the industry to prioritise issues of concern and develop plans to address those issues.

The Advancing Agricultural Industries Programme helps agricultural, fisheries and forestry industries to come together with the Australian Government to build stronger, more profitable and sustainable rural and regional industries in Australia.

An Industry Stocktake is one of four components of the Programme. It may lead to opportunities for the turf industry to seek support under the other three components of the Programme which are:

- Action Grants – which support priority projects to improve an industry's ability to address major challenges and opportunities that will contribute to its long-term success.
- the Advancing Agriculture Fund (AgFund) – which provides grants to producer groups for local initiatives aimed at managing business risks and ongoing change.
- Rural Leadership Development – to help improve leadership skills of young people, women and Indigenous people in rural Australia.

This Industry Stocktake Project provided the opportunity for the turf production and maintenance sectors. along with its input suppliers and service sector, to undertake a rigorous self-assessment of the overall industry. The focus of the project was on the industry's current situation, its performance and future outlook, and its capacity to manage change and respond to opportunities.

For turf producers, the project addressed their concerns about future profitability and competitiveness, sustainability, and industry capacity to be resilient and self-reliant. For the turf maintenance and service sectors, the project provided an opportunity to engage with other sectors to present an agreed 'picture' of the industry, backed by data where possible. Overall, the project provided a unique opportunity for all sectors of the industry to act as one to examine and reflect on their situation and to chart industry directions.

1.2 Project methodology

This Industry Stocktake Project was undertaken between May and August 2007. During the project, the consultants met with turf industry participants to seek their views on the industry's situation and the key issues that needed to

be addressed in the project. The consultations included businesses, individuals and organisations from all parts of the industry's value chain. This covered turf growers, golf course superintendents, racecourse managers, members of the broader turf maintenance sector, representatives of allied industries such as gardens, nurseries and landscape contractors, educators, researchers, industry and government policy makers and water regulators.

Further industry involvement was achieved through two national workshops. A Taking Stock Workshop was held in Melbourne on 27 June 2007 involving 30 participants across the various industry sectors. This was followed by a Setting Directions Workshop in Sydney on 13 August 2007 involving 40 industry participants.

Finally, the information from the consultations and workshops, together with an analysis of industry data and industry reports, was drawn together to produce this final Stocktake report. The report provides the foundation for follow-up action by the Australian turf industry.

1.3 Industry oversight of the project

A joint industry-government steering committee oversighted the progress of the project to ensure that the industry was engaged, that its views and inputs were fully considered and the project outputs were endorsed and owned by the industry. The members of the Steering Committee were:

- Robert Davey, President of Turf Producers Australia Limited and Managing Director of Evergreen Turf (Victoria);
- Ray Moir, Chief Executive Officer of Turf Producers Australia and President of Turf Growers Association Western Australia;
- Lynn Davidson, Director of Turf Producers Australia, Vice President of Queensland Turf Producers Association, and Managing Director of Jimboomba Turf Group (Queensland);
- Greg Miller, Director of Turf Producers Australia; President of Turf Growers Association New South Wales, and Proprietor of Millers Turf Supplies Pty Ltd (NSW);
- Suzanne Shearer, Coolabah Turf (Echuca);
- John Lloyd, Manager, Landscape Services, Parliament of Australia (representing the turf maintenance sector);
- Jennifer Medway, Senior Policy Officer, Advancing Agricultural Industries Programme, Department of Agriculture, Fisheries and Forestry; and
- David Simpson, Policy Officer, Food & Agriculture Division, Department of Agriculture, Fisheries and Forestry.

Industry Stocktakes are facilitated by independent consultants that work with the industry and Government in a way that ensures objectivity and to bring a fresh perspective to the industry's situation, challenges and opportunities.

The Department of Agriculture, Forestry and Fisheries and Turf Producers Australia engaged the consulting company, Kiri-ganai Research Pty Ltd to work with the industry to undertake this Industry Stocktake Project. The consulting team was Ken Moore, Dr Richard Price, Michael Williams and Judy Andrews.

1.4. Industry stocktake considerations

The Stocktake report addresses the industry's performance and capacity against the outcomes of competitiveness and profitability, sustainability, and resilience and self-reliance. It considers the industry's access to required resources; its markets and how well it engages and communicates with its customers and society's influencers; and its capacity as an industry in dealing with business variability and having a voice in the key issues that affect its future.

Project objectives

The formal objectives of the project were to:

Stocktake

i. Undertake an analysis of the turf industry's current performance to cover a range of issues including profitability, competitiveness, sustainability, resilience and self-reliance.

ii. Identify possible challenges and opportunities for the turf industry over the next 5-10 years.

iii. Determine the capacity of the Australian turf industry to respond to current and future challenges and opportunities.

Setting Directions

iv. Identify key areas that the industry can build-on for future success, and establish a process to assist the industry to determine appropriate responses to these key areas.

v. Assist the industry to develop its own strategies on issues the industry has identified as high priority.

Successful industry outcomes

Industries and the Australian Government recognise that the desirable outcomes for industries operating in Australia's modern competitive market economy are: profitability, sustainability, competitiveness, resilience and self-reliance as defined below.

Profitability - this outcome is an industry with the capacity to generate profits for turf businesses and suppliers. Critical issues are increasing demand and prices of turf; managing rising input costs (fuel, fertiliser, chemicals, water, labour) and gross margins; and the adoption of new technology and business practices.

Sustainability – this outcome is an industry which invests in, and manages its resources effectively so that it can be profitable and grow over the long-term. Critical issues for the industry are planning for natural resource availability and

efficient use, particularly for water; and adopting environmental and quality management practices.

Competitiveness - this outcome is an industry with the ability to be highly competitive in markets against substitutes. Critical issues are developing strategies and resources to retain and build markets (including exports); collaborating across the industry to deliver to market and consumer preferences; and investing in research and development that drives innovation and market growth.

Resilience - this outcome is an industry that is resilient in the face of fluctuating fortunes and has the capacity to avoid past mistakes and capitalise on opportunities. Critical issues are the quality of industry data and analysis; effective planning and strategy setting processes to manage change; and investing in the industry's human capital.

Self-reliance – another important outcome is the capacity exercised through the industry's leaders and structures to plan for the future; to provide the leadership necessary to achieve success; to respond quickly and effectively to issues that arise; and to build relationships within the whole industry and with governments.

The Stocktake Project addressed the industry's performance and capacity against these outcomes. In particular, it considered:

- The **industry's resources** as reflected in the attributes of turf and the industry which supports this product; the history and development of the industry and how this affects future directions; turf grass varieties grown in Australia and the value added to the industry through the Plant Breeding Rights system; Australia's production regions and available natural resources; and the possible future impact of climate change.
- The **demand side of the industry's operating environment** as reflected in turf markets, demand, prices and the industry's value generated through its value chain.
- The **capacity side of the industry's operating environment** as reflected in the network of turf and allied industry organisations, industry information, research and development, training and education and government services and regulation.

The operating environment includes both those factors that the industry is unable to change, but must deal with in managing its affairs, and those factors that it is able to influence and take responsibility for in setting its directions.

2. THE AUSTRALIAN TURF INDUSTRY

This section addresses the attributes of the industry and its resources that contribute to its long-term sustainability.

Topics covered include:

- the importance of grasses to Australia's economy and way of life;
- a definition of the turf industry;
- the origins of turf as a ground cover and early uses;
- the arrival of turf in Australia;
- the development of an industry associated with turf production, establishment, maintenance and service provision;
- turf varieties grown in Australia and the introduction of plant breeding rights; and
- the industry's use of natural resources.

2.1 The role of grasses in Australia

Australia has around 1,300 grass species that are found in all environments from coastal regions to alpine areas and from rainforests to deserts. Grasses are the third largest family of flowering plants in Australia. Most of the 1,300 species are native grasses that provide the ground cover for soil stabilisation, water control and a food source for native animals and insects. Many species have been introduced since European settlement for agricultural and domestic purposes.

In 2003, Dr David Kemp and Dean Wells, then the Australian and Queensland Environment Ministers respectively, described grasses as the backbone of Australia's natural economy4. They talked about the importance of grass and lamented the under-appreciated role of grass in underpinning 'Australia's pastoral and agricultural industries, its sporting fields and its landscapes'. Kemp and Dean noted that they 'provide pastures for stock, all of our grains (wheat, barley, oats, rye, rice, millet and sorghum) and sugar cane, playing field turf, domestic lawn and horticultural species'.

Turf refers to the specialised grasses that are grown and maintained to provide a stable and aesthetic surface in gardens, sporting fields, golf courses, racetracks, parks and areas where erosion control and dust suppression is required. Turf is used as a ground cover worldwide for utility, recreational and aesthetic purposes.

[4] **Natural economy** refers to a type of economy involving the transfer of resources among elements of nature including humans without the use of money as in the financial economy.

Grasses have widespread distribution in most climatic zones of the world, but are the predominant form of vegetation in drier areas and many species are able to withstand extended drought. Similarly, turf varieties have been bred to grow successfully with limited water input or poorer quality water.

Despite this ecological fact, the turf industry is hindered by a strong public misconception that turf and green space in urban environments are 'water wasters'. This misconception is reinforced by statements from some government spokespersons and media personalities that lawns should be removed as a water saving action. A major challenge for the industry is to change this perception and ensure turf remains a predominant part of urban environments, and green space is actually increased so that the environment is improved for human health.

2.2 What is the Australian turf industry?

In Australia, with the development of our modern society and economy, both commercial and consumer demand for turf as a surface has grown and changed over time.

Today, a large modern industry has developed to grow, supply, install and maintain turf. The product is usually supplied in sod form, which is a harvested piece of material composed of grass and a thin layer of soil beneath it held together by interweaved roots. Turf then becomes part of an industry value chain that generates employment to a large workforce and profits for a wide-range of input suppliers and service businesses.

The Australian turf industry encompasses economic activities that include:

- the growing of turf on farms and its harvesting in rolls or slabs ready to be transported and laid on prepared surfaces. Some turf provided to the market is in the form of runners or sprigs where the soil has been removed and the turf broken up;
- landscape design and contracting to install the turf;
- employment in the maintenance of the turf in domestic, commercial, civil, sporting and recreational uses (including houses and apartments, business and shopping complexes, road verges, sports fields and community open spaces, parks and gardens);
- input supply to the turf production and maintenance sectors (which includes seeds, irrigation, fertilisers, chemicals, tools, equipment, machinery); and
- service provision including consulting services, education, research, advocacy, policy making and regulation (through industry organisations and government agencies).

Turf production is clearly an agricultural industry because the product is grown on farms using methods that are characteristic of other agricultural industries: namely preparing the land and soil, seeding or planting, irrigation, fertilising, pest and disease control, harvesting and supply to markets.

Likewise turf establishment and maintenance could be regarded as an agricultural activity because the processes involved are similar to other agricultural industries, although the economic processes are largely urban based.

A definition of the turf industry

The Australian turf industry encompasses business and employment in the production, distribution, sale, installation and maintenance of turf and turf products.

Turf is grown on farms and is an agricultural industry. On the farm, there is a range of input suppliers and service providers including seeds, fertilisers, chemicals, irrigation equipment, machinery and vehicle suppliers and mechanics, farm employees (including family members), farm consultants, accountants, bankers and legal advisors. These services provided for the turf farm are part of the industry.

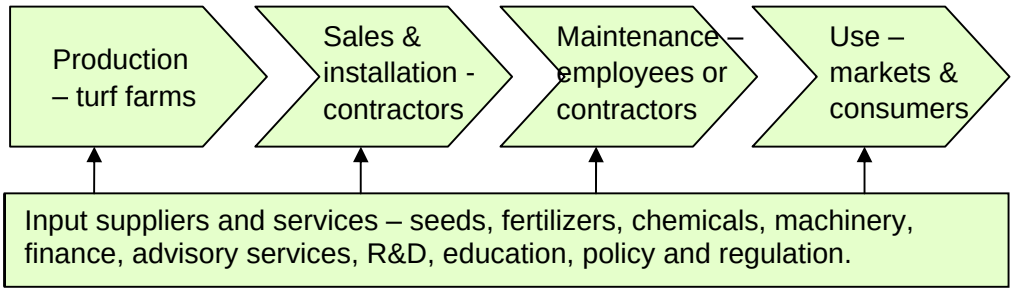
Beyond the farmgate, the industry comprises the delivery of a range of services, encompassing transport (including that carried out by the turf business), wholesale and retail sales of turf, landscape design and landscape contracting to install the turf.

Once turf is laid as a surface for a variety of uses (e.g. house lawns, for erosion control and dust suppression on commercial and housing development sites, road verges, urban parks, sports fields, golf courses, sports stadiums, cricket pitches, racetracks, tennis courts and bowling greens), a large sector of the industry manages and maintains the turf surfaces. This sector also supports input supply and service businesses.

In addition, the sports that are played on turf generate economic activity and businesses that encompass sporting clubs, service providers for sporting events and spectators, and the media that provides television, radio and print coverage.

Also considered to be part of the turf industry are businesses and organisations that provide a range of specialised training and education, research and development, industry representation and advocacy, policy making, regulation, and information and communication services.

This project is concerned with the whole of the turf industry as represented in its value chain shown below.



2.3 Origins and development of the turf industry

The Australian turf industry has evolved from a long and interesting history over centuries. The industry of today stems from human transformation of forests into grasslands and then the continued grazing of those grasslands by sheep, goats and rabbits to form turf-like surfaces.

In Europe, lawns probably had their origin in heavily grazed areas adjoining human settlements. Martin (2004) notes that these grassed areas were likely to have been composed of a 'handful of species capable of enduring close and regular defoliation and trampling by sheep and goats'. He states that the grass selection process was likely to have been intensified by rabbits nibbling the grasses closer than the sheep and goats.

This intensified grazing over a long period resulted in a surface layer of ground containing a matt of grass and grass roots called a sward, which is the original meaning of the term 'lawn'. These origins can be seen in place names that include lawn in the name.

Lawns became popular in Europe from the Middle Ages onward. They were used in medieval times within monasteries and in the courtyards of castles largely for the inhabitants to enjoy walks in the open and to escape the odours of the building.

Gardens and lawns became areas that were admired and sought after in Tudor and Elizabethan times. Lawns, often made up of meadow plants, were created for walkways and play areas. The epoch of gardening really began in the Jacobean era during the early 1600s. The closely cut English lawn appeared in this time and became the envy of European royalty and was seen as a status symbol by the gentry.

In the 1700s, the influence of the English architect, landscape architect and furniture designer, William Kent, became prominent. This period saw the rise of the English garden or the English park with the distinctive features of statues, water and surrounding lawns that flowed from the garden into the outer landscape.

Lancelot (Capability) Brown, perhaps remembered as England's greatest gardener, was the pre-eminent landscape gardener of the 18th century and most of his 170 gardens are still visited today. His informal style was smooth undulating grass that ran straight to the house and had clumps, belts and scattered trees with lakes formed by invisibly damming small rivers.

During Victorian times, more plants were introduced into Britain and the influence of France and Italy became prevalent. Lawns became smaller as borders were created and filled with plants, statues, sculptures, terraces and water features.

While Europe was influential in the early development of lawns, in the United States of America, it was not until after the Civil War that lawns began to appear in middle class homes. Average homeowners either raised vegetables in their yards or left them fallow. Towards the end of the 19th century, suburbs gradually appeared in urban areas and the predominant features of 20th century backyard lawns involving irrigation sprinklers and mechanical lawn mowers appeared.

The establishment of lawns in the yards of most homeowners is closely allied to developments in lawn mowing. This progressed from grazing by sheep, goats and rabbits, to cutting by scythe, sickle or shears, to horse-drawn mechanical mowers, to push mowers and then to motorised mowers. Mechanical mowing commenced in the 19th century after a patent was granted to Edwin Budding in 1830 for a cylindrical or reel mower. The first non-human powered mower was built by Alexander Shanks of Scotland. In 1841, he built a pony-drawn 27 inch reel lawn mower and later a larger 42 inch horse-drawn mower. This involved the person walking beside the pony or horse and led to the expression for walking of 'to go by Shanks' pony'.

In 1870, Elwood McGuire of Indiana designed a push mower that brought mowing to the masses. James Sumner of Lancaster built the first motorised mower in the form of a giant two-tonne steam powered machine that cut a 40 inch swath. The British company, Ransomes, produced the first commercially available mower powered by an internal combustion engine in 1902.

The turf industry's arrival and development in Australia

We now think of turf production in Australia as a modern and highly specialised agricultural industry and the turf maintenance sector as part of everyday Australian life through areas such as parks, sports fields, golf courses, racecourses and bowling greens. However, like Europe and the USA, turf had humble origins associated with grassed areas being grazed by sheep. Early governors of the colonies and the aristocracy, who were the owners of landscaped gardens including lawns, had no other way to keep the grass short until the importation of mowers.

During the 19th century, with the creation of suburbs and backyards for the general population, the desire for beautiful lawns and gardens spread from the landed gentry to most homeowners. As Australia moved into the 20th century, walk-behind reel mowers became popular for maintaining lawns in backyards and neighbourhoods. This continued through the 1920s, 1930s and 1940s.

In the post World War II period, the baby boom and development of sprawling suburbs saw the rise of the petrol and electric driven mowers which led to a new era of lawns and lawn care. This was the era of the quarter-acre block and the establishment of large lawns for relaxing and 'playing cricket in the

backyard at Mum's'. Lawns were established largely through planting sprigs or runners in warmer regions and by seed in cooler regions.

In the 1950s, the power rotary mower became the predominant feature of lawn care. In this sense, power and speed had arrived on the lawn and large areas of grass could be quickly mown in the home yard, public open spaces and on sporting fields.

With the advent of smaller families, dual incomes and 'time poor' lifestyles, lawns became smaller in the latter decades of the 20th century. However, more homeowners looked to have instant lawns resulting in increased demand for turf installed by a landscape contractor or the turf grower providing this service.

This trend has been reinforced by housing styles in recent years with smaller property sizes and larger houses filling most of the block. Gardens and lawns are often being limited to areas adjoining courtyards or integrated with courtyards. While homeowners continue to demand instant lawns, changes in housing styles and the growth of apartment living are negative factors in the demand for turf and create challenges for turf producers to increase sales in the domestic market.

The development of sports turf has followed similar trends to lawn grass. It commenced from the close grazing of grassed areas on which village people played their games. Martin (2004) refers to a pioneering study by Bower (1911) on the ecology of golf links in Scotland in which Bower observed that the 'finest turf with the best playing characteristics was always found in areas grazed by both sheep and rabbits'.

Today sports turf is a highly specialised part of the turf industry, backed by extensive research and development that has provided new and greatly improved turf varieties, growing practices, establishment techniques and maintenance to provide high quality surfaces.

2.4 The Australian industry in an international context

The Australian turf industry has close relationships with the industry in other countries, particularly the USA. Turf Producers Australia is a member of Turf Producers' International and the industry associations representing other sectors of the industry have both formal and informal linkages with their international counterparts.

International trade linkages are through the importation of turf machinery from the USA and Europe and most turf seed from the USA. Australia exports some leading turf varieties through seed and sprigs and is increasingly becoming a supplier of turf services, particularly in Asia and the Middle East, due to our advanced turf production and maintenance expertise.

The industry considers it is leading the world in environmental management systems, occupational safety and health management, some sports turf varieties and profiles, sports turf management, and industry extension practice through field days and trade shows.

However, it considers Australia is well behind the USA in turf education and research where there are dedicated universities for turf science. Australian researchers have strong links with these universities and also with the Turf Science Working Group of the International Society for Horticultural Science.

2.5 Turf species and varieties

Martin (2004) notes that there are around 15,000 grasses and grass-like species worldwide, but only a small percentage have attributes suitable for turf. He estimates that fewer than 25 of these species are recognised commercially, although many are of minor importance.

Martin lists the species that probably account for over 90 per cent of the world's managed turf:

- warm season (C4) grasses – Cynodon dactylon (couch grass), Stenotaphrum secundatum (St. Augustine grass), Zoysia japonica (Japanese lawn grass), Axonopus affinis (carpetgrass), Pennisetum clandestinum (kikuyu grass) and Paspalum notatum (Bahia grass).
- cool season (C3) grasses - Lolium perenne (perennial ryegrass), Agrostis stolonifera (creeping bentgrass), Agrostis tenuis (colonial bentgrass), Festuca arundinacea, Festuca rubra (tall fescue) and Poa pratensis (Kentucky bluegrass).

He states that 'the massive expansion of the area of managed turf in the last 100 years has not been accompanied by a corresponding increase in the range of species employed. During that period there has been little change in the composition of the “main species” list, and many of the other traditional turf-grasses have remained throughout, with a steady but small market’.

Martin notes that a few species, which were previously recognised as useful for turf only in special habitats, have been shown to have a much wider and increasing commercial application. These include Paspalum vaginatum (seashore paspalum) and Buchloe dactyloides (buffalo grass).

Generally, the world can be divided into three climatic areas (cool, warm and transition) when it comes to selecting turf grasses most suited to sustainable management. This is a basic classification and many varieties can perform well across a relatively wide range of conditions relating to light, temperature, precipitation and wind. This means that warm season varieties, which are more drought tolerant and use less water than cool season varieties, are suitable for most areas of southern Australia.

Selection of the most appropriate turf for individual situations is to obtain the best growth and maintenance characteristics in terms of water use, response to fertiliser application, pesticide use and environmental impact.

Table 1: Turf species and varieties grown in Australia

Species	Category	Uses
Couchgrass (Cynodon dactylon)	Warm	Hard wearing and low cutting properties makes it suitable for cricket wickets; tennis courts; golf fairways, tees and greens; lawns, parks and other sporting fields where summer durability is sought.
Kikuyu (Pennisetum clandestinum)	Warm	Vigorous grass that recovers quickly from drought and tolerant to a wide range of soil and location conditions. Wide use in lawns, landscaping and sports fields.
Zoysiagrass (Zoysia willd)	Warm	Attractive appearance broad leaf grass and very suitable for lawns and landscaping. Has high drought tolerance and grows well in semi-shade. Is a low maintenance grass.
Buffalo grass (Stenotaphrum secundatum)	Warm	Varieties now available with soft leaves which make it suitable for lawns. Vigorous grower, recovers well from wear and low water user.
Paspalum (Paspalum vaginatum)	Warm	Tolerates saline and grey water. Very low maintenance and grows well in a variety of soils and conditions. Dark green colour and suitable for landscaping, lawns and sports turf.
Crested hairgrass (Koleria macrantha cristata)	Warm	Drought tolerant and grows in difficult conditions. Produces dense turf with fine leaves that can withstand very close mowing.
Sheep fescue (Festica ovina L.)	Cool	Low quality turf that is blended with Hard and Chewings fescue to provide a natural appearance in tee surrounds and roughs.
Kentucky bluegrass (Poa pratensis L.)	Cool	Strong and vigorous rhizome and roots system makes it suitable for sports fields, racetracks, parks, lawns and amenity areas.
Rough bluegrass (Poa triviallis L.)	Cool	Poor tolerance to wear, but suitable for heavily shaded and damp areas in parks and amenity areas. Used as an oversowing grass for fairways, tees and greens.
Creeping bentgrass (Agrostis stolonifera)	Cool	The most highly cultivated turf and valued for its low cutting tolerance. Used for bowling and putting greens. Often in blends for golf tees and fairways, amenity areas and home lawns.

Source: Heritage Seeds Turfgrass Handbook,

2.6 Introduction of Plant Breeding Rights

The major change in the past decade of delivering new turf varieties to the market has been the introduction of Plant Breeder's Rights (PBR) in Australia in 1994.

PBRs are a form of intellectual property that protects a breeder's invention of a new and unique plant variety. This provides the right of commercialisation of the new variety and the collection of royalties via grower licences or contracts.

PBR protection is normally valid for up to 20 years and under registration gives the breeder the exclusive right to sell, produce or reproduce, import, export and hold stock of the variety. PBR allows the breeder to license another person or company to undertake these activities.

PBR in Australia allows the breeder to receive a return on the considerable investment involved in producing new varieties. This encourages companies and individuals to invest in further plant breeding. As such, PBR adds value to the industry by providing superior varieties with the potential to increase sales of turf. Generally, the licence to grow and sell a PBR variety includes quality assurance requirements in the production, marketing and sale of the product.

PBR has been a significant factor in encouraging the flow of genetic material from overseas, allowing improved varieties to be released into the Australian market, while remaining fully protected.

The main advancements in the qualities of new varieties of grasses is in:

- drought tolerance and the use of less water;
- greater disease tolerance requiring the use of fewer and less dangerous pesticides;
- lower nutritional requirements involving the use of less fertiliser;
- slower growing characteristics involving less mowing and energy use;
- lower invasive characteristics requiring less maintenance and labour input; and
- improved colour and feel through softer foliage; and
- having a range of varieties that meet the specific requirements of the various uses.

The number of licensed growers is not known, but TPA suggests that there are more than 100 in Australia. These growers have been able to achieve better prices for their product as distinct from the turf varieties that have essentially become 'commodity' grasses. This has caused some tension amongst turf growers that have not bought licences.

2.7 Australian turf growing regions

The start of the turf industry is the business of growing turf, which takes place on commercial turf farms in each Australian State, and the Australian Capital Territory and the Northern Territory. Turf Producers Australia estimates that

there are around 320 significant turf production businesses that produce at least 80 per cent of the total output. The remaining 20 per cent is grown on more than 40 smaller farms.

The main turf producing States are New South Wales, Queensland, Victoria and Western Australia with businesses in the following locations:

- New South Wales – around 155 turf growing businesses (estimate of the NSW Department of Agriculture survey in 2002) located largely in Windsor/Richmond, Camden, Wyong and Newcastle/Hunter Valley with a small number in Wagga Wagga and south coast locations;
- Queensland – around 152 turf growing businesses (estimate of Queensland Turf Growers Association) located in tropical Queensland (Townsville and Cairns) and south east Queensland (Sunshine Coast, Brisbane, Gold Coast and the Darling Downs);
- Victoria – around nine turf growing businesses (estimate of local turf producers) located largely in the Melbourne peri-urban area, but including some regional centres such as Echuca-Swan Hill, Mildura and Yarrawonga;
- Western Australia – around 40 turf farms located on the Gingin to Mandurah coastal plain with a small number in the regional centres of Broome, Geraldton, Albany, Busselton and Manjimup.
- In South Australia, there is a small number of producers (five from the TPA estimates) in the Adelaide peri-urban area, Victor Harbour and Narracoorte.
- There are three growers in the Northern Territory, two in Tasmania and one in the Australian Capital Territory.

Almost all turf producers are small and medium enterprises (SMEs) mostly family owned. Most turf farms employ labour, including members of the family. Senn (2002) found a typical NSW business employed two workers (full time equivalent – FTE) and total employment of 559 by 155 businesses. This gives average employment of 3.6 FTEs. TPA estimates around 1,100 people employed in turf production, but this is not a validated figure. Extrapolating the NSW average to the rest of Australia indicates a number of around 1,320 employees.

The total area under production on turf farms is estimated by TPA at around 6,500 hectares, which produces approximately 90 million square metres of turf annually. Senn (2002) found in his NSW survey that 3,210 hectares were under turf production in that State which is almost 50 per cent of the Australian total.

Australian turf farms vary greatly in size from the largest of around 240 hectares down to a few hectares where turf may be part of other farming activities or undertaken on an opportunistic basis. The average area of turf production per farm is considered to be around 12 hectares, which was confirmed by the Senn survey in NSW.

Most turf is grown locally to avoid long periods of transport and drying of the product. However, prior to water restrictions limiting sales in Victoria, there was significant trade from Sydney to Melbourne. There is also some trade between Sydney and Adelaide.

In contrast to many other agricultural industries, the turf production sector is largely peri-urban in location and supplies urban markets (cities and towns).

The turf maintenance sector is largely urban-based which is where most of the golf courses, racetracks, sports fields, urban open space, school grounds, etc are located.

The peri-urban and urban location of the industry raises a set of issues about land use, water access and use, environmental management and the regulatory environment of State and local government, which must be addressed by the industry.

Apart from access to markets, input suppliers and services providers, the peri-urban location provides turf growers with an appreciating land asset that will provide significant capital gain if the land is zoned for housing sub-division. A disadvantage is that the grower must achieve a high profit margin on sales to achieve a return on the land asset that justifies continuing turf farming in that location. Another disadvantage is the high initial capital investment required for new entrants to the industry, which may discourage replacement of retiring growers with younger people.

In future, the location of turf growing is likely to be influenced by a wide range of factors relating to the identification of acceptable land areas for this use and involving such considerations as soil type, irrigation water availability and price, property values, topography, proximity to markets, distance to composting facilities, highway conditions to markets and input suppliers, and EPA determinations or regulations.

2.8 Natural resources

The availability of water to turf growers, the maintenance sector and users of turf is the most important resource issue facing the industry. At the consumer end of the industry's value chain, restrictions on water use have prevented lawn establishment or instilled in consumers concerns about planting lawns. This is often exacerbated by authorities and public identities actually advocating that consumers do not plant lawns or move to smaller lawns. Such opinions are not based on knowledge of the low-water use capability of new varieties of turf and the importance of green space in homes and public areas. Within the production and turf maintenance sectors of the value chain, access to reliable supplies at cost-effective prices is central to the industry's sustainability. Turf production and maintenance requires irrigation to supplement rainfall and with increasing evidence of a drying climate, more variable rainfall and increasing competition for water resources, the focus on the industry's water availability and use will increase.

All sectors of the industry are improving water use efficiency and environmental management generally. The Australian industry is acknowledged as a leader

in international standing for these aspects of natural resource management. The industry recognises the need for improvements to continue, the benefits to be promoted within the industry, and the achievements promoted in the wider community.

Water availability and irrigation

Turf growers and the turf management sector use water from a variety of sources (rainfall catchment, bores, river pumping, recycled) and have moved away from using potable water. Use of recycled water is common and increasing, but there are problems of access (i.e. it is not available in the right places) and a lack of knowledge on using recycled water. The industry is also expressing concerns about water companies and industrial users buying recycled water, which will reduce the availability of supplies to growers and the turf maintenance sector.

There is a lack of industry level data of water use by the various sectors: turf production, the maintenance sector and turf users (including households). Collecting this data would represent a major study, but is justified given the increasing competition for water, the importance of the industry knowing its water use across the various sectors, and the need for the industry to have a prominent voice in water allocation decisions.

At the production level, the Australian Bureau of Statistics collects water use data as part of its annual agricultural survey and shows area irrigated, volume of water applied in megalitres (ML) and the application rate (ML/hectare). However, turf is included with nurseries and cut flowers.

For 2004-05, this category showed water use of 66,267 ML at an average application rate of 4.7 ML per hectare. The category accounted for only 0.7 per cent of total agricultural water use in 2004-05. The area irrigated for turf is less than half of the area irrigated for the nursery/cut flower/cultivated turf category as a whole. The ABS has released its preliminary 2005-06 agricultural water use data, but water use for 'nurseries, cut flowers and cultivated turf' continues to be a combined item in the ABS's Agricultural Census.

As a first step, the turf industry could seek agreement from the ABS to identify turf production as a separate category, which is possible using the ANZSIC classification. However, there is a broader need for water use statistics across the production, maintenance and household sectors and this needs to be addressed by the industry.

Irrigation on turf farms and maintenance sites

At the farm level and maintenance site, there is a lot of information available on how to calculate water requirements for growing and maintaining various turf species (including Australian research), but the calculations need to be site-specific. This relates to the moisture holding capacity of soil at the site, evapotranspiration (i.e. combination of evaporation of water from moist surfaces of the plant and transpiration from within the plant tissues which is driven by climatic conditions), the crop factor of the species (i.e. ratio of the water used by the plant to evapotranspiration) and the application efficiency of the irrigation system used.

Australian turf growers and maintenance personnel have greatly increased water use efficiency with new varieties of turf and improved irrigation practices, but the industry recognises more improvements are required. Some of the improvement is coming from new varieties of turf that use less water and flourish on lower quality water. In cooler areas such as Victoria, warm season grasses that use less water are replacing cool season grasses.

Some States have progressed further than others in updating irrigation technology for turf growing (e.g. Western Australia with centre pivots which have high irrigation efficiency), but outdated technology is still being used in some regions. Improved irrigation practices can be constrained by the low profitability of many businesses, small farm size and other factors. Opportunities exist for growers to modernise irrigation under the National Plan for Water Security when it is implemented.

Irrigation in the maintenance sector has greatly improved over recent years with increased use of soil moisture monitoring and programmed water scheduling.

Irrigation of home lawns

Watering of home lawns with hoses and many types of sprinklers, including pop-ups has been a familiar part of domestic life for many decades. With the introduction of water restrictions and smaller block sizes, there has been a significant shift to automated sprinkler systems. However, little is known about the efficiency and effective management of these systems.

The CRC for Irrigation Futures (Maheshwari, 2006) examined the irrigation of home lawns and gardens in the Sydney metropolitan area during the period of November 2004 to March 2005. The study of 50 home sites found that irrigation of lawns and gardens accounted for 34 per cent of total household water use, although there was considerable variation in a range of two per cent to 84 per cent.

The total water use for irrigation per site was 392 litres a day and the average monthly use was 12kL per month. This compared with indoor use of 593 litres a day and an average of 18 kL per month.

The average water use for the lawn was 4.3 kL/100 square metres per month compared with 8.7 kL/100 m2 for the garden areas. Lawns used one-third of the irrigation water and gardens two thirds, even though both areas were approximately equivalent.

The study concluded that:

- there are relatively few well-designed irrigation systems in operation;
- a typical home-owner does not know how to design and manage an irrigation system; and
- maintenance is usually neglected.

Much more research is required into the efficiency of domestic irrigation in order to determine the scope for improvement in water use efficiency for home lawns.

A new era of intense competition for water

In an era when competition for access to water is increasing, irrigation industries will need to demonstrate effective planning and management of available water resources, efficient irrigation practice and appropriate accounting for water used.

The National Water Commission suggested in consultations during this project, that in future water would go to its highest value use and for this reason the industry will need to demonstrate the value it obtains from water use. This reinforces the argument for the industry to upgrade its data on gross value of production and water used across the production, maintenance and household/commercial sectors of the value chain.

On face value, both the production and maintenance sectors can produce high value per megalitre of water used for irrigation. At the upper end, this is demonstrated in elite sporting events. For the turf production sector, best practice irrigation producing higher priced grasses, could achieve gross returns per megalitre of up to $10,000.

The National Water Commission also stated that water use efficiency is critical for the industry and this includes irrigation of open spaces in urban areas. The Commission noted that the industry is not seen as an efficient water user and there are possibly large water savings to be made through improvements in irrigation practices including the technology used and irrigation scheduling.

The Commission suggested that education about irrigation and other water issues is critical. They considered that, as with all sectors of society, the turf industry will be confronted with debates about diversifying water resources (i.e. sewer mining, stormwater, reclaimed effluent, water recycling etc) and so the industry will need to be pro-active in these debates.

Soils and topography

In turf farming, the sod is grown in a wide range of soil types that include sand, sandy loam and alluvial silty loam. Generally flat land is used including river flats, but better soils are those that provide a suitable root environment. This is by being well drained and aerated with good organic matter content and an adequate supply of nutrients. Chicken manure is a common nutrient along with NPK blends of fertiliser, Nitram and/or urea.

For most uses, turf is established on the soil that currently exists on the site. However for professional sporting uses, specialised profiles are installed to ensure effective water drainage, stability and comfort of the players or horses.

Climate

While turf varieties grown in Australia have a considerable climatic range, the industry will need to monitor the impact of increasing climate variability and climate change on species and growing areas for production and maintenance.

CSIRO and the Australian Greenhouse Office predictions are that most of Australia may warm from 0.4°C to 2.0 °C by 2030 and from 1.0°C to 6.0°C degrees by 2070.

Consequential impacts are considered to be:

- more evaporation, more hot days and fewer cold days;
- rainfall decreasing in the south and east (mainly in winter and spring);
- some inland and eastern coastal areas experiencing wetter summers;
- some inland areas becoming wetter in autumn;
- extreme rainfall and tropical cyclones becoming more intense and having impact over a more extensive area.

Table 2 shows possible increases in temperature and the negative moisture balance (rainfall minus evaporation) along with decreases in rainfall.

The Australian Government has reviewed the Rural Research and Development Priorities in consultation with industry, State and Territory governments, the rural R&D corporations (RDCs) and other research funders and providers. In its revised priorities for investment, it has included the need for industries to build resilience to climate variability, and adapt to and mitigate the effects of climate change.

This will need to be taken into account by the turf industry in setting its R&D priorities, and provides an opportunity to research the role of turf in mitigating greenhouse gas emissions and prospects for the industry in carbon trading. In the USA, the Chicago Climate Exchange is expected to trade around 12 million tonnes of carbon dioxide emissions in 2007, with credits trading at around $US3.80 per tonne. In Australia, the National Australia Bank has established a NAB Capital Carbon Solutions Group to identify the opportunites in the evolving carbon finance market and it has indicated that it is keen to assist clients to take advantage of new markets that are emerging.

Table 2: Possible climate change in Australian regions

	Now	2030	2070
South western Australia (Perth)			
Annual av. max. temp.	23.3	24.3 +or-0.7	26.3+or-2.2
Dec – Feb above 35C	15	19+or-3	29+-10
Av. annual rainfall mm	869	800+or-105	660+or-310
An. moisture balance	-882		
Southern South Australia (Adelaide)			
Annual av. max. temp.	21.4	22.4+or-0.7	24.4+or-2.2
Dec – Feb above 35C	10	13.5+or-2.5	21+or-7
Av. annual rainfall mm	454	435+or-35	400+or-110
An. moisture balance	-1,407	-1,470+or-40	-1,600+or-125
Tasmania (Launceston)			
Annual av. max. temp.	16.9	17.8+or-0.6	19.5+or-1.8
Jun–Aug days below 0C	21	14+or-4	7+or-7
Av. annual rainfall mm	684	684+or-25	684+or-80
An. moisture balance	-630	-675+or-30	
Victoria (Melbourne)			
Annual av. max. temp.	19.8	20.8+or-0.7	22.8+or-2.2
Dec – Feb above 35C	8	10.5+or-1.5	15+or-5
Av. annual rainfall mm	657	630+or-50	580+or-155
An. moisture balance	-584	-665+or-50	-825+or-155
Eastern NSW (Sydney)			
Annual av. max. temp.	22.1	23.3+or-0.8	25.6+or-2.5
Dec – Feb above 35C	2	3+or-1	7+or-4
Av. annual rainfall mm	1,102	1,070+or-70	970+or-265
An. moisture balance	-686	-765+or-45	-930+or-155
South East Queensland (Brisbane)			
Annual av. max. temp.	25.5	26.5+or-0.7	28.5+or-2.2
Dec – Feb above 35C	2.5	4.5+or-1.5	20+or-15
Av. annual rainfall mm	1,146	1,100+or-90	1,010+or-275
An. moisture balance	-387	-430+or-30	-525+or-95

Source: CSIRO and Australian Greenhouse Office, Future climate change in Australia, 2001

3. THE OPERATING ENVIRONMENT – MARKETS, DEMAND, INDUSTRY VALUE & PROFITABILITY

This section addresses the current performance of the industry in relation to its markets, value chain, triple bottom line value, profitability and competitiveness. A desired outcome is an industry with the capacity to generate profits for turf businesses and increase real incomes for employees in the maintenance and service sectors.

3.1 Markets and demand for turf

There are essentially six key markets for Australian turf:

1. Domestic – comprises the individual households which purchase turf for home landscaping. It is supplied directly from a turf grower, retailer or by a landscape/garden maintenance contractor who installs and/or mainains the turf for the householder;
2. Commercial – comprises both residential, office, shopping and industrial complexes. The distribution channel for this market is usually from the turf grower to a landscape contractor who installs and/or maintains the turf for the developer and subsequent owner;
3. Sports turf – comprises golf courses, bowling greens, sports ovals and stadiums, sports fields and racecourses which are owned by sporting clubs, private organisations, schools, councils and community sporting groups;
4. Urban green space – comprises the publicly and privately owned parks and gardens that include grassed areas in the landscaping;
5. Environmental management – comprises road verges and development sites where turf is used for soil stabilisation, water control and interim aesthetic appeal; and
6. Export – presently a small market for turf runners or sprigs where the soil is removed and the turf shredded. A greater export market exists for Australian turf services to manage or provide advice on turf installation and maintenance projects. Potential export markets are largely unexplored and require further examination.

The fundamentals of demand in markets 1 to 5 listed above, are generally positive for turf demand in the longer term due to population increases, rising real incomes, greater lifestyle spending and the increase in 'greenfields' development in outer metropolitan areas of all the capital cities. A major negative impact on demand has been the outdoor water restrictions in Melbourne, Sydney, south east Queensland, Perth, Adelaide and Canberra.

Growth in population, dwellings and incomes

Longer term growth in demand for turf is influenced by the growth in population, housing and disposable incomes. Current rates of population growth, dwelling construction and incomes are strong. Australia's population reached 21 million in June 2007 and grew by six per cent (1.2% per annum) since the 2001 Census. There were 8,426,559 private dwellings counted in Australia in the 2006 Census, an increase of 8.2 per cent (1.6% p.a.) since the 2001 Census.

Median gross individual income rose 24 per cent (4.8% p.a.) between the 2001 and 2006 Censuses. In 2001, the median gross household income was $782, and this increased to $1,027 in 2006. The median gross family income also increased during the same period from $937 to $1,171.

Longer term demand for turf (20-30 years) could be affected by projections of a slowing in population growth and economic growth as the 'Baby Boom Generation' ages, retires and dies.

Population density in all of Australia's larger cities has increased in the past decade, with more high-rise, medium density, infill and smaller lot greenfield developments which have also increased dwelling density.

A positive factor in the demand for turf is that the highest growth rates have been in the the outer suburbs - greenfield developments around the city fringes. In addition, there is some growth in the larger regional centres at the expense of small towns within easy driving distance to a larger town.

A negative factor in the demand for turf for dwellings is the increase in the number of people choosing to live in high-rise buildings in city centres, particularly in 'beachfront' suburbs. Residential densities are increasing across middle suburbia under compact city policies and infill housing.

The turf industry needs to monitor trends in the dwelling market and analyse what it means for the industry, and what strategies are required for building the demand for turf in concert with the trends. The demographic changes mentioned above are fundamentally altering Australian cities. Apartment living is in vogue and the demand is being met by recycling of old buildings and construction of new high-rise buildings. This is being driven by changes in population demographics (e.g. the preferences of the so-called Generations X and Y groups), land values and planning policies that encourage more vibrant city and town centres.

The industry has the opportunity to promote the benefits of new low input and attractive turf varieties that can be integrated in smaller yards with indoor/outdoor styles of landscaping in a way that softens hard materials. The availability of low maintenance turf has the potential to cater for an apparent trend to more 'time-poor' consumers.

Sports turf

Recent decades have seen major advances in the quality of turf for sports surfaces with the major markets being golf courses, racecourses, sports stadiums, sports fields and bowling greens.

There are 1,472 golf courses in Australia (Australian Golf Course Database), although golf clubs report declining memberships and number of rounds played. This is impacting on course maintenance and superintendents are reporting a decline in budgets in real terms. The average course budget is about $380,000 with courses employing on average three to four maintenance staff. There has been a trend to incorporating golf courses in housing

developments and clubs sourcing revenue in other ways, in order to offset declining club membership revenue.

There are 164 racecourses in Australia, 19 of which are metropolitan tracks and 145 are country or regional city tracks. With off-course betting there has been a growth in the number of race meetings within Australia, which has increased maintenance requirements for tracks. However, as with most sports turf surfaces, demand is periodic and on a contract basis to a small number of turf growers who can supply turf to this market.

As an example, the turf of Flemington Racecourse has recently been relaid in the first major reconstruction of the course proper in 143 years. This project, which was completed for the 2007 Spring Carnival, involved supplying 124,000 square metres of specially-grown kikuyu turf oversown with a blend of three different pasture-type perennial ryegrasses and a Kentucky bluegrass. In addition to the course proper, the project involved the supply of 20,000m2 for the main lawn, 7,000m2 for the Birdcage and 3,000m2 for The Elms.

A number of other metropolitan courses have also been relaid in recent years indicating strong confidence in the role of turf in Australian horse racing. While some concern remains about turf being replaced by synthetic surfaces on racecourses, this is not considered to be a serious threat due to the safety of turf for horses and jockeys and the tradition of turf in Australian horse racing.

There is some use of synthetic surfaces on horse training tracks. However, synthetic surfaces have made significant inroads for bowling greens. This has been increased by government subsidies for artificial greens including state sport and recreation grants and the Australian Government's Community Water Grants.

There is a misconception that artificial turf does not require watering, but the maintenance of the surface requires water for sanitising and temperature control, which is not the case for natural grass. Studies have shown that there is little difference in the comparative maintenance costs of artificial and natural turf if subsidies are removed from the equation. On the other hand, turf has been shown to have superior comfort and environmental benefits.

Deying Li (2007) shows a comparison of the comparative thermal properties of artificial and natural turf and their impact on surface temperature which is the major factor in player comfort and possibly health in high temperature playing conditions (see Table 3).

Today, sports turf is a highly specialised part of the turf industry backed by extensive research and development that has provided turf varieties, growing practices, establishment techniques and maintenance to provide high quality surfaces. The advent of TV coverage of premier sporting events has increased the focus on the quality and appearance of the turf surface. This has led to practices where whole arenas, racecourses, cricket pitches, etc, can be relaid in a short space of time.

The growing of turf for premier sports arenas is on a commissioned basis through tightly specified contracts. While it is an important part of the overall

market for the turf industry, demand for sports turf is periodic and 'lumpy' and is not part of the ongoing sales of most turf growers. Some turf businesses are generating export sales through the management of sports turf projects overseas, and while this area has not been explored through market research, the prospects are considered to be promising by the industry.

Table 3: Comparison of thermal properties between artificial and natural turf and their impact on surface temperature.

	Artificial turf	Natural turf
Photosynthesis	No	Yes. Decrease temperature.
Heat transfer.	Slow in reducing heat load.	Fast in reducing heat load.
Evaporation and transpiration.	Evaporation only. Reducing temperature only when water is retained on the surface.	Evapotranspiration based. Regulated by living grass, water can be transported from deeper root zones.
Heat dissipation to sub-surface.	Top layer is hydrophobic – water is repelled- and is not a good conductor of heat. Energy will accumulate at the surface resulting in a high surface temperature.	Whole system is hydrophilic - water assists heat transfer – and a good heat conductor. Solar energy will dissipate faster into the sub-surface.
Buffering capacity	Surface is not well buffered.	Well buffered.
Water needs for sanitising	Yes	No

Source: Deyling Li, in Turf News, May/June 2007

A major challenge facing sports turf and the turf maintenance sector generally is the difficulty of retaining and attracting quality employees due to very low wage rates in relation to the skill requirements of superintendents, sports field managers, curators and green keepers.

Impact of water restrictions

The decline in rainfall across southern Australia (including south east Queensland) has resulted in water restrictions being applied to outdoor domestic water use in the capital cities and regional centres. This has severely affected demand for and sales of turf for lawns in all States, but the impact varies depending on the restrictions that apply to lawn establishment.

All States report a 10-30 per cent negative impact on turf production business revenue resulting from the water restrictions, with the complete ban on watering lawns in Victoria during 2006 and 2007 having a much greater impact. Victorian turf growers report that this has reduced their sales turnover by

between 85 – 90 per cent, which is unsustainable for those businesses. This is a critical situation that water authorities need to address in conjunction with the industry.

Other States have limited exemptions for lawn establishment that have been negotiated with the water authorities. The only State where appropriate industry consultation has taken place in the implementation of water restrictions is Western Australia, which has exemptions that allow turf businesses to continue to operate profitably.

While south west WA has experienced the greatest decline in rainfall and run-off into water storages, the impact of water restrictions on the turf industry has been lessened by the Water Corporation working with the industry to establish arrangements that do not threaten the survival of the industry and encourage water efficiency and conservation measures.

Water restrictions were introduced in Perth in 2001 and, at that time, the Government established an industry reference group that was representative of all sectors of the turf, nursery and garden industries. As a result, the Water Corporation will issue exemptions of up to 90 days for the establishment of turf and gardens using water from the States Integrated Water Supply System. Watering of lawns and gardens using reticulation systems is allowed on two days per week with the permitted days based on odd and even house numbers. There are no restrictions for properties with bores if the watering takes place between 6pm and 9am and this covers some 130,000 properties in WA.

ACTEW in the ACT has publicly stated that it gives consideration to preserving jobs in local industry through limited exemptions and has been consulting with industry groups that rely on outside use of water including golf courses, irrigation, landscaping, nurseries and the turf industry. It reports that it is developing an exemption policy based on discussions and submissions it has received, that will help industries maintain core business and preserve jobs while still making significant water savings.

There is no consistent set of restrictions Australia-wide and the conditions of the restrictions vary between the States. The restrictions are subject to ongoing review and change if water availability increases or decreases.

The turf maintenance sector has been less severely affected by watering restrictions than households, but they have had an impact on operations. Under the stage 3a exemptions that applied in Victoria in August 2007, turf cricket pitches, golf tees and greens (not fairways), tennis courts, bowling greens, hockey pitches, running tracks, croquet greens were exempt from the restrictions.

The Victorian Government argued that ‘It is important that we keep community sport going while still cutting back the amount of water that we are using’. Unfortunately, the same thinking was not applied to the establishment and maintenance of lawns and the survival of the state’s turf growing businesses.

For sportsgrounds, local councils were only allowed to water one in four grounds and water used on the sportsgrounds needed to be reduced by 25%,

in accordance with a water conservation plan submitted by each council. Anecdotal information is that the policy resulted in ground closures due to the increased liability of councils for injuries sustained on hard grounds.

Under the water restrictions, both the turf production and turf maintenance sectors have moved to using alternative water sources to potable water. Generally, recycled and bore water have been excluded from the restrictions and there has been a strong move to utilise these sources along with rainfall harvesting.

Long-term impact of water restrictions on the demand for turf

The negative impact of water restrictions on people's perception of turf represents the most significant challenge to the sustainability of the industry in its history. The long-term viability of all sectors of the industry will depend upon arrangements being put in place, which allows exemptions for turf establishment and also countering the impact of water restrictions on consumer sentiment, and attitudes to watering lawns and gardens. A grower has described water restrictions as the regulatory instrument that has 'paralysed the home garden and lawn market' and is leading to negative perceptions amongst consumers and children of outdoor water use.

There is considerable distrust of the underlying rationale of water restrictions, which many consider is not based on science and unlikely to be effective as a long-term water conservation measure. For example, Victorian turf producers argue that outdoor water use restrictions are a small part of total water use and lawn establishment in Melbourne accounts for only 0.03 per cent of Melbourne's water use in summer.

Turf growers and maintenance businesses and personnel suggest that the watering restrictions have created an atmosphere of discrimination due to the lack of consistency between how the restrictions are applied to different industries. The major concern expressed is the lack of effective consultation by the water authorities and failure to establish reference groups with industry.

As noted, this has not been the case in Western Australian where the Government has worked closely with industry in setting the arrangements. and this approach has lessened the impact on the industry's profitability. It has also encouraged a positive approach to water conservation. The focus is on what can be done to improve water use efficiency and save water without creating a fear of using water. The outcome has been more effective than the negative regime of restrictions that applies in other States.

A major complaint against the present water restrictions is the failure of State governments to develop alternative sources of water to cater for a growing population. In domestic situations, many industry representatives saw large-scale rainwater collection (e.g. via underground tanks of 100,000 litres or more) and grey water recycling as being necessary, and if effectively implemented it could cater for all domestic outdoor water use.

A new era of environmental concern and practice

The prolonged drought and other unusual climatic events have resulted in heightened community concern about greenhouse gas emissions and climate change. This, in addition to ongoing concerns about pollution, the quality of air and water, and the creation of heat banks in cities, presents opportunities for the turf industry to highlight the environmental benefits of turf. The industry's challenge is to build sustainable demand for turf by promoting it as a valued part of the built environment of cities.

The turf industry has clearly identified the environmental benefits of turf (TPA, 2004), but has not been able to develop an effective promotional campaign that has broad community impact.

The environmental benefits of turf are:

Softening the harshness of the built environment

More green space including turf within cities and towns greatly improves the urban environment visually and aurally, which leads to improved comfort and health (physical and mental) for users and residents. Apart from aesthetics, turf improves visual comfort through glare reduction, and aural comfort through noise absorption.

Improved air quality

Turf produces oxygen required to sustain life. It can be described as the 'lungs of a city'. The process of photosynthesis can be simply stated by the chemical reaction:

Six molecules of water plus six molecules of carbon dioxide produce one molecule of sugar plus six molecules of oxygen.

Turf also removes carbon dioxide, smoke, dust and other pollutants from the air. Particulates and toxic gasses in urban air are a major cause of health problems and increasing green space reduces health costs and productivity due to improved health.

Temperature moderation for heat banks in built areas and in buildings and housing

Grassed areas greatly reduce on-site heat build-up during the day and heat loss at night providing greater comfort to users of the urban space and reducing energy use for cooling and heating buildings that are surrounded by green space.

Water quality protection

Grassed areas reduce nitrates and other pollutants leaching through the soil into groundwater and reduce surface water runoff, keeping phosphorus and other pollutants out of waterways.

Prevention of soil erosion

Turf is a cost effective means of preventing soil erosion due to land development and road construction. It controls both water and wind damage to cleared areas undergoing building works.

Soil improvement and restoration

Turf is an effective medium for the organic chemical decomposition of animal and human faeces, fertilisers and chemicals that can cause health problems if left on surfaces. Decomposion of organic material from grass roots and leaves adds humus to the soil and increases microbote microbe activity.

Fire retardant in commercial and residential areas

Turf is a fire barrier in city and suburban areas and this was demonstrated during the Canberra bushfires in January 2003, where yards with lawns were more effective in retarding fire than gardens with wood chip mulch.

Medium for water conservation

While turf uses water to grow, with increasing emphasis on storm water harvesting, grass is a highly effective natural filter for surface water capture and groundwater recharge. Research has also shown that once established, turf uses less water than trees and shrubs and increasing the proportion of low water use turf in green space will actually result in water savings and improved water conservation.

The environmental benefits of turf present a key opportunity for the industry to be a prominent and valued player in this new era of environmental concern and practice. As markets for environmental services, including carbon trading, develop, potential exists for both the turf production and maintenance sectors to be involved and to trade credits with businesses seeking environmental offsets such as carbon emissions.

Competition from other products

The environmental benefits of turf provide the industry with a powerful message in competing with other surface materials. In domestic and commercial landscaping, turf competes with mulches, paving and to a lesser extent, gardens. There is anecdotal information that developers of housing and commercial complexes are reducing areas of turf and substituting hard materials. However, there has been little analysis of consumer preferences and competitive strategies for turf (including recognition of potential collaboration between producers of the various products to increase consumer spending on landscaping).

Some turf businesses have recognised this and are selling artificial turf. They see it as a complementary product for specific situations such as highly shaded areas. In the case of bowling greens, some see the ideal as a mix of turf and synthetic greens (such as one synthetic surface for winter when the turf greens are being rehabilitated).

There is a divergence of opinion in the industry on whether synthetic turf and other artificial covers are a serious competitive threat in the sports turf, domestic and commercial markets. The high cost of artificial turf reduces its competitiveness in domestic, sporting and landscaping situations. In addition, the world industry (Turfgrass Producers International [TPI], 2007) has clearly demonstrated the benefits of natural grass over artificial turf in terms of: wear and durability; human health effects; environmental health effects; and mental and emotion impact.

Market research, monitoring and promotional strategies

There has been no industry analysis to date of trends in these markets and of sales of turf through various distribution channels. HAL funded a project (RETAILworks, 2004) on the nursery and garden industry (NGI) size and structure for the year ending 30 June 2003, which included turf sold through distribution channels of the NGI. This showed a market value to the end user of turf sales through the NGI of $137.4 million. The farmgate value of these sales was $84.2 million representing 8.4% of the total farmgate value of all 'greenlife categories' in the NGI.

Turf is part of the lifestyle horticultural industry and competes for consumer dollars. The industry acknowledges that it has limited information on consumer preference and attitudes and how these are changing. In addition, it has little research on market trends in Australia that can impact both positively and negatively on long-term demand. It believes there is an over-reliance on the expectation that overseas developments or trends will flow on to Australia within the short term.

Most market and consumer knowledge rests with individual producers through growers learning about their own client base. The Australian turf market is largely based on warm season grasses that are suitable for a range of climatic conditions. A clear preference is developing for varieties that use less water or lower quality grey and saline water, have good wear characteristics and have attractive appearance and feel. The advent of licensed grasses through the PBR system has been a significant development allowing producers to respond to changing consumer preferences backed by effective marketing.

3.3 The value of the turf industry and its value chain

The industry's supply chain covers the production, establishment, maintenance, service provision and use of turf. These activities create economic, social and environmental value for the Australian society. Determining this value is fundamental to defining a value proposition for the industry. This is a concept which the industry can use in its promotion and advocacy to government and the community.

Triple bottom line value of the turf industry

Turf is used as a ground cover for utility, recreational and aesthetic purposes and provides economic, social (including health) and environmental services to Australia (i.e. the triple bottom line value).

To date, the industry has identified many of the economic, environmental and social values of turf and cites overseas studies that demonstrate the benefits of turf. However, the Australian industry has not undertaken the research that quantifies this value across the whole of the Australian industry including turf production, maintenance and service provision.

In recognition of the need for research to quantify the value of turf, Horticulture Australia Ltd has funded a project titled 'Economic and agronomic study of the Australian turfgrass industry' which is seeking to document the size, structure,

cultural practices, financial costs, and returns for Australian turf producers, and also identify industry priorities. The results of this work are not yet available.

As a conceptual framework for future research, this project has identified a set of values that can be classified as direct benefits, derived benefits and intangible benefits.

The economic value of the turf industry comprises both quantifiable direct and derived values, and non-quantifiable values generated by businesses and organisations within the production, maintenance and service sectors of the industry.

The quantifiable direct economic value comprises:

- the income of producers gained from the sale of turf (which includes the value of inputs, labour and capital equipment used in turf growing);
- the income of people engaged in the profession of designing, establishing and maintaining turf surfaces in domestic, commercial, sporting, recreational and environmental management uses; and
- the income of service providers to the turf industry (excluding services which are inputs to the value of production of the turf growing sector) including trainers, educators, researchers, industry organisations and government agencies (e.g. those providing policy, program, extension and regulatory services); and
- as markets in environmental services develop, the value of payments made to the turf industry for land and water conservation and restoration resulting from the use of turf in erosion control, dust suppression, water control, etc; and
- as carbon trading develops, the value placed on turf through the market as a carbon sink.

The quantifiable derived economic value of the turf industry includes:

- the value of output of sports (professional and community) played on turf which provides the best available functional and aesthetic surface. The value includes the income of players, coaches, administrators, fitness and medical staff, etc;
- the value of services provided for sporting events including the income of ticket sellers, food and drink caterers;
- the value of media rights to events and the income of sports journalists, commentators, etc;
- in the case of horse racing, the incomes of breeders, trainers, strappers, jockeys, veterinarians, etc; and
- the value of wagering including the incomes of associated staff;
- the value added to housing and commercial properties due to the turfed areas;and
- savings in energy costs due to the warming and cooling qualities of turf.

The non-quantifiable derived economic value of the turf industry includes:

- savings in health care associated with turf in the built environment which contributes to physical and mental wellbeing through exercise and relaxation;
- the value of environmental services attributed to turf that are difficult to measure and attribute value such as oxygen production through photosynthesis, and nutrient and pollutant filtration of air and water; and
- contribution of gardens and landscaped areas, sporting fields and surrounds and golf courses to urban ecosystems which provide sanctuaries for plants, animals and insects.

Increasing research is being undertaken overseas on the health benefits of green space and grassed areas in particular. Aldous (personal communication, 2007) notes the growing evidence that green space is important on a human level and can contribute to human health (physical, psychological, emotional, social, and spiritual). The health benefits are gained through providing visual relief and stimulation from viewing green space; commuting by walking or cycling through green space; and playing and exercising on grass. The documented health effects include: increased wellbeing, lower stress levels, fewer visits to a general practitioner, reduced incidence of some diseases, reduced obesity and lower use of prescription drugs.

This project has identified more Australian research that identifies and quantifies or describes the value of these services as a priority for the industry to ensure the industry has a voice in economic, social and environmental debate and policy making in Australia.

The National Land and Water Resources Audit is managing a project called Signposts for Australian Agriculture that may assist the turf industry with a methodology and process for quantifying its triple bottom line. The Signposts framework which is web based, provides a knowledge tool for industries to comprehensively asses, illustrate and demonstrate how their activities contribute to ecologically sustainable development in Australia. The framework shows the industry's contribution to economic, social and biophysical systems.

3.4 Prices, costs of production and turf grower profitability

The economic health of the turf industry rests on the profitability of the growing sector. As noted in previous sections, profitability is determined by demand and sales.

There are several points of sale for growers and hence types of prices paid. Most sales by growers are at wholesale or retail prices, but Senn (2002) found significant sales to distributors (i.e. other growers who also trade or non-growing specialised traders – Senn found 35 traders in NSW in 2002).

The main price types are:

- distributor price – the price charged by the grower in sales to a grower-trader or non-growing trader;

- wholesale or trade price – the price charged by a grower or trader in sales to landscape contractors, nurseries or large buyers such as councils which then supply to an end user; and
- retail price – the price paid by end users such as a consumer employing a landscape contractor or buying from a nursery. Turf growers or traders delivering direct to an end user would charge this price.

Anecdotal information from the project consultations showed that farmgate prices vary considerably between States. The highest prices appear to be in Darwin with prices up to $20 per square metre for high quality soft leaf buffalo varieties, followed by Western Australia with sales in the price range of $12-14. New South Wales and Queensland have the greatest range in turf prices. Low prices of around $2 - $2.50 per square metre are attributed to producers selling below the cost of production for opportunistic sales.

The variation in prices reflects the turf varieties grown, competition between growers and business practices. Senn found that nearly all turf grown in NSW is kikuyu, couch and buffalo. Many growers consider that kikuyu being sold at $2.00 per square metre has become a 'commodity grass' and its price does not reflect actual production costs.

Competition between growers also varies between the States. Queensland and New South Wales both have a large number of producers of varying size and turf production specialisation. This appears to be reflected in the large variation in prices. In Victoria, there are a limited number of commercial producers in relation to the size of the market. However in Western Australia, prices are on average higher than other States, but it has a relatively large number of producers in relation to the size of the market.

The growing sector of the industry has identified the need for improved marketing to increase demand for turf varieties that can be sold for higher prices, as is generally being achieved for licensed varieties. Growers consider that turf prices should rise in line with increasing prices for other housing and landscaping materials.

Profitability and business costs

Many industries have identified production cost and profit analysis and benchmarking as fundamental strategies in their efforts to increase business competitiveness and profitability. The turf industry lacks aggregated data on business profitability and costs of production that would allow industry benchmarking. The project has identified the need for gross margin analysis for large, medium and small growers, improved cost accounting and the introduction of simple cost benchmarking for growers to compare their performance against industry benchmarks.

This project has highlighted the need for the industry to encourage growers who appear to be selling under the cost of production to achieve opportunistic sales to improve their cost accounting and particularly to ensure that family labour costs and farm assets that are owned (e.g. land, machinery and vehicle) to be accounted for and reflected in prices charged.

As with most agricultural industries, profit margins in turf production and maintenance budgets are under pressure by rapidly rising costs of inputs including fertilisers, chemicals and fuel. Several strategies were identified during this project as necessary to address this issue including:

- investigating the scope for achieving greater economies of scale in turf production;
- improving the efficiency of higher cost processes including irrigation and harvesting; and
- overcoming anomalies where some effective chemicals are registered for use in horticulture, but not able to be used for turf.

In order to maintain business profitability and provide growth opportunities, many turf production businesses are diversifying the range of services being provided. This includes lawn design and installation, input supplies, equipment and machinery supplies, and consultancy services. Some consultants to the industry suggest that those turf businesses that rely on direct selling to the household sector are facing the most serious decline in profitability.

4. THE OPERATING ENVIRONMENT – INDUSTRY STRUCTURES AND CAPACITY

This section addresses the third objective of the project, namely to determine the capacity of the turf industry to respond to current and future challenges and opportunities.

A desired outcome for any industry can be described as resilience in the face of fluctuating fortunes and developing the capacity to avoid past mistakes and capitalise on opportunities.

Another important outcome is self-reliance or the capacity exercised through its leaders and industry structures to plan for the future; to provide the leadership necessary to achieve success; to respond quickly and effectively to issues that arise; and to build relationships within the whole industry and with governments, the community and other sectors of the economy.

Topics covered in this section include:

- the attributes of the industry's organisations and services provided, and their effectiveness in presenting a united voice for the industry;
- turf industry data and its adequacy for industry promotion and advocacy;
- the industry's development of R&D capacity and funding arrangements;
- the adequacy of education and training capacity and arrangements; and
- the key relationships that need to be established with governments, the general public and the media.

4.1 Australian turf industry organisations

Most industries develop institutions that deal with the functions of industry-wide marketing, research and development, policy development, political advocacy, industry development and information provision.

All sectors of the turf industry have established industry associations that provide a range of services to their members and all have the mission of representing their members' interests in dealing with issues that affect the industry. This includes providing advocacy services for their members in representations to government, other organisations and the general public.

In addition to the national and state level structures, the turf industry has well-established international networks for the exchange of information and research. This includes Turfgrass Producers International for growers, the International Society for Horticultural Science (ISHS) for turf researchers and a range of international sports turf networks for the sports turf maintenance sector. The ISHS has recently established a Working Group for Turf Science.

4.1.1 Turf grower associations

Turf growers are represented by state associations and nationally by Turf Producers Australia Ltd, which was formed in March 2003.

Turf Producers Australia Limited (TPA)

TPA is the peak industry body representing turf production businesses. It was established by a number of larger turf producers to provide a national organisation that could represent growers with a united voice to the Australian Government and other sectors of the turf industry.

Its objectives are to:

- be the principal advisory body for Australian turf farmers;
- encourage best industry practice and implement a code of practice to guide its members;
- provide a forum for industry members and allies to ensure they receive the benefits of R&D and its adoption by meaningful technology transfer;
- represent the turf production industry to local, state and federal government agencies; and
- encourage and direct extension, education and research to benefit the industry, the environment and the broader community.

TPA has eleven directors and a chief executive officer, but does not employ any other staff. The national organisation is underpinned by state turf grower associations including:

- Queensland Turf Producers Association;
- Turf Growers Association of New South Wales;
- Turf Producers Associaton of Victoria;
- Turf Growers Association of Western Australia.
- Turf grower representation in South Australia, Northern Territory, Tasmania and the Australian Capital Territory is through TPA.

TPA is a relatively new organisation and has been successful on a number of fronts, particularly in being able to achieve industry agreement to the introduction of a statutory levy for research and development and marketing. It has also successfully sought Australian Government support for this Industry Stocktake Project, which will provide a strong basis for setting industry directions and establishing TPA's role in this process.

Most of the turf growers consulted referred to the need for strong leadership from their industry associations at national and state level including frequent and effective communication back to their members.

This project has identified the need for the turf industry to develop key messages about its value to the Australian economy, environment and society as the top priority. This is seen as necessary to drive a campaign to change community and government perceptions about turf as a product and the industry's environmental and water use credentials.

TPA is seen as the natural leader of this campaign and to build relationships across the industry's value chain, and with regulators to ensure that the industry's key messages are understood and taken into account in policy decisions. In order to carry out this role, there is recognition that TPA needs to be developed further in terms of resources, staff and structures.

4.1.2 Sports turf associations

Turf superintendents, curators, green keepers and managers for several of the major sports are represented by individual associations. This includes golf course superintendents associations, bowling green keepers associations, sports field curators associations and racecourse managers associations.

Australian Golf Course Superintendents Association (AGCSA)

The AGCSA is the largest industry organisation in the turf industry with over 700 members from all States of Australia, New Zealand and the Pacific Rim. It was established in 1981 to further the profession of golf course management in these countries.

AGCSA's mission is to:

- promote the profession of golf course management;
- provide continuing educational opportunities to its members; and
- provide support services and information to golf course superintendents to assist them in their professional development.

AGCSA's activities in carrying out its mission includes the:

- publication of Australian Turfgrass Management magazine;
- staging of the annual Australian Turfgrass Conference and Trade Exhibition;
- staging of the AGCSA national roving workshop series, twice a year;
- publication of AGCSA Action newsletter published alternate months to ATM magazine, and weekly email newsletter The Cut;
- development and administration of the AGCSA Accreditation Program for golf course superintendents;
- provision of Course Quality Officials for the Australian Open;
- provision of a free legal advice service for members;
- operating AGCSATech for providing research, diagnostics and technical advice; and
- development and provision of guidelines for employing a golf course superintendent.

The AGCSA turf maintenance program operates on 1,472 golf courses in Australia catering for more than 30 million rounds of golf each year. The

average course maintenance budget is $380,000, which employs three to four turf maintenance personnel.

AGCSA has a board comprising the President and three Directors. It employs six professional staff in specific roles. The national organisation is underpinned by state organisations in New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania that provide member services relevant to each State.

4.1.3 General turf managers and allied trades associations

Similarly with sports turf, there are a number of bodies that represent various turf managers' groups and allied trades. The largest association is the Turfgrass Association of Australia, which despite having a national name is organised as state chapters that address local issues.

Turfgrass Association of Australia (TGAA)

The TGAA was formed in Melbourne on 22 November 1989 to give all turf managers and allied trades a single representative body. This includes sports field curators and recreational open space managers along with chemicals, fertiliser and irrigation personnel.

The TGAA has established chapters in Queensland, New South Wales, the ACT and Southern Tablelands, the Murray Region, Victoria, Tasmania, South Australia, Western Australia and the Northern Territory. Services provided to members include training, participation in education and research programs, sponsorship of TAFE students, provision of up to date industry and technical information and social activities for members. State chapters network with other industry bodies.

Parks & Leisure Australia (PLA)

PLA is a professional association that provides services to members of the parks and leisure industry including parks; gardens; sports, aquatic, and rehabilitation facilities; aged hostels; recreation centres; researchers, educators and students; private consultants; and private facility operators.

The PLA's aims are:

- To provide a national organisation which promotes cooperation and mutual assistance between persons and organisations associated with public parks, botanic gardens and open space environments, recreation and leisure facilities and services.
- To promote the aesthetic, scientific and social development and study of all matters related to, and impacting on, the management and operation of public parks, botanic gardens and open space environments, recreation and leisure facilities and programs.
- To act as an advocate and representative body of the Australian parks and leisure profession to all levels of government and business instrumentalities.

- To promote a conservation ethic within the profession and throughout the parks and leisure industry.
- To maintain a high standard and status for the professions within the Australian parks and leisure industry.
- To assist in the development of parks and leisure professionals through the promotion and support for appropriate information, education and training opportunities.
- To arrange meetings and opportunities for member information exchange, through formal and informal forums and conferences, as well as disseminate a range of published material relating to all aspects of parks and leisure services.
- To encourage the application of appropriate resources towards the development and maintenance of parks and leisure services across Australia.
- To stimulate the development of service levels within the industry and the achievement of best practice.

4.1.4 Allied industries

There are well-developed representative structures across other sectors of the turf industry supply chain and service sectors including landscape contractors, mowing contractors, landscape architects, irrigation companies and the nursery and garden industry.

Australian Landscape Industry Association Inc. (ALIA)

ALIA states that its core purpose is to provide a professionally structured organisation and a central point of contact for those operating within the Australian landscape industry. This is to allow the development of professional recognition and awareness by consumers and stimulate sustainable growth in demand for landscape services.

ALIA's key strategies are listed as:

- national membership from all state associations;
- implementation of national individual Certification programs;
- implementation of national company and Accreditation programs;
- recognition and support from all levels of government;
- development of national industry best practice and world competitiveness;
- development of national marketing and consumer awareness programs;
- availability of established career path guidelines for landscape skills development;
- identification of potential export markets; and
- development of an efficient national communications process.

ALIA has identified ten issues that it will address and has established five task forces to progress the major issues. The agreed issues and associated task forces are:

1. National central point of contact and communication portal.
2. Government lobbying and liaison.
3. Environmental management (water and natural resources) – Task Force 2.
4. Career path development, education and training, professional development – Task Force 4.
5. Export development.
6. Certification, CPD, accreditation and licensing – Task Force 3.
7. Marketing, promotion and consumer awareness - Task Force 1.
8. National conferences and study tour development.
9. Innovation, research and development – Task Force 5.
10. Financial sustainability.

ALIA's members are the five state bodies: Queensland Association of Landscape Industries Inc.; Landscape Contractors Association of New South Wales Ltd; Landscape Industries Association Victoria; Landscape Industries Association of Western Australia Inc. and Landscape Association of South Australia Inc.

Nursery & Garden Industry Australia (NGIA)

NGIA is the peak body for the nursery and garden industry (NGI) in Australia and is responsible for overseeing the national development of the industry. NGIA and the State and Territory NGIs represent all sectors of the industry including producers, wholesalers, retailers, allied traders and consultants.

NGIA's roles are to:

- liaise with federal government departments and authorities on relevant industry issues;
- work with Horticulture Australia Limited (HAL) to determine industry marketing and research and development (R&D) initiatives as well as levy funding priorities;
- provide strategic direction and leadership to the industry;
- ensure communication of relevant industry information; and
- work with the State and Territory Nursery & Garden Industries (NGIs) to ensure unity, strength and synergy.

NGIA's vision is a united and sustainable industry providing plants, gardens and landscapes that are highly valued by Australian households and communities. Its objectives, listed in the 2006-08 NGI Strategic Plan, are to:

1. achieve business sustainability by facilitating a change in business culture and improved business practice;
2. promote plants, gardens and landscapes to consumers;
3. have a strong unified industry with one voice and identity;
4. influence the opinion and policies of governments and key external bodies for the benefit of the industry;
5. position the industry as the community's leader on relevant environmental issues; and
6. ensure the industry has the resources and structures needed to implement its vision.

Irrigation Australia Limited

Irrigation Australia Limited is a new peak body for Australia's irrigation industry formed in September 2007 as a result of the merger of the Australian National Committee on Irrigation and Drainage (ANCID) and Irrigation Association of Australia (IAA).

Irrigation Australia Limited has been established to:

a. represent the interests of the irrigation industry in Australia to governments, statutory authorities, other groups and organisations and the public;
b. to promote and contribute to the development and expansion of the industry;
c. to provide information and liaison at government and other enquiries, investigations and forums concerning the industry;
d. to disseminate technological agronomic and other information by way of bulletins and seminars, field days, radio television, newspapers and other means for the purpose of benefiting the industry; and
e. to cooperate with the International Commission on Irrigation and Drainage for the distribution and interchange of information concerning irrigation, drainage, river training, flood control and natural resource management between the international Committees of the participating countries.

The Fertilizer Industry Federation of Australia, Inc. (FIFA)

FIFA is the industry association representing manufacturers, importers and distributors of fertilizer in Australia, and associated service industries. Its members supply over 95 per cent of the fertilizers used in Australia.

FIFA's mission is to maintain 'public consent for the responsible contribution of our industry to the growth of Australian agriculture for the benefit of the Australian fertilizer industry and its customers'.

FIFA's role is to effectively manage issues that are common to members where an industry-wide approach is likely to be more effective than the actions of individual companies. Its operating principles are to maintain an effective public profile in areas of interest to members by actively contributing to public policy debate and involving external stakeholders in the development of FIFA programs.

4.1.5 Joint industry peak bodies

At the national level, the Horticulture Australia Council represents many horticultural industries, including turf, to provide a united voice across horticulture. Attempts have been made to establish a Lifestyle Horticulture Council comprising associations representing various sectors of this industry to discuss issues of common concern and to present a united voice. However at the time of writing this report, this group appears to have floundered. In some States, comparable organisations have been established such as the Turf and Landscape Industries Association Inc. in Western Australia, and the Australian Centre for Lifestyle Horticulture in Queensland.

Horticulture Australia Council (HAC)

HAC's mission is to achieve the advancement and prosperity of Australian horticulture by identifying whole-of-horticulture issues, developing policy and facilitating change by any means, including political action. HAC also seeks to develop and encourage the adoption of policies, procedures, standards and codes of practice in the Australian horticulture industry. In addition, it assists and supports the production and dissemination of information about the Australian horticulture industry.

HAC's roles are to:

- represent the interests of horticulture as a whole, in any appropriate forum and to governments, statutory authorities, public bodies, international organisations, corporations, lobby groups and other industries (voice);
- raise the profile of Australia's horticulture industry as a vital contributor to the nation's economy and an important element of both rural and urban communities (image);
- provide a forum and structure for cross-industry debate and discussion on development of policy and strategies on matters of common interest (forum); and
- alert and advise members of agripolitical issues that may impact on horticultural industries (advice).

HAC's objectives are to:

- build HAC's agripolitical capacity;
- ensure adequate resources are in place to manage the company and fulfil its roles and create a reserve;

- develop and implement a process for issue identification and management;
- draw on all the resources and skills of allied research and marketing organisations to maximise benefits for its members; and
- ensure good corporate governance of the Company.

HAC's members are:

Turf Producers Australia Ltd
Apple & Pear Australia Ltd
Aust. Citrus Growers Inc.
Aust. Dried Fruits Assoc.
Aust. Nut Industry Council
AUSVEG
Cherry Growers of Aust.
NSW Farmers Assoc.
Growcom Pineapples
Strawberries Aust. Ltd
Summerfruit Australia Ltd
Aust. Banana Growers' Council
Aust. Custard Apple Growers' Assoc.
Aust. Mushroom Growers' Assoc. Ltd
Aust. Passionfruit Industry Assoc. Inc.
Avocados Australa Ltd
Growcom
Nursery & Garden Industry Aust. Ltd
Persimmon Industry Assoc. Inc.

Turf and Landscape Industries Association Inc. (TLIA)

TLIA is a body of representatives from the 'green industry' in Western Australia which aims to provide a united front for the industry. It supports current trends in sustainable development, conservation, water management, research and development, training and business and employment trends within the industry.

Its members comprise the following Western Australian industry associations and organisations

Golf Course Superintendents Assoc.
Landscape Industries Assoc.
Turf Growers Assoc.
Lawn Mowing Contractors Assoc.
Department of Education & Training
Challenger TAFE
the fertilizer industry,
Turf Grass Assoc. of Aust.
Aust. Institute of Horticulture
Irrigation Assoc. of Aust.
Drilling Assoc.
Parks & Leisure Aust.
Water Corporation

Victorian Sustainable Water Use Group (VicSWU)

VicSWU is a group of representatives from allied industries that was formed to address critical water issues being faced by the industries, particularly as a result of the Victorian water restrictions. It is active in coordinating industry responses to water policies and regulatory actions by the Victorian Government.

4.1.6 Australian Centre for Lifestyle Horticulture (ACLH)

There is one significant Australian initiative where a state government has formed a partnership with the lifestyle horticulture industry and established a

centre that allows collaborative action to 'meet the main challenges, remove growth impediments, and to maximise future growth'. This is the Australian Centre for Lifestyle Horticulture (ACLH) that has been established in Redlands, Queensland.

The Queensland Government has acknowledged that the lifestyle horticulture industry 'provides a range of important social, environmental and economic contributions to Queensland'…and …'It is one of the State's fastest growing primary industries'.

With investment by the Queensland Government, the following industry associations have been brought together as the founding members of the Centre:

- Queensland Turf Producers Association;
- Australian Institute of Horticulture;
- Flower Association of Queensland Incorporated;
- Nursery & Garden Industry Queensland;
- Parks and Leisure Australia; and
- Landscape Queensland Incorporated.

The purpose of the Centre is for the partnership to address the main challenges which have been identified as:

- developing funding sustainability for the peak industry and other associations;
- the current structure of the industry, in particular the dominance of small and very small firms;
- export development, labour, training, and professional development issues;
- water issues that relate both to the supply of inputs and impact on the demand for lifestyle horticulture products and services; and
- research and development issues.

Its initiatives and projects must address one or more of the following objectives:

Market competitiveness and growth - supporting industry's pursuit of market and demand chain opportunities for sustainable growth in the lifestyle horticulture industry.

Industry efficiency and effectiveness - supporting improved industry performance in local and export markets, in particular improving efficiency of operations, supply chain activities and marketing.

A skilled industry - increasing skill levels and professional development to support a competitive lifestyle horticulture industry in national and international markets.

A forum for industry - acting as a leading forum for identifying industry priorities and communicating with government, industry and other key stakeholders on industry development priorities for the short-term and the long -term.

Adding value - focusing on value-added services and initiatives for industry and professional associations in the lifestyle horticulture industry.

A recognised industry - raising the profile of the lifestyle horticulture industry with the community, government and other key stakeholders.

The ACLH provides a useful model for the national turf industry in defining its industry, identifying constraints to future profitability and sustainability, and focussing it actions on industry priorities.

4.2 Industry data and information

National industry statistics

The main information providers to the turf industry are the research institutes and industry associations. Turf Producers International has an extensive information base for members on a wide range of production issues.

However, the Australian turf industry lacks an integrated set of national statistics that accurately reflects its size, structure and contribution to the economy.

Fifteen years ago, the nursery industry recognised a similar deficiency and the Nursery & Garden Industry Association of Australia (NGIA) engaged the Australian Bureau of Statistics to conduct two collections for the industry covering the financial years 1992-93 and 1993-94.

The nursery collection used a hybrid population list consisting of establishments reporting nursery, cut flower and/or turf production in the agricultural census; nursery wholesalers and retailers selected from the ABS Business Register and units selected from other sources, including various industry association member lists. The nursery collection was a census of farms and businesses engaged in nursery activities.

The results obtained from these two collections were considered to be very useful to the industry and led to a further nursery collection for the financial year 1996-97. However, this collection has not been continued and the 1996-97 data, which contains some information on turf production and sales, is now out of date.

To replace this collection, the NGIA has implemented the Australian Garden Market Monitor report, which provides national statistics on the size of the industry, important growth areas and market trends. These reports are commissioned by Horticulture Australia Limited (HAL) and NGIA and undertaken by Freshlogic.

Many other agricultural industries have collections established through the Australian Bureau of Statistics (ABS) and the Australian Bureau of Agricultural and Resource Economics (ABARE). However, there are no ABS or ABARE collections or survey data on the turf industry. The turf industry is not covered under ABARE's Australian farm surveys of selected agricultural industries. These surveys have been conducted since the 1950s and provide a broad range of information on the current and historical economic performance of farm business units in the rural sector.

In the absence of ABS or ABARE data, the turf industry is not included in the Australian Horticulture Statistics Handbook published by Horticulture Australia Ltd.

Until recently, the ABS had maintained its own register of agricultural establishments which grouped turf with other nursery and garden businesses. However, due to problems in maintaining this list and questions from users on its accuracy, the ABS has moved to a new frame sourced from the Australian Taxation Office's Australian Business Register (ABR). While turf establishments can be identified separately from the ABR, this did not take place for the 2005-06 Agricultural Census.

In this project, the turf industry has identified the need to compile national statistics on the size of the whole industry as its highest priority. The Department of Primary Industries and Fisheries estimated the gross value of lifestyle horticulture (non-food horticultural products and planting stock for other horticultural industries) as exceeding $1.4 billion in 2004-05 which made it the second largest primary industry after forestry. They estimated that lifestyle horticulture grew at 9.1% per annum between 2000-01 and 2004-05.

A national study commissioned by the Lifestyle Horticulture Council (Agtrans, 2005) estimated employment in the lifestyle horticultural industry at about 110,000 with the value of inputs valued at $6.87 billion (i.e. the value of direct employment plus the value of outputs from nursery and garden supplies, irrigation equipment and services, landscape materials and services and turf producers which are inputs to the lifestyle horticulture industry).

However, there is no national data on the gross value of output of the turf industry across the complete value chain. In this project, the industry has requested a national survey conducted through a federal government agency or State governments acting together to provide the highest level of credibility and trust in the results.

The terms of reference for this national survey will consist of the production, installation and maintenance sectors of the industry. It will primarily focus on economic output and identify the value added to turf through all sectors of the turf industry. This could be backed by additional research that quantifies or identifies the substantial economic, social and environmental values that are derived from turf.

National water availability and use of data across turf industry sectors

It was noted earlier in this report that there are no national water statistics for the turf industry on water access and use in the production, maintenance and household/commercial sectors. The ABS does not identify turf production as a separate user in its series on water use on Australian farms, and does not collect data for water use in the turf maintenance sector or domestic/commercial sectors. This is a major weakness for the industry in an era where competition for access to water is increasing, and irrigation industries need to demonstrate effective planning and management of available water resources, efficient irrigation practice and appropriate accounting for water used.

4.3 Research & Development

The turf industry is developing a national R&D capacity that will underpin the innovation, education and training essential for its future development in response to market changes. The introduction of a national turf levy represents a major step in further building R&D capacity and resources.

4.3.1 National turf levy

A levy and export charge on turf of 1.5 cents per square metre came into effect on 1 October 2006 after a successful vote by turf producers across Australia and the passage of legislation through the Australian Parliament. The levy is imposed and collected under the Primary Industries (Excise) Levies Act 1999, the Primary Industries (Customs) Charges Act 1999, the Primary Industries Levies and Charges Collection Act 1991 and associated legislation.

The levy and export charge is payable by growers on turf at the first point of sale. Growers selling less than 20,000 square metres in a levy year are exempt from the charges.

The funds collected are for promotion and R&D expenditure via Horticulture Australia Limited (HAL). The Levies Revenue Service (LRS) of the Department of Agriculture, Fisheries and Forestry receives the funds from turf growers and forwards the revenue to HAL along with the Australian Government's matching R&D contribution.

The Government's contribution is paid to match expenditure on R&D, but is not paid on those levy funds which are directed to industry promotion. The R&D portion of the levy is 80 per cent of the levy rate and export charge and the remaining 20 per cent is available for promotion.

Funds collected in the first nine months since the introduction of the levy from 1 October 2006 to 30 June 2007 amount to almost $301,000 on leviable sales of just over 20 million square metres of turf.

4.3.2 Horticulture Australia Limited (HAL) – turf industry R&D program

HAL's overall aim is to develop Australian horticulture by providing comprehensive and professional R&D and marketing services to over 30 different organisations from the fruit, vegetable, turf and nursery industries. HAL was formed in February 2001 from the former Horticultural Research & Development Corporation (HRDC) and the Australian Horticultural Corporation (AHC). It is now an industry owned company that the Australian Government has contracted to deliver marketing and R&D services for horticultural industries.

Prior to the introduction of the levy, HAL funded turf R&D via voluntary contributions from producers, sports turf associations, the turf maintenance and landscape sector and allied industries. HAL funded 65 turf R&D projects to the value of $6.6 million up until 2003-04. The main focus of the research program was on turf varieties; seed evaluation; and pest, disease, nutrient, chemical and weed management. More recent research has targeted water use efficiency, use of recycled water, sustainable turf production and environmental issues including fertiliser usage and leaching.

HAL established an Industry Advisory Committee (IAC) with broad industry representation to set R&D priorities, call for and select projects and monitor outcomes. Current membership of the IAC comprises: John Brent (Independent Chair); Lynn Davidson (Qld turf producer), Doug Fleet (SA turf producer), Terry Anderlini (Qld turf producer and scientist), David Nickson (Course superintendent and R&D consultant from Victoria), Peter McMaugh (turf scientist and consultant from NSW), Adrian Pitsikas (WA turf producer), John Lloyd (landscape and turf manager for the Australian Parliament House, ACT), John Neylan (AGCSA General Manager from Victoria), Robert Davey (Victorian turf producer), Frank Muscat (NSW turf producer), Ray Moir (TPA CEO from WA) and Stuart Burgess (HAL Industry Services Manager for the nursery, mushrooms, turf, cut flowers, strawberry, rubus, blueberry, pyrethrum, hops and poppy industries).

The IAC and TPA Board have prepared a draft Turf Industry Strategic Development Plan, 2005-2008, which sets out its R&D priorities as:

- The identification of versatile, quality turf varieties that use water and other inputs efficiently; and perform under a range of Australian climatic conditions (e.g. salt tolerant, new or improved varieties of turf).
- Protection of the environment via sustainable turf production, e.g. the preservation of production areas, the guarantee of water supply at a reasonable price, the conservation and efficient use of water, the minimisation of fertilizer, chemicals, and other turf production inputs.
- Achieving efficient and effective irrigation to increase profitability using both normal and recycled water.
- The development of sustainable production systems, industry standards and codes of practice designed to protect the Australian environment.

- Increased promotion of the benefits of Australian turf and the R&D technology transfer and adoption via national grower education programs.

The draft plan identified the following additional R&D issues that it considered were important:

- national industry development;
- improved industry communications;
- identification of a suitable replacement for methyl bromide fumigant;
- pre-emergent herbicides and registration of new environmentally friendly herbicides for turf;
- nutrient management and new varieties that only require low nutrient inputs;
- triple bottom line production benefits;
- production benchmarking;
- soil moisture retention;
- fertilizer practices in different soil types;
- irrigation auditing and scheduling;
- using recycled water for turf production;
- salt tolerance levels for turfgrass varieties;
- improved water use efficiency and management; and
- integrated pest management.

The industry recognises that this plan needs to be completed with the top R&D priorities identified and expenditure allocated to match these priorities.

4.3.3 Turf research providers

There are four major national research providers for the turf industry:

- University of Western Australia (UWA) Turf Research Program;
- Queensland Department of Primary Industries and Fisheries (DPI&F) Turf Research Program;
- University of Sydney, Plant Breeding Institute, Turf Research and Education;
- University of Melbourne, Faculty of Land and Food Resources, Turf Research; and
- University of Queensland, School of Land and Food Sciences, Molecular Plant Breeding Plant Improvement Group.

Apart from the Queenland DPI&F, other departments of agriculture provide little research or extension support for the turf industry. The NSW Department of Agriculture provides some extension support to the state turf industry through the District Agronomist at Windsor, although the responsibilities of the position also cover dairy and other broadacre industries in the Sydney region.

University of Western Australia (UWA) Turf Research Program

The Program works in colloboration with the Australian turf industry to 'provide the quantitative information required to develop best management practices for water and nutrient use in turf culture'.

UWA's turf research program has been developed and is managed by the Turf Industries Research Steering Committee which was established in 1995. The committee comprises representatives from the Turf & Landscape Industries Association, UWA, turf consultants, the Water Corporation, local government, Department of Water, Irrigation Association of Australia, Turfgrass Association of Australia, Turf Growers Association of Western Australia, Lawn Mowing Contractors Association, Organic 2000 and CSBP. The Committee is presently chaired by John Brennan of the Water Corporation.

Other partners of the Program include HAL, Western Power Corporation, MicroControl Engineering and the Ash Developmment Association of Australia.

In 1997, the UWA Turf Research Facility was established at Shenton Park which includes a lateral boom irrigator, soil-water monitoring equipment, weather station, lysimeters and access to analytical laboratories at the UWA campus in Crawley.

The Turf Industries Research Steering Committee managed a portfolio of eight projects during the period 1997 to 2007 covering water use by turf grasses; fly ash amendments; nutrient management systems; soil moisture sensor control for improved water use and managing nutrient leaching; the kikuyu research project; adaptation and management of buffalograss cultivars for water conservation; and irrigation of turf with saline water.

As of May 2007, the Turf Research Program had a team of six researchers led by Associate Professor Tim Colmer. At the same time, it was supervising three PhD projects, three student projects and two projects by visiting scientists.

The Program publishes extensively on turf research in scientific journals and runs extension activities for the industry.

Queensland Department of Primary Industries and Fisheries (DPI&F) Turf Research Program

This research program and facility is based at the Redlands Research Station in Cleveland near Brisbane. The Program commenced in 2000 and is supported by the Queensland Government through DPI&F. The Redlands team is the largest turf research group in Australia.

The Program aims to provide independent scientific research with a focus on warm season turf grasses to meet the needs of the turf industry in Queensland, Australia and the Asia-Pacific region. It conducts R&D to support the whole turf industry through innovation and providing scientifically-based information to turf producers, professional turf managers of parks, golf courses, bowling greens and sports fields, facility managers and home owners.

The Redlands Research Station has a turf research laboratory, tunnel houses and glasshouse facilities, turfgrass field plots, multiplication areas, a living turfgrass library (currently 130 warm-season varieties), and a greens testing facility. It is co-located with GrowSearch Australia which provides a turfgrass information service.

The living turfgrass library provides a resource for the research program in water use and bioremediatiion, stress tolerance (salt, shade and temperature), diseases, nutrition, weed control, characterisation and improvement of sports surfaces, DNA fingerprinting and breeding.

The greens testing facility enables the evaluation of new turfgrass cultivars for bowling and putting greens. It is aligned to a commercial assessment program that accelerates the introduction of new cultivars by bowling clubs and golf courses.

The DPI&F turf research team led by Principal Scientist, Dr Don Loch, has a growing portfolio of industry-funded projects and also conducts contract research to register new varieties, imports and multiplies overseas cultivars. It provides independent testing of new products for turf use and provides information and educational activities to industry.

University of Sydney, Plant Breeding Institute (Camden Campus)

The Institute was established in 1953 and undertakes research into the breeding and management of a wide range of crops including cereals, other field crops, and amenity horticulture. The work of the Amenity Horticulture Unit extends from turf and showy annuals to woody perennials and small trees.

The Institute is a centre for turf research with trial plots at Lansdowne Farm, glasshouses for pot trial work and supporting controlled environment and laboratory facilities.

A new Amenity Horticulture Centre houses a team of researchers and postgraduate students, and is supported by laboratories for physiological and nutritional studies. The Institute provides a Masters degree in Turf Management.

Being located in a turf farming area provides close links to the industry along the Nepean River in the Camden area. The Institute provides extension services and participates in turf industry education days and conferences.

Its research and education cover:

- turf pathology;
- environmental impacts of sports turf and turf farming;
- soil health and sustainability studies of turf ecosystems;
- nutritional sustainability and the role of alternative nutrient sources;
- turf breeding with an emphasis on low input grasses;
- breeding and development of ornamental grasses for use in low input landscapes;
- growing media for turf; and
- phytotoxicity and pesticide testing.

The Amenity Horticulture Centre is led by Professor Peter Martin and has ten staff. It is supervising four PhDs, has 15 students in its Master of Turf Management program, has a final year B.Ag (Sc) project student and two international exchange students

University of Melbourne, Faculty of Land and Food Resources, Turf Research

This program is led by Associate Professor David Aldous whose research covers:

- the biology and management of turfgrass and amenity grassland systems;
- alternative salt land grasses for bioremediation ;
- sports turf surface performance;
- sustainable park management; and
- triple bottom line issues associated with sustainable development.

Professor Aldous is currently conducting a HAL funded project, Economic and agronomic study of the Australian turfgrass industry, which is attempting to document the size, structure, cultural practices, and financial cost and returns of the industry, as well as identify industry priorities for Australian turf producers.

University of Queensland, Molecular Plant Breeding, Plant Breeding Improvement Group, School of Land and Food Sciences

Dr Chris Lambrides is managing a research project to develop more water-efficient turf grass varieties. The project is funded through a four-year Australian Research Council grant of $3 million along with other private sector and government contributors.

Australian Rural Research and Development Priorities

The Australian Government has reviewed the Rural Research and Development Priorities in consultation with industry, State and Territory governments, the rural R&D corporations (RDCs) and other research funders and providers.

It has established a revised set of priorities as shown in Table 4 in order to help focus R&D effort on issues of major importance that go beyond individual industry sectors and jurisdictions. These priorities are to help the RDCs to direct their investments into areas of importance to the Government as well as to industry, and include climate change, biosecurity, the sustainable use of Australia's natural resources and maintaining the productivity and competitiveness of rural industries.

Table 4: Australian Rural Research and Development Priorities, 2007

The priorities

1. Productivity and adding value – Improve the productivity and profitability of existing industries and support the development of viable new industries.

2. Supply chain and markets – Better understand and respond to domestic and international market and consumer requirements and improve the flow of such information through the supply chain, including to consumers.

3. Natural resource management – Support effective management of Australia's natural resources to ensure primary industries are both economically and environmentally sustainable.

4. Climate variability and climate change – Build resilience to climate variability and adapt to and mitigate the effects of climate change.

5. Biosecurity – Protect Australia's community, primary industries and environment from biosecurity threats.

Supporting the priorities

1. Innovation skills – Improve the skills to undertake research and apply its findings.
2. Technology – Promote the development of new and existing technologies.

Turf industry R&D expenditure will need to reflect these priorities as well as maintaining and further developing the capacity of the above research providers, which is seen by the industry as a priority for its future growth, profitability and sustainability. This requires the support and recognition byState governments of the importance of a strong R&D capacity for the turf industry and broader lifestyle horticulture.

4.4 Training and education

Training and education of new entrants to the turf industry, as well as current participants, is critical to future industry prospects. The TAFE sector is the primary provider of education for people entering the turf production and maintenance sectors through certificates in horticulture (turf), horticulture and irrigation.

In relation to turf maintenance, TAFEs provide nationally recognised qualifications including Certificates II and III in Horticulture (Turf):

- **Certificate II** provides a qualification with the practical skills and knowledge to establish, maintain and repair turf surfaces. This qualification is designed to provide the student with the foundation skills and knowledge required by the turf industry sector. Successful completion provides the opportunity to become a greenkeeping assistant. Skills attained include preparing turf surfaces for recreation purposes, maintaining irrigation systems, treating pests, diseases and weeds, applying chemicals, maintaining surrounding gardens and structures, and operating and maintaining machinery.
- **Certificate III** provides a qualification with the practical skills and knowledge to establish, maintain and repair turf surfaces. Successful completion provides the opportunity to become a green keeper, turf curator, grounds person, and head green keeper. Skills acquired include the preparation of seedbeds and the establishment, maintenaince and repair of turf surfaces. The course also involves learning skills to install, operate and maintain drainage and irrigation systems, construct cricket wickets, tennis courts, bowling and golf greens, peg, mark out and install nets and posts on sporting fields, maintain surrounding gardens and structures, and operate and maintain machinery.
- **Certificate IV in Horticulture** provides supervisory level skills in addition to those acquired under Certificate III and caters for employment in local government, State government, nursery and turf, floriculture, gardening and the landscape industry.
- **Diploma of Horticulture** provides students with a wide horticultural and management skills base for those seeking employment in parks and gardens, nurseries, local government and other areas of the horticultural industry. The qualification provides practical skills and knowledge to plan, implement and manage operations and processes in the chosen field of horticultural specialisation. Skills attained include the design, implementation, management and evaluation of horticultural procedures and operations.

Attainment of a Diploma of Horticulture provides a pathway for university entrance to undertake applied science courses in horticulture or agricultural science,e.g. B Ag (Sc) in turf management. An Associate Diploma and Graduate Diploma of Applied Science (Turf Management) is available at the University of Melbourne-Burnley campus, along with electives in the Bachelor

of Applied Science (Horticulture). The University of Queensland also offers a Bachelor of Applied Science specialising in turf management.

A Masters degree in Turf Management is provided through the Plant Breeding Institute, University of Sydney (Camden). The Unversity of Melbourne (Faculty of Land and Food Resources) offers turf management training and research at Masters level and PhDs in turf grass science and management. The Plant Breeding Institute and the University of Western Australia's Turf Research Program also supervise PhDs with theses in a variety of areas of turf research. Currently, there is no baccalaureate training in turfgrass science and management in Australia.

Turf education and training, in common with most disciplines, faces the current intense competition for attracting quality students and teachers. Some concerns were expressed during the consultations about the new TAFE horticulture curriculums being too generic and responsible for 'dumbing down' turf management knowledge and skills.

4.5 Government services and regulation

The relationships that the turf industry has with governments at local, state and national levels are critical to its future sustainability and profitability. Across the different levels, governments exercise planning, natural resource use, environmental protection, labour regulation, policy and program management roles that impact on industries.

This section examines some of the key areas that need to be acted on by the turf industry for it to develop relationships with the agencies that administer the regulatory, policy or program areas.

4.5.1 Water supply and management

As noted in a previous section of this report, the two key issues for the turf industry are access to water at reasonable prices for both the turf production and turf maintenance sectors, and the impact of water restrictions on turf customers. This means that the turf industry needs to develop working relationships with the key water providers and regulators in order to influence policy and resulting regulation.

The key water instrumentalities in the major urban areas are:

- **Melbourne Water** is owned by the Victorian Government and manages Melbourne's water catchments and major distribution system. It supplies around 500,000 megalitres of water annually to the retail water companies (**City West Water, South East Water and Yarra Valley Water**) and lesser amounts of water to Western Water, Gippsland Water and Southern Rural Water. It is also responsible for the removal and treatment of sewage and trade wastewater (around 330,000 megalitres per year).

Melbourne Water has a Board of Directors responsible for the governance of Melbourne Water. The responsible Minister is the Minister for Water, Environment and Climate Change. Similarly, the retail water companies are government owned, but are required to operate commercially under a Board of Directors appointed by the government shareholder, and are subject to Corporations Law. All instrumentalities state that they operate according the values of consultation, collaboration, openess and accountability.

- **Sydney Water** is owned by the NSW Government and provides potable water, recycled water, wastewater services and some stormwater services to Sydney, Illawarra and the Blue Mountains. Potable water is sourced from a network of dams managed by the Sydney Catchment Authority, then treated and delivered to customers' homes and businesses by Sydney Water. The corporation has a Board of Directors responsible to the Minister for Water Utilities. Included in its values are a commitment to listen and respond to community needs and expectations, and to be willing to learn, share and change.
- **Sun Water** is a Queensland government owned corporation that provides a range of services including infrastructure ownership, water delivery, operation and maintenance of infrastructure and engineering consultancy services. It supplies approximately 40 per cent of the water used commercially in Queensland via 27 water supply schemes. The corporation is governed by a Board of Directors and its relationships with industry are subject to a Customer Service Charter. It is responsible to the Minister for Natural Resources, Mines and Water.
- **South East Queensland Water Corporation Limited** trades as SEQWater and is the major supplier of untreated water in bulk to local governments and industries in the south east Queensland region, through ownership of Wivenhoe, Somerset and North Pine dams. The corporation is a public company owned by the Queensland Government (20%), Brisbane City Council (45%), and eleven other Local Governments in south east Queensland (35%). SEQWater is governed by a board of six directors, two of which are appointed by all shareholders (one of whom is appointed as chairperson), a director appointed by Queensland Treasury Holdings Pty Ltd (on behalf of the Queensland Government), a director appointed by Brisbane City Council, and a director appointed by the other eleven Local Governments.
- **Water Corporation** of Western Australia is a Government owned corporation that provides water, wastewater, drainage and irrigation services to Perth and WA towns and communities. The Corporation is governed by a Board of Directors that is responsible to the Minister for Water and claims that its strategies are driven by customers who are its advocates and that it genuinely engages with stakeholders. The Corporation has lived up to these aspirations in the way it has engaged the turf and allied industries in implementing water restrictions, and provides a model for water regulators in other States. Another key agency for the WA turf industry is the Department of Water which licences and regulates groundwater. Some 130,000 households have bores and most turf farms and turf surfaces are watered from bores.

- **SA Water** is a government enterprise, wholly owned by the SA Government. It provides water and wastewater services to approximately 1.5 million people in the State. The enterprise is governed by a Board comprising the chief executive officer and six directors appointed by the Minister for Water Resources. SA Water's relationships with customers and stakeholders and service is oversighted by a Customer Council.

4.5.2 Environmental protection and management

All industries are facing increasing environmental regulation usually administered through state environmental protection agencies (EPAs). The key regulatory agencies are:

- **Queensland Environmental Protection Agency**, which includes the Queensland Parks and Wildlife Service (QPWS), a department of the Queensland Government. Key functions of the EPA are environmental planning, environmental policy, management of parks, forestry and wildlife, environmental operations, sustainable industries and environmental and technical services.
- **Victorian Environment Protection Authority** is a government agency whose purpose is to protect, care for and improve Victoria's environment. The EPA is managed by an Executive Chairman who is responsible to the Minister for Environment. The portfolio arrangements include an Advisory Board with the specific role of maintaining an overview of the administration and policies of the Authority, without direct management responsibility or a regulatory role.
- **Western Australian Environmental Protection Authority** is an independent Authority with the broad objective of protecting the State's environment. The EPA provides overarching environmental advice to the Minister for the Environment through the preparation of environmental protection policies and the assessment of development proposals and management plans, as well as providing public statements about matters of environmental importance. The Authority has five members: a full-time Chairman, a part-time Deputy Chairman and three part-time members.
- **South Australian Environment Protection Authority** is the State's environmental regulator, responsible for the protection of air and water quality, and the control of pollution, waste, noise and radiation. The EPA is an independent statutory authority within the Environment and Conservation Portfolio with a chief executive and governing board.
- **New South Wales Department of Environment and Climate Change** amongst other roles is responsibility for regulating activities to protect the environment and it reports to the portfolio Minister.

4.5.3 Australian Government industry assistance

The turf industry needs to be aware of government support programs at federal and state levels and to utilise these programs wherever appropriate. The Australian Government, through the Department of Agriculture, Fisheries and

Forestry, supports a range of initiatives to help primary producers to be more competitive, sustainable and profitable.

Table 5: Agriculture – Advancing Australia package (2007-08 to 2010-11)

Programs	Funding (million)
Advancing Agricultural Industries A framework for the Australian Government to work with industry on current and future challenges. There are four integrated components: ***Industry Stocktakes***: projects of up to $200,000 over one year to help industries better understand their situation, prioritise issues and develop action plans; ***Action Grants***: grants up to $1 million over two years, matched by industry to support projects that focus on priority industry needs; ***Rural Leadership Development***: primarily focused on creating opportunities for young people, women and Indigenous people; and ***Advancing Agriculture Fund***: matching grants of up to $50,000 over one year to promote local level action to manage business risk and ongoing change.	$40.0
Farm Business Management (FarmBis) Supports primary producers and rural land managers to improve business management skills. The new FarmBis will be delivered by the Australian Government.	$43.9
Farm Management Deposits Scheme A risk management tool to allow primary producers to set aside cash reserves to meet costs in low-income years. Increase in the maximum holding from $300,000 to $400,000 and in the off-farm income limit from $50,000 to $65,000.	Tax expenditure item
Rural Financial Counselling Provides a free and confidential financial counselling service and a central reference point for other available services. Funding to maintain an effective Australia-wide service to clients in need of support.	$54.9
Farm Help Provides short-term income support and professional advice to farm families in severe financial difficulty to adjust and change. Farm Help will be more accessible, with previous recipients allowed a second chance to obtain advice and training grants of up to $2500 and a re-establishment grant. Re-establishment grants increased to up to $75,000; maximum asset limit of $150,000 to obtain the full re-establishment grant.	$106.6
International Agricultural Cooperation Improves bilateral agricultural trading relationships with key developing country markets. Strengthened to respond to trade disruptions and to increase understanding of trade related issues.	$9.3

Source: Department of Agriculture, Fisheries and Forestry, Future harvest, 2007 www.daff.gov.au/__data/assets/pdf_file/0016/228301/ag_statement7may.pdf

Government assistance for drought

Assistance measures to support farmers and rural communities announced in the 2007 Budget include:

- Exceptional Circumstances assistance, including income support and interest rate subsidies, for farmers and farm-dependent business operators;
- Providing extra financial and personal counselling to rural communities;
- Emergency individual and community grants to be provided through the Country Women's Association;
- Increasing the deposit cap for the Farm Management Deposits scheme from $300,000 to $400,000, and the non-primary production income test from $50,000 to $65,000;
- Professional business and financial planning grants of up to $5,500 (GST inclusive) are available for eligible farmers in areas that have been EC declared for more than three years, and
- Making changes to Drought Force and Job Network to help farming communities meet their workforce needs and to encourage skilled labour to remain in the region.

Australian Government Water Programs

Australian Government support to water management in Australia is provided through a Water Fund of $2 billion for investment in water infrastructure, improved water management, and better practices in the stewardship of Australia's scarce water resources. The Fund supports practical onground water projects that will improve Australia's water efficiency and environmental outcomes.

The Fund comprises three programs: Water Smart Australia, Raising National Water Standards, and the Community Water Grants programs. Water Smart Australia was established to accelerate the development and uptake of innovative technologies and practices in water use across Australia. It is a $1.6 billion Program with funding over five years until 2010. It is targeted at large-scale projects.

The Raising National Water Standards Programme aims to assist the development of the necessary tools to improve Australia's national capacity to measure, monitor and manage its water resources. It has funding of $200 million to 2010 to support projects that meet its objectives.

The aim of the Community Water Grants Programme is to promote a culture of wise water use through community engagement, awareness and investment in saving and conserving water and encourage best practice measures and demonstrate water wise solutions adapted to local needs and problems. The program was extended by $200 million in the 2007-08 Budget and is

administered by the Australian Government Departments of the Environment and Heritage and Department of the Agriculture Fisheries and Forestry.

In addition to the Water Fund, the Australian Parliament passed the Water Bill 2007 in August. This provides a range of programs announced under the National Plan for Water Security. The programs include:

- $3 billion to address over allocation and overuse of the water resources of the Murray Darling Basin either by buying out or helping to relocate unviable or inefficient irrigators;
- $1.6 billion is to be provided for on-farm investments in irrigation efficiency and $70 million for hotspot assessments as part of the Improving System Delivery Efficiency program;
- $617 million will be provided for more accurate metering and monitoring, including upgrading bulk off-take and on-farm metering;
- $450 million in investment will be provided for water information; and
- $3.55 billion is to be provided for the improvement of off-farm delivery system efficiency, river operations and storages.

4.5.4 Other key policy and program areas

Workplace relations and labour supply

The availability and cost of labour is a critical issue for turf production and maintenance costs. Both sectors face difficulties in attracting skilled staff. The maintenance sector cites the low level of wages that are not commensurate with increasing levels of skills and technical knowledge required as a major factor in both attracting and retaining employees. The turf production sector faces difficulties in establishing a consistent award system across the sector.

The Australian Government and State governments have significant powers in relation to workplace relations' matters which impact on the costs of employing labour. This includes the processes for setting terms and conditions of employment, payment of the superannuation guarantee, workers' compensation premiums, and occupational safety and health requirements.

The most significant change in recent years has been the introduction of the national Work Choices initiative that allows greater flexibility to employers and employees in negotiating terms and conditions.

Key strategic issues that have been identified by the Australian turf industry to be critical to the future competitiveness of the industry are:

- labour costs in turf production;
- shortages in the supply of labour with appropriate skills;
- low wages that do not reflect skills and increasing regulatory demands in the turf maintenance sector; and

- Australian society's expectations on employment conditions and management practices.

There is little likelihood of the conditions that contribute to high labour costs being removed in Australia, and attention needs to be directed at management approaches that maximise productivity and innovation to reduce the labour input. Businesses consulted during this project stressed the need for the focus to be on greater efficiency in the use of labour and maximising productivity through effective use of highly skilled workers and automation.

4.5.5 Local Government

Local governments interact with the turf industry through a variety of ways:

- they are involved in land classing and zoning, identifying suitability of land uses within their jurisdiction;
- following from this, they are responsible for land use approvals, and approvals of related on-farm infrastructure;
- in some cases they price and regulate the use of resources such as water, depending on where the water is sourced;
- the management of some regional infrastructure such as local roads;
- placement, licensing and control of local markets and other retail establishments; and
- certain regulatory responsibilities for safety and health, and point source pollution; and
- conflict resolution processes that arise in peri-urban areas due to farming operations and residential areas being in close proximity.

Little formal interaction takes place between industry and local government in comparison with that between industry and state or federal government. However, in view of the local level responsibilities, relationships with city and town councils need to be developed by the turf industry.

PART B: SETTING DIRECTIONS FOR THE AUSTRALIAN TURF INDUSTRY

While the Australian turf industry faces challenges and opportunities in the future, it has many strengths that provide the foundation for it to be successful, and continue to be a major contributor to the Australian economy and our way of life.

This project has identified five strategic imperatives, five strategies that address those imperatives and 12 recommended actions. These are based on the findings of the Industry Stocktake that are outlined in Part A of this report.

This result has been achieved through the processes of industry consultation, meetings of the Steering Committee, which oversighted the project, and two national workshops held in June and August 2007. These workshops allowed direct industry input and feedback on the Stocktake findings and the development of the strategies and actions outlined in this report.

This part of the report outlines a range of considerations in relation to the strategies and actions that will assist the industry in designing, planning, funding and implementing the project recommendations.

The strategic imperatives are numbered in priority order. It is envisaged that action will be taken on imperatives 1-3 over the following year with full implementation within three years. Implementation of imperatives 4 and 5 is envisaged within five years.

It is acknowledged that the industry's organisations have limited human and financial resources and implementation of the agreed Stocktake strategies and actions will require support from appropriate funding programs and collaborative initiatives between organisations where there is a common purpose. The report identifies a number of areas of potential support that could be explored by the industry.

Strategic imperative 1: Demonstrating the size of the industry & promoting its value proposition

Strategy 1:

Establish and maintain reliable and credible industry data on the size and structure of the turf industry and its broader triple bottom line values (TBL) with the resulting information used in industry advocacy, promotion, investment decisions and funding proposals.

Industry actions:

1.1. Prepare a project proposal for measuring the gross value of output across all turf sectors, the number of businesses or organisations involved in turf production and maintenance, total employment and the total area of turf in Australia by use.

1.2. Specify, resource and undertake the research necessary to quantify and/or describe the TBL value of the whole of the Australian turf industry and establish a 'value proposition' for the industry that reflects its true worth to Australia.

1.3. Design, resource and undertake a national turf communication and marketing strategy that promotes the industry's value proposition in the community, addresses the misconceived image of turf and creates a distinct brand that builds sustainable increases in demand for turf.

Considerations:

Action 1.1: This is a complex exercise that requires an accepted and rigorous methodology to ensure accuracy, reliability and credibility of the resulting data. In measuring the gross value of the industry, a significant issue is to avoid double counting where the outputs of one sector of the value chain are the inputs of another sector. It is essential that this task be undertaken by a national data collection agency such as the ABS or ABARE or by a company that has the expertise and whose methodology and results are accepted by governments. The turf industry has requested that this action be commenced following the completion of the Stocktake Project with a view to it being completed by September 2008.

Action 1.2: The first step for this action could be to prepare a research proposal to review available research, including overseas studies, and to prepare a synthesis report that identifies key findings that are applicable to Australia and the gaps that require further research.

A possible model and approach for consideration by the industry is Signposts for Australian Agriculture, which is managed by the National Land and Water Resources Audit. This initiative provides a web-based model for reporting on the contributions of agricultural industries to Australia's total quality of life. It shows the contributions of the industry to economic, social and biophysical systems: http://signposts4ag.com/signposts-grains/about-signposts

It is likely that undertaking the research to establish the comprehensive TBL values of the Australian industry (including direct and derived values as defined in the Stocktake report) may take several years. However, an outcome of the initial synthesis report could be a series of fact sheets that describe the economic, social/lifestyle and environmental values of turf supported by credible evidence. A possible model for the fact sheets is provided by Project EverGreen in the USA: http://www.projectevergreen.com/about.html

Action 1.3: This action links to actions 1.1 and 1.2, but can be undertaken concurrently using credible available information. It will involve developing a brand and image for turf, identifying key themes and messages, identifying target audiences and strategically tailoring the messages to key audiences using media and presenters who will be 'listened to'. Implementation of the

communication and marketing strategy needs to be multi-faceted in using various media such as a dedicated website, information packs for 'influencers', articles for papers and magazines, and papers and speakers for conferences. A possible model for elements of a comprehensive communications and marketing strategy is provided by the Water Action Guide of the Green Associations Conservation Council in the USA: http://www.wateractionguide.org/index.htm

Strategic imperative 2: Establishing a united voice for the turf industry

Strategy 2:

Establish and maintain an alliance across the industry's value chain to advance the interests of the whole turf industry in representations to government and to build relationships with policy makers and regulators, the media, public, health and lifestyle organisations and potential investors in the industry.

Industry actions:

2.1 Establish an alliance for the turf industry across its production, maintenance and service sectors to address industry-wide issues.

2.2 Turf Producers Australia to lead the implementation of the strategies and actions agreed in the Australian Turf Industry Stocktake report in collaboration with other turf industry sectors.

Considerations:

An 'umbrella' alliance is needed to present a united voice for the industry in representations to government and in building relationships with policy makers and regulators, the media, public, health and lifestyle organisations and potential investors in the industry.

Representation could be considered from Turf Producers Australia, Turf Grass Association of Australia, Parks and Leisure Australia, Irrigation Association of Australia, Australian Landscape Industries Association, Australian Golf Course Superintendents Association, Australian Race Course Managers Association, Tennis Australia, Cricket Australia, Bowls Australia, Australian Football League, Australian Rugby League and Australian Rugby.

Turf Producers Australia should play a leadership role in implementing the strategies and actions of this Stocktake report and ensure collaboration across the Australian turf industry alliance.

Efforts should continue for the various industries comprising lifestyle horticulture to act together when required. Strong links should also be maintained with the Horticulture Australia Council.

Strategic imperative 3: Ensuring access to water for turf production & maintenance

Strategy 3:

Prepare and maintain a national industry-wide water strategy for the turf production, maintenance and domestic/commercial water use sectors for ensuring reliable access to water, cost-effective prices and high water use efficiency.

Industry Actions:

3.1 Prepare a proposal for the development of a turf industry water strategy that engages key water regulators, policy makers, irrigation water providers and irrigation suppliers.

3.2 Produce and maintain data on the industry's water availability, use and irrigation practices across the turf production, maintenance and domestic/commercial water use sectors.

Considerations:

Action 3.1: In an era when competition for access to water is increasing, irrigation industries will need to demonstrate effective planning and management of available water resources, efficient irrigation practice and appropriate accounting for water used. The turf industry could adopt a proactive response by developing a national strategy for securing access to required water resources and using water with maximum efficiency and productivity. The preparation of the strategy could be managed by the turf industry alliance referred to under Strategy 2.

Action 3.2: This action is designed to overcome the lack of industry data on water access and use in the production, maintenance and household/commercial sectors. The ABS does not identify turf production as a separate user in its series on water use on Australian farms and does not collect data for water use in the turf maintenance sector or domestic/commercial sectors. This is a major weakness for the industry in negotiating with water regulators and policy makers. Action 3.2 proposes the collection of data on water availability, use and irrigation practices across the turf production, maintenance and domestic/commercial water use sectors. This could extend to the development of water accounts for the industry that covers water entitlements, transactions and use. In addition, it could also provide water resource audits to show surface, groundwater and recycling sources and yields for turf irrigators.

Strategic imperative 4: Researching & monitoring market and consumer trends

Strategy 4:

Develop an ongoing program of market and consumer research that provides intelligence to underpin industry promotional campaigns and supports the marketing efforts of industry businesses.

Industry Actions:

4.1 Specify the terms of reference for market and consumer research that can be funded through the turf R&D program under Horticulture Australia Ltd.

4.2 Examine the need to incorporate quality assurance, ethical advertising and consumer services into industry marketing strategies aimed at adding value to sales.

4.3 Design a member-based web system that regularly presents market research results and market intelligence on trends in turf markets and distribution channels.

Considerations:

Associated with the requirement for the industry to promote its environmental and water use credentials and the industry's value to Australia, is an ongoing need for the industry to research and have a deep understanding of its markets.

This strategy and actions are designed to develop the market knowledge of industry businesses and service providers on changing population demographics, housing and living styles, participation in sports played on turf and consumer preferences and purchasing behaviour for turf products and services.

Due to restrictions on outdoor watering, the industry is facing a major challenge in overcoming consumer apprehension and concerns with turf. Consumers appear to be unaware of the low input attributes of modern turf varieties and this presents an opportunity for the industry to promote these positive attributes.

With appropriate market research, opportunities may also exist for the industry to partner with private sector, community and government groups involved in health-care, wellbeing and lifestyle services, sustainable cities movements and environmental education initiatives for children.

Strategic imperative 5: Establishing industry benchmarking for turf production and maintenance

Strategy 5:

Development of systems for industry cost analysis, benchmarking, quality assurance and certification for international leading practice in turf production and maintenance.

Industry Actions:

5.1 Investigate the scope and attributes of an appropriate cost, price, profit and operational performance benchmarking system for adoption by turf producers and the turf maintenance sector.

5.2 Develop a practical approach to industry quality assurance and certification for turf production and maintenance businesses against a background review of international leading practice.

Considerations:

The strategy and associated actions are designed to build the confidence of turf users in the quality and value for money of turf through industry quality assurance and certification for international best practice. The marketing focus of the industry must be to meet customer needs, behaviour and responses in order to build long-term demand for turf and to value-add to sales through products and services.

The strategy and associated actions are also designed to provide modern business systems that address pressures on profit margins or maintenance budgets due to rising costs of inputs including fertilisers, chemicals, fuel and regulatory requirements. It could also address improvements in cost accounting, pricing to reflect the value of turf and maintenance services and industry best practice measured against industry-wide and international benchmarks.

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APPENDIX 1. INDUSTRY CONSULTATIONS

The following table provides a list of individuals and their respective organisations that were consulted during the project.

National	Victoria	NSW	ACT	Queensland	WA
Turf Producers Australia (TPA) – Ray Moir (CEO)	Turf producers: Robert Davey (Evergreen Turf and President TPA), Steve Cole (Lilydale Instant Lawn and Chair, Vic. SWU group), Suzanne Shearer (Coolabah Turf), Garry & Denise Lusk (Lilydale Instant Lawn), Bruce Stevens (ANCO), Peter van Leeuwen (HG Turf), Anthony Gallenti (Greenacres Instant Lawn) Apologies: John Cotter (ANCO)	Turf producers: Greg Miller (Miller's Turf, President TGANSW), Steve (A View Turf & Bobcat Service), Frank Galea (Award Turf), Frank Muscat (J&B Buffalo Turf) Richard Grech (Grech's Turf Supplies) – by phone	Turf Producers: Andy Middleton (Canturf)	Turf producers: Lynne Davidson (Managing Director, Jimboomba Turf Company) Tony Cross (President, QTPA, Caboolture Turf) Geoff Hindmarsh (Managing Director, Cabarlah Park Turf, Director QTPA) Burton Dennis (Turf Force, Director, QTPA) Simon Adermann (Nuturf)	Turf producers: John Clayton (Down South Turf), John Maas (Bullsbrook Turf and Greenfields Turf), Con and Peter Paino (Westland Turf and Perth Turf Supplies), Adrian Pitsikas (Greenacres Turf Farm) Greg Hackshaw (Allwest Turf)–
Horticulture Australia Ltd – Stuart Burgess (Industry Services Manager, Amenity and Berry) – by phone	Victorian Golf Course Superintendents Association - Michael Freeman (President)	TGAA (NSW) and Telstra Stadium – Graham Logan (President)	TGAA (ACT) - John Lloyd (Manager, Landscape Services, APH)	Queensland Turf Producers Association – Jim Vaughan, (CEO) Therese QTPA Secretariat	Challenger TAFE – John Forrest
Irrigation Association of Australia – Jolyon Burnett (CEO)	Moonee Valley Racing Club - Martin Synan – (Asscn. Racecourse Manager and Deputy President, ARMA)	Golf Course Superintendents Association of NSW – Anthony Hugill (President) and Mark Warwick (Secretary)	Canberra Institute of Technology – Bruce Davies	Golf Course Superintendents Association of Queensland – Darren Moore (Lakelands) Scott McKay (Super Golf Course Company) Dave Morrison (Windaroo Lakes) Rodney Cook (The Grand) Justin Kelly (Gainsborough), Ben Cavanagh (Brisbane)	UWA Turf Research Steering Committee – A/Prof Tim Colmer and Dr Louise Barton

National	Victoria	NSW	ACT	Queensland	WA
Nursery & Garden Industry Australia – Jenny Lambert (CEO)	Victoria Racing Ltd – David Hawke (Manager, Assets and Planning)	Turf Grass Scientific Services – Peter McMaugh	Horticulture Engineering – Keith McIntyre	Redlands Research Station - DPI&F Matt Roche (Research Scientist)	Turf Grass Association of Australia (WA) – Peter Ruscoe
Fertiliser Industry Federation of Australia – Nick Drew (Executive Manager)	University of Melbourne (Burnley Campus) - Associate Professor David Aldous	University of Sydney (Camden Campus) - Prof Peter Martin		Landscape Industry Association of Qld) – Jim Vaughan (CEO), Theresa Elliott (General Manager, Vorn Australasia Pty Ltd)	Water Corporation – John Brennan
National Water Commission – Tim Gilbert	SportsTurf Consultants (Aust.) – Terry Woodcock, Ron MacCartney (Directors)	Sydney Water – John Ethell (Manager, Development Operations and Water Restriction Enforcement)		Nursery & Garden Industry Queensland - Donald Scotts (CEO)	Turf and Landscape Industry Association (WA) – Kim Bailey
Horticulture Australia Council – Kris Newton (CEO)	Euan Laird - Managing Director, embark and former CEO of AGCSA	Ryde TAFE – Frank Dempsey		Australian Centre for Lifestyle Horticulture – Don Scotts (Chairman)	Golf Course Superintendents Association of WA – Brad Sofield (Gosnells), Jeff Lane (Joondalup), Darren Wilson (Wembley), Glen Cross (Mt Lawley), Craig New (Lakelands Country Club)
Australian Golf Course Superintendents Association – Jeff Gambin (President) and John Neylon (General Manager)	Nursery & Garden Industry Victoria - Alan Hollensen (IDO, Retail)	NSW Department of Primary Industry – Ashley Senn (District Agronomist, Sydney Region)		Dr D.S. Loch (Leader - Turf Research Horticulture & Forestry Science, DPI&F) Phone interview on 7 June.	
Australian Landscape Industry Association - Jim Vaughan (CEO)	Heritage Seeds – Jim McDonald, (CEO) and Matt Merrick (National Turf Manager) 03 9501 7077			Simon Adermann (Nuturf)	

National	Victoria	NSW	ACT	Queensland	WA
Australian Racecourse Managers' Association - Arthur Stubbs (Secretary)	Solid Water Technologies Pty Ltd – Rocco Pisanelli (Executive Director)			Australian Centre for Lifestyle Horticulture - DPI&F – Dan Corfe (Industry Development Officer) Steve Capeness (IDO) Susan Porchun (Senior IDO)	
TGAA -Simone Staples				DPI&F – Kirsten Pietzner (Principal Policy Analyst, Innovation & Biosecurity Investment, Industry Development)	

The following paragraphs reflect feedback provided during the consultations.

Examples of grower sentiment

Profitability

We are in a situation of having to concentrate on surviving under water restrictions.

We are in survival mode – not advancing and some are quitting the industry.

Diversification is critical to profitability.

The maintenance sector needs to be more business oriented.

Water restrictions have paralysed the home garden and lawn market.

Growers need education on their costs of production and the price of capital.

Water restrictions have made customers scared to do anything.

Sustainability

Growers as an industry must concentrate on product quality for the customer.

Water restrictions are our biggest threat and we need to get an understanding of the total resource available.

Turf needs to be better positioned in the water debate to deal with water supply issues.

Less than 2% of Victoria's water use is on gardens and lawns.

Input suppliers are the first part of the industry to lose orders if turf sales drop.

Turf is a visual user of water.

There is a need to disband myths about how much water is used in the turf industry as compared to its competitors.

Lawn establishment uses only 0.03% of Melbourne's daily water use in summer.

The present water restrictions are not based on science.

Replacing turf with hard surfaces is not the answer. There will be an increased heat load and water run-off that will pollute rivers.

New homes need to be built with 100,000 litre rainwater tanks underground and this will supply all of the water required for a household and garden use.

Accreditation and certification are industry priorities.

The durability of machines is the biggest problem with automated harvesters and major corporates won't get involved in R&D on the equipment.

The use of turf for erosion control is a very promising prospect for the turf industry.

There are export opportunities, but exporting is difficult and requires incentives.

Environmental management and occupational safety and health are now the biggest tasks for golf course superintendents. Less time is spent on actually managing and maintaining courses.

As a golf course superintendent, I spend most of my time trying to keep up with the legal jargon, but club members judge my performance on what they see on the golf course.

Competitiveness

Australian turf producers provide a surface of excellent quality and are seen as very efficient by their overseas counterparts. It is estimated Australian producers run at 60% of costs compared to US producers.

The future will see more competition between the turf industry and alternatives as more options become available to consumers (i.e. hard surface synthetics, mulch etc). Less water will inevitably mean less plants.

Grass has a bad name for itself. It is imperative that the public is educated about its value and the true story about its water use compared to the alternatives.

Synthetics should not be seen as a healthy alternative to turf. They breed bacteria and hence are not a good option with children. They also require significant energy to maintain and are not water free.

More government money is available to change from natural to synthetic surfaces rather than spending funds on looking at options for reducing water use on turf.

Ninety-five per cent of Australian racing is on turf because of tradition and safety.

With water restrictions, the emphasis should be on getting smarter on how to conserve water rather than turning it off.

Italy does systematic variety trialling and looks at the value-package for turf (including mowing and fertilising). We need to do the same.

Recycled water pumped on turf comes out three times cleaner.

The industry now has new-era grasses that are environmentally friendly.

Turf growing is a peri-urban industry and workers in these locations don't want to work in agriculture.

Turf growers must be recognised by the customer as a supplier of quality turf backed by standards and a code of ethics.

The skill set for turf managers is increasing rapidly, but the low wages paid does not attract people to the industry.

Turf businesses need to be careful that they don't distort information in claims on the performance of their product. There is a lot of snake-oil out there and growers need to be better informed on the science and technology.

Resilience

The Australian turf industry does not have a concept of how big or how small it is.

Information in this industry is extremely fragmented if it exists at all. It has certainly not been pulled together particularly well. The turf industry needs a comprehensive website that might act as a focal point for collecting industry-wide data. Perhaps the R&D levy could be put to this end.

TAFE courses are being dumbed-down with generic curriculums.

It is difficult to see where the next generation of teachers will be coming from. Even the current generation of teachers are moving out of teaching roles in their organisations.'

The next generation of researchers is barely there in the turf industry. Not many researchers have time to write and not many researchers are coming through the system.

A key misconception is that R&D is for the benefit of the big guys.

With the lack of industry data and a picture of ourselves, we are running blind.

The future is not going to be business as usual. We need to reinvent the industry for the long-term.

The highest priority of R&D is determining the water use efficiency of turf growing and maintenance.

Communication on the results of R&D is critical or growers will lose faith in the levy.

If I pay a levy, I need to know what is happening with it.

The turf industry is an aging industry.

A positive of the water restrictions is that people are more interested in using water efficiently.

The hardest thing to do is sell a turf farm for continuing use in turf production. There are few new people coming into the industry.

Self-reliance

We must sell the value of the whole industry to the Australian economy.

A major issue for research is assessing turf's contribution to the wellbeing of society. The biggest threat to the turf industry is public perception.

The major challenge for producers is for them to see themselves as part of a large industry. It would do well to piggyback on the campaign of other parts of the industry such as the 'Life is a Garden' campaign of the Nursery and Garden Industry Association.

The TPA is a terrific initiative that hopefully will break down some of the competitive nature of the production sector. But it is a young industry with a lack of vision about where it should head and what it should run with.

Our industry needs to get together with allied industries and undertake a holistic promotion of our benefits.

Networking between the sectors is the key for sharing knowledge and dealing with situations.

Everyone is searching for the silver bullet, rather than concentrating on finding the combination of good practices that will work.

The demand-supply chain in lifestyle horticulture industry is a total link that connects all sectors.

Our biggest competitor is doing nothing.

We need to be smart in selling how our industry fits into the bigger issues of climate change and the environment.

In WA, when water restrictions were first mooted, we set up a broad industry reference including the media and got all players involved in looking at the implications and selling positive messages.

Our industry associations are suffering from a lack of interest and support. We are only effective when major issues arise and members become interested. Industry development officers could play a major role in getting more continuity of member involvement and being informed on on-going issues.

Our industry's profile is too low – we need to lift it.

APPENDIX 2. TAKING STOCK WORKSHOP

TAKING STOCK OF THE AUSTRALIAN TURF INDUSTRY
WEDNESDAY, 27TH JUNE 2007
HOLIDAY INN, MELBOURNE AIRPORT

Workshop facilitator – Mike Williams of Michael Williams & Associates Pty Ltd Sydney

Workshop aims

1. To report back on the key messages arising from the industry consultations for the Taking Stock report on the turf industry;
2. To seek workshop participants' comments and discussion on these key messages and obtain further input to the Taking Stock report;
3. To facilitate discussion across different sectors of the turf industry on Taking Stock issues identified to date;
4. To ensure that the commentary from this workshop, industry consultation and comment on the workshop discussion paper together provide the information, knowledge and insights that are necessary to construct a complete picture of the Australian turf industry. This will form the base information for the preparation of the industry's future strategic directions.

Workshop sessions

Discussions with industry stakeholders over the past few weeks have identified the following issues as critical in Taking Stock of the Australian turf industry:

1. Presenting a complete picture on the economic, social and environmental importance of the industry to the Australian economy and community;
2. Factors in the short-term and long-term markets for turf (including the impact of water restrictions);
3. Improving collaboration across different sectors of the industry to raise the profile of the industry in Australia and ensuring it has a strong voice in key policy decisions.

These issues will be explored in the Workshop along with others in order to compile the information, knowledge and insights that are necessary to construct a complete picture of the Australian turf industry.

TAKING STOCK WORKSHOP PROGRAM

PRELIMINARY

8.30am Registration - Tea and coffee on arrival

9.00 – 9.20 Workshop commences (Michael Williams – Facilitator)

- Welcome
- Introductions

Session 1: Setting the context for the Taking Stock Workshop

9.20 – 9.30 Purpose of workshop, context and expectations – Robert Davey (President TPA)
9.30 – 9.40 Industry Partnership Program – Jenny Medway (DAFF)
9.40 – 9.50 The Australian Turf Industry Taking Stock and Setting Directions Project – Ken Moore (Project consultant for Kiri-ganai Research)
9.50 – 10.20 Views from the floor (facilitated by Michael Williams)

TAKING STOCK

Session 2: What are the key economic, social and environmental benefits of the whole turf industry to Australia and its regions (i.e. the industry's value proposition)?

10.20 – 10.30 Consultation feedback to date [(Ken Moore, Kiri-ganai Research)

10.30 – 11.00 Morning Tea

11.00 – 11.50Group discussions to answer the following questions:

1. Taking into consideration what has been heard during the industry consultations and reported today, confirm or identify additional economic, social and environmental benefits of the whole of the turf industry to Australia and its regions?

2. What data is available and what is required to quantify and demonstrate the industry's benefits?

11.50 -12.20 Group reports (facilitated by Michael Williams)

Session 3: What are the opportunities for the Australian turf industry to improve its future profitability and sustainability?

12.20 -12.30 Consultation feedback to date (Ken Moore)

12.30 – 1.30 Lunch

1.30 – 2.15 Group discussions to answer the following questions on industry profitability and sustainability:

1. Based on the industry's value proposition established in the previous session, what are the opportunities for the industry to improve its future profitability and sustainability?

2. What changes are required in the industry or in its operating environment to meet the opportunities?

2.15 – 2.45 Group reports (facilitated by Michael Williams)

Session 4: What are the key features of industry structures and capacity that will drive the industry's future success?

2.45 – 2.55 Consultation feedback to date (Ken Moore)

2.55 – 3.30 Group discussions to answer the following questions about industry resilience and self-reliance:

1. Based on the opportunities and changes identified in the previous session, how well are the industry's representative and leadership structures set up and working?

2. What changes are required in the industry's arrangements, culture and policies to meet it future aspirations?

3.30 - 4.00 Group reports (facilitated by Michael Williams)

SUMMING UP AND NEXT STEPS

4.00 – 4.45 Key outcomes, achievements of the workshop and next steps (facilitated by Michael Williams)

4.45 – 5.00 Closing statement (Ray Moir)

5.00pm Workshop closes

Workshop participants:

Michael Williams, Facilitator

Adrian Pitsikas, Secretary Turf Producers Australia, Turf Industry Advisory Committee, Greenacres Turf Farm
Bruce Davies, Member, Turf National Education Committee, Canberra Institute of Technology
Bruce Fordham, President PLA (Vic/Tas) – Hume City Council
David Simpson, Agriculture & Food Division, DAFF
Denise Lusk, Lilydale Instant Lawn, Victoria
Doug Fleet, Member, Turf Industry Advisory Committee, Marne Valley Turf
Greg Miller, President, TGA NSW, Director TPA, Miller's Turf Supplies
Jenny Medway, IPP, DAFF
John Cotter, President, Vic TPA; Vice President, TPA; Anco Turf, Victoria
John Lloyd, Manager, Landscape Services, Parliament House
John Neylon, General Manager, Australian Golf Course Superintendents Association
Jolyon Burnett, CEO, Irrigation Association of Australia
Kate Casimaty, StrathAyr Turf Systems, Victoria
Kevin Meissner, President, Turf Grass Association, South Australia
Linda Quinn, IPP, DAFF
Mark McKenzie, Executive Director, Wine Grape Growers Australia
Martin Synan, Deputy Chairman, Australian Racecourse Manager's Association, Assistant Racecourse Manager, Moonee Valley Racecourse
Peter McMaugh, Turf Industry Adv Committee, Turfgrass Scientific Services
Peter van Leeuwen, H G Turf
Phil Ford, Northern Melbourne Institute of TAFE
Ray Moir, CEO, Turf Producers Australia
Robert Davey, President, Turf Producers Australia, Vic Turf Producer
Steve Cole, Chair, Victorian Sustainable Water Use Group
Suzanne Shearer, Coolabah Turf, Victoria
Tony Cross, President, Queensland Turf Producers Association; Southern Pacific Turf

Ken Moore, Consultant Kiri-ganai Research
Judy Andrews, Kiri-ganai Research

APPENDIX 3. SETTING DIRECTIONS WORKSHOP

THE AUSTRALIAN TURF INDUSTRY SETTING DIRECTIONS WORKSHOP PROGRAM

The Stamford Plaza Hotel – Sydney Airport

Monday, 13 August 2007
9.00am – 4.15pm

WORKSHOP AIM

To explore and agree on a portfolio of strategies and practical actions to improve the sustainability[5] of the Australian Turf Industry.

Mike Williams (Michael Williams & Associates Pty Ltd, Sydney) will lead the workshop.

Preliminary

8.30am Registration - Tea and coffee on arrival

9.00am Workshop commences (Mike Williams – Facilitator)
- Welcome by Ray Moir (CEO, TPA)
- Introductions.

Session 1: Setting the context for the Setting Directions Workshop.

9.20am Setting the scene – Dr Richard Price (Managing Director of Kiri-ganai Research)

9.25am Setting Directions Workshop Discussion Paper – Ken Moore (Project consultant for Kiri-ganai Research)

9.40am Guest speaker from another industry

10.10am Views from the floor (facilitated by Michael Williams)
- Which Stocktake findings have really hit the mark and why?
- What is industry currently doing about them?

10.30am Morning tea

Session 2: Priority strategies.

11.00 am Are the ten strategies for future directions the right ones? Will they make a difference? Which ones will make the most difference? Can they be aggregated into 3-5 strategic imperatives[6]?
(Group work)

[5] Includes the outcomes of industry profitability, competitiveness, resilience and self-reliance.
[6] Absolutely necessary for the future of the industry.

12.30 Report back and collate group results to identify the 3-5 strategic imperatives.

1.00pm Lunch

Session 3: Actions to implement the strategic imperatives.

1.45pm Develop actions to support the aggregated strategic imperatives. (Group work)

2.45pm Report back

Session 4: Summing up and next steps for the project.

3.15pm Key outcomes, achievements of the Workshop and next steps (Statements from the floor facilitated by Mike Williams)

4.00pm Closing statement (John Cotter, TPA Vice President)

4.10pm Workshop close

Workshop participants:

Michael Williams, Facilitator

Adrian Pitsikas, Secretary, Turf Producers Australia Ltd, Industry Committee, Greenacres Turf
Alan Duff, Principal Experimentalist (Turf), Horticulture & Forestry Science, DPI
Bob Greasley, Director, Turf Producers Australia – Rochedale Turf Queensland
Christopher Lambrides, School of Land, Crop & Food Science, University of Queensland
Clinton Skeoch, Project Manager Market Analysis, Horticulture Australia Ltd
David Franklin, Commercial Sales Manager, HG Turf Pty Ltd
David Simpson, Agriculture & Food Division, DAFF
Denise Lusk, Lilydale Instant Lawn, Victoria
Dennis James, Director, Turf Producers Australia Ltd, (Yarramalong Turf)
Donald Loch, Leader, Turf Research, Hort & Forestry Science, DPI
Doug Fleet, Member, Turf Industry Advisory Committee, Marne Valley Turf
Frank Dempsey, Head Teacher Turf Management, North Sydney Institute, Ryde College
Greg Miller, President, TGA NSW, Director TPA, Miller's Turf Supplies
Jeff Wearing, Wollongong City Council - NSW PLA Rep
Jenny Medway, IPP, DAFF
Jim Vaughan, Chief Executive Officer, Qld Turf Producers Association
John Cotter, President, Vic TPA; Vice President, TPA; Anco Turf, Vic
John Lloyd, Manager, Landscape Services, Parliament House
John Neylan, General Manager, Aust Golf Course Superintendents Assoc
John Odell, Course Superintendent, Royal Sydney Golf Club
Jolyon Burnett, Chief Executive Officer, Irrigation Association of Australia
Keith McIntyre, Representing TGAA - ACT region – Consultant Horticultural Engineering
Kris Newton, Chief Executive Officer, Horticulture Australia Council Ltd
Lynn Davidson, Director TPA; Jimboomba Turf, Qld

Martin Synan, Deputy Chairman, Australian Racecourse Managers Association, Assistant Racecourse Manager, Moonee Valley Racecourse
Peter Martin, Plant Breeding Institute, University of Sydney
Peter McMaugh, Turf Industry Advisory Committee, Turfgrass Scientific Services
Ray Moir, CEO, Turf Producers Australia
Robert Prince, Nursery & Garden Industry Association, NSW
Shane Holborn, Research Team Leader, Horticulture & Forestry Science, DPI Qld
Steve Shepherd, Brand Story
Suzanne Shearer, Coolabah Turf, Victoria
Tony Cross, President, Qld Turf Producers Assoc; Southern Pacific Turf
Tony Gander, Contracts Coordinator Centennial Parklands – NSW Parks and Leisure Australia representative
Victoria Anderson, General Manager, Industry Leadership & Development, DAFF

Richard Price, Managing Director, Kiri-ganai Research
Ken Moore, Project Consultant
Judy Andrews, Kiri-ganai Research