



## Planning or expanding a turf farm

Setting-up a new or expanding an existing turf farm without good planning is a recipe for disaster.

With most viable turf growing land in Australia costing \$20,000 or more per hectare (ha), a grower cannot afford to make mistakes – they must first do their homework.

To understand and justify your turf business development you will need to undertake significant research, including:

- **Understanding your market**
- **Growing the right turf varieties**
- **Knowing the characteristics of your soil and site**
- **Environmental considerations**
- **Local community expectations**
- **Water use requirements**
- **Knowing your state and local government rules and regulations**

- **Familiarising yourself with new growing, harvesting and transporting techniques**
- **Effective marketing and pricing strategies**

This edition of *Turf Facts* can help a turf grower plan for a profitable and environmentally sustainable new property or expansion, meet council requirements (where applicable as these vary across Australia) and maintain a 'social licence' to operate into the future.

### Land use planning for turf farms

Different state governments and local councils have different planning requirements for sustainable agricultural development, including turf, on rural lands. A grower may need to address certain requirements with local consent from authorities (local council or state government) through a *Development Application* (DA).

The DA can be used to help identify areas most suited to agricultural development, ensure ongoing support for long-term agricultural investment and help determine land use regulations along with water allocations.

Refer to *Appendix 1* for information required in a DA. Further land-use planning information and turf farm development requirements should be sought from your local council.

Continued...

## Planning or expanding a turf farm (cont.)

### Environmental protection

Planning to maintain and/or improve our environment is becoming an increasingly important issue.

Most development approvals are the responsibility of local council authorities who may vary planning and approval requirements within the various State Government environmental legislations.

For example in New South Wales (NSW), turf farms are classified as designated developments, under the Environmental Planning and Assessment (EP&A) Act (1979), when they satisfy the following location criteria:

- (i) Within 100 metres (m) of a natural waterbody or wetland, or
- (ii) In an area of high water table or acid sulphate, sodic or saline soils, or
- (iii) Within a drinking water catchment, or
- (iv) Within 250m of another turf farm, or
- (v) Because of their location, are likely to significantly affect the environment.

### Site selection

Well sited turf farms should match the land and soil capability for cropping. The NSW Office of Environment and Heritage has mapped land and soil capability classes to determine degradation risks. Land capability is classified into three classes. Classes 1 and 2 have the best capability to be intensively cropped. Class 3 land is also capable to withstand cropping, however, standard management practices are required to minimise or avoid issues such as soil erosion, sedimentation and nutrient run-off into local waterways. Check with your local government authorities before siting or extending a turf farm to ensure will not contravene existing land classifications.



THE MOST COSTLY TURF TO GROW ON A TURF FARM IS THAT WHICH CANNOT BE HARVESTED. PLANNING YOUR SOIL, IRRIGATION AND DRAINAGE MANAGEMENT IS ESSENTIAL PRIOR TO DEVELOPING YOUR TURF FARM.

### Soil management

It is in every grower's interest to protect the topsoil of their farm and the following recommendations can assist in ensuring continued productivity:

- Collate soil data to prepare a **Soil Management Plan** that addresses and prevents the loss of top soil. Refer to *Appendix 1* for required soil data information.
- Maintain a vegetative buffer surrounding the production area with at least 80 per cent groundcover to reduce erosion risk and dust/sediments entering waterways.
- Apply rubber matting, sand, asphalt, cement or rubble to high traffic areas to reduce dust, mud and soil erosion.
- Avoid slopes greater than 10 per cent due to the increased risk of soil erosion, particularly if minimal vegetation (however a slight slope encourages drainage).
- Use soil aerators where appropriate to ensure water and nutrients are incorporated into the soil and to minimise runoff. Aeration straight after harvest followed by an addition of poultry manure to manage compaction and encourage quicker re-growth has been reported to provide up to 50 per cent quicker re-growth for up to four weeks after the harvest.

### Water management

Irrigation is essential for turf farming and turf farm developments should consider the following:

- Preparation of an **Irrigation and Drainage Management Plan** that demonstrates how the water will be managed. This should describe the irrigation system and proposed scheduling along with a Water Budget that provides figures on rainfall, evapo-transpiration, runoff and infiltration, etc...
- The suitability of the soils in the proposed turf area for irrigation, including soil texture, depth and hydraulic conductivity.
- Confirmation of lawful access to water including suitable quantity, quality and reliability. The use of ground/surface water or access to an irrigation scheme usually requires a licence or approval. Typically, turf production requires 6 to 8 mega litres (ML) / ha / year however, increasing soil organic matter can reduce water requirements.
- The impact of surface water runoff from turf farms during storm events. These events can transport soil, weed seeds, pesticides and fertilisers including manure into waterways. Excessive nutrient or water extraction can also affect groundwater. Assessments of turf farming proposals are usually more vigorous where natural water systems may be affected.
- Turf farms within 100m of a natural water body, in areas of high water table and within a drinking water catchment may trigger development restrictions. It is imperative growers' check their state's EP&A Act before establishing an irrigation system.
- Tail-water or stormwater collection dams should be constructed (except in high flood zones). Structures should be large enough to contain the first 10 millimetres (mm) of runoff from the turf farm.
- Appropriate management of fertilisers and pesticides to avoid negative impacts to groundwater.

Recommended management practices to reduce some water issues, include:

- Maintaining grass or plant covered buffers between turf harvesting areas and waterways to assist in reducing erosion and runoff.





Your choice of irrigation will affect your turf farm efficiency and overall profitability.

- Where practical, manage surface water by separating “clean” (rainwater) from “dirty” or grey water. Water from washing down equipment can pollute waterways and should be directed to grassed areas before it leaves the property.
- Recycled water can be productively reused on paddocks.

### Manure management

Fertilisers, soil improvers and manures commonly used on turf farms can pollute water bodies. Each state’s Department of Agriculture or Primary Industries should have information which addresses manure management practices, such as:

- A list of the most commonly used fertilisers/manure, quantities and associated methods of application and storage.
- Ensuring an ongoing soil test regime to determine nutrient requirements.

Poultry manure can emit an odour (ammonia) and attract flies, particularly during hot weather. It can also contaminate waterways. Overloading fertiliser on soils will additionally create a nutrient imbalance that can contaminate runoff and ground water and encourage weed and algal growth, which chokes the waterways.

## CARE SHOULD BE TAKEN WHEN SPREADING MANURE TO AVOID CONTAMINATING ROADWAYS ...

Leaching is the downward movement into the soil of water borne nutrients – this would occur to some extent to manure piles exposed to rain. Poultry manure will form a sealed surface crust once it dries, however if a stockpile is delivered in a dry state it does not always have a crust. Until this crust forms, odour levels are at their highest in this wet state. Therefore, if manure is stockpiled, avoid flood-prone sites and/or spread it as soon as possible. Ideally manure should be stored in a purpose-built covered loading bay with an impervious base.

Care should be taken when spreading manure to avoid contaminating roadways, waterways and significant drainage lines:

- Poultry manure piles should be located above dams or diversion drains so that any released nutrient is captured before overflow to waterways.
- Spread manure when climatic conditions are favourable, for example, no wind, or when the wind is blowing away from populated areas and on a sunny day. Spreading when the

sunlight is strongest during the middle of the day will assist in the breaking down of odorous particles.

- Spread manure when turf is adequately re-established, usually when there is at least 25 per cent groundcover.
- Spread manure when people are not normally at home, such as during school hours.
- Where suitable, keep neighbours informed, allowing them time to prepare for the event by closing windows and bringing in any washing.
- Balance the application of manure (and fertiliser) with crop nutrient needs.
- Site the manure bay/composting area downwind from nearby neighbours.

(refer to *Turf Australia* Spring 2016 - *Growers need to understand nutrient requirements of their turf*. The article by Dr Mick Battam from AgEnviro Solutions is an important reference for growers in terms of understanding the importance of soil and turfs’ nutrient requirements.)



On farm storage and spreading of poultry manure requires careful management for optimal turf growth and to maintain your social licence to operate within your community.

### Emergency management plans

Planning for emergencies (flood, storms or fire) at a local and individual business level allows better coordination of emergency management responses by the relevant authorities.

Emergency plans should:

- Identify and analyse the likely risks.
- Consider preventative measures to minimise risks.
- Identify responses and responsibilities where equipment, for example, irrigation pumps, tractors, turf cutters may need to be moved from low lying areas during floods.
- Identify strategies for recovery, such as financial and operational arrangements.

### Amenity risks and potential conflict management

Turf farms can produce off-site environmental impacts such as noise, drift of herbicide sprays and odour when poultry manure or any nutrient is being spread. These may cause conflict, particularly with nearby residents. A **Property Management Plan** (PMP) is a tool to help demonstrate how potential environmental impacts of a proposal can be adequately managed (refer to *Appendix 1*).

## The PMP could include the following:

### Separation Buffers

The determination of appropriate separations should take into consideration distance, terrain, vegetation, landform and adjoining land use. Consent authorities will need to determine who provides the separation areas and the grower may need to justify the separation distances proposed, such as ensuring separation between:

- Water bodies (generally at least 20m)
- Dwellings (generally at least 100m), and
- other developments.

### Pesticides and Herbicides

The potential for pesticide/herbicide drift onto non-target areas such as vegetable crops should be addressed. In particular, assess the possible impacts of using hormonal type herbicides (for example, 2,4-D, MCPA).

**Keep a Register or Log Book** of pesticides/herbicides proposed to be used and their application according to the label use conditions. Contact your local relevant State Department for more advice.

### Noise

Noise complaints can arise from turf farming activities. A map of your proposed development should indicate the location of neighbours and any form of mitigation, such as designated areas for trees and/or shrubs.

For instance, the NSW Industrial Noise Policy specifies noise at a residence in a rural area should not exceed 55 decibel (dB) between the hours of 7am (8am Sun) and 6pm, 50dB between 7pm and 10pm and 45 dB between 10pm and 7am. In rural areas where the dwelling is remote from the boundary, the point of measurement should be within 30m of the complainant's dwelling on the side closest to the noise. The general noise level targets for protecting against intrusive noise is the background noise level plus 5dB. The Office of Environment and Heritage has various guides on noise control and regulation for each state.

### Hours of operation

Turf farms should not be subject to restricted hours of operation, however, night operations should comply with noise regulations.

### Traffic generation

Turf farms generate traffic by employees, suppliers, operations and the sales process. The establishment of a new turf enterprise, or an expansion, will generally increase the level of traffic on local roads.

Assess the number of vehicle movements per day and the effect such increases will have on the normal traffic flow on the access road(s).

Note the suitability of entrances to the turf farm, with respect to road safety.

### Waste management

Turf farms have the potential to generate small amounts of waste. Examples of wastes are used pesticide containers, fertiliser bags, fuel drums and unsaleable turf rolls which will all require management.

The proposed method of waste disposal and handling should be included in any turf farm development proposal.

### Work Health and Safety

(refer to *Turf Facts* Production 2016-09 – *Safety Culture Pays Off*)



*Turf farms are often located on a urban fringe and, as a result, farming practices need to be acceptable to the local community.*

### For more information:

Each State's Department of Primary Industries has additional web based information as well as publications related to planning for agricultural establishment:

QLD - [www.daf.qld.gov.au](http://www.daf.qld.gov.au)

NSW - [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

VIC - <http://agriculture.vic.gov.au/agriculture>

WA - [www.agric.wa.gov.au](http://www.agric.wa.gov.au)

### See also:

*Preparing Intensive Plant Agriculture Developments*, 2011 - [http://www.dpi.nsw.gov.au/data/assets/pdf\\_file/0009/422982/Preparing-intensive-plant-agriculture-development-applications.pdf](http://www.dpi.nsw.gov.au/data/assets/pdf_file/0009/422982/Preparing-intensive-plant-agriculture-development-applications.pdf)

*Assessing Intensive Plant Agriculture Developments*, 2011 - <http://www.dpi.nsw.gov.au/content/agriculture/resources/lup/development-assessment/plant-devs>

*Best Practice Guidelines for using poultry litter on pastures*, 2011 - [http://www.dpi.nsw.gov.au/data/assets/pdf\\_file/0004/140359/Best-practice-guidelines-for-using-poultry-litter-on-pastures.pdf](http://www.dpi.nsw.gov.au/data/assets/pdf_file/0004/140359/Best-practice-guidelines-for-using-poultry-litter-on-pastures.pdf)

*Land Use Conflict Risk Assessment (LUCRA) Guide*, 2011 - [http://www.dpi.nsw.gov.au/data/assets/pdf\\_file/0018/412551/Land-use-conflict-risk-assessment-LUCRA-guide.pdf](http://www.dpi.nsw.gov.au/data/assets/pdf_file/0018/412551/Land-use-conflict-risk-assessment-LUCRA-guide.pdf)

*Living and Working in Rural Areas*, 2007 - [www.dpi.nsw.gov.au/data/assets/pdf\\_file/0020/210188/Living-and-working-in-rural-areas-Ch0.pdf](http://www.dpi.nsw.gov.au/data/assets/pdf_file/0020/210188/Living-and-working-in-rural-areas-Ch0.pdf)

*Planning for turf farms*, Prime Fact 1320: [http://www.dpi.nsw.gov.au/data/assets/pdf\\_file/0020/504722/Planning-for-Turf-Farms.pdf](http://www.dpi.nsw.gov.au/data/assets/pdf_file/0020/504722/Planning-for-Turf-Farms.pdf)

### Land and soil capability maps:

QLD - [www.qld.gov.au/environment/land/soil/soil-data/](http://www.qld.gov.au/environment/land/soil/soil-data/)

NSW - <http://mapdata.environment.nsw.gov.au/geonetwork/srv/en/main.home>

VIC - [http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/land\\_capability](http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/land_capability)

WA - [www.agric.wa.gov.au/land-use-planning/land-capability-assessment](http://www.agric.wa.gov.au/land-use-planning/land-capability-assessment)

## Appendix 1:

### Information to include in a Development Application (DA) or when preparing a Property Management Plan for a turf farm.

#### Physical soils data

- Depth of a horizon
- Depth to water table (can be estimated from relevant published information)
- Depth to bedrock (can be estimated from relevant published information)
- Particle size analysis
- Dispersion
- Plastic limit
- Infiltration capacity
- Hydraulic conductivity (permeability)

#### Water data

- Evapo-transpiration
- Water Budgets
- Chemical soils data (for both top soil and sub-soil)
- A standard full analysis including pH, EC (salinity), P, S, Cl, exchangeable cations and organic matter

#### Meteorological data

- Wind direction
- Rainfall
- Evaporation

*Developing your turf farm is not all about the turf growing aspects, it also requires knowing what turf varieties to grow along with effective marketing and pricing strategies.*

### Property plan

The plan should:

- be at a scale of 1:1000 to 1:4000
- show topographic features
- show Northcote soil types
- show existing vegetation (type and location)
- show land capability (potential for erosion) and agricultural land suitability classes
- indicate areas to be cleared (if any)
- indicate erosion and sediment control structures which are in place, proposed or approved
- indicate locality plan and details of proposed development
- indicate proposed buffer zones
- indicate land uses on adjacent lands
- show buildings
- indicate adjacent development, including residential, rural residential, towns and villages
- show water courses and other water bodies

### Topographic Map

A topographic map to identify features of the site:

- slope gradients (maximum gradient 10 per cent)
- existing erosion (including stream bank erosion)
- drainage pattern
- water courses, wetlands
- areas subject to flooding – especially buildings
- contours/banks





## Wise Turf Farm Planning advice from fellow growers:



**Adrian Pitsikas, Greenacres Turf Group, Western Australia**

An economic rationale for any turf farm expansion is needed. Don't just expand because you can, this is a recipe for disaster. To understand and justify your economic rationale, you need to do your research, specifically:



- **Market research:** Including new housing approvals; infrastructure and community developments; landscaper, garden and lawn maintenance service expansion; turf variety selection; etc...
- **Researching, predicting and monitoring water use:** Large developments involving water usage in Western Australia (WA) require ongoing water use monitoring by a third party and provision of quarterly reports.
- **If larger irrigation pumps are required:** Talk with your electricity supplier to ensure if the current electricity infrastructure can provide the increased power capacity. If not, the expense required to upgrade your power supply will need to be researched and considered.
- **Gaining the appropriate state and local government approvals:** Including land use planning and, the big one in WA, water allocation. A total of 11 government approvals were required for the most recent expansion of Greenacres Turf Group. This included negotiations with the Local Council, the Local Landcare Group, the Department of Agriculture, the Department of the Environment, and, the big one, the Department of Water.
- **A mandatory consultation period:** During which the proposed development needs to be advertised and neighbours consulted.
- **If expanding and your business goes over certain threshold levels:** Such as payroll or turnover, you may be liable for additional taxes, such as payroll tax, or subject to other regulations, such as unfair dismissal legislation.



**John Keleher, Australian Lawn Concepts, Queensland**

Assessing the viability of your proposed turf farm development or land acquisition is essential. This not only includes determining the profitability of a growing premium versus a common grass variety, it also includes where are you going to get new information and best practices from?



From my experience, it pays to ensure the best ground preparation right from the start. This includes laser levelling, drainage and soil preparation as all these things have a big bearing on the resulting crop performance.

Also, stewardship of the land, and your activities on it, are very important. Every turf farm is part of community and therefore has a social responsibility to consider. By keeping the presentation of all of your farm blocks like they are prepared for sale can help, and you may be able to capitalise on an unexpected sale opportunity.

Get involved with and support your farming and turf associations. Field days, conferences, seminars and farm tours will help you keep abreast of technological development and adopt new practices like 'Precision Farming'.

Importantly, determine your acceptable level of profitability and pay close attention to marketing. Growing turf these days is easy. The hard bit is receiving the best, most profitable return for your product.

As turf farms sell direct to the end user, turf growers are in control of the retail price of turf. Your marketing and pricing strategies, therefore, need to ensure your customers recognise the inherent value of turf and other areas of value-adding (such as delivery and lawn care products) should also be considered.

And finally, use management systems that are world class. Environmental management, Work Health & Safety, industrial relations, accounting (for profit and for tax purposes), production, order management and transporting are all important components of, in many cases, multi-million dollar turf farm businesses. As the business owner, it is your job to manage the lot and not adopt a 'she'll be right' attitude. You need to set high standards for you and your staff from the start, which includes transparency and accountability across all fronts of business management.

### Acknowledgements

The following people are thanked for their contribution to this *Turf Facts*:

Matthew Plunkett, Greater Sydney Local Lands Services,  
Peter McMaugh, Turfgrass Scientific Services Pty Ltd  
Ashley Senn, NSW Department of Primary Industries  
Andrew Docking, NSW Department of Primary Industries  
John Keleher – Australian Lawn Concepts  
Adrian Pitsikas – Greenacres Turf Group

### Disclaimer:

*The information contained in this publication is based on knowledge and understanding at the time of writing (October 2016). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the Department of Primary Industries or the user's independent adviser.*

*Published by Turf Australia.*