

Planning for turf farms

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Introduction

This guideline has been developed by the Department of Primary Industries (DPI) to support the sustainable development of turf farming in New South Wales.

The purpose of this primefact is to:

- provide local consent authorities with a clear set of requirements that should be addressed in development applications (DA) for turf farming,
- promote establishment of turf farms in areas which allow long-term sustainable operation,
- assist the turf industry to minimise effects on the environment, adjoining landholders and the general community by identifying the environmental management considerations.

The first section of the guideline lists the resource requirements to be addressed in the development approval process. Details of the specific information the applicant and consent authorities should consider can be found in *Appendix 1*.

This Primefact assists in streamlining the DA process by helping applicants identify the appropriate information to consider and include in their (DA), and by minimising the need for council to refer specific proposals to DPI for comment.

Turf farming is a form of intensive plant agriculture which produces grass sod for commercial and domestic use. The application of turf plays a vital role in erosion control at many development sites. The industry is primarily located on flat, fertile and often flood-prone agricultural land.

Turf farming is a valuable industry which augments the amenity values of a range of urban landscapes and sporting facilities. The NSW turf industry gross value in 2011 was \$81 million and employed 328 fulltime workers.

Councils are the local planning and development authority in NSW. All DA enquiries for turf farms should be directed to the local council.

Image 1: Turf farming in the Richmond lowlands, NSW



Strategic Planning for Turf Farms

Councils are encouraged to strategically plan for sustainable agriculture, including turf development on rural lands. The areas most suited to the location of these agricultural development opportunities need to provide for and support agricultural investment in the long term.

The standard Local Environmental Plan (LEP) definitions for turf farming are located under intensive plant agriculture.

Standard LEP Definitions¹:

intensive plant agriculture means any of the following carried out for commercial purposes:

- (a) the cultivation of irrigated crops (other than irrigated pasture or fodder crops),
- (b) horticulture,
- (c) turf farming,
- (d) viticulture

turf farming means the commercial cultivation of turf for sale and the removal of turf for that purpose

DPI recommends the following guiding principles to help plan for turf farms:

- Turf farming locations are consistent with councils' strategic planning policies and zone objectives,
- Land use conflicts are minimised, amenity values are protected and the expectations of local communities are managed,
- Turf farms are designed and sustainably managed to minimise environmental impacts, this may require referring development proposals, near or on sensitive areas, to certain authorities which could trigger a higher level of assessment, such as an Environmental Impact Statement,
- Agricultural development proposals that fragment rural resources, increase residential densities, and / or increase land use conflict risks are unsuitable for Primary Production Zones (RU1) or most Rural 1(a).

Subdivision and Rural Workers Dwellings

Subdivision for turf facilities is not supported unless the proposed development satisfies the relevant zone objectives, planning criteria and strategic considerations. The risk of current and future land use conflict also needs to be assessed.

Turf farms do not usually require rural workers to reside on site.

Further information is available in DPI prime facts on [Farm Subdivision](#) and [Rural Workers Dwellings](#)

Environmental Protection

The framework for obtaining planning approval for developments is set down in the NSW

Environmental Planning and Assessment (EP&A) Act (1979) and the Protection of Environment Operations (PoEO) Act (1997).

Most development approval is vested in local government authorities who may vary planning and approval requirements within these two legislative frameworks.

The main statutory requirement under the PoEO Act (1997) is that the proposed turf farm is an activity consistent with the zoning tables, listed in the LEP. Amendments to Schedule 3 of the EP&A Act (1979) enable local councils to determine the need for an environmental review, depending on the intensity of the development.

Turf farms are classified as designated developments, under the EP&A Act (1979), when they satisfy the following location criteria:

- (i) within 100 metres of a natural waterbody or wetland, or
 - (ii) in an area of high watertable or acid sulphate, sodic or saline soils, or
 - (iii) within a drinking water catchment, or
 - (iv) within 250 metres of another turf farm, and
- (b) that, 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 Office of Environment and Heritage has mapped land and soil capability classes for NSW to determine degradation risks. 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.

Recommended Site Assessment:

- Restrict development to alluvial agricultural land or land capability class 1 to 3,
- Provide a description of the soil profile to at least 1 metre in the Northcote Soil Classification system and provide full soil chemical analysis of the surface and sub-soil,
- Areas identified as an acid sulphate soil risk will require additional assessment (refer to Appendix 1).

Soil management

It is in every grower's interest to protect the topsoil of their farm. The protection of this valuable resource is essential for the long-term

¹ Standard Instrument (Local Environmental Plans) Order 2006

future of the enterprise. The following recommendations could assist in improving soil management on farms;

- Collate soil data (Appendix 1) to prepare a soil management plan to address and prevent loss of top soil,
- Maintain a vegetative buffer surrounding the production area with at least 80% 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% 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. It is common for turf farmers to aerate straight after harvest followed by an addition of poultry manure to manage compaction and encourage quicker re-growth. Aeration straight after harvest is reported to provide up to 50% quicker re-growth for up to 4 weeks after the harvest.

Image 2: A vegetative screen assists to capture wind blown dust particles



Water Management

Irrigation is essential for turf farming. Planning proposals should consider the following water management parameters:

- Irrigation and drainage management plan or equivalent that demonstrates how the water will be managed. Description of the irrigation system proposed including a detailed water budget listing water balance parameters of rainfall, evapo-transpiration, runoff and infiltration; and irrigation modernisation and scheduling to be used,
- Suitability of the proposed turf area soils for irrigation, including soil texture, depth and hydraulic conductivity,
- Confirmation that there is lawful access to water of 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 ML / ha / year – increasing soil organic matter will reduce water requirements,
- The impact of surface water runoff from turf farms during storm events. These events can transport soil, pasture and weed seeds, pesticides and fertilisers including manure into waterways such as rivers, lakes and estuaries. Excessive nutrients or water extraction can also affect groundwater. Assessments of turf farming proposals are more vigorous where natural water systems may be affected,
- Turf farms within 100 metres of a natural water body, in areas of high water table and within a drinking water catchment may trigger designated development as outlined in Schedule 3 of the EP&A Act. Ponds provided to control runoff from the proposed turf farm are excluded from the provision of separation distances,
- Tail-water or stormwater collection dams should be constructed, (except in high flood zones which could destroy them). Structures should be large enough to contain the first 10mm of run-off from the turf farm,
- Appropriate management of fertilisers and pesticides to avoid negative impacts to groundwater.

Recommended management practices to reduce some of these water issues could include:

- Maintaining well pastured buffers between turf harvesting areas and waterways to assist in reducing erosion and runoff,
- 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. Subject to requirements in the NSW farm dams policy, clean water may be captured on site or allowed to re- enter the natural water system,
- Recycled water can be productively reused on paddocks.

Manure Management

Fertilisers, soil improvers and manures can pollute water bodies. The DA needs to address manure management practices such as:

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

Image 3: The grassed area between turf and a waterway captures nutrients and soil run-off



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.

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, i.e. no wind or when wind 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 breaking down odorous particles,
- Spread manure when turf is adequately re-established usually when there is 25% 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.

Image 4: Deliveries of bulk poultry manure should be sited away from waterways and spread as soon as practical



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 e.g. 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.

Fact sheets on the DPI website contain [further information on planning for emergency management](#).

Amenity Issues and Additional Conflict Risks

Turf farms can produce off-site environmental impacts such as noise, drift of herbicide sprays and odour when poultry manure is being spread. These may cause conflict, particularly with nearby residents. A property management plan (PMP) is an available tool to help demonstrate how any potential environmental impact of the proposal can be adequately managed. The plan 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. The applicant will need to justify the separation distances provided in the DA.

- Ensure separation between water bodies (generally at least 20 metres), dwellings (generally at least 100 metres) and other developments.

Pesticides and Herbicides

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

- Keep a register of pesticides / herbicides proposed to be used and their application according to the label use conditions.

Noise

Noise complaints can arise from turf farming activities. The map in the DA should indicate the location of neighbours and any mitigation to potential sensitive receptors.

The NSW Industrial Noise Policy specifies amenity criteria, for example, noise at a residence in a rural area should not exceed 55 dB between the hours of 7 am (8 am Sun) and 6 pm, 50 dB between 7 pm and 10 pm and 45 dB between 10 pm and 7 am. In rural areas where the dwelling is remote from the boundary, the point of measurement should be within 30 metres 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 5 dB. The Office of Environment and Heritage has various guides on noise control and regulation.

Hours of operation

Turf farms should not have 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 will generally increase the level of traffic on local roads.

- Assess the number of vehicle movements per day and the effect such increase 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 must be included in the proposal.

More information

DPI has additional web based information (www.dpi.nsw.gov.au) and publications related to planning for agricultural establishments. See in particular:

- [Preparing Intensive Plant Agriculture Developments](#), 2011
- [Assessing Intensive Plant Agriculture Developments](#), 2011
- [Fertilisers for pastures](#), 2005
- [Best Practice Guidelines for using poultry litter on pastures](#), 2011
- [Land Use Conflict Risk Assessment \(LUCRA\) Guide](#), 2011

- [Living and Working in Rural Areas](#), 2007

Other useful resources include:

[Farm Dam Policies](#) – contact your local water licensing officer at NSW Office of Water before presenting your DA to council.

Land and Soil Capability Maps,
<http://mapdata.environment.nsw.gov.au/geonetwark/srv/en/main.home>

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This NSW Guideline will be reviewed occasionally to allow for changes in the industry and planning controls. People and organisations wishing to raise matters for consideration in any review are invited to write to:

Agricultural Land Use Planning
 Department of Primary Industries
 Locked Bag 21, ORANGE 2800

For updates go to
www.dpi.nsw.gov.au/factsheets

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (February 2014). 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.

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Appendix 1: Information to include in the DA or when preparing a property management plan.

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

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%)
- existing erosion (including stream bank erosion)
- drainage pattern
- water courses, wetlands
- areas subject to flooding – especially buildings
- contours/banks.