Department of Primary Industries

FACTSHEET

Assessing Intensive Plant Agriculture Developments

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This Factsheet sets out the relevant agricultural issues for consent authorities to consider when assessing a proposal to develop rural land for intensive plant agriculture including viticulture and horticultural proposals.

This factsheet is part of a series that helps streamline the development application (DA) process, by setting out the key agricultural issues, impacts and recommendations for consent authorities to consider. Preparing a Development Application for intensive agriculture in NSW and Preparing intensive plant agriculture Development Applications may provide further information.

Only those proposals that might trigger integrated development under the *Environmental Planning and Assessment Act 1979*, the provisions of the *Fisheries Management Act 1994*, *the Mining Act 1992*, or the *Plantations and Reafforestation (Code) Regulation 2001* should still be routinely referred to NSW Department of Primary Industries (NSW DPI).

The factsheet focuses on agricultural issues rather than the full range of issues that consent authorities must address.

Intensive plant agriculture DAs may also require the applicant or Council to seek additional specialist advice from other government agencies and independent planning, agricultural and/or agri-business consultants with relevant expertise.

What is Intensive Plant Agriculture?

Intensive plant agriculture and various component activities are defined in the Standard Instrument - Local Environmental Plans (LEP) Order 2006[1].

Table 1 lists the types of agriculture covered by each term as defined in the Standard Instrument.

Older LEPs have varied definitions that may not be in the Standard Instrument.

Table 1 Standard Instrument Definitions

Standard LEP Definitions	Type of development
Intensive Plant Agriculture	Any of the following carried out for commercial purposes: a) cultivation of irrigated crops (other than pasture or fodder crops), b) horticulture, c) turf farming, d) viticulture
Horticulture	The cultivation of fruits, vegetables, mushrooms, nuts, cut flowers and foliage and nursery products for commercial purposes, but does not include retail sales or viticulture
Turf farming	Commercial cultivation of turf for sale and the removal of turf for that purpose
Viticulture	Cultivation of grapes for commercial purposes for use in the production of fresh or dried fruit or wine

The Standard Instrument LEP does not specifically define what comprises an irrigated crop (other than pasture or fodder crops), but this might include any irrigated vegetable, flower, fruit or nut, cotton or rice crop grown for commercial purposes.

This factsheet considers intensive plant agriculture including horticulture and viticulture. Turf farming will be covered by a separate factsheet in this series.

[1] Standard Instrument (Local Environmental Plans) Order 2006

Fresh, local vegetable production on alluvial soils at Maitland. Photo: Glenda Briggs.

Intensive Plant Agriculture Issues

Intensive plant agriculture is relatively labour intensive and can involve high capital investment. The production of fresh food, plants and cut flowers, provides employment and support for agricultural service industries (such as irrigation suppliers, seedling growers, retailers) that can result in flow on benefits including supporting the local and regional economies and communities.

Additional planning measures may consequently be considered to encourage intensive plant agriculture development.

Lands that are well suited for sustained high levels of agricultural production and particularly fresh food are a limited and finite resource. Hence it is critical to avoid:

- ☑ fragmenting important food producing land into lots that are not suitable for sustainable intensive plant agriculture, and
- ☑ restricting efficient primary industries production and investment which may result from increased land use conflict, inflated land values or reduced access to critical support services and water.

Development Application Assessment Guidelines

Consideration of site specific issues is essential to ensure sustainable agriculture development, especially on smaller lots.

The scale of the proposal and/or its location in relation to a sensitive site will determine whether a license is required under Schedule 1 of the Protection of the Environment Operations Act 1997 or if the proposal comprises 'Designated Development' in accordance with Schedule 1 of the Environmental Planning and Assessment Act 1979 (EP& A Act (1979). The NSW DPI booklet Preparing a DA for intensive agriculture in NSW explains these requirements.

When assessing development proposals for intensive plant agriculture developments, consent authorities should consider:

- ☑ consistency with the planning principles, objectives and provisions of the *State Environmental Planning Policy (SEPP) Rural Lands 2008* [2], regional and local strategic planning polices, zone objectives and relevant legislation (eg *EP&A Act 1979, POEO Act 1997*). Clause 10 of the *SEPP (Rural Lands) 2008* outlines broad matters to be considered for rural subdivisions or rural dwellings.
- ☑ consistency with other planning policies
- ☑ what definitions apply to the proposed development and whether consent is required
- ☑ its justification in a regional context, with the merits, community benefits and opportunity costs identified
- ☑ consistency with Council's settlement strategies
- ☑ if sufficient information has been provided to identify the impacts, risks and responses
- ☑ if there is a clear and demonstrated link between sustainable agricultural outcomes and any subdivision proposal, especially if additional dwelling entitlements would result, and
- ☑ if a mandatory legal water entitlement and access licence are suitable for the establishment and maintenance of the proposed development.

Consent authorities are also encouraged to verify that the DA considers:

- **A.** Appropriate lot sizes for efficient and profitable agricultural development
- **B.** Suitable, reliable water resources
- **C.** Suitable soil resources
- **D.** Land use conflict risks
- **E.** Additional sustainability factors
- **F.** Financial and physical commitment

Topics A to F are now discussed in detail.

[2] www.planning.nsw.gov.au/planningsystem/sepp.asp

A. Appropriate Lot Size

Local Environmental Plans prescribe minimum subdivision standards for a dwelling in rural areas (referred to as the Minimum Lot Size).

Minimum lot sizes developed from recent strategic reviews may provide a useful guide to determining lot sizes that are likely to support agricultural developments. This should include relevant provisions for all horticultural developments or irrigated crops.

However, minimum lot standards adopted in the 1970s or 1980s (typically 40 ha or 100 ha) focused on residential density in urban fringe areas rather than actually providing for sustainable agriculture.

Hence a site specific assessment is necessary to verify that the proposal has the relevant resources and capacity to support sustainable intensive plant development and avoid conflict.

Consent authorities should verify that the proposed site has sufficient area to:

- ☑ Allow for associated infrastructure, for instance; equipment sheds, packing or loading facilities, greenhouses, water storage, worker facilities, access routes etc)
- ☑ Allow for effective waste and stormwater management which may require diversion banks and holding ponds to capture, store, treat and reuse run off
- ☑ Allow for the rotation of annual crops to protect soil resources, control weeds and minimise pest and/or disease risks
- ☑ Provide effective set backs (or buffers) to:
  - protect biodiversity and catchment values
  - minimise amenity impacts on sensitive receptors (eg neighbouring houses). This may require an assessment of likely odour, noise, pesticide or dust impacts in accordance with current industry guidelines (eg Office of Environment and Heritage odour or noise guidelines).

    It is also critical to consider the zoning of adjoining lands and future land uses identified in planning strategies.

    This may impact on relatively small holdings with variable topography and high environmental values. The area that needs to be excluded from development (eg set backs, drainage lines, creeks, wetlands, areas of remnant vegetation or highly erodible slopes) can mean that a 40 hectare lot is required to secure a horticultural development area of just 10 hectares.

Lot size for a sustainable intensive plant agriculture development should extend beyond the actual productive area. Greenhouses with room to expand. Photo: Glenda Briggs.

- ☑ Optimise the use of specialist equipment or labour resources. For instance the minimum productive area to justify mechanical harvesting of grape vines, contract site management and wine sales is typically 10 ha in the Hunter Valley, but can range to 30 ha in the Balranald and Wentworth areas.
- ☑ Generate sufficient income when the crop is mature to cover all the operating costs and generate a profitable income to cover capital repayments.

  Gross margin budgets [3] for various enterprises might be helpful and provide an indication of the required scale for current and future market predictions.
- ☑ Support future industry expansion or adjustment in technology or practices. Although not essential, this can be crucial for making the best use of fixed assets and long depreciation time frames and to account for changes in markets and climate into the future.

MIA irrigated citrus. Photo: John Gasparotto.

[3] Farm budgets and costs NSW DPI website

B. Suitable, Reliable Water Resources

A reliable water supply is critical for horticultural and irrigated crop enterprises. Water quality is also important for crop growth rates and yields (and hence enterprise sustainability).

The use of ground or surface water or access to an irrigation scheme usually requires a licence or approval.

A Development Application should demonstrate consultation with the NSW Office of Water and /or a relevant irrigation expert to:

☑ Confirm lawful access to water of suitable quantity, quality and reliability.

Legal requirements such as Harvestable Rights and Water Sharing Plans set out rules to ensure that the use of water does not significantly restrict the rights of other water users, or environment flows.

Whilst a property may have a licence to extract a certain volume of water, this is a maximum and the volume actually available will depend on water flows in the stream, the allocation of ground water to each license holder or the type of license held.

☑ Identify the amount of water required by the proposed intensive plant enterprise.

The assessment of water needs should be based on the FAO Irrigation and Drainage Paper No 56 – Crop Evapotranspiration, Guidelines for computing crop water requirements[4].

An alternative approach is to analyse soil moisture availability, water availability and the impact of climate for crop irrigation requirements. Details are included in the irrigation and drainage management plan guidelines available on the website.

☑ Consider climate change impacts and on future seasonal variations. For instance a proposal to create a vineyard occupying half the site, might also consider water availability for future expansion, or for alternative crops.

☑ Confirm the capacity to economically extract the required water supplies. For instance, the depth to groundwater, the pumping rates, or the required water supply infrastructure could be cost prohibitive.

☑ Confirm the water is of suitable quality by testing water salinity and pH. Sedimentation or calcium chloride may also cause problems with irrigation equipment. The agfact Farm Water Quality and Treatment provides specific guidance.[5]

☑ Indentify the capacity to effectively manage the use of water on-site and avoid adverse environmental impacts. This might include:

- available dam capacity to harvest water and/or store water on site, or the feasibility of constructing this infrastructure
- the capacity to sustainably capture and dispose of or reuse run off from developments, and
- the risk of rising water tables or salinity caused by irrigation.

C. Suitable Soil Resources

Consent authorities should verify that the proposed site has:

☑ Sufficient area and depth of the appropriate soil types to sustain the proposed crops. This should include an assessment of the soil constraints (eg suitability for regular cropping, erosion risks, productive capacity).

Annual crops such as vegetables and many cut flowers require soils suitable for regular cultivation.

Viticultural developments are suitable for a wide range of soil types and steeper slopes.

Long lived orchard developments (eg fruit or nut trees or olives) are similarly suitable for a range of sites and soils.

☑ An assessment of the risk of contaminated land (eg due to previous chemical applications, dip sites, storage facilities) and how this will be managed.

☑ Appropriate soil types and land area to enable the productive and sustainable re-use of excess nutrients or manure without adverse environmental impacts.

If this is not feasible the applicant should demonstrate the capacity to sustainably dispose of such nutrients off site. This should

[4] Crop Evapotranspiration – Guidelines for computing crop water requirements, FAO Irrigation and Drainage Paper No 56. Food and Agriculture Organization of the United Nations, Rome 1998

[5] www.dpi.nsw.gov.au/agriculture/resources/water/quality/publications/treatment

include any relevant guidelines or best management practices for transport and re-use.

☑ Existing and emerging technologies might assist in offsetting specific site limitations (eg greenhouses and hydroponic production systems).

D. Land Use Conflict Risks

Intensive plant agriculture can involve a range of activities that might lead to conflict with adjoining properties.

Land use conflict may result from many factors such as dust generation, noise from harvesting activities chemical usage and spray drift and pest control methods such as “lawful” shooting of pests.

Understanding and managing land use conflict requires managers, decision makers and other affected stakeholders to fully appreciate the likely scale and frequency of such risks and the consequences for potentially affected parties.

Good communication between neighbours and monitoring (eg checking wind direction before cultivating paddocks) can greatly reduce the incidence and intensity of conflict and reduce opposition to intensive agricultural activities.

The overriding principal is that agricultural operations should not have significant adverse “off site” impacts on the environment. This includes; soil, water, vegetation and the local amenity (air quality, noise levels and visibility).

In all cases, early and regular consultation with consent authorities is recommended.

Protecting fruit orchards from insect pests and fungi can require spraying. Photo: Graham Johnston.

Avoiding land use conflict requires:

☑ Thorough planning, good communication, effective monitoring, and best practice management

☑ That compatible land uses are located within a zone and effective buffers or separation distances are adopted by all developments.

☑ Applicants to undertake a Land Use Conflict Risk Assessment (LUCRA), view the guide on our website.

☑ All neighbours (and in some cases the wider community) to be informed of pending intensive plant agriculture development proposals at the earliest appropriate time.

Strong neighbour or community support can help consent authorities in the deliberations and may influence the “conditions of consent” applied to the development.

☑ Checking Clause 10 of the SEPP (Rural Lands) 2008 which outlines some matters to be considered for rural subdivisions or rural dwellings to minimise the potential for land use conflict.

Preferred locations for Intensive Plant Agriculture include:

☑ Zones where intensive plant agriculture is a priority land use, such as RU1 Primary Production zones or RU4 Primary Production Small Lots.

☑ Within the rural zones it is preferable to select locations with:

- few houses and relatively large lots
- appropriate resources (e.g. alluvial soils and reliable irrigation options, as irrigation is particularly critical for successful greenhouse and horticulture)
- moderate to low rainfall locations
- good transport options and proximity to population centres (for farm labour and sales)
- access to relatively level sites this is important for polyhouse and hydroponic developments, but may be less relevant for fruit or nut orchards, and
- access to services (e.g. power, water, communication, road standards), specialist support, processors, markets and labour.

Location within a cluster of similar enterprises is often critical for tourist related sales, the

sharing of specialist equipment, cost effective technical or consultancy support and transport.

Where a high risk of conflict is identified possible consent conditions might include:

- ☑ developing an Environmental Management Plan
- ☑ maintaining a log of key farm activities (eg major traffic movements, cultivation or harvesting activities)
- ☑ maintaining a record of complaints and remedial actions and making these documents available for Council inspection in response to reasonable requests
- ☑ ensuring new non-agricultural developments on adjoining land (eg new dwellings) include mitigation of potential conflicts as part of their own approval

Banana and Macadamia plantations with vegetation buffers. Photo: Graham Johnston.

E. Additional Sustainability Factors

Proposals affecting native or remnant vegetation should comply with the *Native Vegetation Act 2003*. Council approval may also be required if a Tree Preservation Order applies.

The protection of vegetation, biodiversity and water quality is more readily achievable when the lots are of sufficient size to allow for effective buffers and avoid the need to develop the entire site for productive purposes.

Impacts on threatened species also need to be assessed. Habitat disturbance (such as bush rock removal or vegetation clearing) should be assessed according to section 5A of the *Environmental Planning and Assessment Act 1979.*

To demonstrate sustainability the proposal should:

- ☑ avoid or minimise disturbance to native vegetation (including the removal of individual large trees)
- ☑ consider the development of relevant marketing and business plans
- ☑ document adequate buffer areas, procedures and facilities to minimise the risk of disease spread to or from other sites with similar crops

F. Financial and Physical Commitment

When a proposal requests an additional dwelling, applicants should be required to demonstrate financial and physical commitment to the agricultural development prior to the approval of a dwelling.

This might include verifying the:

- ☑ lawful access to commercial quantities of water and licenses to access such water
- ☑ purchase and installation of critical infrastructure such as irrigation equipment, specialised machinery, storage or processing sheds
- ☑ establishment of a significant percentage of the proposed crop

Additional Reading

The NSW DPI website (www.dpi.nsw.gov.au) has additional publications related to intensive plant agriculture, water and soils.

See in particular:

- ☑ Preparing a development application for intensive agriculture (NSW DPI, 2006).
- ☑ Preparing Intensive Plant Agriculture Development Applications
- ☑ Guidelines for the development of Controlled Environment Horticulture (NSW DPI, 2005).
- ☑ Sustainable Horticulture (Primefact 144 NSW DPI, March 2006)
- ☑ Land Use Conflict Risk Assessment Guide (Factsheet 1134 NSW DPI October 2011)
- ☑ Farm subdivision assessment factsheet (Primefact 972, NSW DPI December 2009)
- ☑ Grapevine management Guide 2008-09 Agdex 241/10

- ☑ Put yourself in the picture – Caring for your small rural property, 2006. (NSW DPI 2006)
- ☑ Living and Working in Rural Areas; (NSWDPI 2007)
- ☑ PROfarm educational courses
- ☑ Some precautions when buying rural land (NSW DPI, 2011)

Other useful resources include

- ☑ Rural Landholders water rights; and water sharing plans
- ☑ Australian Code of Practice for On-Farm Irrigation 2001 ISBN 0 7347 118214
- ☑ Irrigation and Drainage Management Plan Guidelines (NSW Agriculture, 2002)
- ☑ Farm Water Quality and Treatment (Agnote NSW DPI, 2005)
- ☑ Irrigation and salinity publications available on our website
- ☑ Interpreting water quality test results Agnote (NSW DPI, May 2004)
- ☑ Rural Workers Dwellings (Primefact NSW DPI, 2008)
- ☑ Development Assessment guidelines for Turf Farms (in progress)
- ☑ Productivity Commission/ Australian Bureau of Statistics 2006 Characteristics of Australia's Irrigated Farms 2000-01 to 2003-04. Commonwealth of Australia

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