



# primefacts

FOR PROFITABLE, ADAPTIVE AND SUSTAINABLE PRIMARY INDUSTRIES

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RURAL DEVELOPMENT GUIDELINES

## Agricultural issues for landfill developments

**Mary Kovac and Wendy Goodburn**

Resources Planning and Development Unit

**The purpose of this Primefact is to help consent authorities plan for and assess landfill facilities in rural areas.**

Landfill developments are defined in the Standard Instrument (Local Environmental Plan) Order 2006 as waste disposal facilities and waste or resource management facilities. Waste resource transfer stations are not specifically addressed in this Primefact.

This guide is part of a series aimed at streamlining the Development Application (DA) process, by setting out the key agricultural issues, impacts and recommendations for consent authorities to consider.

The guideline may additionally help applicants, developers, consultants and the general public identify important design considerations to avoid adverse impacts on agricultural resources and land use.

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

Proposals which 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 continue to be referred to the relevant section of Industry and Investment NSW (I&I NSW).

### Planning for landfill developments

Councils are encouraged to develop strategic plans that identify desired planning outcomes for rural lands. These plans should consider local and regional primary industry resources, sustainable development opportunities for primary industries,

the need for waste facilities and the minimisation of land use conflict.

### Development assessment guiding principles:

- Landfills are consistent with strategic planning policies and zone objectives.
- Landfills are designed and sustainably managed to minimise environmental impacts, including biosecurity risks.
- Landfills are clearly justified in a regional context with the merits and community benefits and opportunity costs clearly identified.



*The impact of landfills on adjoining farm land should be carefully considered. Photo: A. Cullen-Ward, Bathurst Regional Council.*

- Land use conflicts are minimised, amenity values are protected and the expectations of local communities are managed.
- DAs identify suitable mitigatory and monitoring responses that address the following issues:
  - Agricultural land and operational Impacts
  - Water resources and fisheries Impacts
  - Rehabilitation and soil management
  - Biosecurity, pests and weeds
  - DrumMUSTER, livestock welfare, and emergency management.
  - Community consultation and project justification.

## Development assessment guidelines

### Agricultural land and operational impacts

Consent authorities should verify that development proposals for landfill sites on rural resource lands comprehensively document:

- Agricultural operations in the surrounding locality (grazing or cropping enterprises, intensive agriculture or horticulture) including groundwater usage and relevant agricultural improvements such as houses, sheds, cropping areas, irrigation systems, improved pastures.
- The predominant landuse of the site and the total area that would be removed from agricultural use during landfill operations.
- The location and total area of the property in addition to the specific location of the proposed landfill and the area to be disturbed.
- Soil landscapes and soil types on the site including depth to bedrock, or impervious clays and the suitability and volume of available top soil to rehabilitate the site. See suggested websites in the Addition Information section.
- The potential impacts on agricultural enterprises and rural landholders, possible cumulative effects, the relative risks associated with those impacts and effective mitigation strategies.

*Specific issues to consider include:*

- Current land uses in the area and any loss of agricultural lands. Include land removed from agricultural use in order to ensure a safe working environment or to prevent injury to livestock and wildlife.
- Predicted operating life span of the facility, proposed hours of operation (including construction periods)
- Opportunities for the safe disposal of dead animals / birds from local agricultural operations or veterinary surgeries.
- Proposed access routes and arrangements and associated noise and traffic impacts on farm residences and farming operations.
- Dust and windblown litter impacts on nearby farm residences, pastures, crops and livestock.
- Visual and lighting impacts on nearby farm residences and farming operations.
- Opportunities for the productive re-use of organic material and methane.

Impacts on Biosecurity, Water Resources and the management of Emergency incidents should also be considered (see subsequent sections).



*Vegetative screening improves the amenity of landfills and can capture debris. Photo: W Goodburn.*

### Water resource and fisheries impacts

Water is a critical resource for sustainable farming enterprises and the environment in which they operate.

*Applications for landfill developments should:*

- Identify catchment boundaries and current ground and surface water resources, water management arrangements and water quality.
- Describe current / historic water quality and usage for irrigation, stock requirements and other uses.
- Identify and map existing drainage patterns water storages (including farm dams), local water bores or pumping sites and potential impacts or threats to these. Describe and map proposed water diversions or other drainage structures, including measures to divert and hold clean run off.
- Describe predicted leachate volumes and quality and seepage pathways including the lateral movement of leachate.
- Develop a water balance model to document the volume of run on and run off water and leachates, on site water requirements (eg to manage dust levels) and any water deficit or surplus.
- Develop a nutrient budget for leachate and related soil and pasture management plans. An accumulation of nutrients and salts may lead to pasture failure, weed growth and soil erosion.
- Design and model any potential impact of the landfill development on local flooding that could impact on agricultural operations and farm access.
- Describe mitigating and monitoring proposals to prevent the contamination of ground or surface

waters and protect water resources and existing water use opportunities.

Pay particular attention to leachate management, including the size and location of leachate irrigation areas and/or leachate evaporation ponds.

- Document any proposals for the productive re-use of water captured on site or the requirement to purchase water entitlements

#### *Additional fisheries issues*

Landfills could impact fish habitats and fish populations if they leach substances into nearby or downstream waterbodies. Access roads to Waste facilities that cross streams or waterways may also affect fish passage.

When reviewing or planning for a new or expanded landfills, consent authorities should check the Key Fish Habitat mapping available from [I&I NSW \(Fisheries\) Regional Conservation Managers](#) to identify potential fish habitats in close proximity to the proposed facility or downstream.

*Specific measures to avoid potential impacts upon fish habitats and populations include:*

- Locating landfills away from waterways and associated floodplains to the greatest extent possible
- Developing appropriate leachate collection and disposal infrastructure
- Incorporating liners to prevent leachate transmission to the watertable and subsequently into downstream waterways
- Utilising access routes that avoid crossing streams or waterways or incorporate appropriate design structures.

#### **Rehabilitation and soil management**

Rehabilitation is important to curtail erosion, limit weed germination and restore productive land use options

*I&I NSW recommends that proponents commit to preparing a comprehensive rehabilitation management plan that:*

- Clearly documents environmental policies and rehabilitation objectives.
- Comprehensively reviews the relevant issues and risks
- Identifies mitigation measures to prevent excessive dust, soil erosion and the sedimentation of waterways
- Documents monitoring proposals

- Describes the proposed future land use options and justifies any permanent impacts on agricultural or other primary industries.

*In particular rehabilitation plans should document:*

- Vegetation re-establishment goals and strategies, including the predominant species to be used.
- Final landforms and revegetation proposals and future land uses for the site.
- Likely staging and timeframes for site rehabilitation.
- Opportunities to support sustainable agricultural production (eg separation and productive re-use of organic wastes).
- Measures to strip and maintain the viability of topsoil over time and subsequently use this resource for site rehabilitation.
- Proposed sources of interim land fill cover and management proposals. Timing of revegetation efforts to fit with seasonal conditions.
- Weed and pest management proposals and ensure they are in accordance with existing State, regional or local management plans or strategies.
- Monitoring proposals to assess the effectiveness of rehabilitation efforts and repair as required.
- The responsible body for site management and ongoing remediation when landfill operations cease.

*Rehabilitation practices supported by I&I NSW include:*

- The removal of topsoil and its immediate reuse before disturbing sub-soils or erecting permanent structures.

If this is not possible, topsoils should be temporarily stored in accord with best practices to maintain soil health and the vigour of native seed, limit weed germination, avoid soil loss and catchment impacts.

- Frequent and preferable daily covering of deposited waste to limit water infiltration, litter problems, fire risk and odour generation. Regular cover also reduces biosecurity risks.
- Reforming the landscape to blend with surrounding landforms and land uses. Plans should allow for soil settling and make provision to refill disturbed sites.
- Appropriate and enduring water diversion and erosion structures and practices.

- ☑ The de-compaction of areas traversed by heavy machinery to encourage plant growth and minimise run off.
- ☑ Progressive site rehabilitation,
- ☑ Sowing of cover crops or pastures to stabilise disturbed sites and reduce weed growth.
- ☑ Use of species suitable for the locality and clean seed with a low risk of contributing to weed problems.



*Active tip face, Whylandra Waste Disposal Depot, Dubbo Photo: Ian Bailey, Dubbo City Council*

### Biosecurity, pests and weeds

Landfills receive organic material from diverse sources. The deposited material can harbour and nurture potential diseases, and cause pest or weed infestations. Such impacts can increase the cost of control actions on surrounding farms and threaten agricultural enterprises in the locality or region.

Vehicles travelling to and from landfill sites can additionally contribute to the spread or build up of disease, weeds and pests.

Landfills pose a particular risk for viticultural, organic and apiary industries.

Appropriately managed landfills can also provide for the secure disposal of animal carcasses. This is important for the sustainable operation of most agricultural and veterinary businesses.

*To ensure appropriate consideration of Biosecurity risks the Environmental Assessment should:*

- ☑ Identify what materials will be accepted at the facility and how they will be managed. For instance:
  - will dead poultry or animal carcasses be accepted and how will they be managed?
  - where will organic or other material be sourced from and how will this be controlled?
- ☑ Include a biosecurity risk assessment outlining the likely plant and animal disease risks. The

risks will depend on the source and type of material to be deposited, as well as local issues such as flies or feral animals accessing deposited waste.

- ☑ Develop a risk management matrix. This should identify:
  - Risks to current and potential animal and plant products and other land uses in the locality and region against the types of waste to be deposited in the landfill facility.
  - Impacts on landholders and the risks of disease spread associated with the collection and movement of waste to the waste disposal site.
  - Any stock movement corridors in the vicinity of the waste management facility.

The critical distance to producers or stock movement corridors will vary according to site security, terrain, water movement, locality (in relation to airflows and different disease risks), and species of livestock, but should extend for at least 3 kilometres.

- ☑ Develop a response plan to deal with identified risks as well as contingency plans for any failures.

Risk management plans should include a consideration of agricultural risks during emergency situations such as flooding, fire, disease outbreaks and other possible catastrophic events.

See also the reference on Environmental Risk Assessment Mitigation Package for Small Waste Facilities under the Additional Information section.

Diseases and pests requiring specific consideration include [Phylloxera](#), Queensland fruit fly, potato cyst nematode and [American foulbrood disease](#). Additional information on these is provided in the following below.

### Phylloxera

Phylloxera (*Daktulosphaira vitifoliae*) is the world's worst grapevine pest and is a proclaimed plant disease with significant implications for the Australian viticultural industry.<sup>1</sup>

The NSW Plant Diseases Act 1924 identifies [Phylloxera Infested, Exclusion and Risk Zones](#). Phylloxera Infested Zones include the Sydney Basin and the Albury-Corowa regions. All other regions in NSW are Phylloxera exclusion zones.

<sup>1</sup> NSW DPI website - [Phylloxera leaflet](#)

The *NSW Plant Diseases Act 1924* also imposes restrictions on the movement of grape material (eg grapevine prunings, grape bunches or live plants) between these zones (Proclamation P157)<sup>2</sup>.

*I&I NSW recommends that landfill proposals:*

- Identify the relevant Phylloxera zone.
- Proposals must assess the risk of Phylloxera and develop suitable prevention measures that comply with legislative requirements and protocols.
- The movement of waste from or within a Phylloxera Infested Zone requires comprehensive consideration of the Phylloxera risks and the adoption of specific management procedures as set out in [National Phylloxera Management Protocol](#).
- Green waste sourced from Phylloxera Exclusion zones can be composted and processed for reuse within that zone.

#### Queensland fruit fly

Queensland Fruit Fly is endemic in much of NSW, but not in Proclaimed fruit fly zones. The risk of breeding Queensland Fruit Fly will be negligible provided green waste and fruit which might be a host for Queensland fruit fly is processed at the facility and buried within a few days or composted with other green waste material (and subjected to temperatures normally above 55 degrees Celsius).

#### Potato cyst nematode

NSW is currently free of Potato cyst nematode; consequently potato waste originating from an interstate potato cyst nematode infested area must not be dumped into landfill, subsequently composted or distributed as a garden/farm product.

At this time only two companies within NSW are importing potatoes from Victoria under an I&I NSW movement approval (Sydney metropolitan area) and there are requirements for their waste to be disposed of by burial at Eastern Creek.

It is important to ensure that no companies importing Victorian potatoes dump potato waste at the landfill facility.

#### Sugarcane smut

Sugarcane smut is deemed as an established disease and there are no quarantine or movement control measures likely to affect landfills within sugarcane Pest Quarantine Areas. However, the

movement of sugarcane planting material and machinery between sugarcane quarantine areas is still restricted and requires an Inspector's Approval.

#### Apiary considerations

Bees will source food (particularly protein) from a waste or compost facility and encourage other bees to gather at the food source. Hence landfills are a potential biosecurity risk to the apiary industry.

The risks are associated with disease transmission and the impact on Industry Quality Assurance Certification and the status of an organic business.

The main biosecurity risk is the contamination of local honey and commercial colonies with disease, most particularly the *American foulbrood* disease which is a notifiable disease under the [NSW Apiaries Act 1985](#).

*American foulbrood* is the most serious brood disease of honey bees in New South Wales (NSW)<sup>3</sup>. It can be transferred in honey and is viable for up to 70 years.

Bee swarms can also pose an occupational health and safety (OH&S) risks for employees and visitors to landfills..

To minimise apiary biosecurity risks and employee injury the following practices are recommended:

- Identify the location of apiaries and potential landfills and assess the risk for the apiary industry.
- Develop measures to minimise risks, such as covering waste material on a daily basis.
- In the event of a bee swarm inhabiting the site, engage a suitably qualified apiarist to remove the bees.

#### Pest management

Landfill sites can also provide food sources and refuge for feral animals such as cats, foxes, pigs and dogs. As well as threatening biodiversity, this can also lead to the spread of endemic and exotic diseases for local and regional agriculture.

Food waste that can be accessed by feral pigs presents a significant foot and mouth disease risk.

Consent conditions for landfill proposals mandates the development of a Pest and Feral animal management strategy and plan, in consultation with the relevant Livestock Health and Pest Authority.

*A pest animal plan should identify:*

- Likely feral animals and their management.

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<sup>2</sup> [National Phylloxera Management Protocol](#)

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<sup>3</sup> [American Foulbrood – Tracing the source](#), NSW DPI

- ☑ Measures to limit domestic, feral animals and birds from accessing disposed material.
- ☑ Potential impacts on birds or other wildlife and appropriate safeguards to be implemented.
- ☑ Potential impacts of species that may be introduced from other states (eg fire ants).
- ☑ Monitoring and mitigating measures to manage feral animals. The compaction and covering of waste material with adequate drainage is an effective management tool for pest and feral animal management.

### Weed management

Consent conditions for landfill proposals require the development of a Weed management strategy and plan in consultation with relevant local council Weed Authorities.

*A weed management plan should identify:*

- ☑ Noxious and problematic environmental weeds on site and for those likely to be transported to the facility from source areas.
- ☑ Weed suppression, management and containment strategies for all disturbed areas. For instance soil stockpiles, roadsides leading to the landfill site and disturbed areas. Weed germination and invasion is stimulated by disturbance. This should include measures:
  - to limit the off site spread of weeds via vehicles (eg segregation, wash down or monitoring provisions)
  - targeting soil stockpiles, roadsides within and leading to the landfill site and any other disturbed areas (weed germination and invasion is stimulated by disturbance).
- ☑ Monitoring and mitigating measures to manage noxious and problematic weeds on site and in immediately adjoining areas.
- ☑ Green waste composting needs to be undertaken in accord with Australian Standards. That includes green waste that is to be composted for re-use off site.

### Additional agricultural issues

#### Chemical drum recycling

[DrumMUSTER](#) is a National program for the collection and recycling of cleaned eligible non returnable crop production and on-farm animal health chemical containers.

The responsible collection and recycling of used chemical drums by landfill facilities supports agricultural industries and the environment.

*I&I NSW recommend that landfills:*

- ☑ Include a drum muster depot for the collection of chemical drums.



*Composting organic material is an effective way to reuse waste and reduce landfill. Photo: Tamworth Regional Council.*

#### Livestock welfare

*To ensure the health and welfare of livestock located near the landfill, consent authorities should verify that the development application identifies:*

- ☑ How stock would be excluded from the landfill and associated infrastructure (roads, weighbridge, leachate ponds, stormwater dams etc)..
- ☑ The standard of any exclusion fencing, maintenance schedules and proposals to remove when the site is stabilised.
- ☑ Measures to avoid stock health risks on adjoining lands such as the ingestion of windblown plastic bags or other items and contamination of water.

#### Emergency management

Landfills contain large quantities of combustible materials which if ignited may threaten adjoining landholdings. Landfill gas can also contain corrosive and toxic substances. These can be explosive and cause fires.

Landfill gas also contributes to greenhouse gases and climate change which impacts on agricultural sustainability.

*Development Applications for landfills should document strategies to effectively:*

- ☑ Minimise and manage the production of methane and other gases.
- ☑ Prevent and respond to fires.
- ☑ Train staff in relevant emergency management procedures.

## Consultation and project justification

*Industry and Investment NSW recommends that consent authorities ensure that landfill proponents:*

- Consult with relevant agencies such as local weed and pest and catchment management authorities on the design, construction and operation of the proposed infrastructure.  
  
I&I NSW particularly recommends consultation with the Livestock Health and Pest Authority in regard to the management of pests and disease control measures such as quarantine period for decontamination of sites under the *Stock Diseases Act 1923* and accompanying regulations.
- Consult with the owners / managers of affected and adjoining agricultural operations in a timely and appropriate manner about; the proposal, the likely impacts and suitable mitigation measures or compensation.
- Provide sufficient documentation to demonstrate that all significant impacts on current and future agricultural developments and resources have been identified and can be reasonably avoided or adequately mitigated.
- Establish a complaints register and response protocol.

## Additional information

I&I NSW website ([www.industry.nsw.gov.au](http://www.industry.nsw.gov.au)) has additional information on:

- Recycling and waste management including the use of biosolids and effluent and other recycled organics (eg composted wastes) and related I&I NSW research.
- [Protecting and mapping aquatic species and habitat](#)
- [Biosecurity prevention measures and responses](#)
- [Phylloxera disease risks and management](#)
- [American Foulbrood – Tracing the source](#)
- [Living and Working in Rural Areas. A Handbook for Managing Land Use Conflict Issues on the North Coast](#)
- [Weeds](#)
- [Pasture establishment](#)

Other websites with relevant information include:

- [Environmental Risk Assessment Mitigation Package for Small Waste Facilities](#)
- [Environmental Guidelines for Solid Waste facilities](#)
- [Natural Resources Atlas](#)
- [Landscape and Soils Data on line](#)

- The NSW Department of Environment and Climate Change and Water ([DECCW](#)) and the Australian Department of Environment, Water, Heritage and the Arts (DEWH&A) for comprehensive information on managing wastes. This includes a comprehensive list of [publications](#).

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