

# Environmental management guidelines for the dairy industry





NSW DEPARTMENT OF  
**PRIMARY INDUSTRIES**

Title: Environmental management guidelines for the dairy industry

Author: Liz Rogers (Editor), Executive Officer, Intensive Agriculture Consultative Committee.

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#### Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing (November 2007). However, because of advances in knowledge, users are reminded of the need to ensure that information on which they rely is up to date and to check the currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent advisor.

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- Mr Nicholas Bullock, formerly Environmental Engineer, Dairy Waste Management, NSW DPI, Taree
- Mr Tim Burfitt, Manager Intensive Livestock Industry Development, NSW DPI, Orange
- Mr Ross Coomber, formerly Livestock Officer, Dairy, NSW DPI, Coffs Harbour
- Mr Tony Dowman, Technical Specialist, Dairy, NSW DPI, Kempsey
- Dr Jess Jennings, Natural Resource Management Consultant, NSW Dairy Industry
- Mr Ian Kruger, Environmental Engineer (Intensive Livestock), NSW DPI, Tamworth
- Ms Liz Rogers, Leader Regional Services (Land Use), NSW DPI
- Dr Diane Ryan, formerly Livestock Officer, Dairy, Camden; currently Senior Regional Animal Health Manager, NSW DPI, Camden
- Mr Andrew Winspear, formerly Editor, NSW DPI, Orange

This guideline is endorsed by the Intensive Agriculture Consultative Committee (IACC), a NSW government agency and industry committee that promotes the development of sustainable agricultural industries.

## ABBREVIATIONS

BMP	Best management practice
BOD	Biochemical oxygen demand
CMA	Catchment Management Authority
DA	Development Application
DCP	Development Control Plan
DECC	Department of Environment and Climate Change (NSW)
DoP	Department of Planning (DoP)
DSRD	Department of State and Regional Development
DWE	Department of Water and Energy
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
LEP	Local Environmental Plan
LG Act	Local Government Act
NSWDPI	Department of Primary Industries (NSW)
OHS Act	<i>Occupational Health and Safety Act 2000</i>
PCA	Principal Certifying Authority
PFM	Planning Focus Meeting
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PVP	Property Vegetation Plan
REP	Regional Environment Plan
RTA	Roads and Traffic Authority
SEE	Statement of Environmental Effects
SEPP	State Environment Planning Policy
SIS	Species Impact Statement

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# 1. INTRODUCTION

## 1.1 AUDIENCE AND PURPOSE OF THE GUIDELINES

These guidelines will assist farmers who are planning a new dairy development and/or a major re-development of an existing operation. It will also aid the key stakeholders involved, including consent authorities, regulatory agencies, and industry consultants.

The purpose of the guidelines is to provide:

- an explanation of the planning process in NSW, as well as the relevant documents, approvals, requirements and legislation
- information on siting and design
- best practice advice for managing the environmental impact of the facilities.

## 1.2 OPERATION AND SCOPE OF THE GUIDELINES

These guidelines should be applied uniformly across NSW and may be applied to dairies milking other species, such as goats, sheep, buffalo and camels. They may be referenced in planning documents to help determine reasonable best practice. An approval authority may make reference to the guidelines in planning policies, plans and guidelines, as well as in the execution of its responsibilities. These guidelines should assist the proponent in preparing a Development Application (DA).

Following the guidelines alone will not ensure compliance with planning and environmental requirements – they should be read in conjunction with other planning and environment management policies, plans, guidelines, advisory material and legislation.

Technical information on all matters relating to dairy effluent will be available at [www.dairyingfortomorrow.com/activities/products.php](http://www.dairyingfortomorrow.com/activities/products.php) in late 2008.

A useful description of the NSW planning process is also available from 'Preparing a development application for intensive agriculture in NSW' at [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au) or at [www.planning.nsw.gov.au](http://www.planning.nsw.gov.au).

## 1.3 CONTENT AND REVIEW OF THE GUIDELINES

**Section 2 – Dairy production in NSW** outlines some of the basic characteristics of the industry including relevant general issues such as biosecurity, animal health and welfare, and human health.

**Section 3 – Planning a dairy development** details the planning process involved in developing relevant dairy infrastructure.

**Section 4 – Siting and design** provides specific information to assist with these aspects of dairy developments.

**Section 5 – Managing environmental impacts** describes best management practice standards and information on how to implement them.

**Section 6** – outlines the relevant regulations and legislative requirements that govern dairy developments.

### Review of Guidelines

The guidelines are based on information, knowledge and practice which is current at the time of writing. Future investigation, research and innovation related to farm practice may establish new practices and redefine best practice for the dairy industry. Technical notes will be used to disseminate information on development in best practice between reviews.

Updates to the guidelines will be available on the NSW Department of Primary Industries website: [www.dpi.nsw.gov.au/agriculture/livestock/dairy-cattle](http://www.dpi.nsw.gov.au/agriculture/livestock/dairy-cattle).

## **2. DAIRY PRODUCTION IN NSW**

### **2.1 THE NSW DAIRY INDUSTRY**

The NSW dairy industry has undergone significant changes since the total deregulation of farm gate pricing in 2000. Herd numbers have dropped and average herd size and production per cow has increased. There is a move towards more intensive feeding systems, to supplement or replace pasture grazing.

The NSW dairy industry can be found in a range of climatic conditions:

- subtropical environment, from the mid-North Coast to the Queensland border
- temperate environment, from the mid-North Coast to the far South Coast
- inland regions dependent upon irrigation, extending from Tamworth to the Riverina.

### **2.2 DAIRY PRODUCTION SYSTEMS**

Many NSW dairies use 'year-round' calving herds (where milking is conducted all year), 'seasonal' milking (where all the cows in the herd are calved in one short time period), and 'batch' calving (where groups of cows are calved at different times of the year).

Lactating dairy cows require sufficient high-quality feed throughout the year to achieve profitable milk production and to meet milk quality targets, as well as health, maintenance and reproductive requirements. Pasture is the basis for production, and it is supplemented with feeds such as grain, hay and silage.

## 3. PLANNING A DAIRY DEVELOPMENT

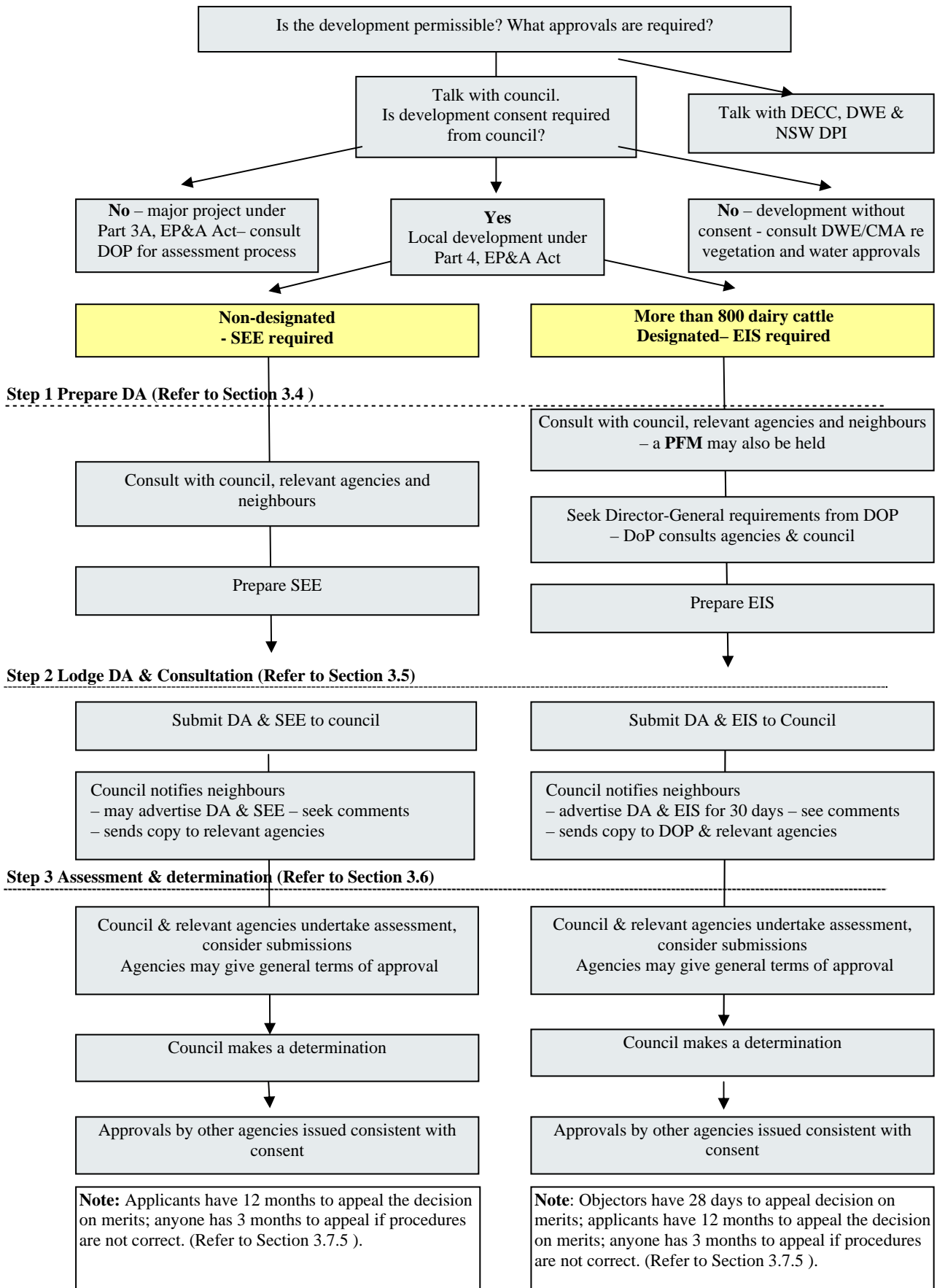
### 3.1 AN OVERVIEW OF THE LEGAL PROCESS

NSW dairy operations, especially if they are restricted dairies or have restriction facilities, must comply with a range of legislation and regulations that are designed to protect the environment and the expectations of local communities.

The *Environment Planning and Assessment Act 1979* (EP&A Act) is the major legislation governing land use and environmental assessment in NSW. It provides for a hierarchy of environmental planning instruments, which include state environmental planning policies (SEPP) and local environmental plans (LEP). The Act establishes a framework for local government zoning, assessment requirements, development control plans, and development consent provisions. There are also various consents or licences required from the local council and other agencies that define the required environmental performance outcomes.

The key steps in the planning assessment are outlined in Figure 3.1. The time taken to complete this process depends on the scale and complexity of the development, as well as the level of concern about the environmental performance expressed by the neighbours and the broader community.

**Figure 3.1: Key steps in the Development Assessment process**



## **3.2 IDENTIFY A SUITABLE SITE FOR YOUR DEVELOPMENT**

The following steps are not necessarily sequential. For example, finding out what approvals are required should ideally be done at the same time as a preliminary evaluation of site suitability.

### **3.2.1 Contact your local council**

Before committing to developing a particular site, you must determine whether the dairy proposal requires consent or is prohibited. This includes the expansion or alteration of an existing dairy. Even if your proposal requires consent, it still may not be approved, if environmental and community concerns are not adequately addressed.

### **3.2.2 Find out what approvals are required**

The local council will be able to advise whether you need consent for your proposed development and what their requirements are. The proposal may be classified as a local development (for which the local council is the consent authority), or it may qualify as a 'major project' (which requires approval from the Minister for Planning).

Also, find out what planning requirements relate to the proposed development such as local environmental plans (LEP), development control plans (DCP), regional environmental plans (REP), or state environmental planning policies (SEPP), particularly SEPP 30 – Intensive Agriculture. Any proposed development must comply with these requirements.

It is also important that you understand the development application process, what information is required, what steps the application will need to go through, the role of government agencies, and public consultation requirements. When seeking advice from the local council, provide clear and thorough information, so that they fully understand the proposed development. Put the request in writing, and ask for a written copy of their advice, so you will be able to refer to the information during the application process.

### **3.2.3 Check the local environmental plan (LEP)**

LEPs are developed by councils. They zone land into categories, such as business, residential, industrial, environment or rural. They have LEP maps showing the zoning for each property.

Zones indicate whether the land use:

- is permitted without consent
- requires consent
- is prohibited.

LEPs also include definitions for many uses. It is important to identify what definition the dairy proposal falls under. Proposals under 'agriculture' or 'extensive agriculture' are generally permitted without consent in rural zones. This is why most primary producers have previously not needed to consult LEPs. Restricted dairies which are defined as 'intensive livestock agriculture' may require consent from council. Current planning documents may use different terms, such as 'intensive livestock keeping establishments' or 'intensive agriculture', to refer to intensive agriculture developments. Over the next five years, all councils will be developing new LEPs, using standardised definitions for ease of use. These definitions are explained in the Standard Instrument (Local Environmental Plans) Order 2006, and further explained in DoP LEP Practice Note PN 06-003 'Preparing LEPS using the standard instrument definitions'. Definitions relevant to a dairy development and identified in the Standard Instrument include agriculture, extensive agriculture, dairy (pasture-based), intensive livestock agriculture, restricted dairies, and agricultural produce industry.

### **3.2.4 Check the development control plan (DCP)**

Local councils have DCPs, which contain more detailed provisions than the LEP. For example, there may be provisions regarding entrance from a property onto a main road, setback from boundaries, water recycling, stormwater management, waste management, landscaping or signs, which could be applicable to the development.

### **3.2.5 Check regional environmental plan (REP) and regional strategies**

REPs are in place in a number of areas in NSW, such as the South Coast, North Coast, Murray, Riverina and Sydney regions. They may have implications for some types of dairies. For example, Sydney REP No. 20 Hawkesbury Nepean River notes that consent is required for dairy farms. Regional strategies are also being developed for the Sydney Metropolitan Region and for coastal and certain other regions. These strategies provide guidance regarding future development trends and infrastructure provisions.

### **3.2.6 Check state environmental planning policies (SEPP)**

SEPPs override LEPs, and consent may be required under an SEPP. For example, SEPP 30 Intensive Agriculture (1989) requires development consent for cattle feedlots over 50 head. SEPP 30 may in the future specifically refer to dairies requiring consent.

SEPP 62 Sustainable Aquaculture Section 15B notes that development consent may be refused if the development will have an adverse effect on oyster aquaculture. See [www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au) for more details.

### **3.2.7 Review the suitability of the site**

Having checked that your land is in a suitable planning zone for a dairy, you also need to be satisfied that it is suitable in practical, financial and environmental terms.

For existing enterprises, where you are proposing to change or expand operations, it may be worthwhile to undertake a risk assessment and a cost-benefit analysis to consider whether it is worth continuing operation on the site, and to compare relocation options with expansion on the existing site. Include council levies and charges, such as s94 contributions for road upgrades and maintenance, as well as connection to water supply, in your assessment of costs. It is also important to consider how long it may take to recoup your investment.

For new enterprises, you will have greater success getting your proposal approved if the site is already used for agriculture. Please note that the siting and design of a development is covered in detail in Section 4.

## **3.3 CONTACT RELEVANT GOVERNMENT AUTHORITIES**

Before committing to developing a particular site, you should determine whether approval under other legislation is required, and whether it is possible to meet such requirements. More detailed information on legislation and contacts is provided in section 6. It is also useful to check whether changing the design or location might avoid additional requirements.

### **3.3.1 Environmental protection licence**

The Department of Environment and Climate Change (DECC) is responsible for administering environmental protection legislation, including the *Protection of the Environment Operations Act 1997* (POEO Act).

Dairies that accommodate more than 800 animals in milk production require a licence, as they are listed in Schedule 1 of the *Protection of the Environment Operations Act 1997*. As a general rule, if the development is a type that requires an EIS, it will also require a licence from DECC. Consult with DECC early in the process, particularly in relation to avoiding or minimising air and water quality impacts, or if the site is likely to have been contaminated by previous use of chemicals or fuels. If a licence is required, the development is an integrated development, and these matters must be considered jointly by council and DECC during the development approval process.

### **3.3.2 Commonwealth environmental approvals**

Under the *Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, an approval may be required if the development is likely to affect matters of national significance, including threatened species, wetlands and heritage items. An on-line search of matters can be undertaken using the Environmental Reporting Tool at [www.environment.gov.au/epbc/index.html](http://www.environment.gov.au/epbc/index.html).

If the development is likely to affect these matters, the development proposal should be referred to the Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) in Canberra before the DA is lodged with local council.

If an approval is required, a joint assessment can usually be undertaken under the EPBC Act along with the DA process. If you have any questions about the application of the EPBC Act to your proposal, you should contact the DEWHA in Canberra (02 6274 1111), or see <http://www.environment.gov.au/epbc/assessments/process.html>.

### **3.3.3 Clearing native vegetation**

If the proposal includes clearing of vegetation, an approval under the Native Vegetation Act is required and an application should be lodged with your local Catchment Management Authority (CMA) at the same time as the DA is lodged with local council.

A clearing consent involves the development of a Property Vegetation Plan (PVP), which is a voluntary agreement between the landholder and the CMA.

Clearing will now only be approved if, overall, management actions improve or maintain environmental outcomes. Offsets are permitted, if required, to compensate for the effects of clearing and to meet the 'improve or maintain' criteria.

Clearing approvals within a PVP can last up to 15 years. For more information about the clearing of native vegetation and PVPs, contact your nearest CMA or visit [www.nativevegetation.nsw.gov.au](http://www.nativevegetation.nsw.gov.au).

### **3.3.4 Threatened species**

In NSW "threatened species" include all animal and plant groups – mammals, reptiles, birds, amphibians, fish, trees, shrubs, grasses, algae etc. They are listed under either the *Threatened Species Conservation (TSC) Act 1995* or the *Fisheries Management (FM) Act 1994*.

Lists of species likely to occur within particular geographic areas and vegetation types can be generated at the Threatened Species website at:  
<http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/index.aspx>

It is best to try to design the proposal to avoid negative interactions with threatened species if possible.

A 'test of significance' (7 part test) must be undertaken and submitted to the consent authority if there is a possibility that threatened species will be affected, either directly or indirectly, by the proposal. The test considers the likely impacts of the proposed development on any critical habitat, and on threatened species, populations or ecological communities or their habitats. You will find a list of critical habitats, as well as threatened species, populations, ecological communities and their habitats, in the *Threatened Species Conservation (TSC) Act 1995* or the *Fisheries Management (FM) Act 1994*.

The test of significance considers the likely impacts of the proposed development on the habitat (including identified critical habitat) and life cycles of threatened species, populations or ecological communities. Guidance on applying the test of significance can be found at:  
[http://www.abeleecology.com.au/7\\_Pt\\_Test\\_Guidelines.htm](http://www.abeleecology.com.au/7_Pt_Test_Guidelines.htm).

The test is used to determine if a Species Impact Statement (SIS) is needed. Preferably this should be done prior to lodging the DA, so that if a SIS is needed it can be prepared and included in the SEE or EIS.

Proposals which are likely to impact threatened species will require approval from the relevant Government agency.

### **3.3.5 Water licences and approvals**

Extraction of water from rivers or aquifers for commercial purposes requires a licence and/or other approval from the NSW Department of Water & Energy (DWE).

For water licences and associated water trading (the buying and selling of water licences or annual allocation water), licensing provisions come under the *Water Management Act 2000* or the *Water Act 1912*. See table 3.1.



**Table 3.1 Water licensing Acts**

<b>Issue</b>	<b>Legislation</b>	<b>Approval or licence</b>
Access to water	<i>Water Act 1912</i> : (for all water sources in NSW not subject to a Water Sharing Plan under the WMA 2000.	Part 2 – surface water licences Part 5 – groundwater(aquifer) licences
	<i>Water Management Act 2000</i> : for water sources subject to a proclaimed water sharing plan or water management plan	Access licences Harvestable rights Water supply work approvals Water use approvals Flood work approvals Aquifer interference approval
<i>Construction near/within or across estuaries, lakes, rivers, creeks and floodplains</i>	<i>Water Management Act 2000: Controlled Activities</i> <i>Water Act 1912: Part 8 (Flood Control Works)</i>	Approval for works within 40 m of the bed or bank of a river, creek or lake. Approval for works likely to affect the distribution or movement of floodwaters

Please note that the transitional provisions relating to the *Water Act 1912*, the *Water Management Act 2000* and the *Rivers and Foreshores Improvement Act 1948* are complex. Please contact your nearest DWE office for more information concerning your particular area.

More detailed information and information sheets are available on:

- water management and water licensing – see [www.dnr.nsw.gov.au](http://www.dnr.nsw.gov.au)
- water quality – see [www.dnr.nsw.gov.au/water/water\\_quality.shtml](http://www.dnr.nsw.gov.au/water/water_quality.shtml)

### **3.3.6 Talk with your neighbours**

Consent and regulatory authorities make their decisions according to the law and planning instruments, but the level of support from the local community and neighbours can influence whether your enterprise will be approved and how it will operate in the future.

If there is strong community opposition to a dairy proposal, the development application (DA) may not be approved. If it is approved despite community resistance, you will have to divert time and resources, which should be used in operating the enterprise, to deal with complaints. Community opposition will usually lead to the imposition of additional conditions to consent.

It is extremely important that you thoroughly inform potential neighbours before committing to a proposal. An active and comprehensive engagement with your neighbours and community early on will establish a firm foundation for good relationships. Be open and honest about all aspects of the proposal, and take time to listen to what your neighbours have to say. In many cases, neighbours' concerns can be taken into consideration, and the proposal modified so that it can proceed with the neighbours' support, or at least without their opposition.

The more information you can provide, the more likely your neighbours are to accept the proposal. For instance, minor changes in siting and design of the development may prevent future problems and delays. Organising a visit to a nearby similar enterprise that demonstrates high standards, or taking people on a tour of your existing farm, may reduce the concerns of neighbours or communities who are unfamiliar with how the proposed development would operate.

### **3.3.7 Major projects require Ministerial approval**

Major projects require approval from the Minister for Planning. A development is classified as a major project if it is considered to be of state or regional planning significance, and is listed in the SEPP (Major Projects) 2005. Part 3A of the EP&A Act provides the rules for how major projects are to be assessed. To determine whether your proposal is a major project or for

information on how to lodge an application, contact the Department of Planning (DoP) or go to <http://www.planning.nsw.gov.au>. The guidelines in this document do not apply to Part 3A projects.

Major projects include intensive livestock industries that employ 20 or more people for the purpose of feedlots or dairies. See [www.planning.nsw.gov.au](http://www.planning.nsw.gov.au) for more information.

### **3.3.8 Developments requiring council consent**

Developments that require consent from local council under Part 4 of the EP&A Act are referred to as 'local development', and can be:

- non-designated development
- designated development.

Either of these types of development can also be an integrated development (see 3.3.9); that is, they require permits or licences from state government agencies in addition to council consent (see Table 3.2).

#### *Non-designated development*

Non-designated developments are typically proposals that pose a lower or more acceptable risk to the environment than other types of development. Development applications for this type of proposal must include a statement of environmental effects (SEE), which is a review of the key issues and measures for minimising or managing impacts.

#### *Designated development*

Designated developments are particular types, sizes and locations of projects with potential for significant environmental impacts. Dairies with more than 800 head of cattle maintained for milk production are classified as designated developments.

Designated developments require an environmental impact statement (EIS). When preparing an EIS, it is strongly recommended that you use a suitably qualified consultant. Requirements for the preparation of the EIS must first be sought from the Director-General of the Department of Planning. There is also a specific requirement for council to advertise designated development proposals (DA) for a minimum of 30 days, and to seek submissions from the community. Anyone who lodges an objection with council during the exhibition of the DA has the right to have that objection heard by the Land and Environment Court, and for the court to redetermine the DA on its merits.

### **3.3.9 Integrated developments**

Some developments require permits or licences from state government agencies, as well as council consent, in order to proceed. If a development requires a permit or licence listed in Table 3.2, it is considered to be an integrated development, and council must refer it to the relevant agency, so that a joint assessment can be undertaken.

With integrated development, both council and the agency assess the information in the EIS or SEE. Agencies may request that certain information be included in the SEE or EIS, or that certain issues be assessed. Agencies will then issue 'general terms of approval'. See 3.6.4 for more details.

**Table 3.2 Relevant integrated approvals under Section 91 of EP&A Act.**

Approval	Act	Provision	Agency
Permit to carry out dredging or reclamation work	<i>Fisheries Management Act 1994</i>	s.144	NSW DPI
Permit to cut, remove, damage or destroy marine vegetation on public water land or an aquaculture lease, or on the foreshore of any such land or lease		s. 201	
Permit to obstruct fish passage		s. 205	
Approval in respect of the doing or carrying out of an act, matter or thing referred to in s 57 (1)	<i>Heritage Act 1977</i>	s. 58	DoP
Approval to alter or erect improvements within a mine subsidence district or to subdivide land therein	<i>Mine Subsidence Compensation Act 1961</i>	s. 15	Mine Subsidence Board
Consent to knowingly destroy, deface or damage or knowingly cause or permit the destruction or defacement of or damage to, a relic or Aboriginal place	<i>National Parks and Wildlife Act 1974</i>	s. 90	DECC
Environment protection licence to authorise carrying out of scheduled development work at any premises	<i>Protection of the Environment Operations Act 1997</i>	ss. 43 (a), 47 and 55	DECC
Environment protection licence to authorise carrying out of scheduled activities at any premises (excluding any activity described as a 'waste activity' but including any activity described as a 'waste facility')		ss. 43 (b), 48 and 55	
Environment protection licences to control carrying out of non-scheduled activities for the purposes of regulating water pollution resulting from the activity if pollution of water unavoidable.		ss. 43 (d), 55 and 122	
Consent to: (a) erect a structure or carry out work in, on or over a public road, or (b) dig up or disturb the surface of a public road, or (c) remove or interfere with a structure, work or tree on a public road, or (d) pump water into a public road from any land adjoining the road, or (e) connect a road (whether public or private) to a classified road	<i>Roads Act 1993</i>	s. 138	Council and/or RTA
Authorisation under section 100B in respect of bush fire safety of subdivision of land that could lawfully be used for residential or rural residential purposes or development of land for special fire protection purposes	<i>Rural Fires Act 1997</i>	s. 100B	RFS
Water use approval	<i>Water Management Act 2000**</i>	s. 89	DWE
Water management work approval		s. 90	
Activity approval under part 3 of Chapter 3		s. 91	
Approval for works within 40 m of the bed or bank of a river, creek or lake	<i>Water Management Act 2000.</i>	s. 22B (1)	DWE

\*Note that in some areas not included within a water sharing plan or a water management plan, certain provisions of the *Water Act 1912* still apply.

### 3.4 PREPARING THE DEVELOPMENT APPLICATION

If the proposal is a non-designated development, you must submit a SEE when lodging the DA with the consent authority. If the proposal is a designated development, you must submit an EIS with the DA to the consent authority. Requirements for the EIS must be formally requested and received from the Director-General of the Department of Planning before the DA is lodged with the consent authority.

The SEE or EIS needs to outline the size and nature of the proposed development, as well as include a description of the site and surrounding environment, and the management practices and environmental impact mitigation strategies to be employed. Support the application with maps, plans, diagrams and photographs where appropriate.

Agencies such as the Department of Planning (DoP) and the Department of Environment and Climate Change (DECC) have guidelines in relation to the assessment and management of environmental issues, which can assist in the preparation of the EIS or SEE. An EIS is complex, and typically requires the use of a consultant. There is no standardised format for the preparation of an SEE, but applicants should consider the same issues as in the preparation of an EIS.

Schedule 2 of the EP&A Regulation sets out specific requirements for an EIS.

The Department of State and Regional Development (DSRD) may consider contributing towards the costs of an EIS for the establishment or expansion of a dairy at a regional site, if the project is unlikely to proceed without such assistance.

### **3.4.1 Planning focus meetings**

It is recommended that you hold a meeting with council before lodging a DA.

A planning focus meeting (PFM) is also recommended if there are a large number of issues to be considered and development is likely to be contentious. A PFM allows relevant parties to meet and identify possible issues in advance. Doing this can greatly reduce the risk of subsequent delays in processing your application. It also reduces the risk that council will deny your application because of inadequate information. PFMs are usually organised by the consent authority, but can also be organised by the proponent or by consultants. Resource Management Officers from NSW DPI can also assist.

A planning focus meeting should include a site visit, and would normally involve:

- the applicant
- the applicant's consultants
- representatives from the local council
- DECC, DoP, NSW DPI, DWE, CMAs and other appropriate state government agencies
- relevant other parties or stakeholders.

If the development is likely to be contentious, the council may recommend further meetings involving councillors and community, so that their concerns can be identified.

The booklet *Planning focus* is useful if you are considering a PFM. It is available at [www.planning.nsw.gov.au](http://www.planning.nsw.gov.au).

If a PFM is not required, or has not been organised, agencies should be consulted about their requirements.

### **3.4.2 Director-General requirements**

If the development is a designated development, the applicant must obtain Director-General requirements from the Department of Planning. These requirements will set out the matters that must be assessed in the preparation of the EIS. The PFM is usually held after the applicant has requested Director-General requirements, so that matters relevant for inclusions in these requirements can be discussed with relevant agencies at that meeting.

If the development is an integrated development, the relevant agencies provide the DOP with the matters they deem it necessary to include in the Director-General requirements.

These requirements provide the overall scope of matters that must be addressed in the EIS.

### **3.4.3 Community consultation**

While preparing the SEE or EIS, it is important to consult with neighbours, and possibly the broader community, to ensure that all issues of importance are appropriately addressed. This consultation may also produce information that will assist in the preparation of the

assessment. It may also be useful to provide agencies with a draft EIS prior to lodgement, so that they may give you advice as to whether you are appropriately addressing the issues.

#### **3.4.4 Information to be included in the development application**

Local councils will have a development application form, and can provide guidance on submitting a DA. The following is the minimum information to be included in a DA (note that Schedule 1 of the EP&A Regulation sets out specific requirements for information required in a DA):

- the name and address of the applicant
- a description of the development to be carried out
- the estimated cost of the development and number of employees
- the address, and formal particulars of title of the land
- an indication as to whether the land is, or is part of, critical habitat, or whether the development is likely to significantly affect threatened species, populations or ecological communities, or their habitats
- a list of any authorities from which concurrence must be obtained
- a list of any approvals that must be obtained before the development may be carried out
- if the applicant is not the owner of the land, a statement signed by the owner of the land to the effect that the owner consents to the making of the application
- a list of the documents accompanying the application.

#### **3.4.5 Components of an EIS or SEE**

Schedule 2 of the EP&A Regulation sets out specific requirements for an EIS.

The assessment level should match the level of impact the proposed enterprise might have.

There is no standardised format for preparation of a SEE, but proponents would be expected to address, in less detail, the same components as in an EIS. These are summarised as follows.

1. Summary of the EIS or SEE
2. Statement of objectives
  - objectives: reasons for undertaking the proposal
3. Analysis of alternatives
  - an analysis of any feasible alternatives to carrying out the development or activity (with regard to its objectives), including the consequences of not carrying out the development or activity.
4. Description of the proposal
  - i) capital investment value of the development proposal and likely employment costs
  - ii) size of the operation (e.g. the area under production, and/or production targets and estimated value of production per annum)
  - iii) production, packing and processing facilities, if any
  - iv) previous and existing operations on the site
  - v) site layout plans, including
    - (1) the location of any waste storage or disposal areas
    - (2) existing vegetation and trees on the land
    - (3) the location and uses of existing buildings on the land
    - (4) existing levels of the land in relation to buildings and roads
    - (5) the location and uses of buildings on sites adjoining the land
  - vi) a sketch of the development, including
    - (1) the location of any proposed buildings or works (including extensions or additions to existing buildings or works) in relation to the land's boundaries and adjoining development
    - (2) floor plans of any proposed buildings, showing layout, partitioning, room sizes and intended uses for each part of the building
    - (3) elevations and sections, showing the external finish and height of any proposed buildings
    - (4) proposed finished levels of the land in relation to existing and proposed buildings and roads
    - (5) proposed parking arrangements, vehicle entry and exit points, and provision for movement of vehicles within the site (including dimensions where appropriate)

- (6) proposed landscaping and treatment of the land (indicating plant types, as well as their height and maturity)
  - (7) proposed methods of draining the land
  - (8) in the case of residential development, a BASIX certificate and other such requirements
  - vii) water and power supply, road access and proposed truck movements
  - viii) outline of any construction to be undertaken
  - ix) plan for the storage and disposal of wastes (e.g. effluent from silage bunkers and milking facilities, and mass mortality)
  - x) emergency management strategies to minimise the potential for risk events, including emergency response plans (e.g. in the case of power failure, emergency pest or disease outbreaks, flood or bushfire). An example of an emergency management plan can be found in appendices.
5. Location and site description
    - description of the site, adjacent areas and existing or approved land uses
    - topography, drainage and flooding pattern, vegetation, soil type and groundwater depth (particularly where there is on-site waste water disposal)
    - relationship with surrounding land uses (e.g. distances to any houses, property boundaries or watercourses)
    - whether the proposal is consistent with relevant SEPP, REP, LEP or DCP provisions
    - a general description of the environment that is likely to be affected by the development or activity, together with a detailed description of those aspects of the environment that are likely to be significantly affected
  6. Identification of key issues
    - identify the likely impact on the environment. A risk-based approach should be taken when identifying issues, with the focus on matters likely to significantly affect the environment
  7. Assessment of environmental issues
    - air quality, including chemical spray drift, dust and odour
    - noise issues, especially at night if there are residences nearby (including on truck routes)
    - water quality, drainage, flooding, erosion and sedimentation
    - water supply impacts
    - traffic and road impacts
    - lighting impacts
    - waste management (e.g. composting, on-site waste water treatment, use and/or disposal, and effluent from silage bunkers and milking facilities)
    - native vegetation, as well as threatened species populations (both terrestrial and aquatic), ecological communities and their habitats
    - visual impacts, taking into consideration the landscape characteristics and viewing sites
    - social issues, including health risks and potential impacts on amenity
    - economic issues, including employment issues
  8. List of approvals and licences
    - a list of any approvals that must be obtained under any other Act or law before the development or activity may lawfully be carried out
  9. Proposed environmental management plan and mitigation measures
    - a full description of the measures proposed to mitigate any adverse environmental effects of the development or activity
    - proposed actions to minimise and manage land use conflicts
    - a single-section compilation of all commitments to avoid, minimise or manage potential impacts
  10. Justification for the proposal
    - the reasons justifying the carrying out of the development or activity in the manner proposed, with regard to biophysical, economic and social considerations

Section 4 contains more detailed information relating to siting, design and environmental impacts.

### 3.4.6 Other documents to accompany the development application

If relevant, the following documents are to accompany the DA or be integrated into the SEE or EIS:

- in the case of land that is, or is part of, critical habitat, or of a development that is likely to significantly affect threatened species, populations or ecological communities, or their habitats – a species impact statement
- if the development involves any subdivision work – preliminary engineering drawings of the work to be carried out
- if an environmental planning instrument requires arrangements for any matter to have been made before development consent may be granted (such as arrangements for the provision of utility services) – documentary evidence that such arrangements have been made
- in the case of development that involves the erection of a building – an A4 plan of the building that indicates its height and external configuration, as erected, in relation to its site
- if the development involves building work to alter, expand or rebuild an existing building – a scaled plan of the existing building
- if the land is within a wilderness area and is the subject of a wilderness protection agreement or conservation agreement under the terms of the *Wilderness Act 1987* – a copy of the Minister for the Environment's consent to the carrying out of the development
- if the development involves changing the use of a building (other than a dwelling-house or a structure that is ancillary to a dwelling-house) – a list of the Category 1 fire safety provisions that apply to the existing building, and a list of the Category 1 fire safety provisions that will apply to the building following its change of use
- in the case of residential development – a BASIX certificate. See [www.sustainability.nsw.gov.au](http://www.sustainability.nsw.gov.au) for information.

## 3.5 LODGING A DEVELOPMENT APPLICATION

### 3.5.1 Submit the completed DA and supporting information to the consent authority

You should check with the council about the number of copies needed for exhibition and consultation purposes.

The DA can be delivered by hand, sent by post or transmitted electronically to the principal office of the consent authority.

The DA must be accompanied by:

- **an environmental assessment**, in the form of an EIS (if designated development), or in the form of an SEE (if not designated development). This must be signed by the person responsible for preparing it, to declare that the information in the assessment is not false or misleading
- **Landowner's consent**, if you do not own the land, or if it is leased
- **DA fees**. Payments are based on the estimated capital value of the project. Additional charges are levied if the project is a designated development or an integrated development, if the DA is to be advertised, or if it requires concurrence from another authority. A quotation on DA fees can be obtained from council prior to formal lodgement of the DA.

On receipt of the DA, the consent authority will register the application, date it, and issue a DA number.

### 3.5.2 Exhibition and notification of DA

The consent authority must notify adjoining or affected landowners of the proposal in writing, and provide the opportunity for them to comment. If it is an integrated development, a copy of the DA must also be sent to any integrated approval authorities.

If the project is a designated development, the DA will be advertised in the local newspaper, and often in the Sydney press. This notice will usually advise that the documents are

available for inspection at the council offices and/or library, as well as the Sydney Office (and possibly a regional office) of the Department of Planning.

If the development is not a designated development, but is an integrated development, the DA must also be advertised. The consent authority will send copies of the documentation to relevant agencies to seek their views. A copy of submissions received as a result of the exhibition is also sent to relevant agencies.

### **3.5.3 Request for additional information**

The consent authority may reject a DA within seven days after receiving it if it is unclear or illegible. They may reject it within 14 days if it is not accompanied by the appropriate fee or approvals. An agency may 'stop the clock' and request additional information during the exhibition and assessment period. This means that the time for assessing the development is extended. The assessment 'clock' is not restarted until the agency is satisfied that it has sufficient information to appropriately assess the DA.

## **3.6 ASSESSMENT AND DETERMINATION**

### **3.6.1 Assessing the impacts**

The consent authority assesses the impact of the proposed development on the biophysical environment, the built environment, the community and the economy.

### **3.6.2 Consideration of submissions**

The council will identify the key issues they need to consider. Council may also organise meetings between the applicant and those people who have made submissions, to clarify issues and, if appropriate, develop suitable management measures to apply as conditions of consent.

### **3.6.3 Advice from panels or independent experts**

Council may engage independent experts to aid them in assessing the development. They may establish an independent panel to hold hearings with the community and other parties, to aid them in assessing the development, and to provide opportunities for the community to raise issues with technical experts.

### **3.6.4 Advice from agencies**

In assessing a DA, the consent authority may seek advice from NSW DPI, DWE, DECC, DoP and other state government agencies.

For integrated developments, the council will have sent a copy of submissions to the relevant agencies, and will seek the agencies' advice. The agencies provide the council with 'general terms of approval', which must be included in the council's consent conditions if it intends to approve the DA. The consent authority incorporates this advice into its assessment, and the general terms into the consent conditions. If the agency refuses to provide general terms of approval, the council must refuse the DA.

### **3.6.5 Impacts on council infrastructure**

If the development is likely to result in impacts on council infrastructure, such as roads and bridges, the council may charge an S94 contribution as part of the approval conditions. This may be a one-off contribution or an annual payment

### **3.6.6 Matters for consideration in making a determination**

The consent authority then decides either to grant consent, grant consent with some conditions, or refuse consent for the application. Matters taken into account include:

- the provisions of any local, regional or state planning instrument, development control plan and/or planning legislation that relates to the site or the proposed development
- the impact the proposed development is likely to have on the natural environment and the built environment, and the social and economic implications in the locality
- whether the site is suitable for the proposed development
- any submissions made by neighbours, the wider community and government agencies in response to the exhibition of the DA
- the public interest.



The applicant is notified in writing of the decision, and the decision is made public.

## **3.7 AFTER THE DEVELOPMENT APPLICATION DECISION**

### **3.7.1 Approval to begin building works – construction certificate**

If the DA is approved, the next step is to obtain approval of the building details. If the development involves building works such as a building, road, or stormwater system, you must apply separately to the council or an accredited certifier for a construction certificate. This certificate certifies that the work you intend to do will comply with the Building Code of Australia and any other required building standards.

Before any work can start, you must choose a principal certifying authority (PCA). This can be an appropriately certified officer of the council, or an accredited private certifier. When lodging an application for a construction certificate to the PCA, you must provide detailed design and construction plans of the proposed building works. These must be consistent with the plans approved by the council, and must comply with the Building Code of Australia.

At least two days before starting work, you must tell the council who the PCA is, if it is not the council.

### **3.7.2 Approval to occupy – occupation certificate**

You must obtain an occupation certificate from the certifying authority before occupying or using a new building, or changing the use of an existing building. The DA consent will specify what works are to be completed prior to occupation of the development.

### **3.7.3 Approval under other Acts**

Once the development application has been approved, any permits or licences required under other legislation must be obtained, prior to construction and operation of the development: for example, licences under the *Protection of the Environment Operations Act 1997* (POEO Act) or Water Management Act, the EP&A Act, and other Acts. If the approval is an integrated approval, the permit or licence must be consistent with the General Terms of Approval previously specified.

### **3.7.4 Compliance check**

The approving authority will monitor the development to ensure that the approval conditions are being complied with. If the development does not comply, you may be:

- issued with a penalty notice and fined
- ordered to rectify or make changes to the development or the activities carried out at the premises.

Action may also be initiated in the Land and Environment Court. The court may order you to carry out necessary works (such as making repairs), or may forbid you to use the premises.

### **3.7.5 Right of appeal under the EP&A Act**

If, as the applicant, you are unhappy with the decision, you can request a review by the consent authority within 28 days of the decision, and also appeal to the Land and Environment Court within 12 months of the consent authority's decision.

If the project is a designated development, and it is approved, anyone who objected in writing to the proposal during the exhibition period may appeal to the Land and Environment Court within the 28 days. Anyone may appeal to the Land and Environment court within 3 months if they believe there has been a breach of the EP&A Act, or that appropriate procedures have not been followed, in the assessment of the application.

## **4. SITING AND DESIGN CONSIDERATIONS**

### **4.1 PLANNING CONSIDERATIONS**

Table 4.1 outlines some of the potential environmental impacts during operation of a dairy development. Other causes of environmental impact such as the construction phase must also be taken into account.

When planning the construction of a new dairy or restriction facility, or the modification of an existing facility, you should consider the risk of environmental impacts and devise approaches to minimise or eliminate their occurrence through siting, design, operation and maintenance of the facilities as described in Sections 4 and 5.

**Table 4.1 Dairy Development and Potential Impacts**

Source	Impact							
	Surface & Groundwater quality impacts	Nutrient load	Odour	Noise	Dust	Pests and vermin	OH&S	Food safety
Dairy building	Manure, urine, milk, wash water, chemicals, impervious surface	High – manure-contaminated water	Manure, effluent storage area, milk, feed	Milk pumps, feed augers, milking shed equipment		Flies, other insects, mice and rats – attracted to cattle, feed, manure and moisture	Operation of milking equipment, cattle handling	Yes – note HACCAP program
Cattle holding yards	Manure, urine, wash water	High	Manure, feed	Confined cattle	Dusty yards		Cattle handling	No
Feed-pads	Manure, urine, feed, wash water	High	Manure, feed	Confined animals, mixer wagon, tractor	Dusty feed	Flies, other insects, mice and rats – attracted to cattle, feed, manure and moisture	Cattle handling, operation of equipment, manual handling, dust and noise	No
Feed storage areas	Leachate from moist feeds	Low	Moist and fermented feed in contact with air and soil; some by-product feeds	Feed delivery vehicles, tractors, mixer wagons, augers	Dusty feed	Flies, other insects, mice and rats – attracted to cattle and feed	Operation of heavy machinery, manual handling, exposure to dust and allergens	Yes – note HACCAP – feed declarations to minimise chemical contamination
Non-restricted facilities – calving pads	Manure, urine, wash water, bedding material, milk (for calves)	High	Manure, wet bedding materials, muddy areas, milk, feed	Confined animals, excited animals	Dusty bedding or yards	Flies and other insects attracted to cattle	Handling cattle, manual handling, dust	Yes – refer to HACCAP – calf rearing, correct usage of antibiotics
Cattle heavy use areas – cow travel	Manure, urine, compacted or disrupted soil	High	Manure, urine, mud	Congregating animals, moving cattle		Flies and other insects attracted to cattle	Handling cattle, use of vehicles – ag bikes, utes	No
Manure storage	Contaminated run-off	High	Wet manure, poorly composted manure	Tractors, bobcats during formation and maintenance	Dry manure	Flies, other insects	Operation of heavy machinery	Yes – buffer distance of effluent system from dairy

<b>Source</b>	<b>Water quality impacts</b>	<b>Nutrient load</b>	<b>Odour</b>	<b>Noise</b>	<b>Dust</b>	<b>Pests and vermin</b>	<b>OH&amp;S</b>	<b>Food safety</b>
Solids trap	Overflow if poorly maintained, poorly designed or too small	Medium	Wet manure, contaminated water	Tractors and bobcats during clearing	No	Flies, other insects, birds	Operation of heavy machinery, manual handling	No
Effluent ponds	Leakage if poorly constructed, overflow if poorly maintained or too small	High	Contaminated water	Irrigation pumps, manure separators	Dry manure	Flies, other insects, birds	Pump operation, safety near ponds and dams	Yes – buffer distance of effluent system from dairy
Effluent application area	Contaminated runoff, spray drift	High, if inadequate or unsuitable area for total nutrients, or inadequate monitoring	During application; after application from residual pools of water	Irrigation pumps	Dry manure	Flies, other insects, birds	Pumps, operation of heavy equipment (tractors, manure spreaders)	Yes – buffer distance of effluent system from dairy
Farm machinery	Fuel and oil leakage	Low	Poorly maintained engines	Prolonged operation, especially high-decibel equipment	Operation on dusty paddocks or laneways	No	Operation of heavy equipment	No
Vehicle access laneway	Redirection of stormwater flow; erosion potential	No	No	Milk tankers, fodder and animal transport vehicles	Dusty laneways	No	Road safety	No
Free stall barn	Manure, urine, feed, wash water, bedding material	High	Manure, wet bedding materials, muddy areas, feed	Confined animals, mixer wagon, tractor	Dry feed and bedding	Flies, other insects, mice and rats – attracted to cattle, feed, manure and moisture	Cattle handling, operation of equipment, manual handling, dust, noise	Yes – refer to HACCAP program – feed declarations to minimise chemical contamination
Dead animal disposal area	Leachate, contaminated runoff	High	If poorly maintained			Flies, other insects, mice and rats	Potential pathogens	Yes – need buffer

## 4.2 SITE SELECTION AND DESIGN CONSIDERATIONS

Appropriate siting is the most cost-effective way of dealing with environmental performance issues such as odour, dust, noise, effluent management and protection of surface water and groundwater. By addressing these issues at the planning stage, ongoing operational costs and management issues can be significantly reduced.

A site evaluation should be done to identify and assess any constraints within the site.

### 4.2.1 General siting considerations

- Favour a property with natural visual screening
- Consider proximity to neighbours
- Consider proximity to key inputs, such as water for irrigation, purchased feed (e.g. grain and forages) and availability of skilled labour and services
- Prevent a direct line of sight between the development and adjoining dwellings or roadways
- Locate structures with sufficient setbacks from roadsides, boundaries, water courses and drinking water bores
- Use landscaping, mounding and vegetation to soften the impact of the development
- Keep existing vegetation and landforms wherever practical
- Consider transport routes, especially for milk, feed and cattle
- Avoid development in areas that are visually prominent or highly exposed, such as ridges.
- Locate structures so that they follow the contours of the land
- Avoid locating structures on steep slopes (i.e. greater than 1 in 5)
- Check potential impacts of adjacent land uses in terms of pests, diseases and weeds
- Take note of adjacent sensitive areas (e.g. wetlands, waterways, native vegetation) and site restriction facilities appropriately

In relation to effluent management by new dairies or substantial expansions to existing dairies, consider:

- the amount of land required to treat, store and apply effluent and solid waste or sludge on- or off-site, as well as for future expansions. This assessment should include the dairy and any planned or existing restriction facilities
- suitability of the soil for the storage, treatment and application of dairy shed effluent, manure and other solid wastes
- an estimate of the quality and quantity of effluent and solid waste or sludge produced at all stages of the process (i.e. raw, post-treatment, post-storage)
- land suitability (including topography, slope, katabatic winds and drainage)
- climate (including rainfall and prevailing winds)
- the type of treatment system to be used
- neighbouring land use (including residential, commercial, industrial and agricultural)
- the depth to groundwater
- movement of contaminated run-off from manure stockpiles, holding yards and laneways
- the enterprise's proximity to sensitive sites – including surface water and groundwater, areas of scientific value, areas of Aboriginal significance and areas containing unique, uncommon or endangered fauna and flora
- the proximity of services and amenities, including power and water supply
- the need for appropriate buffer zones/separation distances (see Table 4.2) between the enterprise and current and future sensitive areas (including water and residences)
- potential beneficial uses of groundwater.

For technical guidance on soil land-forming requirements for the re-use of effluent, consult NSW DPI.

### 4.2.2 Locality

Any site should have access to an adequate supply of good-quality water and a reliable power supply.

Dairies must be located in a rural zone, and not too near existing or potentially sensitive land uses that are likely to be incompatible with dairy farming. Sensitive land uses include

residential dwellings, hospitals, schools, and other places where people are present for extended periods of time. The location and size of a proposed dairy should be such that there will be no unacceptable impacts on the health and amenity (e.g. odour, dust, bio-aerosols, noise, visual impacts) of residents on the property itself, on neighbouring properties, and in the surrounding area.

It cannot be assumed that the neighbouring owners or land uses will remain the same in the short or long term. Where a site adjoining a proposed dairy is currently vacant, it should be assumed that a future dwelling might be located anywhere on the property. Any agreement with an existing owner regarding the acceptance of impacts is not binding on future owners. Consider reasonable bufferzones/separation distances (see Table 4.2) from the boundary of the property, for management of potential environmental impacts.

You should also consider the potential for surrounding land use, including other agricultural activities, that may in the future have an adverse impact on the dairy.

#### **4.2.3 Size**

The land area required will vary considerably. A property needs to be of sufficient size and preferably of the desired shape to accommodate the facilities required.

Facilities include:

- restriction facilities (milking sheds, feeding and loafing areas, including calving pads)
- feed storage areas
- internal roads and laneways
- staff amenities
- vegetative screens
- setbacks
- pasture and cropping areas
- containment and management of effluent.

#### **4.2.4 Topography**

The local topography, climatic conditions or other features may indicate that changes to buffer/separation distances (see Table 4.2) are required.

An elevated site is preferred for natural ventilation and drainage. Sites where cold air will carry odour down to residences should be avoided. A reasonably level site for the restriction facilities is preferable to a sloping one, to minimise erosion and building costs. When spreading effluent, flat to gently sloping land is preferred.

#### **4.2.5 Existing operations with site constraints**

Consider implementing the following to address effluent management: appropriate design and management, to ensure that environmental performance objectives can be met:

- modifications to the dairy shed, existing restriction facilities, yards and laneways
- modifications to the effluent management system
- effective housekeeping and best management practices
- updating of the farmers' knowledge
- liaison with regional planning and zoning agencies.

See [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au) for more details.

#### **4.2.6 Odour impact assessment**

Odour can be an issue on dairies of any size. Design and management factors to minimise odour impacts should be considered when planning a new dairy, an effluent management system and restriction facilities.

Guidance on the DECC's expectations regarding odour impact assessment is contained in the *Technical framework: Assessment and Management of Odour from Stationary Sources in NSW* and *Technical notes: Assessment and Management of Odour from Stationary Sources* (DECC 2006).

Prior to commencing any significant odour impact assessment, you should contact the DECC to discuss the preferred assessment methods. Additional information on the DECC's requirements for odour impact assessment is contained in the *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales (EPA 2001)*.

An assessment of odour impact will be needed to support an environmental impact statement (EIS), a statement of environmental effects (SEE), a development application or a DECC licence application (if the activity is listed in Schedule 1 of the POEO Act). The assessment must show the regulator (local council or DECC) that the proposal is able to meet the DECC environmental outcomes for odour.

Odour impact assessment is a site-specific design tool; however, it can only predict the likely odour impacts. In some cases, once the facility is operational, unforeseen odour impacts may be experienced at some locations. The farmer will need to address these odour impacts and, if necessary, modify the facility based on actual (rather than predicted) operational outcomes.

Section 5 has details on management practices that can affect odour impacts. It is better to plan to implement these practices before the dairy is operating, rather than use them to ameliorate an existing problem.

#### **4.2.7 Power supply**

Access to reliable power is essential for the operation of milking facilities, cooling equipment and other farm machinery, such as irrigation pumps and feed processing equipment. Discuss your power needs, including future expansion, with the power supplier when you are estimating your power and electric equipment requirements. Access to power may be expensive if it is not already present on the site.

Installation of standby generators may be appropriate in some areas.

#### **4.2.8 Road access**

Suitable all-weather vehicle access should be provided for the transport of milk as well as any feed and livestock. When planning road access, you should:

- provide a convenient parking area for staff and visitors
- consider the impact of noise, dust, lights and road safety on nearby sensitive land users when locating access roads, parking and turning areas
- consider separate cattle and vehicle roads/lanes
- place the access gate (from a public road) far enough inside the boundary that trucks can park off the road without affecting passing traffic.

#### **4.2.9 Water supply**

Water may be a limiting factor to the size of a dairy enterprise. Dairies are large consumers of water, because of the daily water needs of lactating cows, as well as the cleanliness requirements for the milking shed and adjoining yards.

The selected site should have access to water of sufficient quantity and quality for each intended use.

Water requirements can include:

- potable water for the cleaning of the milking machine, as well as for washing the inside of the milking shed. This is a requirement of quality assurance schemes audited by NSW Food Authority,
- potable water for the operation of milk cooling systems (plate coolers and cooling towers)
- water to wash dairy yards, feeding and housing facilities. Reclaimed water that has been adequately treated can be used
- stock drinking water. Take into account the maximum daily milk production of the cow, environmental conditions and the total number of stock
- water for stock cooling systems (e.g. sprinklers in holding yards or races)

- irrigation water in areas where (and at times when) rainfall is low or erratic. This may include the use of reclaimed water from sewerage treatment works or other industries.

#### **4.2.10 Vegetation**

The removal of vegetation may require approval from the Catchment Management Authority.

When developing a site, trees should be strategically cleared for a distance of 2–2.5 times the mature height of the trees around the proposed restriction facilities.

When planting native vegetation, use local native species. State Forests or a reputable local nursery will be able to advise you on suitable and appropriate species.

#### **4.2.11 Farm Layout**

The layout should provide for efficient management of livestock and feed, delivery of inputs, and collection of milk, as well as collection, treatment and disposal of wastes. It must also minimise off-site impacts on neighbouring land uses.

Factors to be taken into account include:

- existing buildings
- roads
- dams, watercourses, drainage lines and other bodies of water
- slopes and other topographical features
- vegetation and valuable habitat
- local meteorological conditions, such as wind patterns and atmospheric stability.

The features of the dairy that need to be considered in the design include:

- the position of the dairy shed in relation to access roads, effluent storage (both liquid and solid), feed storage and feeding areas
- the location of noise producing equipment (milk pumps, feed processing equipment). Such equipment should be placed as far as possible from the boundary fences and roads
- design, placement and construction of cattle laneways from the shed to the paddock or to restriction facilities
- effluent application areas
- paddock design
- stock watering points
- carcass disposal areas.

#### **4.2.12 Buffer Zones or Separation distances**

Buffer zones (or separation distances) are required in order to minimise the possibility of contamination of waterways or the degree of offensive sight, odour or noise from restriction facilities, effluent ponds, manure heaps, sludge stockpiles and land-application sites. Table 4.2 identifies minimum separation distances. These distances are minimum requirements and apply generally to NSW. They should be used as a starting point and guide only. Local and site specific circumstances and the application of relevant council and State policies as well as guidelines specific to your area should increase the buffer distance as required.



Table 4.2 Suggested minimum separation distances for dairies (subject to existing legislation)

Feature	Distance from livestock complex <sup>1</sup> (m)	Distance from land application of effluent, manure or sludge (m)
Well used public road <sup>2</sup> (>50 vehicles/day)		
- intensive livestock & restricted dairy facilities	200	50
- pasture based livestock & dairy facilities	100	50
Low usage public road <sup>2</sup> (1 – 50 vehicles/day)	50	20
Major public water reservoir	800	800
Bore, well or spring supplying potable water	100	100
Major rivers and creeks	100	100
Minor or intermittent watercourses	50	50
Dry runoff/erosion gullies on property	10	10
Dairy	50	50
Neighbouring rural residence <sup>3</sup>	200	100
Property boundary	50	10

<sup>1</sup> **livestock complex** – includes all components and facilities, such as buildings, pens, feedpads, loafing areas, effluent ponds, settling basins, manure and sludge storage areas, composting areas etc.

<sup>2</sup> **road** – refers to the nearest edge of the formed section normally traversed by vehicles, and excludes the roadside vegetation strips.

<sup>3</sup> Minimum distance only. The variable separation distance must be calculated based on DECC's policy 'Assessment and management of Odour from Stationary Sources in NSW (November 2006)' for 'intensive' and 'restricted' facilities and the greater of the two distances applied. Note Appendix A for more information.

**Note:** the above table applies to all new dairies and components added to older dairies during upgrades. The table should not be applied retrospectively to components or dairy complexes existing before the release of the March 2008 edition of the NSW Environmental Management Guidelines for the Dairy Industry.

#### 4.2.13 Flood-prone land

If effluent management systems are sited on flood-prone land, extra consideration will be needed.

##### *Dairy farms and acid sulfate soils*

This can damage the environment by acidifying and poisoning groundwater and streams. It may also reduce farm productivity by inhibiting plant growth and damaging farm structures. The best approach to managing acid sulfate soils is to avoid disturbing or draining the iron sulfide layer in the first place. Development consent is required for works such as the construction of drains and ponds that may affect acid sulfate soils. Acid sulfate soil risk maps can be obtained from DECC which show whether there is a probability of acid sulfate soils occurring on your farm.

##### *New dairy farms and flood-prone land*

To protect surface waters and subsurface waters, the best practice recommendation is that the dairy sheds and associated infrastructure (including effluent treatment and storage ponds, as well as solids storage areas) of pasture-grazed dairies should not be sited in areas subject to flooding at 1-in-25-year or more frequent levels, unless adequate safeguards can be incorporated. Such safeguards include systems that are above the flood line or protected from floodwater. Special provisions, such as tailing dams and contouring, may be required.

Restricted dairies and restriction facilities should be sited above the 1-in-100-year flood levels.

If you plan to establish a new dairy on a floodplain, you should seek advice from DECC which has statutory responsibilities regarding development on flood plains in the state.

#### *Existing dairy farms and flood-prone land*

A large proportion of the NSW dairy industry is situated within floodplains and on alluvial flats. As it is not feasible to alter the site and location of existing dairies, less stringent requirements are to be expected for the siting of treatment and storage ponds and solids storage. It is best to adopt effluent management systems that are appropriate to the location.

Existing ponds should not be topped by flood waters. If a pond is likely to overflow and pollute waters, you should either modify or re-site it.

When the pond overflows, structural damage and silt deposition may occur, as well as contamination of the waterway. Irrigation and application of effluent to paddocks is permitted on flood-prone land, but areas should be avoided that are subject to frequent inundation (more often than 1 in 6 months).

Seek approval from the local council before building new ponds for an existing dairy.

#### **4.2.14 Floodways**

Ponds must not be located in local council designated floodways without prior approval. Alterations in the floodwater flow pattern will occur, as well as structural damage to the pond and possible scouring of the surrounding area. Land application of effluent is permitted in floodways.

#### **4.2.15 Groundwater management**

Dairies should not be constructed on areas with shallow groundwater and in particular in alluvium areas where groundwater may have a strong connectivity with adjacent watercourses. Restriction facilities and effluent ponds should have impermeable bases and adequate clearance to the groundwater table to protect against groundwater pollution.

The vulnerability of the groundwater resource to pollution depends on the depth to the groundwater, the soil type and the nature of the aquifer systems in the region. A development in a vulnerable area will require more thorough assessment and investigation, and will need more control strategies to ensure protection of the groundwater resource.

Generally, an impermeable, compacted base will prevent nutrient leaching. However, on vulnerable soils, you may need a concrete base to ensure groundwater protection.

## 5. MANAGING ENVIRONMENTAL IMPACTS

This section deals with the best management practices (BMP), including basic elements that apply to restricted dairies, restriction facilities and effluent management. These procedures would also be addressed in the on-farm quality assurance program for the property. Technical information on all matters relating to dairy effluent will also be available at [www.dairyingfortomorrow.com/activities/products.php](http://www.dairyingfortomorrow.com/activities/products.php) in late 2008.

### 5.1 THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Effective operation and management of a dairy may significantly reduce the potential for environmental problems, and provide protection for natural resources. An environmental management plan (EMP) can be submitted with the development application for approval.

An EMP specifies:

- standards and practices for the operation of the dairy and restriction facilities
- strategies and measures for minimising environmental risks
- contingency plans for managing any environmental problems that may arise.

The EMP is based on an environmental management system (EMS) approach of **plan, do, check and act**, together with a philosophy of continual improvement of the system and its operation. To make effective environmental management easier, an EMP may contain a number of separate management strategies, depending on:

- the scale of the development
- the complexity of the development
- the environmental sensitivity of the location.

Other plans that can be part of an overall EMP include, for example, dairy effluent management, management of the feed pad area and management of riparian areas of the property.

These plans could have separate components covering the construction and operational phases.

#### 5.1.1 Objective

To apply best management practice, in order to minimise the environmental impacts associated with farm operations and management, and to comply with legislative requirements. This is particularly important when the enterprise is a restricted dairy, or there are a number of restriction facilities present.

#### 5.1.2 Performance criteria

An EMP is developed and implemented. It includes strategies and measures for minimising environmental risks, and contingency actions for managing environmental problems that may arise.

#### 5.1.3 Best practice guidelines

- An EMP is submitted with the development application and forms part of the planning approval.
- The EMP is site-specific. A generic EMP that is acceptable to the appropriate regulatory authority may be used as a template.
- Where any required element is not included in the EMP, the applicant must explain why it is not considered relevant or applicable.
- The EMP is maintained and updated as required by the dairy owner/manager, and is available for inspection by the appropriate regulatory authority.
- The EMP is reviewed annually by the dairy owner/manager.
- To help determine whether the EMP is effective, neighbours may be enlisted to keep a diary of environmental events that are deemed unacceptable. Try to ensure that a range of compass directions and distances from the farm are represented, to allow assessment of the direction and dilution of the impact.

- An EMP should be auditable, and include:
  1. contact details, description of the farm and operations and an environmental management policy statement
  2. overall objectives and specific, measurable and time-bounded targets for each identified risk event
  3. a list of risk events identified using risk management principles
  4. day-to-day best practice management strategies to minimise the potential for risk events
  5. details of contingency plans to deal with accidents and emergencies (e.g. flood; fire; disposal of milk, due to contamination or inability to deliver milk to a processing plant; large scale cattle deaths, due to endemic or exotic disease; chemical spill; power and/or water interruption), including trigger points and target response times for critical incidents
  6. details of the responsibilities of the dairy owner/manager regarding environmental management
  7. details of monitoring systems for assessing environmental performance and procedures, to ensure regular and accurate recording of data. Monitoring records are to be available to responsible authorities upon request
  8. procedures for responding to complaints
  9. provision for annual review and auditing of performance against EMP objectives, with appropriate adjustment made in light of findings and in accordance with continuous improvement principles
  10. provision for post-incident investigation, review of emergency actions carried out, and reporting to the local council if requested
  11. environmental training undertaken by staff.

## **5.2 SURFACE WATER, GROUNDWATER AND SOILS MANAGEMENT**

Dairies use a considerable amount of water for milking machines and dairy shed cleaning, yard and pad wash down and stock drinking. This water must be managed so that the integrity of the water resource and the ecosystems that it supports are not compromised. Transfer of organic matter (such as manure, milk, nutrients, salts, micro-organisms and chemicals) to surface water and groundwater must be avoided.

Sustainable use of effluent as a fertiliser requires the development of a nutrient budget. The effluent applied, together with other nutrient sources, should meet plant requirements. The nutrient budget can also assist in controlling the build-up of nutrients on the farm, and identifying areas of need or oversupply.

### **5.2.1 Objective**

To ensure that best practice is adopted in the planning, design, development, operation and management of the dairy, so that surface water, groundwater and soils are managed sustainably, and protected from contamination and degradation.

### **Requirements of the POEO Act:**

'The occupier of any premises must not cause or permit any waters to be polluted' (section 120).

#### **5.2.2 Performance criteria**

- Best practices are applied in the planning, design, development, operation and management, so that there is minimal risk of contamination to surface water, groundwater and soils during normal operation of the dairy and its facilities.
- An erosion and sediment control plan is submitted with the development application. The plan meets the requirements of DECC and the local council (note: [www.environment.nsw.gov.au/sustainability/builders\\_erosion.htm](http://www.environment.nsw.gov.au/sustainability/builders_erosion.htm)). The owner and the builder are responsible for controlling soil erosion, as well as preventing sediment from the building site from being washed into stormwater drains or other waters, as required under section 120 of the POEO Act.
- A licence is obtained from DWE for the use of surface water or groundwater in the operation of the farm.
- An irrigation and drainage management plan (IDMP) is developed for the enterprise if irrigation is required. Contact NSW DPI for advice and assistance in compiling this plan.
- Irrigation scheduling is managed so as to best utilise the water resource to promote optimum plant growth, prevent soil from becoming waterlogged, and prevent excess nutrient run-off or percolation to groundwater.
- Adequate wet-weather storage capacity is ensured for liquid and solid effluent, feed leachate and contaminated surface water. Chemicals, pesticides, detergents, pathogens and nutrients are all potential contaminants.
- Strategies and measures are developed and implemented for minimising contamination and degradation of surface water, groundwater and soil from the farm. Contingency actions are also developed for managing problems that may arise.

#### **5.2.3 Best practice guidelines**

- Reasonable separation distances are achieved to prevent contamination of surface and groundwaters (see s4.2.12).
- For existing dairies, effluent management systems should not be constructed in a flood-prone area, unless safeguards are observed (see section 4.2.13).
- Groundwater vulnerability is assessed, and appropriate siting, design and management strategies are used.
- Effluent storage areas are designed to divert uncontaminated stormwater.
- Any contaminated stormwater is collected, treated and disposed of without causing pollution.
- Nutrient and chemical storage areas are constructed on an impervious base material, in order to protect ground water from pollution. Chemicals should be stored in bunded and roofed areas.
- Spills of effluent, feed, chemicals and other potential pollutants are cleaned up promptly.
- Chemical storage and usage methods ensure protection of natural resources from contamination.
- Land application of effluent is carried out using a water and nutrient balance that matches application rate to safe soil storage ability, safe infiltration rates, crop uptake and allowable losses.
- Pastures are managed so as to maintain vegetative cover, stabilise soils and use applied nutrients (organic and inorganic) effectively.
- Stock access to streams and damage to stream banks are minimised.
- Unsealed roads are located and managed so as to minimise soil movement and erosion.
- Farm dams are constructed and maintained so as to minimise leakage, as well as soil movement and erosion.

- Local wetlands are protected for their role in filtering natural sediment and nutrient loads and providing a diversity of wildlife habitat.
- On-site household wastewater systems (e.g. septic tanks and aerated wastewater treatment units) are maintained and operated correctly.
- Strategies are used to control site erosion and water run-off. These strategies include preventative measures, such as appropriately placed and maintained sediment traps, sediment barriers, silt fences and straw bales.

## 5.3 ODOUR

Odour is a major potential source of complaint against dairies, especially those that are restricted or have restriction facilities. Odours can arise from manure and wastewater storage areas, certain feeds (such as silage), feed storage areas, livestock housing (such as calf rearing sheds or free stall sheds), and the cows themselves.

The potential nuisance caused by the nature, strength and offensiveness of the odour can arise from a number of factors, including:

- total animal number and stocking rate on pastures and in restriction facilities
- the presence and number of restriction facilities such as calving pads, calf sheds, feed pads and housing sheds
- the feeding and storage of certain feedstuffs (i.e. silage, as well as food industry by-products, such as citrus pulp and brewers grain)
- disposal areas for milk
- waste management practices, such as effluent ponds and manure storages.

The frequency, intensity, duration and character of odour impacts are influenced by:

- local meteorological conditions and topographical features that govern the transport and dispersion of odours
- the distance of the receptor or sensitive land use from the odour source
- the nature and sensitivity of the receptor.

It is unrealistic to expect no odour from a livestock industry. As long as satisfactory management practices are adopted, any significant odour problems should only be short-term, and contained within the property boundary.

Odour control involves planning, management and communication. The important steps involved in the minimisation of negative impacts of odour from a dairy include:

- careful planning and siting of the dairy shed, effluent management systems, feed storage areas, restriction facilities (such as free stall sheds) with regard to neighbouring residences, public roads and wind direction
- good management of all the facilities

Good communication with neighbours is important. Advise your neighbours before starting any work that may cause temporary offensive odours.

### 5.3.1 Objective

To ensure that best practice is adopted in the planning, design, development, operation and management of dairy farms, so that odour emissions do not cause unacceptable impacts on nearby sensitive land uses or receptors.

#### ***Requirements of the POEO Act:***

'The occupier of any premises must not cause air pollution (including odour) through a failure to maintain or operate equipment, to carry out maintenance work on plant, or to deal with materials, in a proper and efficient manner. The operator must also take all practicable means to minimise and prevent air pollution' (sections 124, 125, 126 and 128).

'The occupier of a premise on which scheduled activities are undertaken must not emit an offensive odour, unless the emission is identified in the environment protection licence as potentially offensive and was emitted in accordance with the licence' (section 129).

### 5.3.2 Performance criteria

- Dairies and restriction facilities are set at appropriate separation distances from the boundary of the enterprise (see s4.2.12).
- Site selection and design for a restricted dairy is informed by an odour impact assessment that identifies appropriate separation distances.
- Best environmental management practice is applied in the design of restriction facilities, waste management systems, herd management and general farm management, so that farm operations and odour emission comply with the POEO Act.
- An EMP is developed and implemented that minimises odour emission and includes contingency actions for managing odour problems as they arise.

### 5.3.3 Best practice guidelines

- Best practice guidelines for the siting, design, management and maintenance of dairy waste management system and restriction facilities are followed.

### 5.3.4 Careful planning and siting of facilities

- Feed storage areas should be constructed so that feed is kept dry. Purchased feedstuffs should be stored for a short time before use. Ideally, these feedstuffs should be stored on an impervious surface, in a covered area or shed.
- Any leachate from moist feeds, such as silage and brewer's grain, should be contained. This can be achieved by bunding the storage area. The biochemical oxygen demand (BOD) of silage leachate is approximately 40 times that of milk. It should not be introduced into the dairy or feed pad effluent pond, as it will severely reduce anaerobic activity. The leachate may be used on pasture.
- Consider the annual and seasonal prevailing wind directions, as well as potentially sensitive areas, when deciding on the location of continuous reclaimed water irrigation areas and reclaimed water ponds.
- Trees and windbreaks reduce agitation of the surface of the pond by wind and also help promote vertical air mixing and dilution of odours.
- Do not plant trees so that they shade the anaerobic pond. The reduction in temperature can reduce the pond's microbial activity, and increase the release of odours.
- Plant trees and shrubs between neighbouring residences, reclaimed water ponds and proposed irrigation areas. These can cause a disturbance in the wind pattern, forcing odour to rise upwards and away from the residence.
- Plant trees and shrubs between watercourses and irrigation areas, or re-establish or manage the existing riparian vegetation, as this can restrict the movement of the contaminated water, as well as the movement of pathogens.

### 5.3.5 Sound effluent management

- Limit the nutrient loading in the effluent storage by separating solids from the liquid component. Consider incorporating a solids trap or manure separator into the effluent management system. The reduction in organic material in the liquid effluent reduces odour formation.
- Store manure away from the dairy and feeding area. Odours can build up over 4–5 days and reach a peak in 20 days. Transfer the manure from feeding areas, laneways and shed at least once every week.
- Half-fill a new storage pond with water before allowing effluent to enter.
- Avoid infrequent 'shock' loadings of effluent to the pond, as this can cause sharp increases in odour. Effluent should be added to the pond daily.
- Monitor the pH within the anaerobic pond. The pH should be slightly alkaline. In new ponds that are overloaded or have inadequate dilution water, the pH may fall below 7

(acidic conditions), which can cause odour. The addition of hydrated lime to acidic ponds can improve both pH and odour.

- Try to have a system that incorporates an aerobic second pond, which is shallow with a large surface area.
- Water from the aerobic pond can be used for irrigation. There is a greater potential for odour when water from an anaerobic pond is used for irrigation, due to partial or incomplete anaerobic breakdown products in the water.
- On sites where odour may be a major problem (e.g. close to urban areas), covering the pond or storage tank can reduce odour emission. There are possibilities for using the released methane (e.g. water heating).
- Products for reducing odour or improving anaerobic digestion may be added to the storage pond.
- When pumping reclaimed water from storage ponds, take care to avoid stirring up sludge.
- If the spreading of manure or sludge could result in odour, consider injecting it directly into the soil or spreading it thinly over the soil or pasture. Apply it to the pasture immediately after grazing, to improve the palatability of the grass at the next grazing.
- For all spray irrigation, use sprinkler nozzles that produce large droplets rather than a fine spray. Note: the lower the nozzle height, the lower the odour potential.
- Consider the wind direction and velocity on days when irrigation or manure spreading is carried out. Adjust application times to suit.
- When irrigating with reclaimed water, apply it at such a rate that the liquid does not remain ponded for more than one hour after application.
- Where possible, irrigate reclaimed water or spread manure and pond sludge during the day rather than in the early morning or late evening, when odours can be more intense.

### **5.3.6 Sound general management of the facilities**

- Clean up spilt feed and silage before it ferments.
- Keep cows clean by minimising exposure to mud and manure in yards, paddocks and free stall sheds. Concreted or impervious yards that are easy to clean, attention to muddy areas in laneways and gateways, and regular removal of manure from cow beds and laneways in free stall sheds not only reduce manure contamination of cows, but can assist milk quality and mastitis control through the maintenance of udder health.
- Keep bedding in free stall sheds dry. Regularly remove any wet or contaminated bedding.
- Dispose of any dead animals promptly. A suitable method and site for disposal of a carcass should be part of the farm plan.

### **5.3.7 Minimum separation distances**

Minimum recommended set back or buffer distances have been determined to minimise the contamination of waterways and potential odour problems. Refer to Table 4.2.

The results of an odour impact assessment play a key role in determining an appropriate location and size for a dairy. This assessment may result in greater separation distances than identified in Table 4.2. Guidance on the DECC's policy regarding odour impact assessment is contained in the *Technical framework: Assessment and Management of Odour from Stationary Sources in NSW (DEC, November 2006)* and *Technical notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC, November 2006)*.

An assessment of odour impact will need to be completed as part of an SEE or EIS to support a development application. A Level 1 odour impact assessment calculation will be required for most developments; however, Level 2 and 3 assessments, which involve more complex odour modelling, may be requested by DECC.

There is no specific Level 1 odour impact assessment for dairies in the DEC *Technical notes*. However, since dairies are similar in feeding and waste treatment function to cattle feedlots, it is suggested that the 'Cattle Feedlots: Level 1 Odour Impact Assessment' detailed in the *Technical notes* be used with some modifications as indicated in Appendix A.



## 5.4 EFFLUENT AND NUTRIENT REUSE, FARM WASTES AND DISPOSAL OF DEAD LIVESTOCK

Effluent management on a dairy involves control of both solid and liquid effluent, as well as its sustainable reuse as a source of nutrients and as a soil conditioner. It should be considered as resource management.

Effluent and nutrient reuse management includes:

- liquid effluent management
- on-site manure stockpiling and composting
- on-site bedding, stockpiling and composting of organic bedding, if used in dairy housing.

Waste management includes:

- disposal or recycling of silage plastic
- disposal of used chemical containers
- safe management and disposal of products used for cow treatment (e.g. syringes, needles, pharmaceutical products, footbath liquids)
- preventing run-off
- disposal of dead livestock
- disposal of milk unsuitable for human consumption or use on the farm as calf feed.

Mass mortalities as a result of an emergency such as exotic disease will be managed at the local, regional or state level by emergency management committees with NSW DPI as the control agency. In general, routine disposal of dead livestock is the responsibility of the dairy.

### 5.4.1 Objective

To ensure that best practice is adopted in the planning, design, development, operation and management of dairies so that the management, reuse and recycling of effluent and nutrients, farm waste and disposal of dead livestock results in minimum impact on the environment.

#### *Requirements of the POEO Act:*

'It is an offence under the POEO Act to dispose of waste in a manner that harms or is likely to harm the environment. It is also an offence to transport waste to an unlawful waste facility, or to permit the disposal of waste at such a facility' (sections 115, 143 and 144).

### 5.4.2 Performance criteria

- Best practice is applied in planning, design, development, operation and management of the farm, to minimise farm wastes, manage effluent effectively and maintain visual amenity.
- An EMP is developed and implemented that includes strategies, measures and contingency actions for waste management, including a nutrient management plan for application of effluent and contingencies for disposal of dead animals and large volumes of milk.
- Management and disposal systems for waste are designed and operated so that odour generation and disease transmission are minimised.
- Farm operations meet the requirements of waste management legislation such as the POEO Act 1997.

### 5.4.3 Best practice guidelines

#### *Liquid effluent system and management*

- The effluent system is easy to manage with minimal labour input.
- All effluent is retained on the property.
- Effluent ponds are constructed in low-permeability clay soil, have been lined with clay, or have a synthetic liner that prevents seepage.

- All effluent from dairy shed and associated yards can be stored during all weather events, and for periods in which application is not possible.
- The system has the ability to cope with the current herd, and should be designed (in conjunction with a farm plan) to cope with a herd/shed/farm expansion.
- The effluent system equipment is serviced on a regular basis.
- Backup equipment is available for emergencies.
- If a sump system is present, it has sufficient capacity to store at least two days worth of effluent, to allow for mechanical breakdown or unfavourable weather.
- The effluent is periodically tested for nutrient value.
- Soil testing is used to monitor the ongoing suitability of application sites.
- The effluent can be distributed over enough suitable farm area to avoid nutrient, salt and organic overload. Application areas should be rotated, to prevent excess nutrient build-up and to optimise nutrient use.
- Spreading or spraying effluent on pastures does not cause pollution to air, surface water or groundwater.

#### *Effluent from feed pads and other restriction facilities*

- Effluent from a restriction facility may flow into the existing effluent system (if it has been sized appropriately) or into a separate effluent system.
- The restriction facility is constructed on low permeability soil, or else concreted, to minimise nutrient infiltration into the groundwater.
- Manure and feed waste are regularly scraped from restriction facilities and stored, so that they do not pollute surface water or groundwater, or cause air pollution.
- The restriction facility has drainage which minimises bogging during wet weather, or has reinforced concrete aprons to enhance drainage and assist in regular maintenance.

#### *Disposal of dead livestock*

- Dead livestock can be disposed of in a number of ways, such as burial, composting, rendering and incineration. Before deciding on any disposal option, a risk assessment should be undertaken to determine the most appropriate option for each situation, given the requirements of the POEO Act and the Stock Diseases Act.
- The cause of all deaths should be determined by your veterinarian. In the event of any suspicious or unexpected deaths, you should notify your District Veterinarian at the Rural Lands Protection Board.
- If a mass mortality is caused by a suspected exotic disease or highly contagious endemic disease, contact the District Veterinarian at the Rural Lands Protection Board, your local veterinarian, NSW DPI, or call the Emergency Disease Watch Hotline on 1800 675 888.
- An emergency response plan for the disposal of dead livestock should be developed to deal with a disease outbreak or natural disaster.

#### *Disposal of milk*

- Waste milk can be diluted 1:10 with water, and spread on pasture. It should be applied in a way that suits soil and plant requirements.
- Milk can affect the function of an effluent pond because of its high BOD and organic loading. Disposal of milk in an effluent pond is not recommended. However, if other means of milk disposal are not feasible, a maximum of two days milking product can be added to a well-functioning pond with minimal adverse effect.
- Milk can be fed to milk-fed calves if there are suitable storage facilities available, to prevent spoilage. This may be the preferred option for colostrum and milk discarded during the colostrum withholding period.
- If previous arrangements have been made and there is a suitable facility that can be accessed, the milk can be transported off-site for use in manufactured pet food.
- An emergency response plan for disposal of milk should be developed, to deal with a disease outbreak or natural disaster.
- Always ensure that there is no waste milk run-off to waterways.

#### *General farm waste*

- Any rubbish should be disposed of at public landfill, recycled after sorting or, if possible, reused on farm. No rubbish or household waste should be deposited in gullies or other areas of the farm, as it could contaminate surface water and groundwater.
- Silage wrap and plastic pit covers should be disposed of at public landfills or collected for recycling, if the service is available.

## 5.5 NOISE

Noise from dairy farms may be intermittent or continuous, depending upon the size and complexity of the dairy operation, and the time when the milk is collected by tanker. Most dairies milk twice each day throughout the year, although some may operate during the night and through the middle of the day, while others may operate for 24 hours.

There will be instances when noise is unavoidable. The main sources will be:

- milking machine and associated equipment, such as vacuum pumps
- compressors on milk storage cooling vats
- machinery such as tractors, bobcats, augers, feed processing equipment, feed mixer wagons and farm vehicles
- irrigation pumps
- heavy transport, such as milk, fodder and animal transport vehicles
- domestic vehicles belonging to the farm family and employees
- cattle – cows separated from other cows, cows and calves, bulls.

Table 5.1 illustrates the intensity of noise from some common equipment. The equipment is assumed to be well-maintained and operating correctly. The farmer should check the noise rating on any purchased equipment, and note the correct maintenance required for managing noise from that equipment in the on-farm QA program.

**Table 5.1 Noise intensity of dairy equipment**

Equipment	Sound power level - decibels (at 2 metres)
Vacuum pump (milking machine)	58
Compressor (milk vat)	50
Milking machine pulsators (hydraulic)	54
Effluent sump pump	64
Feed mixer	71
Bobcat	64

Neighbouring residences may be more sensitive to noise in the evening and night, when background noise levels are lower and the potential for sleep disturbance is greater.

Noise transmission and the resulting impacts are affected by many factors, including atmospheric conditions, local topography and noise barriers. Restricted dairies should be sited, designed and managed so as to minimise the risk of noise complaints.

### 5.5.1 Objective

To ensure that noise levels generated by the farm and associated activities do not have unacceptable noise impacts on nearby sensitive land uses.

#### *Requirements of the POEO Act:*

'The occupier of a premises must not cause noise to exceed prescribed levels, or cause offensive noise, or conduct activities in an environmentally unsatisfactory manner' (sections 95-100, 263-279 of the POEO Act).

### 5.5.2 Performance criteria

- Noise levels generated by the farm and related activities do not exceed the requirements of the NSW Industrial Noise Policy (EPA 2000).
- An EMP is developed and implemented that includes strategies, measures and contingency actions for minimising noise impact.

### 5.5.3 Best practice guidelines

- Noise levels generated by the farm and related activities meet the requirements of the NSW Industrial Noise Policy. The noise from vehicle movements associated with development is covered by the policy if the vehicles are not on a public road. If the vehicles are on a public road, the Environment Criteria for Road Traffic Noise (EPA 1999) applies.
- Noise and vibration from the construction and operational phases of the development are addressed in the EMP.
- Sufficient setbacks or other noise mitigation measures are implemented to minimise noise transmission to nearby areas.
  - Pumps and other noise-producing equipment are enclosed inside sound insulated sheds or casings.
  - Landscaping, mounding, barriers and existing buildings are used to absorb and deflect noise.
  - Note s 4.2.12 for suggested minimum separation distances.
- All mechanical equipment is sited away from sensitive land uses.
- All vehicles and machinery are properly maintained, to ensure that noise does not exceed manufacturers' specifications. All vehicles should have efficient exhaust mufflers.
- The need for heavy vehicles to reverse is minimised.
- Hours of machinery and vehicle operation should preferably be during daylight, including machinery used for feed processing, storage and transfer.
- Delivery of feed or transport of stock should be carried out during daylight hours, except in emergencies or if council consent has been obtained.
- Dairy road access should ideally be a minimum of 250 metres from neighbouring residences.
- All operators of noisy equipment should use suitable hearing protection.

## 5.6 DUST

Dust occurs when dry particles of matter are disturbed and lifted into the air. Dust particles can contaminate the udders of cattle and be a contaminant of milk. Eye irritation and respiratory disease can occur in both people and cattle. Dust can also be a potential odour source, especially if particles originate from pulverised dry manure.

The main sources of dust on a dairy are vehicle and machinery movement into and around the dairy, as well as feed preparation and animal movements on gravel or dirt restriction facilities or poorly vegetated paddocks. Factors that influence dust production include: prevailing winds, air movements, source of dust, type and size of feeding and housing facility, and distance to receptors.

### 5.6.1 Objective

To ensure that the design, development, operation and management of the farm minimise the generation of dust that may affect sensitive land uses.

#### ***Requirements of POEO Act:***

'The occupier of any premises must not cause air pollution (including dust) through a failure to maintain or operate equipment, or to deal with materials, in a proper and efficient manner. The operator must also take all practicable means to minimise and prevent air pollution' (sections 124, 125, 125, and 128 of the POEO Act).

'The occupier of any premises must not carry on an activity or operate any plant so as to cause the emission of air impurities (including solid particles) at above the concentration and/or rate set out in the Clean Air (Plant and Equipment) Regulation' (section 128 of the POEO Act).

### **5.6.2 Performance criteria**

An EMP is developed and implemented that includes strategies and measures for minimising dust from the farm, and contingency plans are prepared for managing dust problems.

### **5.6.3 Best practice guidelines**

- Feed pads and other restriction facilities are cleaned regularly.
- Sustainable grazing practices are implemented to maintain pasture growth, and a feed pad or sacrifice paddock is used to feed cattle during times of poor pasture growth.
- Loads of feed and other potentially dusty material are securely covered during transport.
- Suitable driving speeds are maintained on unsealed roads.
- Feed spills are cleaned up promptly.
- Appropriate groundcover plants and vegetation screens are established and maintained.
- Farm operations are planned and performed taking into account weather conditions and forecasts (e.g., wind direction and strength), to minimise dust.
- Dust-generating areas (e.g. roadways) are dampened with water spray if unacceptable dust levels from significant vehicle or stock movements are likely.

## **5.7 LIGHT**

Stray lighting from vehicle headlights, security lighting and sheds can be intrusive to neighbouring residences.

### **5.7.1 Objective**

To ensure that the movement of vehicles and the lighting design of the farm is planned so to minimise any light impact on nearby sensitive land uses, without compromising safety.

### **5.7.2 Performance criteria**

- Lighting of the farm is designed to avoid excessive illumination, and to minimise illumination of neighbouring sensitive land uses.
- An EMP is developed and implemented that includes strategies and measures for minimising light impacts from the farm.

### **5.7.3 Best practice guidelines**

- Lights used to illuminate the site for work purposes and security are angled or shielded so that light does not directly illuminate any nearby sensitive land uses.
- Car parks and roads are situated and/or screened to prevent stray lighting from vehicle headlights from directly illuminating any nearby sensitive land uses.
- Vegetative screening, earthen banks and constructed walls are used, if required, to screen against light impact.

## **5.8 VISUAL IMPACT AND LANDSCAPING**

Landscaping can soften the visual impact of the development, and also assist in reducing noise, dust and odour. Choice of construction materials and use of topography also help reduce visual impact. Ensuring that the farm is constantly kept in a tidy condition not only improves visual amenity, but helps with control of pests, disease and odour.

### **5.8.1 Objective**

To ensure that planning, design, operation and management minimise the visual impact of the farm, and use landscaping and screening to reduce the impact of noise, dust, light and odour on surrounding properties.

### **5.8.2 Performance criteria**

- Existing vegetation is retained wherever practicable.

- Landscaping reduces the visibility of the development from neighbouring sensitive areas.
- Building materials, equipment and plant are selected to minimise visual impact.
- An EMP is developed and implemented that includes strategies and measures for minimising visual impact and for providing and maintaining landscaping.

### **5.8.3 Best practice guidelines**

- The natural topography and terrain of the site and the existing vegetative cover are used to best advantage to maximise visual screening.
- Where practicable, construction materials are selected to minimise visual impact.
- The selected plant species blend in with the local vegetation and landscape, are low-maintenance and are suited to the site.
- A landscape plan may be required for screening of farm sheds and structures. The design of this plan should be approved by the approval authority.
- Buildings and site (including grassed surrounds, drains, fences, dams and roads) are maintained in a functional and tidy condition at all times.

## **5.9 TRAFFIC**

Movement of vehicles and accommodation of farm vehicles can affect the safety and amenity of the public and neighbours. The problems of odour, noise, dust, and vehicle lights can be associated with traffic movement. Site access must not interfere with the function of adjoining roads, and off-site impacts on nearby sensitive land uses must be minimised.

Contact should be made with the approval authority at an early stage of planning, to determine appropriate property access and road layout requirements, and to find out if the approval of the Roads and Traffic Authority (RTA) is required.

### **5.9.1 Objective**

To provide appropriate access to the property, and ensure that the movement and accommodation of vehicles on the property minimises any impact on the amenity of nearby sensitive land uses.

### **5.9.2 Performance criteria**

- Access to the site is appropriate for the size and number of vehicles that will be entering and leaving the site.
- Adequate area is provided within the site to allow service vehicle movements, and for parking of vehicles within the property.
- Access points and roads on the property are located so as to minimise noise impacts on neighbouring sensitive land uses.
- An EMP is developed and implemented that includes strategies and measures for minimising traffic impacts.

### **5.9.3 Best practice guidelines**

- Appropriate and safe access to the property from adjoining roads is provided, to minimise interference with passing traffic.
- The farm layout is planned so as to ensure that adequate space is available to turn vehicles. The need for large vehicles to reverse is minimised.
- Road surfaces are maintained for all-weather use.
- Deliveries and collection are scheduled so as to minimise the impact on surrounding sensitive land uses.

## **5.10 PESTS AND VERMIN**

Pests increase the risk of introduction and spread of diseases (including leptospirosis, salmonellosis and toxoplasmosis) on farm. They can decrease milk production, and result in livestock losses through direct attack or injury (e.g. foxes, dogs). They can also be a nuisance and a health hazard for farm workers and neighbours.

Common pests include insects (flies, mosquitoes), vermin (rats and mice) and vertebrate pests (rabbits and foxes). Dogs, cats, deer and wild birds may also be considered pests.

### 5.10.1 Objective

To minimise health and disease risk to cattle and humans, as well as adverse effects on pasture.

### 5.10.2 Performance criteria

- Legal requirements are met for the control of vertebrate pests.
- An EMP is developed and implemented that includes strategies and measures for minimising pest infestation and contingency actions for managing pest problems that may arise.

### 5.10.3 Best practice guidelines

- Pests can be controlled by management, strategic application of appropriate chemicals or other extermination measures.
- All buildings that house feed, plant and equipment are designed and maintained so as to exclude pests.
- Feed spills are cleaned up immediately, to minimise breeding sites or attractants.
- Vegetation and rubbish around buildings and yards are removed or controlled, in order to reduce habitat for insects and vermin.
- Pest numbers are regularly monitored, and targeted pest extermination programs are undertaken, maintained and monitored for effectiveness. Routine baiting of rats and mice is essential.
- Other pests are identified and controlled if it is a personal priority and/or if there are regional or catchment requirements.
- The control program deals with pest animals in a humane way.
- Coordinated control is undertaken with neighbours.

## 5.11 WEEDS

Weeds are plants that are unwanted in a given situation, and may be harmful, dangerous or economically detrimental. If not controlled, they can:

- compete with pasture
- poison stock
- harbour disease and vermin
- taint milk
- harm human health
- harm the environment
- disrupt water flows
- contribute to land degradation.

In NSW, the term 'noxious weed' is used to describe a plant that has been declared under the Noxious Weeds Act 1993, and for which there are legal control requirements.

Noxious weeds may be declared on a state, regional or local basis, and so their status may vary from area to area, as may the control requirements.

If you have noxious weeds growing on your property, you must control the plant(s) in accordance with its/their declared Control Class, as defined by the Noxious Weeds Act 1993.

There are also restrictions on the movement of contaminated produce, animals, machinery, soil and other materials for some classes of noxious weeds.

All issues concerning noxious weeds should be taken up with the local control authority. In NSW, this is usually the local government council or a special purpose county council.

The Control Classes are included in Appendix B.

### 5.11.1 Objective

To monitor and control weeds, in order to prevent an adverse effect on the property, livestock, neighbours, community and the environment.

### 5.11.2 Performance criteria

Legal requirements are met for the control of weeds. (Appendix B).

### 5.11.3 Best practice guidelines

- Weeds on the farm are identified, and their control status is understood and followed.
- Information sources for noxious and other weed management are identified.
- Information is sought to identify unknown weeds and methods of controlling them.
- Early detection and rapid response processes for new weeds are put in place.
- Details on newly declared and emerging weeds are maintained.
- A rotational schedule is developed and implemented to ensure control or eradication of noxious weeds. This will also ensure that monitoring of the species continues, and the schedule is adjusted if a problem persists.
- Coordinated control is undertaken with neighbours.
- Integrated pest management principles are understood, and can be incorporated into the weed management program.

## 5.12 CHEMICAL USE

The use and storage of agricultural chemicals poses potential risks for users, consumers, the community and the environment. Agricultural chemicals used on dairy farms include herbicides, pesticides and veterinary medications. Minimisation of risk to human health and the environment is achieved through good planning and management.

### 5.12.1 Objective

To minimise the risk to public health, animal wellbeing, property and the environment from chemical use, the presence of chemical residues in meat and milk, and the movement of agricultural chemicals onto non-target areas (e.g. via spray drift and spills).

### 5.12.2 Performance criteria

- Best practice is applied in planning, design, development, operation and management of the farm, so that pesticide use is minimised.
- An EMP is developed and implemented that includes strategies and measures for minimising environmental risks, and contingency actions for managing environmental problems that may arise from chemical use.
- Pesticide use meets the requirements of the *Pesticides Act 1999* and associated regulations, such as the Pesticides Amendment (Records) Regulation 2001.
- Storage, transport and use of chemicals meet the requirements for protection of the health and safety of workers and visitors to the workplace, and meet the hazardous substances requirements laid down in the Occupational Health and Safety Regulation 2001 under the *Occupational Health and Safety Act 2000*.
- The risk of chemical residue in meat and milk is minimised through the implementation of an accredited on-farm quality assurance program.
- Veterinary medicines and chemicals are used according to the label or veterinary advice.

### 5.12.3 Best practice guidelines

- All agricultural chemicals used on farm are registered for appropriate use by, or allowed to be used subject to a permit issued by, the Australian Pesticides and Veterinary Medicines Authority. They are stored, mixed, applied and disposed of in accordance with the instructions on the relevant label or permit, as well as NSW WorkCover Authority's *Code of practice for the safe use and storage of chemicals (including pesticides and herbicides) in agriculture* (1998).
- Standards for the storage and handling of dangerous goods comply with the *Dangerous Goods Act 1975*. Standards Australia has published standards on storage and handling of dangerous goods.
- Chemical records, covering the purchase or procurement of chemicals and details of their application, are maintained for a period of at least three years. Records are available to the responsible authorities to confirm that chemical use meets regulatory requirements. Refer to the Pesticides Amendment (Records) Regulation 2001.
- All persons applying chemicals on the farm have successfully completed training in the safe use of chemicals. Training in the use and management of chemicals is a requirement of on-farm quality assurance programs.



- Veterinary medicines used are appropriate for the identified problem, are used according to label instructions (including withhold periods), are within the expiry date and have been stored correctly from purchase to use.
- Consider the implementation of an integrated pest management program.
- There is no spray drift or run-off from sprayed areas into sensitive land use areas, such as watercourses, wildlife habitats, residential areas, public amenities or other sensitive land uses, including enterprises using integrated pest management or organic practices.
- Chemical use is minimised, and chemicals with the lowest potential for natural environment toxicity and water contamination are chosen.
- The target pest, disease or weed has been correctly identified, and an appropriate chemical, application rate and application method are being used.

## 5.13 COMMUNITY LIAISON AND COMPLAINT MANAGEMENT

Liaison between the property owner/manager and neighbours can be helpful in communicating information for the purposes of avoiding and managing complaints. Open lines of communication help in identifying problems, verifying complaints and successfully applying relevant remedies to minimise the impact of farm operations on neighbouring sensitive land uses.

### 5.13.1 Objective

To maintain systematic communication between the farm and neighbouring sensitive land users, in order to minimise environmental complaints.

### 5.13.2 Performance criteria

An EMP is developed and implemented that includes strategies, measures and contingency actions for managing community liaison and complaints about environmental impacts or problems that may arise.

### 5.13.3 Best practice guidelines

- Neighbouring sensitive land users are informed of unusual events or problems that may affect amenity, how long the impact will go on and the actions initiated to mitigate the impact.
- A complaint register is kept, recording full details of complaints received, results of investigations and corrective actions taken.
- When a complaint is justified, relevant evidence is gathered, and strategies to remedy the problem are identified and implemented. The complainant is informed of the outcome of the investigation, as well as any actions taken to avoid recurrence of the problem.
- Significant on-farm operational activities are recorded, particularly those that have potential environmental impact. Daily weather conditions and prevailing wind direction are measured and recorded. These records will help in the investigation of problems.
- In cases of dispute, the mediation process is allowed to proceed with the participation and cooperation of all parties involved.

Mediation services are available for free from the Dispute Resolution Services section of the Community Justice Centre. The Land and Environment Court may also provide mediation services to resolve a matter, rather than taking it to court.

## 5.14 SAFETY

Ensuring the health and safety of dairy workers, family members, tradespeople and visitors is an integral part of managing a dairy.

The *Occupational Health and Safety Act 2000* (OHS Act) and the *Occupational Health and Safety Regulation 2001* address requirements to ensure the health, safety and welfare of farm workers and visitors. An OHS risk assessment should be included in plans for new facilities or modifications of existing facilities.

The design, construction and operation of the dairy farm facilities should comply with occupational health and safety requirements and relevant Australian construction and safety codes. To meet the requirements of the Regulation, workers are to be consulted in OHS risk management, including identification of OHS hazards, assessing risk and, where possible,

elimination of hazards. Where hazards to health and safety cannot be eliminated, risk-control measures should be designed and implemented. Safety should be addressed in the on-farm quality assurance program.

The OHS Safety Regulation lays down further requirements relating to specified hazards including plant and machinery, noise and hazardous substances.

Health risks to people off-site, in the area surrounding the proposed development, should also be considered, and addressed by appropriate siting and management.

Contact WorkCover ([workcover.nsw.gov.au](http://workcover.nsw.gov.au)) or the Department of Health ([www.health.nsw.gov.au](http://www.health.nsw.gov.au)) for further information.

## **5.15 BIOSECURITY**

On-farm biosecurity is the process in place to protect the herd from adverse impacts resulting from hazards such as infectious diseases, weeds or residues.

Stock-proof fencing is a critical part of biosecurity.

### **5.15.1 Preventing the introduction of disease**

It is possible to prevent the entry of certain infectious diseases into a disease-free herd. The introduction of a disease can also be prevented by establishing that the animals do not have the disease prior to their introduction onto the farm. This can be achieved by:

- treatment prior to introduction (e.g. for liver fluke and lice)
- a segregated paddock for introduction – introduced cattle are observed and tested before they are introduced to the herd, to ensure that they do not have an unwanted disease. A problem with this approach is that, if the disease is detected in the segregated cattle, there is then an area of land that may be contaminated, and therefore a potential source of infection for other cattle
- farm layout – some diseases and weed seeds can be carried on the wheels of vehicles or the shoes of visitors. To prevent this from happening, roads and loading ramps should be situated in areas fenced off from stock.

### **5.15.2 Preventing the occurrence of disease**

Some diseases are present in the environment, and biosecurity for these diseases requires on-farm management, such as vaccination, to prevent or reduce their occurrence. Disposing of carcasses by burning or burial and excluding cattle from the disposal areas reduces the chance of cattle being exposed to botulism.

### **5.15.3 Preventing residues**

Individual animal identification and good records play an essential role in controlling residue contamination. All animal treatments need to be recorded, and the correct withholding periods applied, before milk is put in the vat or animals are sold. To prevent accidental contamination of milk, individually treated animals need to be clearly identified. Farm staff need to be educated about the types of residues and the residue management systems in place.

Cattle should be excluded from old rubbish dumps and known contaminated areas on the farm.

## **5.16 ANIMAL HEALTH AND WELFARE**

Dairy farmers must practice sound animal husbandry and keep their animals healthy. The industry supports the National Dairy Industry Animal Welfare Strategy, which delivers improved animal welfare outcomes. Key elements include the provision of a highly nutritious diet, access to suitable and sufficient drinking water, and a calm and stress-free environment.

For more information visit the Dairy Australia website ([www.dairyaustralia.com.au](http://www.dairyaustralia.com.au)) or contact [animalwelfare@dairyaustralia.com.au](mailto:animalwelfare@dairyaustralia.com.au)

## 6. LEGISLATION AFFECTING DAIRIES

The operation of new and existing dairy farms is controlled by legislation, regulations, codes and standards, through the terms and conditions attached to the development consent, and any associated licences or approvals. The major pieces of legislation that a new or existing dairy farm must follow are outlined below, under the respective administering authority.

### 6.1 DEPARTMENT OF ENVIRONMENT AND CLIMATE CHANGE (DECC)

The Department of Environment and Climate Change (DECC) provides an integrated approach to natural resource management, by implementing a range of conservation and natural resources sciences and programs, including native vegetation, biodiversity and environmental water recovery, to provide an integrated approach to natural resource management.

DECC administers a number of Acts, including:

- the *Protection of the Environment Operations Act 1997*
- the *Threatened Species Conservation Act 1995*
- the *Pesticide Act 1999*
- the *Native Vegetation Act 2003*
- the *National Parks and Wildlife Act 1974*
- the *Catchment Management Authorities Act 2003*.

#### 6.1.1 *Protection of the Environment Operations Act 1997 (POEO Act)*

This Act brings the state's separate pollution statutes under a single act. The Act was amended in 2006 to include:

- strengthening of the environment protection licence
- tightening of the definition of 'fit and proper person'
- the introduction of environmental offset arrangements
- strengthening of personal responsibilities for directors and managers
- a stronger link between penalties and environmental impacts.

Under the POEO Act, dairy operators are required to use the best practicable means to prevent or minimise air, noise, land and waste pollution.

Any person who commits a breach of the environmental legislation commits an offence against the POEO Act, for which heavy penalties may apply. Both DECC and local government can take action against breaches of the Act. Alternatively, DECC and council officers may issue notices requiring works or management to prevent or ameliorate environmental impacts where they have occurred, or are likely to occur. The establishment and implementation of a sound effluent use scheme should reduce the risk of environmental pollution from dairy farms.

#### 6.1.2 Licensing Requirements

##### Dairies accommodating more than 800 animals in milk production

The Schedule of DECC Licensed Activities in the POEO Act identifies dairies that are intended to accommodate more than 800 animals in milk production as licensed activities (referred to as scheduled dairies). A scheduled dairy must hold a current licence. Licences are issued to control all forms of pollution (including water pollution) resulting from work undertaken to construct or operate a scheduled dairy.

##### Dairies accommodating fewer than 800 animals in milk production

Dairy farms should be able to manage effluent so as to avoid pollution of waters; therefore, non-scheduled dairy farms will not need to apply for a licence. When a licence to discharge to waters is sought, the DECC is likely to apply stringent conditions if a licence is granted.

### **6.1.3 Pesticides Act 1999**

The *Pesticides Act 1999* aims to reduce the risks associated with the use of pesticides to human health, the environment, property, industry and trade, by controlling and regulating the use of pesticides in NSW. The Act empowers the DECC to enforce the proper use of all pesticides in NSW after the point of sale. It also provides regulation-making powers. The Pesticides Amendment (Records) Regulation 2001 sets the requirements for record-keeping of pesticide use. The proposed Pesticides Amendment (User Training) Regulation sets the training standards. Both regulations apply to commercial users of pesticides, including farmers. There are also provisions to regulate foodstuffs that contain prohibited residues of pesticides.

### **6.1.4 National Parks and Wildlife Act 1974**

The *National Parks and Wildlife Act 1974* requires consent from the DECC to destroy Aboriginal artefacts, relics or places. It also addresses protection of fauna, native plants, threatened species, populations and ecological communities.

### **6.1.5 Threatened Species Conservation Act 1995**

The *Threatened Species Conservation Act 1995* aims to conserve threatened plant or animal species, populations and ecological communities in danger of extinction. The Act requires a licence to be obtained from the DECC to pick or harm a threatened species, population or ecological community. The Act may also require, through the EP&A Act, an assessment of the potential impacts on threatened species for development approval.

### **6.1.6 Native Vegetation Act 2003**

The *Native Vegetation Act 2003* (NV Act) regulates the clearing of native vegetation.

If the applicant intends to remove native vegetation to establish and construct the project, they may need an authority or approval from the relevant Catchment Management Authority.

Trees within 20 m of some streams cannot be removed without authority. Where a number of trees or shrubs are to be removed, the proponent should check with DECC before starting the work.

### **6.1.7 Catchment Management Authorities Act 2003 (CMA Act)**

There are a number of CMAs throughout the state, and the local branch can advise on their projects and requirements. Contact can be made through the local DECC office.

### **6.1.8 Road and Rail Transport (Dangerous Goods) Act 1997**

The *Road and Rail Transport (Dangerous Goods) Act 1997* sets out requirements for the transport of dangerous goods (including pesticides and other chemicals) on roads. WorkCover NSW regulates the off-road handling of dangerous goods.

## **6.2 DEPARTMENT OF PLANNING (DOP)**

DoP is responsible for land use planning issues, as well as administration of the *Environmental Planning and Assessment Act 1997*.

### **6.2.1 Environmental Planning and Assessment Act 1979**

This Act provides for a hierarchy of environmental planning instruments, including SEPPs, REPs and LEPs. The Act also provides the framework for local government zoning, assessment requirements, development control plans, and development consent provisions for operating dairy farms.

It is an offence under the EP&A Act to undertake, without consent, a development or activity that requires consent. It is also an offence to breach any of the terms or conditions of the development consent. The relevant consent authority (usually local government) enforces the development consent. Any person may bring proceedings in the Land and Environment Court for an order to restrain breaches of this Act.

## **6.3 DEPARTMENT OF WATER AND ENERGY (DWE)**

The Department of Water and Energy is responsible for administering the *Water Management Act 2000*, and the *Water Act 1912*.

### **6.3.1 Water Management Act 2000 and Water Act 1912**

Both pieces of legislation provide for the sustainable and integrated management of the state's water for the benefit of both present and future generations. The *Water Management Act 2000* and *Water Act 1912* control the extraction of water, the use of water, the construction of works such as dams and weirs and the carrying out of activities in or near water sources in New South Wales.

## **6.4 NSW DEPARTMENT OF PRIMARY INDUSTRIES (NSW DPI)**

NSW DPI incorporates the former agencies of NSW Agriculture, NSW Fisheries, Mineral Resources NSW and State Forests NSW. NSW DPI delivers research, regulation, extension, and education to the broad rural community, and is responsible for administering a number of Acts affecting dairy producers.

NSW DPI has Resource Management Officers located around the state who can provide advice on the development assessment process, convene a planning focus meeting (PFM) if required and provide advice on how to manage ongoing environmental regulations. Dairy advisory officers are also available to provide advice on all aspects of dairy farm management and development.

### **6.4.1 Fisheries Management Act 1994**

The *Fisheries Management Act 1994* aims to conserve key fish habitats, fish populations and threatened species of fish (including aquatic invertebrates) and marine vegetation (mangroves, seagrasses and seaweeds).

Projects within or adjacent to streams, estuaries and wetlands that obstruct the free passage of fish, or harm marine vegetation, threatened species or habitats, are prohibited without an appropriate permit. Persons intending to carry out works such as construction or modification of dams and weirs across streams, removal of snags (woody debris), removal of riparian vegetation, the armouring, re-profiling, or filling of banks or the drainage of wetlands should contact NSW DPI beforehand, to determine whether they require a permit.

### **6.4.2 Stock Diseases Act 1923**

The *Stock Diseases Act 1923* places an obligation on owners of stock to notify an inspector of the presence of any disease described under the Act. Notifiable diseases for dairy cattle include:

- enzootic bovine leucosis (EBL)
- tick fever
- cattle tick
- anthrax
- Johne's disease
- trichomoniasis.

The Act allows inspectors to quarantine stock that they suspect are infected, and to order testing, treatment and/or slaughter as appropriate.

### **6.4.3 Exotic Diseases of Animals Act 1991**

The *Exotic Diseases of Animals Act 1991* aims to protect Australian livestock industries from exotic (foreign) diseases. It requires anyone who suspects exotic disease in livestock to immediately notify NSW DPI, the local Rural Lands Protection Board or their own veterinarian. The Act allows for quarantine, testing and control measures for elimination of the disease. Notifiable exotic diseases for dairy cattle include:

- foot and mouth disease (FMD)
- bovine brucellosis
- bovine spongiform encephalopathy (BSE)
- rabies
- screwworm fly

### **6.4.4 Stock Foods Act 1940**

The *Stock Foods Act 1940* states the requirements for the production and labelling of stock feeds. Feeds not meeting requirements may be withdrawn from supply.

#### **6.4.5 Stock Medicines Act 1989**

The *Stock Medicines Act 1989* legislates the registration, supply, labelling and use of stock medicines. The significance for humans of residues in food products means that animals should only be treated with registered products, according to the label instructions (unless authorised otherwise by a veterinarian), and that the withholding period should always be adhered to.

Under the Act, producers may not:

- be in possession of unregistered stock medicines
- use unregistered stock medicine (unless approved by a permit or order)
- use stock medicines that are not for use in food-producing animals (unless approved by permit or order)
- use stock medicine in a manner contrary to label directions (unless authorised in writing by a veterinarian).

#### **6.4.6 Stock (Chemical Residues) Act 1975**

The *Stock (Chemical Residues) Act 1975* aims to prevent contamination of human food with pesticides, drugs and chemicals. The Act allows for the setting of a maximum residues limit (MRL) for various chemicals. Contaminated stock may be placed in detention, to prevent them or their products from entering the human food supply. The stock or products may be destroyed, and action may be taken to prevent the use of contaminated land or buildings for livestock.

#### **6.4.7 Prevention of Cruelty to Animals Act 1979**

The *Prevention of Cruelty to Animals Act 1979* regulates the care and welfare of animals. The RSPCA and the Animal Welfare League have inspectors empowered under the Act.

### **6.5 NSW WORKCOVER AUTHORITY**

WorkCover is responsible for ensuring the health, safety and welfare of workers in the workplace. It is also responsible for injury management, administration of the NSW Workers Compensation scheme, and providing advice on the scheme.

#### **6.5.1 Occupational Health and Safety Act 2000**

The *Occupational Health and Safety Act 2000* (OHS Act) aims to protect workers in the workplace. There are many regulations under this Act, including the OH&S Regulation 2001. The Regulation relates to specific hazards including plant and machinery, hazardous substances and noise, and lays down requirements for consultation with workers.

### **6.6 LOCAL COUNCILS**

Local councils will be the consent authority for most dairy developments.

#### **6.6.1 Local Government Act 1993**

The *Local Government Act 1993* (LG Act) allows local councils to provide for the current and future needs of local communities and manage local resources. It also requires them to use the principles of ecologically sustainable development.

Under the LG Act, councils may abate a public nuisance. A public nuisance is one that materially interferes with public health, safety, property, enjoyment or comfort. In some instances, odour from existing operations has been dealt with as a public nuisance.

In certain circumstances, the LG Act allows councils to issue an order to a person to do, or refrain from doing, things in or on a premise.

Examples of orders that may be issued are:

- to repair or make structural alterations to a building, where the building is erected in a catchment district and causes, or is likely to cause, pollution of the water supply
- to take necessary action to control the flow of surface water across land where other land is being damaged or likely to be damaged
- to ensure that land is, or premises are, placed or kept in safe and healthy conditions when they are not in a clean or sanitary condition

- to store, treat, process, collect, remove, dispose of or destroy waste in the manner specified in the order, when waste present or generated on the land is not being dealt with satisfactorily
- to comply with an approval, when an approval has not been complied with
- not to conduct, or to cease conducting, an activity.

## 6.7 OTHER ACTS

### 6.7.1 *NSW Food Act 2003*

The NSW Food Authority administers the *NSW Food Act 2003*, which deals with building standards, design and requirements for hygiene of the milking facilities and also the proximity of effluent systems to bails and milk storage.

The NSW Food Authority has a number of requirements for the storage and application of dairy effluent. All storage facilities for dairy shed waste, such as solids (manure heaps) and liquids (storage ponds) must be sited at least 45 m from the dairy building.

Sumps and solids traps are generally considered to be part of the waste conveyancing system. Sumps and solids traps of over 600 L capacity must be at least 15 m from the dairy building.

All sumps used in the drainage system should be:

- able to be easily cleaned
- provided with a strainer or stone-trap device
- able to handle the maximum flow of waste
- equipped with a suitable application system.

All dairy shed waste should be dispersed in accordance with the consent authority's requirements.

### 6.7.2 *Sydney Water Catchment Management Act 1998*

The Sydney Catchment Authority (SCA) is responsible for supplying bulk water, and for ensuring that Sydney's catchment areas are managed and protected so as to promote water quality, protection of public health and safety and protection of the environment. The Authority may have input into the granting of some licences.

### 6.7.3 *Public Health Act 1991*

NSW Health is responsible for the administration of the Public Health Act 1991 – 'an Act relating to the maintenance of proper standards of health for the public and for other purposes'.

The Act provides power to make certain orders and give directions, during a state of emergency and at other times, in regard to the disinfection or destruction of items and the closure of water supplies and premises.

The Act provides advice on issues relating to the public health and protection of the safety of food, water and air. It is administered by environmental health officers located in Public Health Units of the local Area Health Service.

# 7. ADDITIONAL INFORMATION

## 7.1 INDUSTRY GUIDELINES

### Effluent reuse

[www.environment.nsw.gov.au/water/effluent.htm](http://www.environment.nsw.gov.au/water/effluent.htm)

### Odour

[www.environment.nsw.gov.au/air/odour.htm](http://www.environment.nsw.gov.au/air/odour.htm)

### General information/guidelines/links

[www.dpi.nsw.gov.au/agriculture/livestock/dairy-cattle](http://www.dpi.nsw.gov.au/agriculture/livestock/dairy-cattle)

[www.dairyingfortomorrow.com/index.php](http://www.dairyingfortomorrow.com/index.php)

[www.dairyinfo.biz](http://www.dairyinfo.biz)

### Land use conflict

Living and Working in Rural Areas: A handbook for managing land use conflict issues on the NSW North Coast by Roby Learmonth, Rik Whitehead, Bill Boyd and Stephen Fletcher, Centre for Coastal Agricultural Landscapes at [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

Management of dairy effluent 2008 DairyGains Victorian Guidelines

National guidelines for dairy effluent management: Technical information on all matters relating to dairy effluent

[www.dairyingfortomorrow.com/activities/products.php](http://www.dairyingfortomorrow.com/activities/products.php) (available late 2008)

### Victorian Guidelines

Management of dairy effluent 2008 DairyGains Victorian Guidelines

[www.dpi.vic.gov.au](http://www.dpi.vic.gov.au)

## 7.2 STATE GOVERNMENT CONTACTS

### Catchment Management Authorities

[www.cma.nsw.gov.au](http://www.cma.nsw.gov.au)

### Department of Environment and Climate Change

Head Office telephone (02) 9995 5000

[www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

### Department of Local Government

Head Office telephone (02) 4428 4100

[www.dlg.nsw.gov.au](http://www.dlg.nsw.gov.au)

### Department of Planning

Head Office telephone (02) 9228 6111

[www.planning.nsw.gov.au](http://www.planning.nsw.gov.au)

### NSW Department of Primary Industries

Head Office telephone (02) 6391 3100

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

Resource Management Officer, North Coast, telephone (02) 6626 1349

Resource Management Officer, North West, telephone (02) 6763 1142

Resource Management Officer, Hunter/Central Coast, telephone (02) 4939 8942

Resource Management Officer, Central West, telephone (02) 6881 1250

Resource Management Officer, Sydney, telephone (02) 4588 2128

Resource Management Officer, South East, telephone (02) 4828 6635

Resource Management Officer, South West, telephone (02) 6951 2750



Department of State and Regional Development  
Head Office telephone (02) 9228 3111  
[www.business.nsw.gov.au](http://www.business.nsw.gov.au)  
NSW Food Authority  
Head Office telephone 1300 552 406  
[www.foodauthority.nsw.gov.au](http://www.foodauthority.nsw.gov.au)

NSW Public Health  
[www.health.nsw.gov.au](http://www.health.nsw.gov.au)

Roads and Traffic Authority  
[www.rta.nsw.gov.au](http://www.rta.nsw.gov.au)

Sydney Catchment Authority  
[www.sca.nsw.gov.au](http://www.sca.nsw.gov.au)

WorkCover NSW  
[www.workcover.nsw.gov.au](http://www.workcover.nsw.gov.au)

Local Government Directory  
[www.dlg.nsw.gov.au/dlg/dlghome/dlg\\_LocalGovDirectory.asp?index=1](http://www.dlg.nsw.gov.au/dlg/dlghome/dlg_LocalGovDirectory.asp?index=1)

Local Government and Shires Association of NSW  
[www.lgsa.org.au](http://www.lgsa.org.au)

## **7.3 INDUSTRY CONTACTS**

Dairy Australia  
[www.dairyaustralia.com.au](http://www.dairyaustralia.com.au)  
or  
[animalwelfare@dairyaustralia.com.au](mailto:animalwelfare@dairyaustralia.com.au)

Dairy Industry Development Company  
[www.didco.com.au](http://www.didco.com.au)

NSW Farmers' Association  
[www.nswfarmers.org.au](http://www.nswfarmers.org.au)

## **7.4 CONSULTANTS**

The Australian Association of Agricultural Consultants (AAAC)  
[www.aiast.com.au](http://www.aiast.com.au)

The Planning Institute of Australia  
[www.planning.org.au](http://www.planning.org.au)

## 8. GLOSSARY

### **Aerobic**

A process or condition that occurs in the presence of dissolved or free oxygen.

### **Anaerobic**

A process or condition that occurs with no dissolved or free oxygen present.

### **Aquifer**

A layer of rock that holds water and allows water to percolate through it.

### **Best management practices**

Activities that will result in reaching or exceeding desired outcomes.

### **Biochemical oxygen demand (BOD)**

The quantity of oxygen used in the biochemical breakdown of organic matter in effluent. Usually refers to a five-day test (BOD<sub>5</sub>). It is expressed in milligrams per litre (mg/L).

### **Building Code of Australia (BCA)**

A uniform set of technical provisions for the design and construction of buildings throughout Australia.

### **Calving pad**

A separate area for calving cattle that provides a warmer and drier alternative to the paddock. It facilitates around-the-clock access for observation and assistance of cows, and care of the newborn and young calves. The pad can incorporate subsurface drainage, and is typically covered with some absorbent organic form of bedding, such as rice hulls, straw or sawdust.

### **Catchment area**

A drainage area, for example for a reservoir or river.

### **Cattle heavy use areas**

These are areas where grazing cows congregate, but are not confined. They typically have little vegetative cover, and may have an accumulation of manure. They include cow laneways, watering points and shade areas ('cow camps').

### **Complying development**

Routine development that can be promptly certified by a council or a private certifier. S76A of the EP&A Act notes specific requirements including circumstances when development cannot be complying development.

### **Concurrence**

The requirement for a government agency to consider development proposals in the light of its specialised functions and policies, and decide whether it agrees with the development taking place.

### **Consent authority**

The party having the function to determine the application: either the local council, or a Minister or public authority.

### **Cow camps**

These are areas where cow congregate, either standing or lying down. They are usually shaded areas under trees or other shelter, in a paddock or yard.

**Dairy (pasture-based)**

A dairy where the only restriction facilities present are the milking sheds and holding yards and where cattle are constrained for no more than 10 hours in any 24 hour period (excluding during any period of drought or similar emergency relief).

**Dairy shed**

Incorporates the milking area, milk room, wash room, machine room, office and main holding yard.

**Department of Environment and Climate Change (DECC)**

This department is responsible for administering environmental protection legislation, including the Protection of the Environment Operations Act 1997 (POEO Act).

**Designated development**

A development that is likely to have significant impacts on the environment and, as such, is subject to special regulatory procedures. Certain agricultural and related activities which meet specified size or locational criteria are designated developments. A list of designated developments is provided in Schedule 3 of the Environmental Planning and Assessment Regulation 2000.

**Development application (DA)**

An application for consent to carry out development. This does not include an application for a complying development certificate.

**Development consent**

Consent under part 4 of the EP&A Act to carry out development and includes, unless expressly excluded, a complying development certificate.

**Development control plan (DCP)**

A detailed plan or guide describing or illustrating the controls that apply to a particular type of development or which apply in a particular area. A DCP refines or supplements a regional environmental plan or local environmental plan, and is prepared (or taken to be prepared) under Part 3 of the EPA Act 1979.

**Effluent**

The liquid and associated solid waste produced at all stages from the milking shed and other restriction facilities on a dairy.

**Environmental impact assessment (EIA)**

A specialised part of the decision-making process, where the environmental impact is considered in detail, together with other aspects of the development.

**Environmental impact statement (EIS)**

A formal evaluation of the effect or likely effect of a development or other activity on the environment where the effect is likely to be significant. For example, an EIS is required for proposals which are designated development.

**Environmental Planning and Assessment Act 1979 (EP&A Act)**

Principal planning legislation in NSW. Sets out the development assessment system in New South Wales in Parts 3A, 4 and 5 of the Act. Intensive agriculture is referred to in Schedule 3.

**Environmental planning instrument (EPI)**

Local environmental plans, regional environmental plans and state environmental planning policies, which describe the current planning status and/or future developments of an area.

They are made according to the EPA Act 1979. Plans made prior to 1979 are deemed EPIs.

### **Feed pad**

A feed pad is a confined area used for the supplementary feeding of livestock. It is usually formed or surfaced so as to be suitable for use in all weather conditions.

### **Feed storage area**

An area where feed can be stored and processed before being fed to cattle.

Supplementary feed can be stored in a variety of ways, depending upon the type of feed:

Grain – silos, covered bunkers, bags, bins or feed sheds.

Hay – paddocks or covered sheds.

Silage – covered or buried pits, covered above-ground bunkers, individual and multiple bales wrapped in plastic.

Food industry by-products – bunkers or feed sheds.

Feed additives – bunkers, bags or drums.

Feed may be processed by grinding, steaming, cutting and/or mixing. A variety of equipment can be required for these processes, including a hammermill, roller mill, feed mixer wagon, silage wagon and auger.

### **Floodway**

Land that is subject to flooding, and experiences high velocity flow rates and/or excessive flood height.

### **Freeboard**

The height of the pond embankment crest above the designed full-storage level. The freeboard prevents overtopping of the pond embankment during spill events, and includes allowances for wave action and construction inaccuracies.

### **Free stall barn**

A partially or fully enclosed structure in which cattle are housed. Feed and/or water is sometimes provided.

### **Groundwater**

This includes all underground waters, both suitable and unsuitable for domestic, stock and irrigation purposes.

### **Infiltration**

The process in which waters (irrigation, rainfall or wastes) reach and enter the soil through cracks and pores between soil aggregates. Sandy soils have high infiltration rates, while clay surfaces generally have low infiltration rates.

### **Integrated Development**

Proposals that require development consent plus a specified permit/approval from a state agency: for example, a licence from the Environment Protection Authority or a permit from NSW DPI.

### **Johne's disease**

A disease of ruminants, caused by a mycobacterium. It can cause wasting, chronic scours and death. Manure ingestion is the primary cause of infection, and can occur if calves suckle manure-contaminated teats and/or graze areas where there is manure or effluent from infected adult animals. The mycobacterium can survive in soil for long periods. Symptoms usually appear in adult animals.

### **Katabatic winds**

Winds occurring mainly on cloudless nights, when the land surface loses heat by radiation. Air that is cooled by contact with the cold land becomes denser than the surrounding air. The force of gravity on it is relatively greater, and the air begins to flow down the slopes of mountains and hills. This downward flow becomes particularly evident as the air moves down the bottom of river valleys that lead to lower levels. Generally, they are rather light winds.

### **Land application area**

The land that has been nominated for the disposal of effluent through surface application.

### **Laneways**

These are walkways/roadways that may have a gravel, concrete, earth or grass surface. They control cattle and machinery flow around the farm and limit the damaging effects of hooves and machinery on pasture and paddocks, especially during wet weather.

### **Leachate**

Leachate refers to the solution of substances (such as soluble salts and nutrients) washed out of the upper layer of a soil into a lower layer by percolating water. Following removal from the soil profile, leachate may enter the watertable and follow the paths of ground water or surface water movement.

### **Leaching**

The downward movement of water through the soil profile. Readily soluble nutrients, especially anions (such as nitrate and sulfate), are removed during this leaching process.

### **Leptospirosis**

A highly infectious disease in animals and humans caused by a bacterium found in the urinary tract. In dairy cattle, it can cause abortion and a drop in milk production. In humans, it causes prolonged muscle pain and intermittent high temperatures.

### **Loafing pad**

A loafing pad is a pad or other area, such as part of a paddock, where hand-fed livestock are held when grazing is not available. These areas reduce damage to pastures and laneways during wet weather.

### **Local Environmental Plan (LEP)**

The principal legal document for controlling development at council level. The zoning provisions establish permissible uses, and standards regulate the extent of development. They are prepared by councils and approved by the Minister (after public exhibition).

### **Manure**

The solid waste produced by cattle.

### **Non-designated development**

The term for proposals that have a lower or acceptable risk to the environment. They require an SEE.

### **Nutrient**

A food essential for cells, organisms or plants. Phosphorus, nitrogen and potassium are examples of major nutrients essential for plant growth. In excess, they are potentially serious pollutants, encouraging (in water) nuisance growth of algae and aquatic plants, and (in the case of nitrate-nitrogen) posing a direct threat to human health. Nitrogen is much more mobile, and is usually used by micro-organisms. Phosphorus is considered to be the major element responsible for algal blooms.

### **Offensive odour**

An odour that, by reason of its nature, character, components, quality or strength, or the time at which it is made, is likely to:

be harmful

be offensive

disturb the comfort or rest of people at or beyond the boundaries of the premises from which the odour originates.

### **Pad**

A pad is an area of land that is formed, surfaced and stocked at a rate that precludes vegetation growth. The term 'pad' refers to the physical structure. A pad usually has a slope to assist drainage and to provide a dry surface.

### **Pathogens**

Micro-organisms that are parasitic on, cause disease in or otherwise affect other organisms, such as animals and human beings.

### **Percolation**

The descent of water through soil pores and rock crevices.

### **Permeability**

The ease with which water may penetrate or force its way through rock, gravel and soils. Coarse sands and gravels permit rapid flow, and are rated as highly permeable materials. Microscopic pores in clay impede flow; such soils are designated impermeable or of low permeability.

### **Plate cooler**

A component of milking machines designed to pre-cool milk before it enters a refrigerated storage vat. The cooler uses cool water or another cooling medium to absorb heat from the milk. It consists of a number of stainless steel plates.

### **Pond**

A structure with a depth greater than 1.5 m that holds effluent and does not drain.

### **Protection of the Environment Operations Act 1997 (POEO Act)**

Principal pollution control legislation in NSW. Consolidates the previous key pollution statutes into a single Act, including Clean Air Act 1961, Clean Water Act 1970, Pollution Control Act 1970, Noise Control Act 1975 and the Environmental Offences & Penalties Act 1989. Developments controlled by the Act are listed in Schedule 1.

### **Protection of the Environment (Noise Control) Regulation 2000**

Made under the POEO Act. The main objective of the regulation is to minimise noise in residential areas. Typical noise sources include lawn mowers, power tools, amplified music, motor vehicles and motor vessels. Enforced by local council, the police, EPA and Waterways.

### **Reclaimed water**

Waste water from the dairy or other restriction facilities that has been captured and stored.

### **Regional environmental plan (REP)**

A planning instrument relating to issues of regional environmental planning significance made by the Minister under section 51 of the EPA Act.

### **Restricted dairy**

A dairy (other than a dairy (pasture-based)) where restriction facilities are present in addition to milking shed and holding yards, and where cattle have access to grazing for less than 10 hours in any 24 hour period (excluding during periods of drought or similar emergency relief). A restricted dairy may comprise the whole or part of a restriction facility.

### **Restriction facilities**

Facilities in which animals are constrained for management purposes, including milking sheds, pads, feed stalls, holding yards and paddocks where the number of livestock exceeds the ability of vegetation to recover from the effects of grazing in a normal growing season, but does not include facilities for drought or similar emergency relief.

### **Run-off**

All water flow over the ground surface (as overland flow) and in streams (as channel flow). It may originate from excess precipitation that cannot infiltrate the soil, or as the outflow of groundwater along lines where the watertable intersects the earth's surface.

### **Scheduled development**

A development that is likely to have significant impacts on the environment and is subject to special licensing requirements under the POEO Act. Developments are listed in Schedule 1 of the Act.

### **Solid waste**

The portion of the effluent that remains after all moisture is removed, consisting of volatile and fixed solids.

### **Stock watering points**

Stock watering points may be constructed at natural water storages or at sites with water troughs.

### **State Environmental Planning Policy (SEPP)**

An instrument of state environmental planning significance, made by the Governor of NSW on the advice of the Minister for Planning under section 39 of the EPA Act 1979.

### **Statement of environmental effects (SEE)**

A document required in 'Schedule 1 Forms' of the EPA Regulations. This document is prepared by a proponent and must accompany development applications for non-designated developments, unless the proposal is considered to have negligible effects. The SEE should demonstrate that the environmental impacts of the development have been considered, and should set out steps to be taken to protect the environment or mitigate any potential harm.

### **Surface waters**

These include dams, impoundments, rivers, creeks and all waterways in which rainfall is likely to collect, and where run-off from all working areas on site is likely to occur.

### **Untaminated stormwater or run-off**

This refers to stormwater on site that has been diverted away from the shed, yards and other working areas, and is not polluted by organic or other matter. It also refers to cooling-plate water (which is chemically untreated), and to stormwater from the shed roof and yards after wash-down.

### **Waste water (contaminated)**

Refers to cleaning liquids for the milking machine and associated equipment, wash-down water from the dairy shed and yard, and/or rainwater collected on buildings and yards that has picked up pollutants, and so needs to be collected and properly disposed of.

### **Watertable**

The distance below the natural ground surface (within an uncontrolled aquifer) at which the groundwater is found.

### **Zoning**

The system of categorising land uses as prohibited, requiring consent or not requiring consent within particular areas. Zones (such as residential or commercial) are shown in plan form and explained in Local Environmental Plans.

# APPENDICES

## APPENDIX A – Suggested Odour Impact Assessment for Dairies

The results of an odour impact assessment play a key role in determining an appropriate location and size for a dairy. Guidance on the DECC's policy regarding odour impact assessment is contained in the *Technical framework: Assessment and Management of Odour from Stationary Sources in NSW (DEC, November 2006)* and *Technical notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC, November 2006)*.

An assessment of odour impact will need to be completed as part of an SEE or EIS to support a development application. A Level 1 odour impact assessment calculation will be required for most developments; however, Level 2 and 3 assessments, which involve more complex odour modelling, may be requested by DECC.

There is no specific Level 1 odour impact assessment for dairies in the DEC *Technical notes*. However, since dairies are similar in feeding and waste treatment function to cattle feedlots, it is suggested that the 'Cattle Feedlots: Level 1 Odour Impact Assessment' detailed in the *Technical notes* be used with some modifications as indicated below.

### Dairies: Level 1 Odour Impact Assessment for Dairies

(Refer to Section 7, pages 39–48, *Technical notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC, November 2006)*).

Section 7.2 Feedlot Classes – use Class 4 for all dairies, since feedpads, loafing areas and holding yards remain wetter for longer periods than most cattle feedlots.

Section 7.3 – use the existing formulae for calculating allowable cattle numbers given the existing separation distance, or allowable separation distance given cattle numbers.

For simplicity, use 'Table 7.1 Standard cattle units' on page 42 as is.

#### Section 7.4 Composite Site Factor

Stocking density factor, S1 – use class 4 in Tables 7.2a and 7.2b.

Receptor factor, S2 – use Table 7.3 as is.

Terrain factor, S3 – use Table 7.4 as is.

Vegetation factor, S4 – use Table 7.5 as is.

Wind frequency factor, S5 – use Table 7.6 as is.

Sections 7.5, 7.6 & 7.7 – apply as is.

#### Example Calculation:

500 head dairy – average cattle weight 650 kg, feedpad 15 m<sup>2</sup>/cow, rainfall 600 mm.

No of SCU's (Table 7.1) = 500 x 1.06 = 530 SCU

Stocking density factor S1 (Table 7.2a, less than 750mm rainfall):

Feedpad area = 15 m<sup>2</sup>/cow, Class 4 feedlot (dairy), **S1 = 127**

Receptor factor S2 (Table 7.3)

Single rural residence, **S2 = 0.3**

Terrain factor S3 (Table 7.4)

Undulating, **S3 = 0.9**

Vegetation factor S4 (Table 7.5)



Crops only, no tree cover, **S4 = 1**

Wind frequency factor S5 (Table 7.6)

Low frequency toward receptor, **S5 = 0.7**

**Variable Separation distance**

$$\begin{aligned} D &= \text{SQRT}(N) \times S1 \times S2 \times S3 \times S4 \times S5 \\ &= \text{SQRT}(530) \times 127 \times 0.3 \times 0.9 \times 1 \times 0.7 \\ &= 23.02 \times 127 \times 0.3 \times 0.9 \times 1 \times 0.7 \end{aligned}$$

$$\underline{\underline{D = 553 \text{ metres}}}$$

## **APPENDIX B**

### **Control classes for noxious weeds in NSW**

Class 1 – state prohibited weeds

Class 2 – regionally prohibited weeds

Class 3 – regionally controlled weeds

Class 4 – locally controlled weeds

Class 5 – restricted plants.

### **Class characteristics**

Class 1 noxious weeds are plants that pose a potentially serious threat to primary production or the environment, and are not present in the state or are present only to a limited extent.

Class 2 noxious weeds are plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies, and are not present in the region or are present only to a limited extent.

Class 3 noxious weeds are plants that pose a serious threat to primary production or the environment of an area to which the order applies, are not widely distributed in the area, and are likely to spread in the area or to another area.

Class 4 noxious weeds are plants that pose a threat to primary production, the environment or human health, are widely distributed in an area to which the order applies, and are likely to spread in the area or to another area.

Class 5 noxious weeds are plants that are likely, by their sale, the sale of their seeds, or movement within the state or an area of the state, to spread in the state or outside the state.

A noxious weed that is classified as a Class 1, 2 or 5 noxious weed is referred to in this Act as a 'notifiable weed', and there are specific requirements for their management.

While the control requirements vary from area to area they generally follow the requirements below:

Classes 1 & 2 -The weed must be eradicated from the land and the land must be kept free of the weed.

Class 3 - The weed must be continuously suppressed and destroyed.

Class 4 - The weed must be controlled in accordance with the management plan published by the local control authority.

Class 5 - The weed cannot be sold or propagated or knowingly distributed.