

Piggeries

EIS Guideline

**New South Wales
Department of Urban Affairs and Planning**

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Executive summary

This guideline identifies some important factors to be considered when preparing an environmental impact statement (EIS).

The preparation of the EIS should be preceded by early effective consultation and technical discussions with relevant government agencies and councils.

A high priority should be given to:

- considering environmental factors in site selection
- evaluating alternative sites
- ascertaining the suitability of the intended location.

There should be an early evaluation of alternatives, taking into consideration the factors in Part 4 of this guideline.

The analysis of alternative design, processing and management practices should consider the environmental implications of options. The justification for the selection of the preferred options should consider biophysical, social and economic factors, and the consistency with ecological sustainability principles.

The assessment process should focus on key environmental issues. These issues should be identified early in the environmental impact assessment (EIA) process, usually at a planning focus meeting and through consultation with the community. The assessment process should clearly identify the environmental (including biophysical, social and economic) costs and benefits of the proposal.

Key issues for piggeries usually include

- effluent disposal
- surface and groundwater quality issues
- air quality issues
- noise
- soil degradation.

The EIS should outline commitments to the ongoing environmental management of the proposal, including monitoring.

The level of analysis of individual issues in the EIS should reflect the level of significance of their impacts. The analysis should focus on key issues. The information in the EIS should be accurate and presented clearly and concisely. There should be emphasis on quality and not quantity. The EIS need not be long.

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1. Purpose and scope of the guideline

1.1 Background

A major function of an environmental impact statement (EIS) is to provide information on the potential environmental impacts of a proposal. This guideline outlines the matters which may need to be included in an EIS for a piggery proposal. The guideline is also relevant for piggery proposals requiring a lesser degree of environmental assessment. The details in the EIS should reflect the level of significance of the potential impacts on the environment.

As well as advising applicants of piggery proposals, the guideline will also be of assistance to government authorities responsible for the approval or regulation of piggeries, and the community who may participate in the environmental assessment process.

This guideline addresses the following specific matters for piggery proposals:

- site selection procedures consistent with 'locational principles'
- planning and other factors to consider when preparing an EIS
- requirements to be resolved in an EIS.

Piggeries have the potential to cause significant environmental impacts related to effluent disposal, soil degradation, and surface and ground water, noise and air pollution. Not all matters outlined in this practice guideline will be applicable to every piggery proposal. The EIS should be tailored to suit the potential impacts of the proposal. It is essential to focus on key issues. If the EIS addresses the relevant matters identified in this guideline, there should be sufficient information for the assessment of most piggery proposals.

1.2 Piggeries covered by the guideline

A piggery proposal may be for a new facility or for the upgrading of an existing piggery. The proposal may also include decommissioning or removal of existing facilities made redundant by the new

facilities. The piggery proposal may include facilities for fattening as well as breeding animals.

All proposals must include a comprehensive scheme for the management of waste from the facility. This may include measures to treat, use or dispose of the gases, liquids or solids resulting from the operation of the facility.

The proposal may also include food manufacture facilities including storage, crushing and blending of grains and other materials. If this component of the proposal is significant (for instance, if feed is manufactured for sale or use off-site), consideration should also be given to any guidelines on Crushing, grinding and separating issued by the Department of Urban Affairs and Planning.

The guideline does not specifically cover any livestock processing facilities (such as abattoir, meat or pet food manufacturing, tannery or fellmongery). For these components of the facility, reference should be made to separate guidelines.

1.3 When is an EIS required?

An EIS must be prepared for proposals which have the potential to significantly affect the environment. Part 4 and Part 5 of the *Environmental Planning & Assessment (EP&A) Act 1979* specify the legal requirements for environmental impact assessment. The assessment and approval process is summarised in the flow chart in Appendix 2 of the guideline.

Under State Environmental Planning Policy No. 30 — Cattle Feedlots and Piggeries, development consent is required for all piggeries having a capacity of at least 200 pigs or 20 breeding sows unless they are for temporary or emergency situations. (Local councils may require consent for piggeries with a lower capacity). The consent authority is usually council. If SEPP No. 34 — Major Employment Generating Industrial Development applies, the Minister for Urban Affairs and Planning is the consent authority.

a. EIA under Part 4

If development consent is required, then Schedule 3 of the EP&A Regulation 1994 applies. Schedule 3 introduces designation thresholds based on the size of the piggery and the sensitivity of the affected environment (see Appendix 6 for full designation).

If a development is designated, then an EIS must be prepared and lodged with a development application. If a piggery proposal is not designated, a statement of environmental effects (SEE) or environmental impact report (EIR) must be submitted with the development application for the proposal. The practice guideline is equally applicable for identifying the range of issues which may need to be addressed in an EIS, SEE or EIR.

b. EIA under Part 5

For proposals or components of proposals which do not require development consent and are not prohibited under the provisions of an

environmental planning instrument, Part 5 of the EP&A Act applies. Under Part 5, a government authority, before approving a proposal which does not require development consent, must first consider whether the proposal has the potential to significantly affect the environment. If significant impacts are likely, an EIS must be considered before an approval is granted.

If an EIS is not required, a review of environmental factors (REF) should be prepared to assess impacts and proposed mitigation strategies. This guideline is equally applicable for identifying issues which may need to be addressed in a REF prior to granting an approval.

For major or controversial projects, a program of community consultation may need to be undertaken as part of the preparation of the EIS. This program would usually include two phases, one seeking to inform the community (for instance involving public meetings, public displays or newsletters) and one seeking to gain input on issues of community concern, to

2. Factors to consider when preparing an EIS

The aim of environmental impact assessment (EIA) is to enable the approving authority, the public, the local council, government authorities and the proponent to properly consider the potential environmental consequences of a proposal. It is important to provide sufficient information for the approving authority to make a decision on whether to approve a proposal and if so, under what conditions. The EIS provides the basis for sound ongoing environmental management.

It is the proponent's responsibility to identify and address, as fully as possible, the matters relevant to the specific proposal and to comply with the statutory requirements for EIS preparation. The following factors are important when preparing an EIS.

2.1 Early consideration of the strategic context

The need for the proposal should be clearly identified along with its relationship to broader strategic plans and goals. Consideration of the strategic context is essential when selecting options for the proposal. Strategic mechanisms such as policies and plans which illustrate how the proposal has been developed, should be discussed in the EIS so that the information is available and relevant. It is not the role of the project EIS to undertake an environmental assessment of strategic mechanisms related to the proposal. However the EIS should report upon and apply them to the proposal.

Any existing relevant cumulative or strategic environmental studies should be considered when formulating and justifying undertaking a proposal. Air and water quality studies, state of the environment reports and local and regional environmental studies should also be taken into consideration as applicable.

2.2 Early assessment of options

The objectives for the proposal should be developed to fulfil any identified need and should encompass the principles of ecologically sustainable development (ESD). ESD principles (outlined in Appendix 1) should be considered when identifying options for all aspects of the proposal. All feasible alternatives that could satisfy the objectives of the proposal should be considered. When weighing up options, the biophysical, economic and social costs and benefits throughout the whole life cycle of the proposal should be considered. The 'do nothing' option should also be included in these considerations.

Careful option selection can lower community concerns and reduce potential costs of mitigation and management required to control environmental (including social) impacts. Early adoption of ecologically sustainable strategies can reduce possible conflicts, and additional costs and delays at later stages of the approval process.

2.3 Identifying issues

The general framework for an EIS is prescribed in Schedule 2 of the EP&A Regulation (see Appendix 1). The Director-General's requirements provide specific matters to be addressed in an EIS. In addition to the specific legal requirements, the proponent has a broader responsibility to consider all potential environmental issues in relation to the proposal.

As a precursor to identifying potential environmental issues, the proponent must be able to outline:

- the important characteristics of the project which will determine the scope of the potential impacts
- the proposed site and a preliminary assessment of the sensitivity of the site.

If either the project characteristics or the site should change, then the potential impacts may also change. If at any time changes occur, the scoping process for the EIS should be reviewed. If major changes occur, the Director-General may need to be reconsulted to amend their requirements.

In addition to the issues outlined in this guideline, other sources of information which may assist in the identification of potential issues include:

- any relevant guidelines produced by other NSW government authorities, e.g. *Environmental Noise Control Manual* (EPA, 1994a), other States or overseas
- EISs for similar projects, and any relevant commission of inquiry report, determination report and conditions of approval
- relevant research and reference material on similar proposals.

There are a number of approaches or mechanisms which help identify issues relating to a particular proposal in a particular location. They may involve fairly unstructured mechanisms with a low level of consultation or a structured process with a high level of consultation with all stakeholders. The choice of the approach should depend on the scale and type of proposal and the sensitivity of the environment. These may include:

- consultation outlined in Part 3
- checklist, matrix, network, GIS or overlay methods or similar approaches such as the tables in *Is an EIS required?* (Department of Planning, 1995)

2.4 Prioritising issues

The EIA process generally will benefit from focusing attention on key issues of concern. Not all issues identified will have the same degree of relevance for all proposals. The relative importance placed on different issues will vary from case to case, and is a function of the type and size of the proposal and the sensitivity of the receiving environment. Issues should therefore be prioritised according to their importance in the decision-making process.

When prioritising issues, consideration should be given to the potential severity, temporal and spatial extent of any beneficial and adverse

effects; their direct impacts as well as any indirect, secondary, tertiary or cumulative impacts; and whether the effects are continuous or intermittent, temporary and reversible or permanent and irreversible.

The outcome of the identification and prioritisation process should result in:

1. a list of all issues with a preliminary estimate of the relative significance of their impacts
2. identification of the key issues
3. an explanation as to why other issues are not considered to be key.

The EIS should address the key issues as fully as practicable. However the level of analysis should reflect the level of significance of the impacts and their importance for the proposal. Lesser attention should be given to those issues which have lesser significance. For these latter issues, there should be sufficient analysis to develop a sustainable mitigation strategy for any potential adverse impacts.

2.5 Impact analysis, prediction and presentation

Discussion of likely impacts should include predictions of the nature and extent of potential impacts and the effectiveness of mitigation strategies. This information is fundamental to deciding the potential ecological sustainability and hence the acceptability of a particular proposal.

a) Presentation

Information provided should be clear, succinct, objective and where appropriate, supported by maps or other descriptive detail. Repetitive or general non-specific data is distracting and is not relevant to the decision-making process. The use of jargon should be avoided. It is recommended that the EIS be edited to ensure consistency of style and accuracy of transference of information from any appendices to the main document. External review of technical analysis will help ensure that the information to be included is relevant.

The EIS should make reference to all relevant studies and investigations that have been carried out in support of the proposal or other studies, reports or literature used in the EIS. These should be made available during the public display of the EIS.

b) Baseline information

Where baseline data is to be collected first-hand, careful consideration must be given to the design of the sampling program. Matters to consider include:

- the degree of understanding of the processes in question
- the reasons for the data collection program
- sampling program design
- data collection procedures
- data analysis methodologies
- relevant quality assurance procedures.

The need for long-term sampling to discern the variability of the environment should also be assessed as early as possible so that it is not overlooked or avoided due to time constraints. Assumptions and extrapolations used to draw conclusions from the data should be justified.

In some circumstances, there may be sufficient existing data available for assessment purposes without the need for additional data collection. Where existing data is used, its adequacy and appropriateness for impact assessment of the proposal should be reviewed and discussed, taking into consideration the above points for first-hand data collection. Shortfalls or uncertainty in knowledge should be clearly identified.

In all cases, sampling programs and analysis procedures should reflect current scientific approaches. Peer review of study design, sampling methodology, data analysis and interpretation of results may help identify inadequacies.

c) Predictions of impacts and mitigation

Impact prediction should consider magnitude, duration, extent, direct and indirect effects, beneficial and adverse effects and whether impacts are reversible or permanent. All predictions of impacts and the likely success of mitigation strategies have an element of uncertainty associated with them. The proponent should identify and, where possible, indicate the

level of uncertainty associated with these predictions and mitigation measures. This information is fundamental in developing appropriate management strategies and informs the proponent, community, government agencies and the decision-maker of the degree of risk associated with the proposal and the importance of that risk.

When predicting impacts, a clear distinction must be made between those impacts which can be assessed quantitatively and those for which only a qualitative assessment can be made. Predictive models used should be justified in terms of appropriateness for the task, outlining its strengths and weaknesses. Whenever conclusions and recommendations have been made based substantially on judgements instead of facts or objective analytical results, the basis of the judgements should be clearly identified. A precautionary approach should be adopted where there is a significant chance a proposal may lead to irreversible consequences.

d) Reference to standards or indicators

Where possible, discussion of impact assessment and mitigation measures should make reference to recognised standards or indicators for sustainability. Standards such as the *Australian Water Quality Guidelines for Fresh and Marine Waters* (ANZECC, 1992) will provide a useful reference against which to measure the acceptability of potential outcomes. In some cases, indicators may have been developed for a region or area, for instance by the Healthy Rivers Commission for specific catchments. In other cases they may be developed as a result of regional strategic environmental or cumulative studies. Some indicators for sustainability may relate to the specific characteristics of the location and can only be developed as a result of the analysis undertaken in the EIS.

e) Mitigation strategies

Mitigation strategies must be considered both in relation to individual impacts and collectively for all impacts. This helps to avoid conflict between mitigation strategies and ensures that measures applied with respect to one (or more) potential impacts do not increase the magnitude or significance of other likely impacts. The mitigation strategy should include the

environmental management principles which would be followed in the planning, design, construction and operation of the proposal and include:

- a compilation of locational, layout, design or technology features described in the EIS
- an outline of ongoing environmental management and monitoring plans.

Predictions made in the EIS should be monitored in an environmental management plan (EMP). With projects with potentially controversial environmental impacts, it may be appropriate to:

- consult with government authorities, council and the community when preparing the EMP
- establish a community committee to consult in relation to the ongoing management of the proposal
- exhibit an annual environmental management report outlining the environmental performance of the proposal.

It is not expected that a detailed EMP be prepared for the EIS. However an outline of the content and structure and commitment to prepare an EMP is required.

2.6 A question of adequacy

The NSW Land and Environment Court has made a number of observations about the adequacy of EISs during its judgements (see Gilpin, 1995). Gilpin's summary of the Court's observations includes:

- The purpose of an EIS is to bring matters to the attention of members of the public, the decision-maker, and the Department of Urban Affairs and Planning so the environmental consequences of a proposal can be properly understood
- The purpose of the EIS is to assist the decision-maker. An EIS is not a decision-making end in itself, but a means to a decision-making end

- The EIS must be sufficiently specific to direct a reasonably intelligent and informed mind to possible or potential environmental consequences
- The EIS should be written in understandable language
- The EIS should contain material which would alert both lay persons and specialists to potential problems
- An EIS would be unacceptable if it was superficial, subjective or non-informative
- An EIS would be acceptable if it was objective in its approach and alerted relevant parties to the environmental effects and community consequences of carrying out or not carrying out the proposal.

2.7 Ecologically sustainable development

Under the EP&A Regulation, it is necessary to justify the proposal having regard to biophysical, economic and social considerations and the principles of ecologically sustainable development (ESD).

Ecological sustainability requires a combination of good planning and an effective and environmentally sound approach to design, operation and management. The proponent should have regard to the principles of ESD throughout the whole project life cycle, and especially:

- when developing the objectives for the project
- during project formulation, planning and design
- when considering project options and alternatives
- during construction
- for the operational life of the proposal
- afterwards during decommissioning, site rehabilitation and reuse.

Continual reference should be made to the question 'Is this proposal ecologically sustainable?'

3. Consultation

Early consultation with the local community, industry, councils and government agencies can be of great assistance when making a preliminary assessment of the potential viability of a proposal at a particular site. It can also assist in ensuring that the EIS is focused on those matters which will add value to the decision-making process.

Effective consultation should enable an applicant to:

- clarify the objectives for the proposal in terms of community needs and concerns, and the relationship of the proposal to any relevant strategic plans, government policy directions and statutory or planning constraints
- identify feasible alternatives (in particular alternative sites) and clarify their relative merits in terms of biophysical, social and economic factors
- identify environmental issues to:
 - prioritise the issues and identify those key to the decision-making process
 - establish the scope of the studies for key issues so that there will be adequate information for the decision-making process
 - where possible, identify performance objectives or indicators for key issues
 - when appropriate, identify experts (in government agencies or from other sources) who can assist in guiding the assessment of a key issue or peer review the assessment
- if appropriate, identify processes for continued community involvement.

The following consultation procedures are recommended:

3.1 Consultation with government agencies

It is intended that this guideline should replace the need to undertake routine consultation with government agencies on general matters to be included in an EIS, statement of environmental effects (SEE) or review of environmental factors (REF).

However, consultation with councils and relevant government agencies is recommended to help identify alternatives and to provide a preliminary view on their acceptability within the strategic context. To maximise the benefits of consultation with government authorities, requests for advice should be accompanied by adequate information on the proposal and proposed locations. The consultation request should be targeted towards identifying key issues, and should specifically relate to the particulars of the location, design and operation of the proposed facility.

To facilitate consultation with relevant government agencies, it may be appropriate to hold a planning focus meeting (PFM). The Department recommends that PFMs be held for all major or potentially controversial proposals. The principal approval authority would usually be responsible for organising the PFM. In addition to including government authorities which have an approval role, other agencies with expertise in the area, catchment management committees or independent technical experts may also need to be included depending on the location, site characteristics and management options.

For a piggery proposal, the following organisations should be invited to a PFM or otherwise consulted:

- relevant local councils
- NSW Agriculture
- Environment Protection Authority
- Department of Land and Water Conservation
- Roads and Traffic Authority.

Appendix 4 lists other organisations who may need to be consulted to identify key issues for particular proposals.

For smaller projects, less formal meetings or discussions with relevant authorities, particularly the local council, should be undertaken. Issues such as whether a proposal is consistent with the council's strategic plan for the area and is permissible at the particular site should be clarified at the outset.

3.2 Formal consultation required under legislation

Under the provisions of the EP&A Regulation, an applicant or proponent must formally consult the Director-General of the Department of Urban Affairs and Planning (DUAP) regarding the content of an EIS. It is recommended that the PFM or preliminary discussions with council occur before the proponent consults the Director-General and that the minutes of the PFM or issues canvassed in the discussions be forwarded to DUAP when the Director-General's requirements are requested.

If a proposal is on land that contains a 'critical habitat' or is likely to significantly affect threatened species, populations or ecological communities or their habitats, the Director-General of National Parks and Wildlife should be consulted regarding the contents of a species impact statement (see Appendix 3 for further information).

3.3 Consultation with the community

The community likely to be affected, whether directly or indirectly, should be informed of the proposal and consulted early in the EIA process. Consultation should aim to include affected individuals, community groups and groups with special interests such as local Aboriginal Land Councils.

For major or controversial projects, a program of community consultation may need to be undertaken as part of the preparation of the EIS. This program would usually include two phases, one seeking to inform the community (for instance involving public meetings, public displays or newsletters) and one seeking to gain input on issues of community concern, to identify community values and to identify and evaluate alternatives (for instance involving community focus meetings, 'issues' workshops and community surveys).

4. Site selection procedures

Principles of site selection for piggery proposals

Consideration must be given to whether:

- the land use is permissible
- environmentally sensitive areas are avoided
- the use is compatible with nearby land uses
- initial site investigations indicate the fundamental suitability of the site.

4.1 Site selection

Piggeries can have major impacts on the environment. The selection of a site therefore requires a precautionary approach, to minimise risks to water and soil resources and reduce the need for expensive or technically complex environmental management facilities. The potential for odours to impact on people's amenity is a particularly controversial aspect of a piggery proposal. The nature and effect of piggery odours are complex but odour to varying degrees will always be present. The greater the potential for adverse effects, the more important the site selection process.

In order to operate a piggery over the long term without overly restrictive controls, selecting a site with an adequate and maintainable separation distance from existing or future residences is of paramount importance. Not only the existing land use but also the planning provisions and any development potential of the locality should be considered to ensure long term feasibility. These issues are equally critical when expanding or upgrading existing older piggeries.

Selection of sites for land application of effluent and biosolids requires consideration of characteristics of soil and groundwater.

Appropriate site selection can avoid or reduce many of the environmental problems inherent with piggery proposals and:

- reduce the need for technically based environmental and health risk mitigation measures and costly ongoing management measures

- result in substantial savings in establishment and operation
- reduce levels of public concern
- avoid potential delays in approval processes.

A systematic and rigorous approach to site selection based on '4 principles' is therefore recommended as set out in Figure 1.

4.2 Permissibility of land use

At a very early stage in the site selection process it is essential to check with the local council to determine if the proposed land use is permissible on a particular site under the provisions of the LEP, other planning instruments or government policy. If the proposal is not permissible, discussions should be held with council to determine its attitude towards rezoning the site.

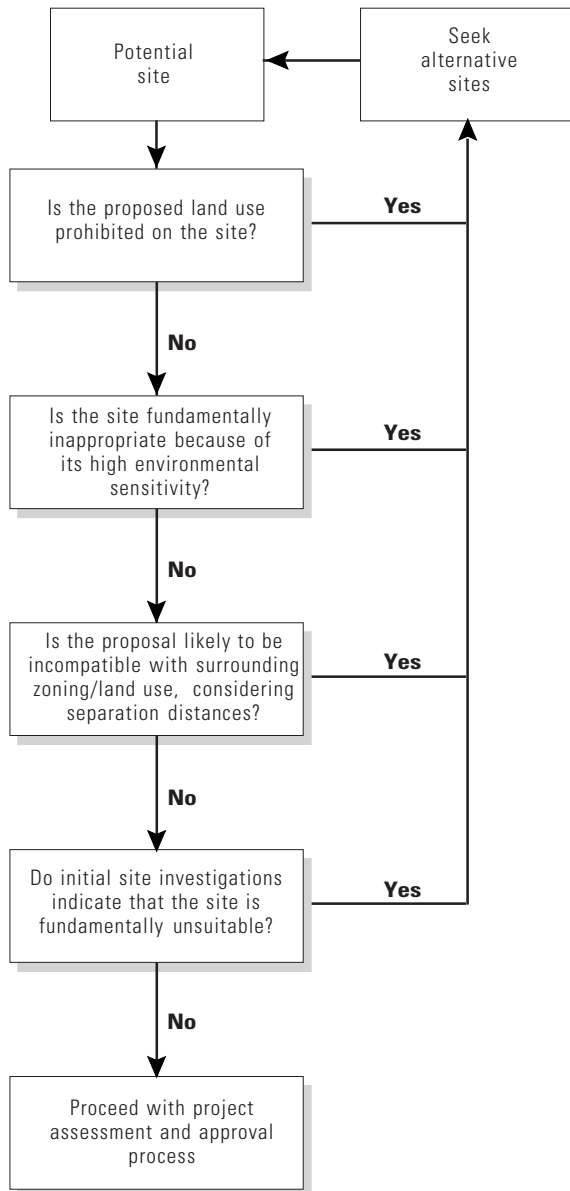
4.3 Environmentally sensitive areas

At an early stage, the site selection process should also determine whether a potential site is likely to adversely affect areas of such high environmental value that the site should be excluded from any further consideration. Table 1 identifies areas which are considered to be inappropriate for piggeries.

4.4 Compatibility with land uses

The compatibility of the proposal with existing or proposed surrounding land uses is one of the most critical issues with piggeries. Conflicts commonly arise when the community's amenity is threatened by odour, health, noise, or water quality impacts. Any potential conflicts and possible options for reducing or preventing conflicts should be considered, in particular, the adequacy of separation distances and the potential land uses close to the facility.

Figure 1. Site Selection



The extent and compatibility of uses of the buffer areas should be considered on a case specific basis. Factors to be considered should include the number of head, the design of the sheds, the operation regime, the effluent and biosolids treatment, storage, use or disposal systems. Local environmental factors should also be considered, particularly local meteorological conditions and

topography. Table 2 suggests land uses which might require separation from nearby piggery facilities and suggests performance objectives which could be used to determine an appropriate separation distance.

If the proposal is potentially incompatible with surrounding land uses, consideration should be given to acquiring sufficient land to provide adequate on-site separation from nearby land uses. Where possible, the buffer area should be owned or controlled by the operator of the piggery.

As the establishment of buffer areas around piggeries can lead to unacceptable land sterilisation, separation distances should not be viewed as a primary means of ameliorating impacts. Instead, separation distances should be seen as a backup to ensure the amenity of existing land uses can be maintained. The EPA does not accept impact reduction by separation distances for air or water pollution. The role of site separation as an impact mitigation measure should simply reinforce the impact mitigation measures provided by other means.

4.5 Initial site investigations

The purpose of preliminary site investigations is to provide an early evaluation of the suitability of the proposed site in terms of management, engineering and environmental factors. The initial investigations can help provide confidence about a potential site's fundamental suitability for use as a piggery prior to proceeding with a more detailed assessment in an EIS. Factors to be considered are listed in Table 3.

The initial investigations can provide a basis for the comparative evaluation of a number of potential sites and can help substantiate the feasibility of the proposal at a particular site. These investigations can serve as a cost-effective device to determine if any particular sites should be excluded from further consideration based on environmental factors.

In addition to assessing the suitability of new sites, site feasibility studies should be undertaken to assess the acceptability of any existing piggeries being extended or altered, for example

to extend biosolid or effluent disposal. In these cases, investigations should consider any monitoring results from the existing facility.

The level of detail at the initial investigation stage should be commensurate with the scale of the proposal, the potential environmental risks associated with the proposal and the potential sensitivity of the location.

The purpose of the initial site investigations is to exclude fundamentally unsuitable sites. Results of the initial investigations should be assessed to

determine if a site is fundamentally suitable or unsuitable for proceeding with a development application.

In some circumstances, the acceptability of a site may be still uncertain following an initial site investigation and more detailed assessment will be required to establish acceptability. A precautionary approach should be adopted with these types of 'marginal' sites. The availability of impact mitigation measures alone to alleviate serious site deficiencies should not be used to conclude that a site is suitable.

Table 1. List of environmentally sensitive areas to be avoided

Area	Objective
A site within 250 metres of an area of significant environmental or conservation value identified under relevant legislation or environmental planning instruments, including: <ul style="list-style-type: none"> • national parks, reserves for environmental protection e.g. marine, aquatic, nature, karsts • other areas protected under the <i>National Parks and Wildlife Act 1974</i>; areas covered by a conservation agreement • world heritage areas, other historic and heritage areas, buildings or sites • wilderness areas identified or declared under the <i>Wilderness Act 1987</i> • SEPP 14 – Coastal Wetlands, SEPP 26 – Littoral Rainforests; areas zoned under a LEP or REP for environmental protection purposes, e.g. high scenic, scientific, cultural, wetlands or natural heritage. 	To avoid the risk of damaging areas of high environmental value.
Sites within an identified drinking water catchment (surface water or groundwater) including: <ul style="list-style-type: none"> • any lands nominated or mapped as 'special or protected areas' by local water supply authorities or in the vicinity of a drinking water bore • lands within 3 kilometres from the top water level of the following storages: Wingecarribee Reservoir, Fitzroy Falls Reservoir, and the Tallowa Dam 	To avoid the risk of polluting drinking water.
Sites located: <ul style="list-style-type: none"> • near permanent or intermittent waterbodies, lakes, bays, inlets or wetlands surfaces • within an area where the watertable is within 3 metres of the surface 	To protect groundwater and water resources.
Sites where the substrata is prone to land slip or subsidence	To avoid unsuitable substrata.
Sites on floodplains which may be subject to washout during major flood events (councils should be consulted for information about local flooding characteristics)	To avoid washout risk if a significant flood event occurs.

Before proceeding with these types of sites, the views of the EPA, NSW Agriculture, Department of Land and Water Conservation and any other relevant authorities should be sought regarding:

- the nature of the environmental constraint and its significance for the proposal's likely impacts
- the availability of impact mitigation measures
- the comparative merits of alternative sites.

A balanced judgement should be made taking account of all environmental factors. If a site is deemed to be suitable, the EIS should include results of the initial investigations and a full explanation of the rationale for selecting the site and for concluding that the site is suitable for the piggery.

Table 2. Appropriate Separation Distances from Certain Land Uses

Land use	Performance objectives	Factors for determining appropriate separation distances
Residential areas, hospitals or schools	<ul style="list-style-type: none"> • Protect residential amenity and health: odour, visual amenity, noise, dust, seepage 	<ul style="list-style-type: none"> • What is the likelihood of the performance objectives being achieved by the mitigation measures alone? • What is the likelihood of the mitigation measures failing? • What is the likelihood of an 'incident' (e.g. accident, system failure, natural disaster) which will result in a failure to meet the performance objectives? • What backup mitigation measures are available? • What is the likely geographic extent of impacts taking into consideration the proposed performance of mitigation measures and the local environment (topography, climate)? • What is the likely geographic extent of the impacts if mitigation measures fail or an 'incident' occurs taking into consideration the local environment (topography, climate)? • What separation distances are required to achieve the performance objectives: <ul style="list-style-type: none"> — under normal operational and mitigation performance conditions — if mitigation measures fails or an 'incident' occurs?
Surface waters	<ul style="list-style-type: none"> • Ensure that surface waters are protected from pollutants in the waste • Ensure that no existing or likely future uses of surface waters are compromised • Ensure that no significant impacts occur to flora and fauna which use surface waters • Ensure that the ecological value of the waters will be maintained 	
Groundwater recharge zones	<ul style="list-style-type: none"> • Ensure that there is no deterioration in the quality of the groundwater • Ensure that no existing or likely future uses of groundwater are compromised 	
Environmentally sensitive areas (Table 1)	<ul style="list-style-type: none"> • Ensure that environmental qualities of the particular area are not compromised 	

Table 3. Matters to be Considered in the Initial Site Investigations

Water issues	<ul style="list-style-type: none"> • Are there risks of surface water pollution because of the proximity to watercourses and natural wetlands, in particular watercourses used for drinking water or aquaculture downstream, or catchments of coastal estuaries intermittently open to the sea? • Are there risks to groundwater because of shallow or rising groundwater tables, or because of the proximity to groundwater recharge areas or to areas classified as having a high vulnerability to pollution? (This will require consultation with the Department of Land and Water Conservation). • Is the site subject to flooding? • Can any separation requirements from waterbodies (under any relevant legislation or guidelines) be complied with?
Soils issues	<ul style="list-style-type: none"> • Are the soils capable of suitable drainage and sedimentation management? • Are there risks of infiltration to groundwater because of highly permeable soils or within a coastal dune field? • Are there environmental risks associated with the underlying strata (for example significant seismic risk, landslide, subsidence or other structural instability)? • Are there existing soils problems, for example contaminated soils or where acid sulfate, sodic or saline soils are located? • If effluent or biosolids usage schemes are proposed, are the soils fertile and not highly permeable or impermeable with a slope of less than 6 degrees?
Vegetation issues	<ul style="list-style-type: none"> • Can the clearing of natural vegetation be avoided? • Can clearing of vegetation of high significance be avoided, e.g. riparian vegetation, vegetation used as corridors for the movement of fauna, vegetation communities containing endangered flora or serving as a habitat to endangered fauna or used for visual screening? • Is a development application required under SEPP 46? Is a SIS required?
Transport issues	<ul style="list-style-type: none"> • Can the standard and capacity of the local road network accommodate the traffic likely to be generated by the proposal? • Can any truck traffic movements avoid residential areas? • If inadequacies exist, can the road network or traffic management be changed to meet requirements and to minimise any impacts on residential areas?
Climate issues	<ul style="list-style-type: none"> • Are the rainfall patterns or prevailing wind direction likely to cause management difficulties? • Are the local climatic conditions (e.g. air movement rainfall) in combination with the topography likely to result in microclimatic conditions which will adversely increase impacts?
Community issues	<ul style="list-style-type: none"> • Is the proposal likely to be compatible with any surrounding existing or proposed land uses, including residential zones, dwellings, and any special land uses such as hospitals or schools? • Can any separation requirements from such uses (under any relevant legislation or guidelines) be complied with? • Is there likely to be a problem in meeting sustained compliance with health, odour, noise or water quality requirements? • Is the proposal likely to affect the heritage significance of any Aboriginal or non-Aboriginal heritage items found or likely to be found on the site? • Is the proposal likely to pose health risks through contamination of agricultural produce? • Is the proposal likely to contribute to any existing cumulative impacts?

5. Summary of EIS requirements

The statutory requirements for an EIS are prescribed in Schedule 2 of the EP&A Regulation (Appendix 1).

A summary of the specific requirements for an EIS for a piggery are provided in the box on the right. These requirements are discussed in detail in Part 6. All issues nominated will not have the same degree of relevance to all proposals.

Depending on the characteristics of the proposal, some of the requirements may be more relevant than others, while others will not be applicable at all. The EIS should be tailored to the specific proposal and should focus on the key issues.

Summary of requirements

A. Executive summary

B. The proposal

1. Objectives and characteristics
2. Description of operations
3. Site layout
4. Infrastructure and services requirement
5. Previous and existing operations on the site
6. Consideration of alternatives

C. The location

1. Planning information
2. Site and locality description
3. Overview of the affected environment

D. Identification and prioritisation of issues

1. Overview of the methodology
2. Outcomes of the process

E. The environmental issues

1. Cumulative impacts
2. Odour
3. Waste management
4. Water quality and catchment protection
5. Land capability and protection
6. Drainage and stormwater management
7. Flooding
8. Traffic and road impacts
9. Noise
10. Dust
11. Visual impacts
12. Pest and insect control
13. Flora and fauna
14. Heritage
15. Hazardous chemicals
16. Animal welfare
17. Economic and social effects

F. List of approvals and licences

G. Compilation of mitigation measures

H. Justification for the proposal

6. Specific requirements for an EIS

A. Executive summary

An executive summary should be provided at the front of the EIS and be available separately for public information. This should give a short overview of the proposal and the potential environmental impacts and be written in non-technical language to facilitate understanding of the assessment by the general public.

B. The proposal

1. Objectives and characteristics

Present a clear statement of the proposal's objectives.

Describe the nature and scale of the operation including:

- a) pig numbers (stocking program)
- b) the method of production
- c) the hours of operational activities
- d) the number of employees
- e) the volume and nature of wastes, including water, nutrient and salt balances
- f) waste handling, treatment and utilisation
- g) crop management and nutrient removal
- h) volume and nature of truck movements
- i) heating and cooling
- j) the frequency of pen flushing or effluent pond clean out
- k) chemical usage and storage
- l) the projected life of the operation
- m) any staging.

2. Description of operations

Describe the proposal and include:

- a) the location, elevation and materials of buildings
- b) earthworks, fencing, dams and ponds
- c) waste management facilities and effluent holding and utilisation areas
- d) type of machinery to be used (feed mill, shed cleaning, solids slurry and sludge spreading, irrigation of liquid effluent)

- e) silt traps, drainage and stormwater facilities
- f) storage areas and sheds
- g) processing, storage or loading facilities for transport.

3. Site layout

Provide plans which clearly indicate the location of the above as well as:

- a) any significant vegetation to be cleared or disturbed
- b) internal access roads, truck parking, loading and turning areas
- c) effluent storage, land application areas, controlled drainage areas and waste disposal areas such as pits for carcasses and placental material
- d) site drainage, erosion and sediment control during construction
- e) landscaping
- f) the dimensions and construction details of storage ponds to be used for liquid effluent, slurry or contaminated water
- g) an explanation of the assumptions regarding seasonal variations, meteorological conditions and storm events used to estimate the required capacity.

4. Infrastructure and services requirement

Consider the following factors:

- a) energy supply and conservation measures
- b) total water requirements including a breakdown for the piggery (including water for drinking, cleaning, cooling and dust suppression), effluent dilution and other uses such as toilets; proposed storage, water recycling and reuse options
- c) sources of water supply (including potable) showing location, quantity, quality and treatment processes
- d) off-site waste disposal requirements, methods and locations
- e) road condition and transport requirements.

5. Previous and existing operations on the site

Examine the previous uses of the site for any implications for the proposal or potential impacts. Where a proposal is an expansion, describe the relationship of the proposal to the existing operation. Review the environmental performance of the existing piggery including compliance with any conditions of development consent and environmental protection licences or legislation. Assess past effluent application areas for nutrient and salt build up and other forms of land degradation.

6. Consideration of alternatives

Justify the suitability of the site for the proposed piggery in terms of proximity to existing and potential residences and public areas, geography, climate, surface and groundwater resources, the potential for land degradation, transport and any other advantages or disadvantages. Consider the potential to use better sites both on and off the property.

C. The location

1. Planning information

Provide the following planning information:

- a) zoning, permissibility and any land use constraints
- b) compatibility of the proposal with any relevant state environmental planning policy, regional or local environmental plans or development control plans (including exhibited draft planning instruments)
- c) compatibility with existing and potential land uses in the locality
- d) any planning strategies or programs for urban expansion, rural residential development, recreation or tourism areas or community facilities
- e) any heritage items or environmental protection areas or areas affected by conservation agreements.

2. Site and locality description

In this description use maps, plans or aerial photographs as necessary and clearly identify:

- a) title details and land tenure
- b) the location of the proposal (including effluent ponds and application areas)
- c) surrounding roads
- d) drainage lines, waterways, natural and artificial waterbodies (including intermittent) and levees
- e) adjoining communities, dwellings and existing land uses
- f) sight lines from dwellings or public places such as roads
- g) utilities.

3. Overview of the affected environment

Provide baseline information on those aspects of the environment which have the potential to be affected by the proposal or influence the nature of impacts. This might include descriptions of:

- a) the surface water regime including drainage patterns; dimensions, flows, quality and use of watercourses; flood regime; nature, depth and quality of the groundwater bearing zone; any water storage or drinking water catchments including groundwater
- b) the geology of the local area
- c) the nature of soils, particularly in regard to type, depth, hydrology and their interaction with climate, to establish the capability of the land to utilise the effluent and to identify the presence of acid sulfate, sodic or saline soils
- d) meteorological characteristics which may influence odour, noise, dust or water impacts
- e) the slope of the land and general topography by way of surface contours
- f) surrounding patterns of existing and proposed land uses, including neighbouring dwellings and public buildings and places as well as undeveloped and potential lots with residential opportunities
- g) any vegetation communities (including riparian) and their habitat value or other items of conservation value
- h) baseline data on water quality which should be sampled over at least a 6 month period, and preferably over 12 months, before pigs are brought on site.

D. Identification and prioritisation of issues

1. Overview of the methodology

Outline the procedures or methodology used to identify and prioritise issues. Factors to consider may include:

- a) an outcome of a review of relevant sources of information on potential issues, including:
 - i) any relevant guidelines produced by NSW government authorities, relevant guidelines from other States or overseas
 - ii) EISs for similar projects, any relevant commission of inquiry reports, determination reports and conditions of approval
 - iii) relevant research and reference material
 - iv) other similar projects particularly if operating in similar locations
 - v) relevant strategic plans or policies
 - vi) relevant preliminary studies or pre-feasibility studies
- b) an outcome of consultation with stakeholders including:
 - i) planning focus meetings, community focus meetings, community workshops or issues groups
 - ii) meetings with stakeholders (e.g. EPA, Department of Land and Water Conservation and councils)
- c) use of methodology such as *Is an EIS required?* (Department of Planning, 1995) or checklists or similar approaches.

2. Outcomes of the process

Summarise the outcome of the identification and prioritisation process including:

- a) all the issues identified
- b) the key issues which will need a full analysis in the EIS (including comprehensive baseline assessment)
- c) the issues which will not need a full analysis in the EIS, though they may be addressed in the mitigation strategy; the justification for the proposed level of analysis.

E. The environmental issues

The following specific issues are nominated as potentially important when assessing impacts, and for decision-making in relation to piggery proposals. The outline of the issues is not exhaustive and the degree of relevance of each will vary. The EIS should only deal with relevant issues as applicable to the particular proposal.

Assessment of potential impacts

The following should be included for any potential impact which is relevant for the assessment of a specific proposal:

- a description of the existing environmental conditions (baseline conditions)
- a detailed analysis of the potential impacts of the proposal on the environment; the analysis should indicate the level of confidence in the predicted outcomes and the resilience of the environment to cope with the impacts
- the proposed mitigation, management and monitoring program, including the level of confidence that the measures will effectively mitigate or manage the impacts.

With each issue, the level of detail should match the level of importance of the issue in decision-making.

1. Cumulative impacts

Cumulative impacts may result from a number of activities with similar impacts interacting with the environment in an area or region. Consider:

- other piggeries in the area or on the site as well as other forms of activities which may have the potential to create environmental impacts in common with the proposal
- any advantages or disadvantages from clustering piggeries or developments with similar impacts in this area
- any likely cumulative impacts having regard to odour, water quality, land degradation, other users of water, truck movements, noise, visual impacts, dust and loss of vegetation or fauna habitat.

2. Odour

Identify all sources of odour generation and sensitive receptor sites and the relative strengths of odour under normal and odour event conditions (e.g. wet weather, pen clean up, pond desludging).

For larger piggeries or those in sensitive locations, an odour dispersion study for the entire operation should be prepared which incorporates the piggery, waste storage areas, waste utilisation areas and other major sources of odour. Where possible, use site specific data and the influence of topography and microclimate on odour dispersion, and identify prevailing wind conditions.

Discuss the appropriate method of odour assessment with the Environment Protection Authority.

Outline design features and management practices to limit and minimise odour impacts and assess these for their adequacy, e.g. frequency of shed cleaning, pond desludging and solids slurry or sludge spreading.

3. Waste management

Provide a thorough assessment of the likely volume and chemical characteristics of both solid and liquid waste (including contaminants such as pathogens).

Outline the methods of solid waste management and utilisation including:

- a) methods of any stockpiling and composting
- b) landfill sites proposed for waste disposal
- c) proposals to minimise the generation of waste.

Identify methods of liquid waste management and utilisation which might include:

- a) collection, storage, treatments, dilution levels and land application rates (including design parameters and special mitigation measures, e.g. sealing of ponds)
- b) cropping rotations
- c) the impacts of wet and winter periods in relation to the rate of application, storage and dilution requirements of effluent
- d) calculations of nutrient loading and water balance.

Also consider alternative waste utilisation strategies in the event that the proposed methods are not in use (i.e. through failure or maintenance).

Outline the means of disposing of dead pigs and placental material, and include a contingency plan for large numbers of carcasses should a high mortality event occur. Where disposal pits are to be used or planned, identify the sites and assess the means to prevent leaching to surface and groundwater for their effectiveness.

4. Water quality and catchment protection

When assessing potential impacts on water quality and quantity of associated watercourses and groundwater:

- a) have regard to the slope of the land subjected to effluent application and land capability
- b) determine the existing depths to and quality of groundwater
- c) if necessary, identify measures to prevent the accession of nutrients or effluent to groundwater (particularly from beneath sheds, holding ponds and waste or effluent utilisation areas).

Assess the impacts from irrigation of effluent or waste water on groundwater and the effect of any existing groundwater trends, such as a rising watertable, on the sustainability of irrigation practices.

5. Land capability and protection

Soils must be able to accommodate on-site waste utilisation. Assess the status of soils in existing effluent utilisation areas and show the chemical and physical attributes of all soils.

Identify potential soil impacts in effluent utilisation areas such as:

- a) salt accumulation
- b) nutrient imbalance
- c) waterlogging
- d) potential for leaching to groundwater
- e) soil erosion.

Management techniques (i.e. cropping and rotation) to control or mitigate potential short- and long-term impacts should also be considered.

In coastal areas where acid sulfate soils are likely to occur, undertake testing to establish if it is present. Where present, prepare a program to monitor and manage the potential impacts (including acidification of surrounding soil or loss

of water quality in nearby bores) for the construction and operational phases.

Provide a description of measures proposed to minimise land degradation. Include:

- a) the means to prevent the contamination of overland flows
- b) channel design criteria
- c) prevention of soil erosion and sedimentation impacts.

6. Drainage and stormwater management

In this description include design criteria and the means to isolate nutrient-loaded or contaminated water, such as irrigation tail water, from watercourses. Prepare an erosion and sediment control plan to a concept level to demonstrate that effective stormwater management can be achieved during both construction and operations.

7. Flooding

State the known flood liability of the site. If liable, assess the potential flood impacts on:

- a) sheds and pens
- b) feed storage
- c) effluent disposal areas and ponds
- d) chemical and fuel storage areas and the subsequent impact on water quality.

Also assess the potential impact on the flooding regime off-site.

Outline measures and management plans to mitigate impacts of floods and indicate details of any levees. These should be constructed to the Department of Land and Water Conservation specifications.

8. Traffic and road impacts

Assess traffic impacts both during and after construction and include:

- a) truck movements, frequency, times and routes
- b) any access or road upgrading that would be made necessary
- c) site access and on-site parking and manoeuvring
- d) road user safety
- e) the impact of noise and dust on residences adjacent to the site and located along transport routes.

Indicate any access or road upgrading that would be made necessary by the piggery.

9. Noise

Assess expected day and night noise levels and impacts on residents in the locality. Include:

- a) transport noise (collection and deliveries)
- b) farm equipment (cooling fans, feeders, electrical generators, tractors)
- c) the pigs themselves (especially at feeding times).

10. Dust

Outline proposed methods to suppress dust which may be generated from unsealed access roads, bare soil, solid effluent stockpiles, feed milling and delivery. Consider the general climate, wind directions and strengths.

11. Visual impacts

Visual impacts may arise from the scale, colour and reflectivity of buildings and machinery, access roads, and general appearance. Assess the potential impacts in relation to topography, and describe measures to ameliorate these.

12. Pest and insect control

Good farm practice includes pest and vermin control strategies. Outline these as well as measures to mitigate impacts associated with insect populations.

13. Flora and fauna

Where flora or fauna or their habitat are likely to be disturbed issues to consider include:

- a) identification of habitats; ecological communities and where appropriate, populations and species in areas to be directly or indirectly affected by the proposal
- b) the local and regional scarcity of these habitats, ecological communities, populations and species
- c) the extent of disturbance, the sensitivity of species or communities to disturbance, the potential impacts of disturbance on biodiversity, and the potential for recolonisation after disturbance

- d) the significance of flora and fauna for other biota, including biota not directly affected by the proposal but which interact with potentially disturbed flora and fauna
- e) details of proposed mitigation methods such as compensatory planting of indigenous species and provision of new habitats
- f) a description of any proposed tree planting program for visual screening, water uptake, ground water interception or shade, and any proposals to use indigenous species in landscaping.

Note: Appendix 3 provides guidance on determining when a species impact statement (SIS) is required. A SIS must accompany any proposal in critical habitat or where there is likely to be a significant effect on threatened species, populations or ecological communities or their habitats.

14. Heritage

If land clearing, earthworks, disturbance of existing items (buildings, works, relics or places) or reduction of the heritage curtilage will occur as a result of the proposal, issues to consider include:

- a) identifying items of Aboriginal, non-Aboriginal and natural heritage significance on the site (including underwater) and in the area affected by the proposal — surveys should be supported by reference to existing studies, plans, registers and groups such as Aboriginal Land Councils and local historical societies
- b) assessing the significance of items identified with reference to appropriate sources (e.g. Aboriginal Land Councils, National Parks and Wildlife Service, NSW Heritage Manual 1996)
- c) assessing the potential impacts of the proposal on the heritage significance and determining if approval for this disturbance will be required (e.g. from councils, the Director-General of National Parks and Wildlife, the Heritage Council or the Director of the NSW Heritage Office)
- d) proposing measures to mitigate impacts or to conserve the heritage significance — if items of significance are to be disturbed, a

conservation management plan may need to be prepared in consultation with the Heritage Office

- e) considering the acceptability of impacts on heritage significance and assessing the adequacy of the measures to mitigate impacts during all stages of the proposal.

15. Hazardous chemicals

Identify the type and quantity of any chemical substances (i.e. pesticides, insecticides, cleaning agents, fuel and veterinary chemicals) to be used in the operation or stored on-site. Outline arrangements for their safe use, storage, transport and disposal, including measures to prevent soil and water contamination.

16. Animal welfare

State the intended level of compliance with any relevant industry code of practice for the health and welfare of animals.

17. Economic and social effects

For piggery proposals located to result in potential impacts on residential communities, consider the following issues:

- a) current and future market demand and supply for the proposed product in a local and regional context
- b) any additional employment as a result of the proposal, at the site and in the community;
- c) social impacts resulting from changes in the amenity of the area
- d) impacts on the health of the community from any potential changes in the air quality, water quality, noise regime and safety on the roads.

F. List of approvals and licences

All approvals and licences required under any legislation must be identified. This is to alert other relevant authorities as early as possible to their potential involvement in the project and to ensure an integrated approach to the granting of approvals. This list also identifies for the community, the relevant authorities involved in the assessment and regulation of the proposal.

G. Compilation of mitigation measures

This section compiles the mitigation strategy outlined in previous sections to demonstrate how the proposal and its environmental safeguards would be implemented and managed in an integrated and feasible manner. This section also demonstrates that the proposal is capable of complying with statutory obligations under other licences or approvals.

The mitigation strategy should outline the environmental management principles which would be followed when planning, designing, establishing and operating the proposal, and include:

- specific locational, layout, design or technology features and
- an outline of ongoing management and monitoring plans.

In some circumstances, separate environmental management strategies should be outlined for the construction and operational stages of the project.

An environmental management plan (EMP)

An environmental management plan (EMP) is a document designed to ensure that the commitments in the EIS, and subsequent assessment reports, approval or licence conditions are fully implemented. It is a comprehensive technical document which is usually finalised during or following detailed design of the proposal after approval of the development application. It should provide a framework for managing or mitigating environmental impacts for the life of the proposal. It should also make provisions for auditing the effectiveness of the proposed environmental protection measures and procedures.

With major or controversial projects, it may be appropriate to:

- establish a community committee to consult in relation to the ongoing management and monitoring of the proposal
- plan to exhibit an annual environmental management report outlining the environmental performance of the proposal.

Although the level of detail required in an EMP is usually not considered necessary for the EIS or statement of environmental effects, a comprehensive outline of the structure of the EMP with a summary of the environmental management principles which would be followed when planning, designing, constructing and operating the proposal should be provided. It should be noted that with key issues, where there are high levels of risk or uncertainty, it may be essential to present details of how these issues would be managed in the EIS.

At the development approval stage, it is essential for the applicant to establish that the environmental impacts can be managed in an integrated and feasible manner. Two sections should be included, one setting out the program for managing the proposal (section a. below) and the other outlining the monitoring program with a feedback loop to the management program (section b. below).

a) Environmental management outline

The management strategy should provide an outline to demonstrate that sound environmental practice will be followed during the establishment, operation, rehabilitation and end use of the proposal including:

- i) management of construction impacts; if appropriate include erosion and sedimentation management and revegetation plans for areas disturbed by construction activities
- ii) management of operational impacts; if appropriate include:
 - surface water and groundwater details, including monitoring locations, parameters and frequencies
 - details of waste utilisation areas, including chemical and physical parameters of soils, effluent application rates, harvest plant production, hydraulic, nutrient and salt budgets
 - details of soil erosion and sedimentation
 - details of odour intensity, dispersion and effects on receptors
 - details of dust and noise effects.
- iii) strategies to feed information from the monitoring program back into the management practices and action plans to

improve the environmental performance and sustainability of all components of the proposal

- iv) training programs for operational staff and incentives for environmentally sound performance
- v) an indication of how compliance with licensing and approval requirements will be achieved and due diligence attained
- vi) if applicable, the reporting mechanism on environmental performance and performance bond and relevant performance parameters.

b) Monitoring outline

This program should be carefully designed and related to the predictions made in the EIS and the key environmental indicators which would demonstrate the potential ecological sustainability of the proposal. The EIS should outline the need for and use of any proposed monitoring, monitoring intervals and reporting procedures.

The program outline should describe the following monitoring details:

- i) the key information that will be monitored, its criteria and the reasons for monitoring (which may be compliance with regulatory requirements)
- ii) the monitoring locations, intervals and duration
- iii) procedures to be undertaken if the monitoring

- indicates a non-compliance or abnormality
- iv) internal reporting procedures and links to management practices and action plans
- v) reporting procedures to relevant authorities and, if appropriate, to the consent authority and the community.

H. Justification for the proposal

Reasons should be included which justify undertaking the proposal in the manner proposed, having regard to the potential environmental impacts and compliance with the principles of ecologically sustainable development.

The principles of ecologically sustainable development are:

- a) the precautionary principle — namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- b) inter-generational equity — namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- c) conservation of biological diversity and ecological integrity
- d) improved valuation and pricing of environmental resources.

Appendix 1. Schedule 2 — Environmental Impact Statements

This appendix contains an extract from the *Environmental Planning and Assessment Regulation 1994*. Schedule 2 outlines the matters that must be addressed in an EIS pursuant to clauses 51 and 84 of the EP&A Regulation.

1. A summary of the environmental impact statement.
2. A statement of the objectives of the development or activity.
3. An analysis of any feasible alternatives to the carrying out of the development or activity, having regard to its objectives, including:
 - a) the consequences of not carrying out the development or activity; and
 - b) the reasons justifying the carrying out of the development or activity.
4. An analysis of the development or activity, including:
 - a) a full description of the development or activity; and
 - b) a general description of the environment 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; and
 - c) the likely impact on the environment of the development or activity, having regard to:
 - i) the nature and extent of the development or activity; and
 - ii) the nature and extent of any building or work associated with the development or activity; and
 - iii) the way in which any such building or work is to be designed, constructed and operated; and
 - iv) any rehabilitation measures to be undertaken in connection with the development or activity; and
 - d) a full description of the measures proposed to mitigate any adverse effects of the development or activity on the environment.
5. The reasons justifying the carrying out of the development or activity in the manner proposed, having regard to biophysical,

economic and social considerations and the principles of ecologically sustainable development.

6. A compilation (in a single section of the environmental impact statement) of the measures referred to in item 4 (d).
7. 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.

Note: For the purposes of this Schedule, “the principles of ecologically sustainable development” are as follows:

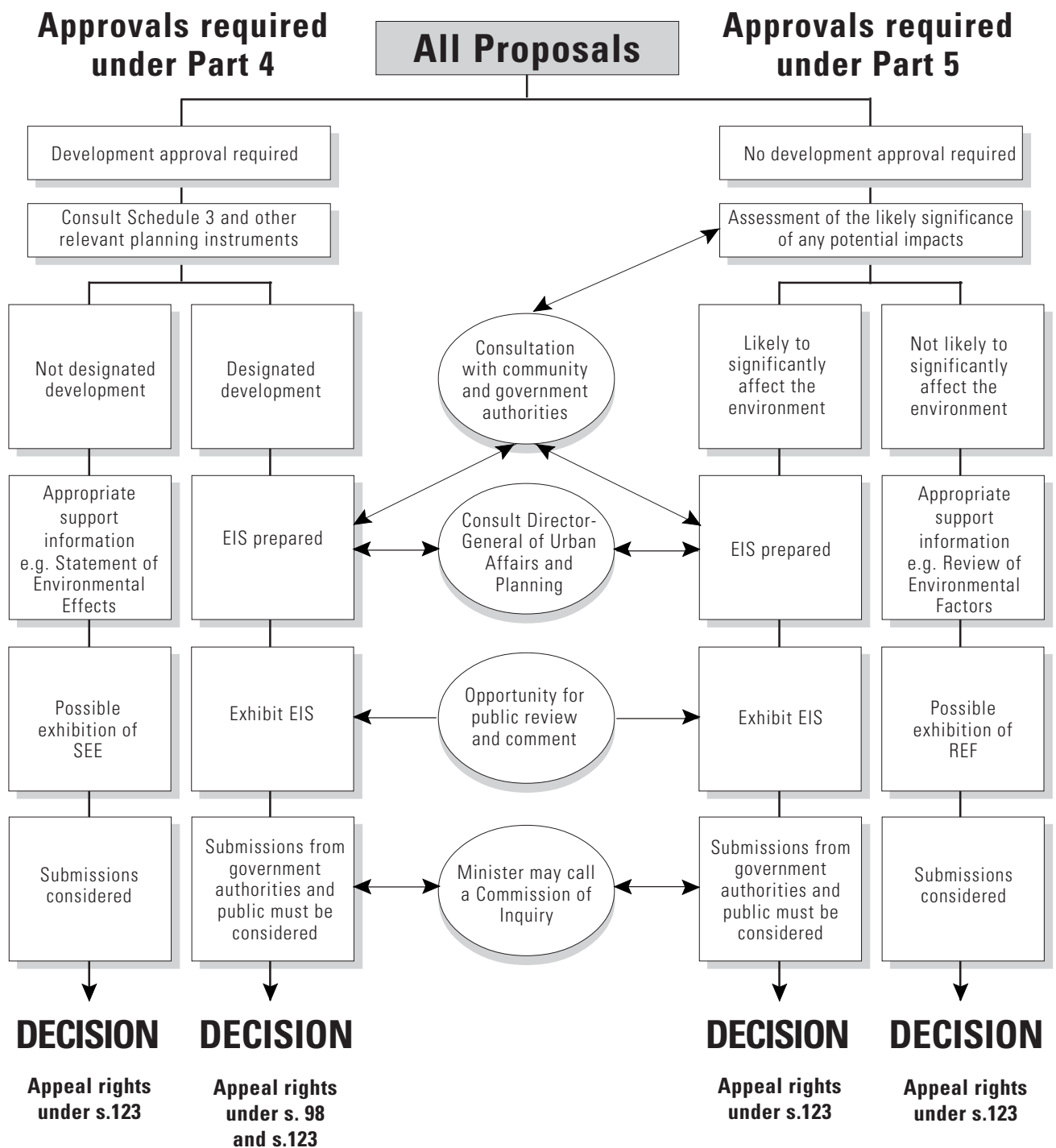
- a) The precautionary principle — namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- b) Inter-generational equity — namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- c) Conservation of biological diversity and ecological integrity.
- d) Improved valuation and pricing of environmental resources.

Note: The matters to be included in item 4 (c) might include such of the following as are relevant to the development or activity:

- a) the likelihood of soil contamination arising from the development or activity;
- b) the impact of the development or activity on flora and fauna;
- c) the likelihood of air, noise or water pollution arising from the development or activity;
- d) the impact of the development or activity on the health of people in the neighbourhood of the development or activity;
- e) any hazards arising from the development or activity;
- f) the impact of the development or activity on traffic in the neighbourhood of the development or activity;

- g) the effect of the development or activity on local climate;
- h) the social and economic impact of the development or activity;
- i) the visual impact of the development or activity on the scenic quality of land in the neighbourhood of the development or activity;
- j) the effect of the development or activity on soil erosion and the silting up of rivers or lakes;
- k) the effect of the development or activity on the cultural and heritage significance of the land.

Appendix 2. EIA procedures under the EP&A Act



Appendix 3. Threatened Species Conservation Act

This appendix contains an extract from the *Threatened Species Conservation Act 1995* and the provisions for assessing impacts on the conservation of critical habitats and threatened species, populations or ecological communities and their habitats.

What are critical habitats, threatened species, populations or ecological communities and threatening processes?

Critical habitats are prescribed in Part 3 of the *Threatened Species Conservation (TSC) Act 1995*. Threatened species, populations or ecological communities and threatening processes are prescribed in Part 2 and Schedules 1 and 2 of the TSC Act.

When is a Species Impact Statement required?

Under section 77 (3) (d1) and section 112 (1B) of the EP&A Act, if a proposal:

- is on land that contains a "critical habitat" or
- is likely to significantly affect threatened species, populations or ecological communities, or their habitats,

a species impact statement (SIS) must be prepared in accordance with Division 2 of Part 6 of the *TSC Act*.

Factors when deciding if an SIS is required

The following factors must be taken into account in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats:

- a) in the case of a threatened species, whether the life cycle of the species is likely to be

disrupted such that a viable local population of the species is likely to be placed at risk of extinction,

- b) in the case of an endangered population, whether the life cycle of the species that constitutes the endangered population is likely to be disrupted such that the viability of the population is likely to be significantly compromised,
- c) in relation to the regional distribution of the habitat of a threatened species, population or ecological community, whether a significant area of known habitat is to be modified or removed,
- d) whether an area of known habitat is likely to become isolated from currently interconnecting or proximate areas of habitat for a threatened species, population or ecological community,
- e) whether critical habitat will be affected,
- f) whether a threatened species, population or ecological community, or their habitats, are adequately represented in conservation reserves (or other similar protected areas) in the region,
- g) whether the development or activity proposed is of a class of development or activity that is recognised as a threatening process,
- h) whether any threatened species, population or ecological community is at the limit of its known distribution.

Form and content of an SIS

Under section 110 of the TSC Act, the general requirements on the form and content of an SIS are as follows.

General information

1. A species impact statement must include a full description of the action proposed, including its nature, extent, location, timing and layout and, to the fullest extent reasonably practicable, the information referred to in this section.

Information on threatened species and populations

2. A species impact statement must include the following information as to threatened species and populations:
 - a) a general description of the threatened species or populations known or likely to be present in the area that is the subject of the action and in any area that is likely to be affected by the action,
 - b) an assessment of which threatened species or populations known or likely to be present in the area are likely to be affected by the action,
 - c) for each species or population likely to be affected, details of its local, regional and State-wide conservation status, the key threatening processes generally affecting it, its habitat requirements and any recovery plan or threat abatement plan applying to it,
 - d) an estimate of the local and regional abundance of those species or populations,
 - e) a general description of the threatened species or populations known or likely to be present in the area that is the subject of the action and in any area that is likely to be affected by the action,
 - f) a full description of the type, location, size and condition of the habitat (including critical habitat) of those species and populations and details of the distribution and condition of similar habitats in the region,
 - g) a full assessment of the likely effect of the action on those species and populations, including, if possible, the quantitative effect of local populations in the cumulative effect in the region,
 - h) a description of any feasible alternatives to the action that are likely to be of lesser effect and the reasons justifying the carrying out of the action in the manner proposed, having regard to the biophysical, economic and social considerations and the principles of ecologically sustainable development,
 - i) a full description and justification of the measures proposed to mitigate any adverse effect of the action on the species and populations, including a compilation (in a single section of the statement) of those measures,

- j) a list of any approvals that must be obtained under any other Act or law before the action may be lawfully carried out, including details of the conditions of any existing approvals that are relevant to the species or population.

Information on ecological communities

3. A species impact statement must include the following information as to ecological communities:
 - a) a general description of the ecological community present in the area that is the subject of the action and in any area that is likely to be affected by the action,
 - b) for each ecological community present, details of its local, regional and State-wide conservation status, the key threatening processes generally affecting it, its habitat requirements and any recovery plan or any threat abatement plan applying to it,
 - c) a full description of the type, location, size and condition of the habitat of the ecological community and details of the distribution and condition of similar habitats in the region,
 - d) a full assessment of the likely effect of the action on the ecological community, including, if possible, the quantitative effect of local populations in the cumulative effect in the region,
 - e) a description of any feasible alternatives to the action that are likely to be of lesser effect and the reasons justifying the carrying out of the action in the manner proposed, having regard to the biophysical, economic and social considerations and the principles of ecologically sustainable development,
 - f) a full description and justification of the measures proposed to mitigate any adverse effect of the action on the ecological community, including a compilation (in a single section of the statement) of those measures,
 - g) a list of any approvals that must be obtained under any other Act or law before the action may be lawfully carried out, including details of the conditions of any existing approvals that are relevant to the ecological community.

Credentials of persons undertaking an SIS

4. A species impact statement must include details of the qualifications and experience in threatened species conservation of the person preparing the statement and of any other person who has conducted research or investigations relied on in preparing the statement.

State-wide conservation status

5. The requirements of subsections (2) and (3) [above] in relation to information concerning the State-wide conservation status of any species or population, or any ecological community, are taken to be satisfied by the information in that regard supplied to the principal author of the species impact statement by the NPWS, which information that Service is by this subsection authorised and required to provide.

Procedures for preparing an SIS

Under Section 111 of the TSC Act, the Director-General of National Parks and Wildlife must be consulted in writing for the requirements for an SIS. These requirements must be provided within 28 days from when a request is made.

Because of the circumstances of the case, the Director-General of National Parks and Wildlife may limit or modify the extent of matters prescribed in section 110. In other cases if the impacts are considered to be trivial or negligible, the Director-General of National Parks and Wildlife may dispense with the requirement for an SIS to be prepared.

An SIS may be prepared as a separate document or incorporated in an EIS. If the SIS is separate to the EIS, it must be exhibited concurrently with the EIS.

The SIS must be in writing and be signed by the principal author of the document and the applicant/proponent.

Appendix 4. Consultation and approvals

It is the responsibility of the person preparing the EIS to determine what approvals will be required as a result of the proposal and to demonstrate that the proposal can meet all approval and licensing requirements. In preparing the EIS, consultation with relevant parties should be undertaken early in the EIA process and their comments taken into account in the EIS.

Approvals or consultation which may be required include:

local councils for development approvals under Part 4 of the EP&A Act and any building approval under the *Local Government Act 1993*, also for any alteration to local roads or buildings or trees of local heritage significance

Department of Urban Affairs and Planning for concurrence if the proposal impacts on SEPP 14 — Coastal Wetlands, SEPP 26 — Littoral Rainforest, potential or actual koala habitat under SEPP 44 — Koala Habitat Protection

Environment Protection Authority for air, water and noise licences, approvals and certificates of registration under relevant pollution control legislation; regulation of waste generation, transportation and disposal; licences for transport of dangerous goods under the Dangerous Goods Act; licences for chemicals subject to chemical control orders under the Environmentally Hazardous Chemicals Act

Department of Land and Water Conservation
Soil and Vegetation Management for information on soils; design and construction of erosion and sediment controls and rehabilitation; approvals on protected lands;
State Lands Services regarding effect of development on any Crown land; for leasing, licence, or purchase; whether the land is subject to Aboriginal land claim or Native Title legislation; if Crown Reserves and dedicated lands exist, whether the proposal is compatible with the stated public purpose;
State Water Management regarding impact on ground or surface water resources; clearing riparian vegetation; works within 40 metres of a stream;

Coastal and Rivers Management regarding flooding and coastal areas;
Water Services Policy regarding approvals under the *Local Government Act 1993*

relevant service authorities such as water, electricity, gas, telecommunication, drainage, flood mitigation, sewerage or other utility organisations

National Parks and Wildlife Service if land clearing or impacts on natural vegetation are likely, particularly in relation to the provisions of the Threatened Species Conservation Act; or if sites of Aboriginal heritage significance or land managed by the Service are likely to be affected

NSW Fisheries if fish or fish habitat is affected (including dredging or reclamation works, impeding fish passage, damaging marine vegetation, desnagging, use of explosives or other dangerous substances in or adjacent to a waterway which may result in fish kills)

NSW Agriculture if the proposal is on land with high agricultural value or will cause dislocation to the agricultural industry

NSW Health Department with regard to the potential health hazard caused by the operation and siting of the facility

WorkCover for responsibilities regarding handling of dangerous goods and hazardous substances

Heritage Council of NSW if the proposal is likely to affect any place or building having State heritage significance or if the proposal is affected by Interim Conservation Orders (ICO) or Permanent Conservation Orders (PCO)

Department of Aboriginal Affairs if the proposal is in an area of significance to the Aboriginal community

Department of Mineral Resources if a resource management plan applies or if the proposal is in an area of important mineral resources, concerning its responsibilities under Sydney REP No 9 — Extractive Industry, and for safety and blasting

Mining Subsidence Board if the proposal is in an underground mining area

State Rail Authority (SRA) if the proposal impacts on SRA operations

Office of Marine Safety and Port Strategy on any activities on navigable waters

Roads and Traffic Authority if the proposal is likely to result in significant traffic impacts

State Forests of NSW in relation to impacts on State Forests

Department of Bushfire Services if the area is in a location of bushfire hazard

Catchment Management Committees or Trusts

Local Aboriginal Land Councils

relevant industry organisations

Commonwealth EPA, if Commonwealth land is likely to be affected or if Commonwealth funding applies

the owner or operator of any nearby airports and airport safety organisations.

Appendix 5. References

- Agriculture and Resource Management Council of Australia and New Zealand/ Australian and New Zealand Environment and Conservation Council (1995) *Draft Effluent Management Guidelines for Intensive Piggeries*, National Water Quality Management Strategy, Department of Conservation and Natural Resources, East Melbourne
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- Department of Planning (1995) *Is an EIS required? Best practice guidelines for Part 5 of the Environmental Planning and Assessment Act 1979*, Department of Planning, Sydney
- Environment Protection Authority (1994a) *Environmental Noise Control Manual*, EPA, Sydney
- Gilpin, A. (1995) *Environmental Impact Assessment: Cutting Edge for the 21st Century*, Cambridge Press, Melbourne
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- McDonald, R. C., Isbell, R. F., Speight, J. G., Walker, J. & Hopkins, M. S. (1990) *Australian Soil and Land Survey Field Handbook*, Inkata Press, Melbourne
- National Health and Medical Research Council (1994) *National Framework for Environmental and Health Impact Assessment*, AGPS, Canberra
- Northcote, K. H. (1979) *A Factual Key to the Recognition of Australian Soils*, CSIRO, Rellim Technical Publications, Glenside, SA
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- NSW Department of Conservation and Land Management, (1992) *What do all the Numbers Mean?* P.A. Hazelton and B.W. Murphy (ed.).
- Shields, J. (1991) *Flora and Fauna Assessment in NSW State Forests, Survey Guidelines: Procedures for Sampling Flora and Fauna for Environmental Impact Statements*, Forestry Commission of NSW
- Standing Committee on Agriculture, Animal Health Committee (1992) *Australian Model Code of Practice for the Welfare of Animals*, CSIRO Publications, East Melbourne
- USA Environmental Protection Authority (1991) *Handbook: Groundwater Volume II Methodology* (EPA 625/6-90/016b) US Government Printing Office

Appendix 6. Schedule 3 — Designated development

This appendix is an extract from Schedule 3 of the *Environmental Planning and Assessment Regulation 1994* and prescribes livestock intensive industries which are designated under Part 4 of the EP&A Act. This designation only applies to proposals which require development consent under the provisions of a planning instrument.

Livestock intensive industries, being:

1. **feedlots** that accommodate in a confinement area and rear or fatten (wholly or substantially) on prepared or manufactured feed, more than 1,000 head of cattle, 4,000 sheep or 400 horses (excluding facilities for drought or similar emergency relief); or
2. **piggeries** that:
 - a) accommodate more than 200 pigs or 20 breeding sows and are located:
 - i) within 100 metres of a natural waterbody or wetlands; or
 - ii) in an area of:
 - high watertable; or
 - highly permeable soils; or
 - acid sulphate, sodic or saline soils; or
 - iii) on land that slopes at more than 6 degrees to the horizontal; or
 - iv) within a drinking water catchment; or
 - v) on a floodplain; or
 - vi) within 5 kilometres of a residential zone and, in the opinion of the consent authority, having regard to topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood by reason of noise, odour, dust, traffic or waste; or
 - b) accommodate more than 2 000 pigs or 200 breeding sows; or
3. **poultry farms** for the commercial production of birds (such as domestic fowls, turkeys, ducks, geese, game birds or emus), whether as meat birds, layers or breeders and whether as free range or shedded birds, that are located:
 - a) within 100 metres of a natural waterbody or wetlands; or
 - b) within a drinking water catchment; or
 - c) within 500 metres of another poultry farm; or
 - d) within 500 metres of a residential zone or 150 metres of a dwelling not associated with the development and, in the opinion of the consent authority, having regard to topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood by reason of noise, odour, dust, lights, traffic or waste.

Are alterations or additions designated development?

Is there a significant increase in the environmental impacts of the total development?

1. Development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority, the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development.

Factors to be taken into consideration

2. In forming its opinion, a consent authority is to consider:
 - a) the impact of the existing development having regard to factors including:
 - i) previous environmental management performance, including compliance with:
 - conditions of any consents, licences, leases or authorisations by a public authority; and
 - any relevant codes of practice; and
 - ii) rehabilitation or restoration of any disturbed land; and

- iii) the number and nature of all past changes and their cumulative effects; and
- b) the likely impact of the proposed alterations or additions having regard to factors including:
 - i) the scale, character or nature of the proposal in relation to the development; and
 - ii) the existing vegetation, air, noise and water quality, scenic character and special features of the land on which the development is or is to be carried out and the surrounding locality; and

- iii) the degree to which the potential environmental impacts can be predicted with adequate certainty; and
- iv) the capacity of the receiving environment to accommodate changes in environmental impacts; and
- c) any proposals:
 - i) to mitigate the environmental impacts and manage any residual risk; and
 - ii) to facilitate compliance with relevant standards, codes of practice or guidelines published by the Department of [Urban Affairs and] Planning or other public authorities.