NSW DEPARTMENT OF
PRIMARY INDUSTRIES

NSW North Coast Sustainable Aquaculture Strategy-Land Based Aquaculture

Readers' Note

This document is part of a larger publication. The remaining parts and full version of the publication can be found at:

http://www.dpi.nsw.gov.au/fisheries/aquaculture/publications/general-management-and-policy/nsw-north-coast-sustainable-aquaculture-strategy

Updated versions of this document can also be found at the above web address.

Assessment Guidelines

NSW North Coast Sustainable Aquaculture Strategy
Land-based Aquaculture
August 2000

A NSW Government Initiative

North Coast Sustainable Aquaculture Strategy

A NSW Government initiative of NSW Fisheries, Department of Urban Affairs and Planning, Department of State and Regional Development, Environment Protection Authority, Department of Land and Water Conservation, National Parks and Wildlife Services and NSW Agriculture to encourage sustainable aquaculture in New South Wales

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1. Introduction

1.1 Scope of the Guidelines

This guideline is a component of the *North Coast Sustainable Aquaculture Strategy for Land Based Aquaculture* and identifies important factors to be considered when preparing a Statement of Environmental Effect (SEE) or an Environmental Impact Statement (EIS) to accompany a development application (DA) for a land based aquaculture proposal. The guideline includes information relevant to applicants as well as councils and government authorities responsible for regulating aquaculture and the broader community.

The SEE or EIS should predict the likely environmental impacts of the proposal and provide the basis for the project's on-going sustainable management. This information is important for the applicant in making business decisions, to the neighbours to understand what is happening in their community and the approval bodies so they have adequate information to make a decision.

The preparation of a SEE or EIS should be preceded by effective consultation with relevant government agencies, councils and neighbours. There should be early evaluation of alternatives, taking into consideration the factors in this guideline and in the relevant sections in the Strategy. A high priority should be given to:

- considering environmental factors in site selection
- evaluating alternative species, design, layout and management practices
- ascertaining the suitability of the proposal in the intended location.

The analysis should consider the environmental implications of all options. The justification for the selection of the preferred options should be consistent with ecological sustainability principles. This step could save time and money and improve the environmental performance and more than likely the long-term viability of the facility.

The assessment process should focus on key environmental issues. Key matters for land based aquaculture facilities and related activities include:

- selection of an appropriate location and design layout to provide for sustainable management
- water lifecycle management: source and availability of water and minimisation and management of wastewater
- minimisation of adverse impacts on flora and fauna, in particular the risks associated with the species to be farmed and management of predators

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

The relevance of matters in this guideline to a particular land based aquaculture proposal will depend upon the proposed location, the species cultivated, intensity of production and the proposed cultural methods. The greater the potential environmental impacts, the more carefully the site, design and operational practices must be considered and assessed. These variables, and particularly the intensity of production, are directly reflected in the classes of aquaculture in the Strategy.

1.2 When is an EIS required?

Under the provisions of the *Strategy and the SEPP - Sustainable Aquaculture*, all land-based aquaculture proposals require development consent under Part 4 of the Environmental Planning and Assessment (EP&A) Act 1979. The SEPP triggers a requirement to consider the likely environmental risks of the project (through reference to the Project Profile Analysis) to determine the level of assessment for the proposal.

Class 1	SEE to assess low risk issues and compliance with best practice,
Class 2	SEE to assess low and mid level risk issues, or
Class 3	EIS to assess low, acceptable and high risk issues.

The provisions in the SEPP and Strategy override those in Schedule 3 of the EP&A Regulation 1994 (normally used to determine if an EIS is required. See Appendix 4).

It is the responsibility of the consent authority (usually, the local council) based on the relevant **Project Profile Analysis** to determine if a proposal is Class 1, Class 2 or Class 3.

- If an aquaculture proposal is Class 3 and designated development, an EIS must be prepared and submitted with the development application.
- If an aquaculture proposal is not designated, a SEE must be submitted with the development application.

Whatever document is prepared, it should address relevant issues in sufficient detail so that the consent authority can make an informed judgement about the environmental impacts of the proposal. The details required in the SEE or EIS should reflect the level of potential impacts of the project on the environment.

2. Factors to consider when assessing a proposal

The aim of an environmental impact assessment (EIA) is to enable the approving authority, the public, the local council, government authorities and the applicant to properly consider the potential environmental consequences of a proposal. It is important to provide sufficient information for

- the Applicant to make decisions about costs and benefits associate with the location, species, design and operation of the facilities
- the Community and particularly neighbours to understand the nature of the proposal being located in their area and to make an informed contribution to the assessment process
- the approving authorities (council and government agencies) to make a decision on whether to approve a proposal and if so, under what conditions.

The SEE or EIS should also provide the basis for sound ongoing environmental management.

It is the applicant'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 broader strategic context should be considered at the outset. This may include consideration of strategic environmental issues such as water quality and quantity constraints in a catchment and the likely trends in the future, for example the likelihood of cumulative water quality issues becoming an increased or reduced constraint in the future. As well as environmental issues, consideration should also be given to strategic marketing issues, for example likelihood of marketing campaigns translating into overseas or domestic sales or the effect of the $A movements on any overseas sales or investment trends.

Consideration of the strategic context is essential when selecting options for the proposal. Strategic mechanisms such as government policies, programs and plans that may provide information on broader issues, may need to be discussed in the EIS. On the whole these broader strategic issues have been considered in the development of the Sustainable Aquaculture Strategy. It is not the role of the project SEE/EIS to undertake an environmental assessment of performance goals in the Strategy. Where the performance goals have been set out in the Aquaculture Industry Development Plan (AIDP), the SEE/EIS will only need to demonstrate compliance with those goals, not the justification of the goals. Information in the AIDP should NOT need to be repeated in the SEE/EIS.

2.2 Early assessment of options

The applicant should liaise closely with NSW Fisheries at the early stages of a development proposal particularly in identifying and testing various options to meet the applicant's objectives for the proposal. The ESD principles must also be considered when identifying options for all aspects of the proposal (outlined in Section 2.2). All feasible alternatives should be considered. When weighing up alternatives, the biophysical, economic and social costs and benefits throughout the whole life cycle of the proposal should be considered. It must be reinforced that early adoption of ecologically sustainable strategies can reduce possible conflicts, and additional costs and delays at later stages of the approval process. Careful option selection can lower community concerns and reduce potential costs of management required to control environmental impacts.

2.3 Identifying issues

There is no prescribed framework for a SEE. The general framework for an EIS is prescribed in Schedule 2 of the EP&A Regulation (see Appendix 1). The assessment structure in Section 4/5 of this guideline meets this requirement and would provide a suitable assessment structure for both EIS/SEEs. If an EIS is required, the Director-General of DUAP must be consulted as to any specific matters (beyond that in this Guideline) to be addressed in an EIS. In issuing requirements, the Director General must consult NSW Fisheries and other integrated approval bodies in preparing the requirements. The requirements of these agencies will also be sent to the applicant at this time.

In addition to the specific requirements, the applicant has a broader responsibility to consider all potential environmental issues in relation to the proposal. As a precursor to identifying potential environmental issues, the applicant must outline:

- the important characteristics of the project
- the proposed site and
- a preliminary assessment of the sensitivity of the site.

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

- any relevant guidelines produced by other NSW Government authorities, 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 that 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 Section 3 of this guideline
- checklist, matrix, network, GIS or overlay methods or similar approaches such as the tables in *Is an EIS required?* (Department of Planning, 1995)
- the relevant Aquaculture Industry Development Plan (AIDP).

2.4 Prioritising issues

Not all issues identified in this guideline 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 surrounding environment. Issues should therefore be prioritised according to their importance in the decision-making process.

There is usually a limited budget for preparing the SEE/EIS necessary for a development application. It is important that the money is allocated so that the necessary studies which are essential to predicting impacts and making decisions are undertaken and money is not wasted on unnecessary studies which may not be important to the decision making or the long term management of the site. It is critical that the resources are focused on “key” issues.

When prioritising issues, consideration should be given to the potential severity, the temporal and spatial extent of any adverse effects; their direct impacts as well as any indirect, secondary, or cumulative impacts; and whether the effects are continuous or intermittent, temporary (and reversible) or permanent (and irreversible). In this regard, the AIDP and the Project Profile Analysis has assisted in ranking the likely risks associated with most of the issues associated with land-based aquaculture proposals.

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

a) a list of all issues with a preliminary estimate of the relative significance of their impacts
b) identification of the key issues taking into consideration the Project Profile Analysis
c) an estimate of the scope of the information required for these key issues
d) an explanation as to why other issues are not considered to be key.

The SEE/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 that have been identified as low risk. For these latter issues, there

should be sufficient analysis to develop a sustainable mitigation strategy for any potential impacts.

2.5 Impact analysis and prediction

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.

Baseline information

A certain amount of baseline information is required to determine the level of risk associated with the project based on the Project Profile Analysis. If the level is considered to be low, more detailed baseline information may not be necessary. However if the level is high, then more detail information may be needed as a basis for predicting the likely level of impacts.

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 assessment of the proposal's impacts should be reviewed and discussed, taking into consideration the points below for considering the adequacy of data collection program. Shortfalls or uncertainty in knowledge should be clearly identified, and a precautionary approach taken in estimating likely impacts and developing mitigation measures.

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

The need for long-term sampling to discern the variability of the environment should also be considered as early as possible to avoid time constraints. This could be an issue where discharges to natural waterways are proposed. Any assumptions and extrapolations used to draw conclusions from the data should be justified.

Predicting the likely impacts and identifying 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 applicant 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 applicant, 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, 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. A staged development may be required in order to monitor and test predicted impacts.

Reference to performance goals or indicators in the AIDP

Where possible, discussion of impact assessment and mitigation measures should make reference to recognised performance goals in the AIDP or indicators for sustainability. In some cases, indicators may have been developed for a region or area, for instance by the Healthy Rivers Commission for specific catchments.

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 that would be followed in the planning, design, construction and operation of the proposal and include:

1. a compilation of locational, layout, design or operational features in the EIS
2. an outline of ongoing environmental management and monitoring plans.

Predictions made in the SEE/EIS should be monitored in an Environmental Management Plan (EMP). With projects with potentially controversial environmental impacts, it may be appropriate to:

- consult with relevant government bodies, council and the community
- trial proposed mitigation measures in the EMP (first ensuring that necessary approvals have been obtained)
- develop contingency measures to deal with impacts should mitigation measures not deliver the predicted outcomes
- establish a community committee to consult in relation to the ongoing management and monitoring 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 at the development application stage. However the EIS/SEE should contain an outline of the content of an EMP addressing critical issues, structure and commitment to prepare an EMP if required. Once development consent has been gained, the details of an EMP should be developed to manage the construction and operation of the proposal.

2.6 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). See Appendix 1 for the 4 basic principles. Ecological sustainability requires a combination of good planning and an effective and environmentally sound approach to design, operation and management. The applicant should have regard to the principles of ESD throughout the whole project life cycle especially in the use and reuse of resources, consideration of neighbours and minimising irreversible impact on the natural environment and especially:

- when developing the objectives for the project
- during project formulation, planning and design - when considering project options and alternatives
- during construction and 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

3.1 Purpose of pre-assessment consultation

Early consultation with the local residents and other industry, councils and government agencies can be of great assistance in making a preliminary assessment of the potential viability of a proposal at a particular site and can provide a preliminary view on the likely acceptability of the project in the broader context. It can also assist in ensuring that the EIS is focused on those matters that will add value to the decision-making process. Early consultation can assist in identifying alternatives which could be more effective and efficient in providing good production outcomes as well as sound reliable environmental performance.

Effective consultation should enable an applicant to:

- clarify the objectives the proposal taking into consideration community concerns or issues
- clarify the relationship of the proposal to relevant government policy directions or land use, economic, estuary or vegetation management plans which may include constraints on development on the site
- identify feasible alternatives (for example sites, water supply, species, layout, design and operational factors) and their relative merits in terms of biophysical, social and economic factors
- identify environmental issues to:
    - prioritise and identify issues key to the decision-making process of the investors as well as to the consent and approval authorities
    - identify the studies for key issues to provide adequate information for the decision-making process
    - identify performance objectives or indicators for key issues
    - when appropriate, identify experts (in government agencies or from other sources) who can assist in guiding and reviewing the assessment key issues
- if appropriate, identify processes for continued community consultation.

It is the responsibility of the person preparing the SEE or 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 SEE or EIS, consultation with relevant parties should be undertaken early in the process and their comments taken into account in the SEE or EIS.

3.2 Consultation steps

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 or SEE. For a SEE less detailed analysis is required than in an EIS. In particular the SEE for Class 1 projects, the emphasis should be directed at demonstrating compliance with best practice particularly in relationship to on-going management of the proposal.

To maximise the benefits of consultation with government authorities, requests for advice should be accompanied by adequate information on the proposal and proposed locations including general particulars of the location, design and operation of the proposed facility.

Planning focus meetings for major projects

To facilitate consultation with relevant government agencies, it may be appropriate to hold a planning focus meeting (PFM). PFMs should be held for all major or potentially controversial proposals. The NSW Fisheries or the consent 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, industry association representatives with current technology and project feasibility information, catchment management committees or independent technical experts may also need to be included depending on the location, site characteristics and management options.

Pre-lodgement Meetings for smaller projects

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.

Formal consultation required for an EIS

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.

Formal consultation required for an SIS

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 2 for further information).

Community consultation

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 or local Aboriginal communities. The community often is a source of valuable local information about flooding and tidal behaviour, seasonal sitings of flora and fauna species and community preferences, needs and trends. By taking a "partnership" approach with the local community, these factors can be identified early and appropriately considered and beneficial relationships can be established which could lead to long terms positive outcomes for all stakeholders.

For major or controversial projects, a program of community consultation may need to be undertaken as part of the preparation of the EIS or SEE. This program would usually include two phases,

- Firstly, seeking to inform the community (for instance involving public meetings, public displays or newsletters); and
- Secondly, seeking to gain input on issues of community concern, to identify community values and to identify and evaluate alternatives (eg community focus meetings, 'issues' workshops and community surveys).

3.3 Who should be consulted on technical issues

Prime group

Local councils for development approvals under Part 4 of the EP&A Act for local development, building approval under the *Local Government Act 1993*, and for alteration to local roads or buildings or trees of local heritage significance. For air, water and noise issues for non-scheduled premises under the POEO Act.

Department of Urban Affairs and Planning for development approvals under Part 4 of the EP&A Act for State significant development, 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.

NSW Fisheries for aquaculture permits (*Fisheries Management Act 1994*) or aquaculture leases on submerged Crown land; permits if fish or fish habitat are to be affected by dredging or reclamation works, impeding fish passage, damaging marine vegetation, de-snagging, use of explosives or other dangerous substances in or adjacent to a waterway which may result in fish kills; approval to obtain live aquatic animals.

Environment Protection Authority for scheduled premises under the *Protection of the Environment Operations Act*, 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
for information, advice and if relevant approval

- on status, tenure and permissible uses of Crown lands which includes most submerged land in tidal waterways, large areas of foreshore land, and areas of reserved, leased and vacant Crown land or land used for a public purpose (eg. Crown road reserves);
- whether land is subject to Aboriginal native title legislation;
- management or clearing of native vegetation, riparian land and wetlands
- non-metropolitan water supply, including surface and groundwater; information on groundwater aquifers or piezometers; works on a floodplain or in the riparian zone
- design of dams and reticulation systems;
- soil types and characteristics; design of sediment/erosion control structures and land rehabilitation schemes and
- wastewater management and disposal techniques.

National Parks and Wildlife Service for information and advice if

- land clearing or impacts on natural vegetation are likely; if any 'threatened species, populations or ecological communities or their habitats or land that is critical habitat are affected' the provisions of the *Threatened Species Conservation Act* are triggered
- approvals under the *National Parks and Wildlife Act* if sites of Aboriginal heritage significance are to be affected;
- where National Parks, Reserves or areas under Conservation Agreements, Wilderness Protection Agreements or Interim Protection Order Areas is likely to be affected;

- approvals under the *National Parks and Wildlife Act* to harm any native birds or animals.

Safe Food for information and advice on the potential health hazard caused by the operation of the facility. Information and compliance with Australian Shellfish Sanitation Control Program.

Depending on the proposal, consultation may be required with the following:

Environment Australia, if Commonwealth land is likely to be affected; if Commonwealth approval is required under the *Environment Protection and Biodiversity Conservation Act* for matters of national significance. If an export licence is require under the *Wildlife Protection Act*; if Commonwealth funding applies.

Catchment or Estuary Management Committees or Trusts Contact via Council or Department of Land and Water Conservation for information on catchment or estuary management and planning

Department of Aboriginal Affairs, Local Aboriginal Land Council or **Aboriginal Communities** if the proposal is in an area of significance to the Aboriginal community. for issues relating to Aboriginal owned lands, community concerns and traditional sites.

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

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).

NSW Agriculture if the proposal is on land with high agricultural value or will cause dislocation to the agricultural industry; where an aquaculture proposal is located in a cropping area where agricultural chemicals are used.

Roads and Traffic Authority and **State Rail Authority** (SRA) if the proposal is likely to result in significant traffic impacts or if the proposal impacts on SRA operations.

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

4. Summary of requirements

A summary of the statutory requirements for an EIS for aquaculture are provided below (see Schedule 2 of the EP&A Regulation Appendix 1). There are no statutory requirements for a SEE. However the outline of issues to address the requirements in Part 6 will be equally applicable to the preparation of a SEE or EIS. All issues nominated will not have the same degree of relevance for 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 SEE or EIS should be tailored to the specific proposal and should focus on the key issues.

The level of assessment should match the level of importance of the issue.

A. Executive summary
B. The proposal
1. Objectives of the proposal
2. Description of the proposal
3. Site preparation and construction
4. Previous and existing operations
5. Decommissioning and site rehabilitation
6. Consideration of alternatives & justification for the preferred options

C. The location
1. Planning context, site description and locality information
2. 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. Water issues
2. Soil and landscape
3. Air quality
4. Flora and fauna
5. Transport and traffic
6. Noise
7. Energy
8. Social
9. Health
10. Visual
11. Hazards
12. Heritage
13. Economic
14. Cumulative impact

F. List of approvals and licences
G. Compilation of mitigation measures
H. Justification for the proposal

5. Matters to be addressed in an EIS or SEE

5.1 Executive Summary

An executive summary should be provided. The summary should give a short overview of the proposal and the potential environmental impacts, and should include a clear map or aerial photograph of the location. It should be written in non-technical language to facilitate understanding of the proposal by the general public. With controversial or major projects, it is helpful if the executive summary is made be available separately for broad public distribution.

5.2 The Proposal

(a) Objectives of the proposal

The objectives of the proposal should be clearly stated and justified in terms of ecological sustainability. The statement should refer to:

a) the size and type of aquaculture and processing facilities
b) types and quantity of species to be cultivated, maximum and anticipated annual production
c) proposed processing and products, maximum and anticipated annual processing production
d) staging and timing of the proposal and any plans for future expansion
e) anticipated level of performance in meeting any relevant environmental standards, criteria or performance indicators in relation to Aquaculture Industry Development Plans (as required in section 143 (5) of the *Fisheries Management Act 1994*) or other relevant environmental plans, policies or guidelines

(b) Description of the proposal

(1) Information on the species

a) species of fish or vegetation to be cultivated
   i) whether indigenous or introduced to the locality
   ii) any disease risks to native species associated with the species
   iii) any translocation Issues or restrictions on the species under the provisions of the *Fisheries Management Act*
b) source
   i) where stock is acquired by gathering: detail the location and method of gathering
   ii) if stock is non-indigenous to the area: disease history of the source stock; quarantine status and any particular risks associated with the introduction of the particular stock to the area
   iii) whether pure/cross bred or genetically manipulated stock; vigour and ability to reproduce if accidentally released

(2) Cultivation practices

a) outline stages in the rearing of stock; if all stages are not on the same site, outline other locations
b) methods of holding stock at all stages of production
   - capacity, dimensions and structure of ponds, tanks, dams, runs etc
   - design criteria or controls to prevent seepage, drainage and overflow
   - length of time held in various facilities

c) methods of preventing escape of stock, including details of the materials used in screens, catch drains and fences,
d) methods of management and control of predators including details of any static or active systems which may be deterrents or cause harm to predator birds or animals.
e) feed management (if relevant); outline
    i) feed type and source
        - if prepared or grown on site, outline methods and procedures
        - if imported, identify sources and any quarantine or other procedures to prevent the importation of disease
    ii) use of chemicals or pharmaceuticals
    iii) procedures for feeding and monitoring application rates and for maximising feed conversion efficiency and minimising wastage or water and sediment contamination
f) procedures, facilities and protocols for disease control including:
    i) methods of isolating stock transported to the site and disposal of fish transport water
    ii) methods of monitoring fish health and occurrence of disease
    iii) likely fish diseases to occur in the operation
    iv) methods of managing and treating disease carriers during day-to-day management, as well as incidents such as disease outbreaks
    v) if relevant, procedures and sites for temporary relocation of stock as part of treatment
    vi) destruction of diseased stock
g) procedures for the harvest of stock

(3) Post cultivation

a) post cultivation stages including facilities and capacity for treating (eg purging), processing and storage, outline stages in processing of stock including cleaning, cooking, canning or bottling processes
b) outline proposed type and quantity of products and by-products; proposed markets and demand
c) health standards or protocols which apply to the products, including physical, chemical or biological specifications
d) procedures for monitoring processes and products to ensure that they meet relevant food safety standards and/or quality assurance objectives

(4) Pond/tank water management

a) water requirements (daily/annual volumes) for cultivation and post cultivation activities;
b) proposed water supply sources and quality; seasonal reliability and long-term availability (eg during drought), justification for the use of the preferred water supply sources; outline any pre-use treatment required
c) outline any reticulation and on-site water storage facilities, proposed turnover rates; management of any pond/tank overflows
d) outline the recycling system and protocols and procedures to maximise the reuse of water on site and to minimise the amount of wastewater
e) outline water quality maintenance procedures during cultivation and if necessary treatments; outline the use of any chemicals
f) measures to prevent inundation of the site by storm, flood or tidal waters; management of any site run-on or run-off waters
g) management to prevent seepage and groundwater infiltration; measures to prevent erosion of banks or dam walls

(5) Water recycling and discharge management

Outline proposals for reuse or disposal discharge water from the cultivation or processing activities including:

h) outline the water treatment methods, management and layout for reuse or discharge of pond/tank water
a) potential quantity and quality of discharge water; measures to reduce the level of nutrients or chemicals in waste water include efficiency of feeding regimes or effectiveness of other treatments such as aeration, settling and vegetation filters
b) options for use or disposal; if relevant, protocols for handling and disposal of water used to transport stock; suitability of the wastewater for land application or use in other schemes taking into consideration the receiving environment; outline any licence requirements for the preferred options and whether the proposal is likely to comply with recommendations in any EPA or NSW Agriculture guidelines
c) if discharge water is to be stored for later use: outline any storage dams, capacity and design criteria in terms of seasonal usage rates and wet weather storage criteria, type of construction and run-off returns, seepage and spillage controls, management strategies for maintenance of water quality in storage
d) if discharge water is to be used for land irrigation: wastewater properties (salinity, nutrient content, pH, BOD and trace element loading or characteristics nominated at a planning focus meeting); outline proposed irrigation system, size of irrigation area, proposed plant species to be irrigated, proposed management regime including harvesting cycles or animal cropping regime, proposed irrigation scheduling, design parameters, management and controls; monitoring protocols and mitigation or remediation of any potential soil or water environmental degradation
e) if discharge water is to be released into evaporation ponds: outline the location, capacity and design criteria of the ponds, overflow controls, evapotranspiration rate taking into consideration climatic conditions; proposed life of ponds, management protocols, method of disposal of salts
f) if discharge water is released to purpose built artificial wetlands; outline the scale and nature of the wetlands, potential ecology of the wetlands including dominant species, proposed performance criteria and management regimes, potential for seepage or discharge into waterbodies, wetlands or aquifers, proposed maintenance or monitoring
g) if discharge water is disposed to the environment: outline proposed method including location and configuration of release points; water quality of the receiving water (surface or groundwater), dispersion, dilution or assimilation achievable under different discharge or hydrological conditions; ability to meet water quality criteria

(6) Solid waste management

a) outline proposals for temporary storage, reuse, recycling or disposal of solid waste including:
    i) diseased, dead or excess stock
    ii) processing wastes
    iii) pond sludge, sediment or linings
    iv) domestic waste and sewage
    v) containers, plant, construction material or other wastes.
b) if on-site landfill disposal; outline proposal including characteristics and quantities of waste, measures to prevent soil, surface and ground water contamination, controls to prevent odour, vectors or visual impacts
c) if on-site land application of sludge disposal; properties of the material (salinity, nutrient content, pH, BOD and trace element loading or

characteristics nominated at a planning focus meeting); outline proposed application rates and size of application area, proposed crops, management regime and the relationship to any irrigation scheme

d) if off-site disposal: outline the quantity and characteristics of material to be transported; any constraints on the type of material accepted at landfill facilities

(7) Other facilities

a) outline storage and handling arrangements including measures to prevent or manage spillage (including bunding) for
   i) feed (including live material)
   ii) fuels and chemicals
b) identify administration, maintenance, workshop facilities
c) identify any tourist, fishout or on-site retail facilities, if relevant, outline visitor and parking facilities and anticipate numbers per annum
d) transport requirements; potential number of truck, employee or other visitor movements; truck parking and loading facilities; potential truck routes
e) potential requirements for electricity or gas supply; access to the site; energy conservation measures

(c) Site layout

Provide site layout and schematic plans for all components of the facility including:

a) cultivation and breeding facilities
b) water circulation and treatment facilities; water supply pumping and reticulation facilities; any dams
c) processing and storage facilities
d) waste management facilities including
   i) wastewater treatment and disposal
   ii) solid waste disposal facilities
e) access, internal road system including visitor parking areas, truck parking and loading facilities
f) administration, maintenance, workshop facilities
g) electricity or gas services
h) landscaping for visual and noise control and on-site vegetation to remain undisturbed
i) storage facilities for products, feed, fuels, chemicals, equipment.
j) fencing and security facilities

(d) Site preparation and construction

Describe construction activities including the construction timetable and hours and any staging of construction, construction methods and equipment

a) outline any land clearing including any burning, chipping or mulching of vegetation
b) outline of construction of ponds, dams, tanks, sheds, administration and other facilities, sealed areas or roads
c) identify type and quantity of construction material to be imported onto or exported from the site
d) outline of drainage, sediment and if relevant acid sulfate soils control systems associated with construction activities

(e) Previous or existing operations

Where applicable outline:

a) the history of any previous aquaculture activities on the site or within the general locality
b) previous controls operating on the site and past environmental performance particularly in relation to
   i) water quality of any impacted natural water body

ii) escape of non-indigenous species or disease
iii) if relevant the management of the acid sulfate soils:

c) the integration of the proposed development with existing or previous operations
d) restoration or rehabilitation works to rectify any existing environmental problems as a result of previous or existing operations
e) results of previous environmental monitoring indicating the performance at the site

(f) Decommissioning and site rehabilitation

When developing the site, consideration should be given to remediation measures should the activity terminate or where it is expected that the activity will not continue beyond a fixed time. Issues to consider include:

a) future use of any drains, ponds, dams, sheds or tanks; compatibility of the proposed use; outline management implications
b) if no feasible uses, measures to rehabilitate the land form to similar to its previous form; outline earthmoving works required, including management to minimise impacts from erosion and sedimentation or acid sulfate soils (if present)
c) measures to ensure that revegetation of disturbed areas occurs
d) measures to manage any water, wastewater or solid waste stored on the site

(g) Consideration of alternatives and justification for the preferred option

Consideration should include an assessment of the environmental impacts or consequences of adopting alternatives including:

a) site locations or layouts
b) construction methods
c) species, stocking densities
d) cultivation procedures, including feeding procedures and timing of seasonal production
e) post cultivation procedures
f) water management options
g) waste management options
h) transport options including access routes

Consideration should also be given to the consequences of not proceeding with the proposal that is the do nothing option.

The selection of the preferred option should be justified in terms of:

a) ability to satisfy the objectives of the proposal; the relative environmental, economic and social costs and benefits of each alternative; significant non-monetary and non-quantifiable costs and benefits should be described and qualitatively assessed
b) ability of the proposed aquaculture process to meet acceptable environmental and production standards
c) acceptability of any environmental risks or uncertainties, particularly in relation to
   i) the reliability of proposed environmental impact mitigation measures
   ii) the ability of options to handle abnormal events such as flooding, storm water intrusion, accidental discharges or release of fuels, chemicals, and non-indigenous or diseased species
d) efficiency of use of land, energy, water and other resources; opportunities to maximise recycling and reuse of resources
e) efficiency of the proposal in supplying markets for the product
f) consistency with NSW Fisheries aquaculture policies, plans and strategies.

5.3 The Location

(a) Planning context, site description and locality information

The following information should be provided in relation to land based facilities:

a) zoning and permissibility of aquaculture and associated facilities
b) compatibility with planning provisions and land use constraints including:
   i) easements, covenants or other restrictions affecting the site, including heritage or environmental protection provisions or conservation agreements
   ii) existing water or land use of the site or adjoining the site
   iii) relevant provisions of any Government policy, State Environmental Planning Policy, Regional or Local Environmental Plans, or development control plan; compatibility with State policies such as the Floodplain Management Policy or Wetlands Policy
   iv) relevant catchment plans, integrated resource management plans, regional strategies, government agency plans of management for the area or approved farm plans
c) title details, land status and tenure; where Crown land is involved, any constraint associated with the status (i.e. reserved, dedicated or unreserved) or tenure (i.e. leases, licences, vacant Crown land)
d) if appropriate, native title status of the land and whether the land is subject to a claim for native title under *Commonwealth Native Title Act* 1993 or the *NSW Native Title Act 1994*: an outline any procedures to be followed to satisfy the requirements of the relevant legislation
e) a site description and maps, plans or aerial photographs to clearly identify the location of the proposal in relation to:
   i) roads, communities, dwellings and any land use or natural features and principal vegetation communities likely to be affected by the proposal
   ii) utilities including transmission lines, pipelines, cables or easements
   iii) sight-lines from dwellings or public places such as roads
   iv) other activities in the vicinity which may affect the proposal (eg agricultural spraying) or, along with the proposal may generate cumulative impacts (eg which may also discharge wastewater) or may be affected by the proposal (eg oyster leases down stream of the development).

(b) Overview of the affected environment

An overview of the environment should be provided in order to place the proposal in its local and regional environmental context. Specific details are to be provided later when assessing the environmental impacts of the proposal.

General information to be provided includes an overview of:

a) geomorphological factors including major landform features, site contours, terrain stability, slope gradient and length, drainage patterns, evidence of historical morphological changes
b) meteorological characteristics which may influence flooding, erosion, evaporation and the management of dust, odour or water quality impacts - these may include wind direction and intensity, rainfall intensity, frequency, duration and seasonal distribution
c) the use and vulnerability of water bodies likely to be affected by the proposal; if relevant, general hydrological and water quality characteristics including flow characteristics; flood liability of the site and surrounding land.

d) the use and vulnerability of ground water, if relevant, general hydrological and water quality characteristics.
e) general soil characteristics; identify any existing soil problems including salinity, acid sulfate soils potential, chemical contamination and highly erodable; the capability and suitability of the site for agricultural or extractive industry purposes
f) predominant vegetation communities, and their potential habitat and conservation values
g) the heritage, archaeological, historical, cultural, scientific or scenic significance of any buildings, items, places or areas likely to be affected by the proposal

5.4 Identification and prioritisation of issues

(a) Overview of the methodology

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

a) the outcomes of a review of relevant sources of information on potential issues including:
   i) Aquaculture Management Plans
   ii) guidelines produced by NSW Fisheries, DUAP or other NSW government authorities; other States and overseas guidelines or standards; any industry guidelines
   iii) EIS/SEEs for similar projects, any relevant commission of inquiry reports, determination reports and conditions of approval
   iv) relevant research and reference material
   v) relevant strategic plans or policies including SEPPs, REPs, LEPs
   vi) preliminary studies or feasibility studies
   vii) consultation with relevant aquaculture industry associations
b) outcome of consultation with stakeholders including:
   i) planning focus meetings, community focus meetings, community workshops or issues groups
   ii) meetings with stakeholders (eg government agencies particularly NSW Fisheries, DLWC, EPA, councils, industry and market representatives).
c) the use of methodology such as checklists, matrices or similar approaches such as DUAP's guideline *"Is an EIS required?".*

(b) 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/SEE, though they may be addressed in the mitigation strategy; the justification for the proposed level of analysis.

5.5 The Environmental Issues

The following specific issues are potentially important when assessing impacts and for decision-making in relation to aquaculture facilities. This outline of issues is not exhaustive and the degree of relevance of each issue will vary. The EIS/SEE should only deal with issues applicable to the particular proposal.

Assessment of potential impacts

The following should be included for any potential impact relevant to assessment of a proposal:

- a description of the existing environmental conditions (baseline conditions)
- analysis of the potential impacts of the proposal, indicating the level of confidence in the predicted outcomes and the resilience of the environment to impacts
- proposed mitigation, management and monitoring program, including the level of confidence that the measures proposed 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.

(a) Water issues

The assessment of water issues should consider the water lifecycle in the use and management of water entering and leaving the facility.

(1) Water resources

a) consider issues in relation to the seasonal and long term water quality of the water source; consider any health or other risks associated the water source
b) assess the efficiency of water use considering any proposed recycling or reuse and any requirements for pre- or re-treatment prior to recycling or reuse and for storage; consider adequacy of the supply and any on-site storage facilities to deal with seasonal fluctuations in supply and requirements
c) if relevant, assess the impacts of the proposal on the natural system considering:
    i) environmental flows in waterbody sources; if an unregulated waterways, estimate the current percentage of flow to be diverted to the facility as well as the percentage required to meet future needs
    ii) local water supply system, including any need to upgrade or augment the water supply or reticulation system
    iii) groundwater reserves
    iv) other users of the water body or wetlands
d) outline designed and management options to minimise the impact of the proposal on water as a resource.

(2) Water quality

Issues to consider include:

a) identify potential sources of point or defuse emissions likely to affect the water quality of any natural waterbody or wetland, outline the characteristics, magnitude and probable frequency of these events, including:
   i) discharge (directly or indirectly including seepage) of water or wastewater from:
      - ponds/tanks during normal operational, maintenance or cleaning phases
      - processing activities, loading or maintenance areas
      - solid or liquid waste management sites or activities
      - on-site surface drainage systems
   ii) accidental spillage or releases of chemicals, fuels, food or solid or liquid waste
   iii) flood, stormwater or tidal inundation
   iv) sediment from construction or runoff from disturbed areas, irrigation areas, stockpiles or dam walls
   v) acid from disturbance of acid sulfate soils
b) identify the direct or indirect drainage pathways to waterbodies or wetlands likely to be affected by the proposal and the general condition or characteristics of the waterbody; identify other existing or potential users of the water bodies
c) consider the risk to the water quality from defuse or point source emissions or a change in the flow regime and the likely assimilation capacity of the receiving waters under:
   - normal operational or maintenance phases
   - during construction phases
   - when there is an incident or abnormal conditions
d) if impacts are likely to be significant, a baseline study of the existing water quality and flow characteristics should be undertaken; indicators may include N, P, BOD, pH, salinity or those established at a planning focus meeting
e) predict the likely dispersion patterns of the emissions and the potential assimilation capacity of the system taking into consideration natural processes which are likely to affect water quality eg seasonal factors, storms, floods
f) if relevant, predict the likely affect on the water quality from changes in water flow regimes as a result of the proposal
g) assess the adequacy and reliability of mitigation measures including systems to:
   i) minimise the discharge of nutrients, chemicals or organisms from ponds/tanks, processing or waste management activities, hard areas, drains by measures such as
      - measures to prevent overuse of chemicals or nutrients
      - pre-treatment prior to discharge and/or polishing through artificial wetlands
      - use of evaporation ponds so no discharge
      - minimise the discharge of wastewater through reuse and when necessary, temporary storage
   ii) minimise seepage from water storage facilities
   iii) minimise erosion and sedimentation from soil surface, roads or other disturbed areas; for example, establish temporary sediment traps or filters during construction periods

iv) store and use fuels and chemicals so as to prevent contamination from accidental spillage; establish response strategies to deal with spillage should they occur

h) if relevant, outline proposed monitoring program of impacts; and remediation strategies should monitoring detect contamination. - the monitoring parameters should be relevant to the particular activities associated with the waterway

i) outline any water quality licence requirements by EPA and the extent to which these will be met by the proposal.

(3) Groundwater

Issues to consider include:

a) general characteristics of groundwater resources in the area; the depth, the overlying geological characteristics and the vulnerability of any aquifers

b) assess the risk of contamination of groundwater given the nature of the potential contaminants and the location, design and management of the proposal under normal operational conditions and when abnormal conditions or incidents occur, including seepage from ponds, movement of leachate and surface runoff into groundwater

c) for aquifers at risk:
   i) investigate the groundwater gradients, rates and direction of flow; location of any recharge areas, seeps or springs
   ii) baseline water quality based on parameters established in planning focus meeting or in consultation with the EPA
   iii) identify existing or potential users

d) adequacy of measures to prevent transmission of contaminants into groundwater, for example
   i) pond liners, and the impacts of sediment removal and harvesting practices on the integrity of pond liners
   ii) use of artificial wetlands
   iii) location of wastewater or solid waste disposal facilities.

If significant risks are identified, alternative locations, layout and design or management practices should be considered

e) if groundwater is being used as a source of water supply, consider the short and long term impacts of pumping rates on the resource, other users and the likely induced movement of contaminants

f) if rising groundwater or salinisation is an issue; identify the location and nature of the problem:
   i) assess the potential for the proposal to contribute to the problem considering the adequacy of liners in any ponds, dams or drains to prevent seepage or the characteristics of any irrigation scheme
   ii) likelihood of seepage from rising groundwater into any ponds

g) proposals for monitoring of groundwater; and remedial action if monitoring detects contamination.

(4) Stormwater management

a) review of those aspects of the proposal which will result in increased stormwater impacts on neighbouring properties eg diversion of stormwater around the site

b) assess the need to augment stormwater infrastructure or the diversion of natural flow to protect neighbours, catchments and the aquaculture facility; design criteria to ensure adequate capacity for predicted storm events

(b) Soils and landscape

This section is important if any earthworks are to be undertaken, if wastewater or sludge is to be applied to the land, if hazardous chemicals have been or are to be used or stored on the site, if acid sulfate soils are to be disturbed or if the soils are highly erodable.

a) a description of the existing landscape characteristics of the site including contours, slope gradient and length, susceptibility to erosion, landslip
b) outline potential direct or indirect effects on soils from the proposed activities including any wastewater disposal activities
c) undertaken a preliminary soil survey of areas to be affected by the proposal including profile characteristics relevant to the sustainable management of the proposal; if impacts are likely to be significant, a more detailed map of soil units and soil landscapes should be prepared
d) identify any constraints on the proposal due to landscape and soil characteristics including:
    i) assess the potential for erosion or soil structural damage
    ii) assess the permeability and surface sealing characteristics and the potential for lateral or vertical movement in relation to seepage from ponds, drains and channels or movement of wastewater at irrigation sites through surface or sub surface layers and the likelihood of affects on surface water, groundwater or on neighbouring properties
    iii) if land application of discharge water or sludge: assess the suitability of the soil considering soil characteristics which could affect root growth, soil fertility, phosphorus adsorption capacity, surface sealing characteristics, pH, EC, nutrient adsorption particularly P, K, (or factors identified at a planning focus meeting); consider the sustainability of the proposed application scheme give the soil characteristics, climate, water characteristics, application rates and management regimes
    iv) if in coastal areas: presence of acid sulfate soils - see *ASS Manual*: if relevant
        - identify the extent of acid sulfate soils
        - assess potential impacts from disturbance of sulfidic material or its use in dam or drains walls, of any change in the watertable during construction or operation of the proposal
    v) if relevant, assess the suitability of the soil given any the existing type and extent of chemical contamination
e) outline mitigation strategies during construction and operation including modifications of design required to minimise impacts:
    i) from erosion and sedimentation including erosion and sediment control for all construction works; storm water management; stabilisation of dam walls, drains and banks; stabilisation of earth material stock piles to minimise erosion; maintenance programs for all control works
    ii) from land application scheme including the wastewater or sludge characteristics, the water and nutrient balance, the response of the soil or crops and any response strategies should deleterious impacts be observed
    iii) from disturbance of acid sulfate soils including actions to minimise disturbance including changes to the watertable, treatment of disturbed soils to neutralise or prevent acidity and monitoring and treatment of water on the site or to be discharged from the site and a response strategies should deleterious impacts be observed
    iv) if relevant, measures to avoid causing site contamination during construction and operation; proposed methods to remediate any existing contaminated sites and potential impacts from the remediation works.
    v) if relevant, proposed strategies to minimise adverse impacts from salinity related problems including monitoring groundwater

(c) Air quality

This section is relevant if dust or odour impacts are likely. Issues to consider:

a) identify any likely sources of odour, dust or other types of air impacts from construction, operation or maintenance activities or from potential incidents or accidents including activities such as cleaning of ponds/tanks, traffic movement, management, storage or disposal of waste, storage and use of chemicals or feeds;
b) consider the likely impact of the proposal on the air quality; if likely to be a significant issues, consider
    i) the sensitivity of the environment to the likely emission - nearby dwellings and sensitive land uses are likely to be affected
    ii) frequency and times of emissions, predict dispersion patterns of emissions considering prevailing meteorological conditions (wind speed, wind direction and temperature)
c) consider the adequacy of proposed mitigation and management measures to control the generation of emissions: such as by water spraying to suppress dust, appropriate road surfaces, vegetation cover, modifying methods for cleaning ponds/tanks; sludge management, controlled storage and handling of wastes, feeds and chemicals; location of potential activities likely to generate impacts remote from sensitive receivers
d) if air quality impacts are likely to be an issue: outline a monitoring program including proposed monitoring locations and frequency; if relevant, method for managing odour complaints and investigation of incidents; proposals for remedial action
e) outline any air quality licence requirements from EPA and the extent to which these will be met by the proposal.

(d) Flora and Fauna

This section is of particular relevance if terrestrial or aquatic vegetation are likely to be cleared or disturbed or affected by a change in water quality or quantity, or fauna habitats are likely to be disturbed or if predator birds or animals are likely to be an issue. Issues to consider include:

a) identify habitats (plant and animal) and ecological communities and where appropriate, populations and species in areas that may be directly or indirectly affected by the proposal
b) indicate the local and regional scarcity of these habitats, ecological communities, populations and species; if relevant identify the following, indicating their incidence on the site:
    i) threatened species, populations or ecological communities listed in the Threatened Species Conservation Act and Fisheries Management Act
    ii) areas protected under SEPP 14 Coastal Wetlands, SEPP 26 Littoral Rainforest, SEPP 44 Koala Habitat Protection, or trees listed in any councils' Significant Tree Register
    iii) aquatic species protected under the Fisheries Management Act 1994; the economic significance of any potentially affected species of vegetation or fish
    iv) areas protected under international agreements such as RAMSAR wetlands, Japan Australia Migratory Bird Agreement (JAMBA) and China Australia Migratory Bird Agreement (CAMBA); Australian Nature Conservation Agency's Directory of Important Wetlands in Australia.
c) identify potential predators (birds, water rats etc); identify measures to minimise the likelihood of predation; develop protocols for managing low, mid and high levels of predation including contingency plans if there is a sudden increase of predation and assess the likely impacts of the

implications of the protocols.

d) assess the potential impacts on species, populations or ecological communities or the number, distribution or size of their habitats as a result of the proposal:
   i) by clearing or the potential traffic conflicts or
   ii) from the introduction of non-indigenous species, weeds, ferals and pathogens
   iii) through changes in water quantity, quality or groundwater regime, deposition of sediments, organic material or nitrification or by affecting species in the food chain
e) mitigation measures including
   i) measures to prevent escape or spread of non-indigenous species, pathogens and diseases
   ii) landscaping and rehabilitation proposals and their role in mitigation of impacts; compensatory rehabilitation with indigenous species or creation of new habitat
   iii) predation management.
f) proposed monitoring to determine effectiveness of mitigation and to verify predictions.

Note: Appendix 2 provides guidance on determining when a species impact statement (SIS) is required. A SIS must accompany any proposal in critical habitats or where there is likely to be a significant effect on threatened species, populations or ecological communities or their habitats.

(e) Transport and traffic

A traffic impact study should be undertaken for all proposals involving significant numbers of vehicle movements, during construction or operation. Issues to consider include:

a) number of truck movements (estimated average and maximum hourly, daily and weekly truck movements) to be generated by the proposal and the proposed routes; consider alternative routes or transport modes
b) assess the ability of the roads to handle the additional traffic considering current traffic volumes and vehicle types and the road standard; identify any road upgrading which may be required
c) identify noise sensitive land uses along the route such as schools, hospitals, nursing homes; potential impacts on the land uses and proposed mitigation measures
d) road safety issues:
   i) potential conflicts (particularly if truck routes are used by school buses) or areas of high risk including any sight distance constraints, existing congestion or poor road standards
   ii) potential risks associated with the transport of any hazardous substances
   iii) proposed measures to improve safety such as turning bays, additional traffic management devices, road upgrades

(f) Noise

If the proposal is close to residences or if noisy “scare” predation methods are proposed, issues to consider include:

a) identify any potential fixed and mobile noise sources during construction and operation of the facility, proposed hours of operation, in particular vehicle movement
b) identify any potential noise issues from proposed predator management;
c) identify nearby land uses likely to be affected by noise and separation distances; estimate whether noise is likely to be an issue, given the

sound power levels of sources and their worst case positions relative to receivers

d) if impacts are likely to be significant,
   i) establish existing acoustic environment considering prevailing meteorological conditions and topographic features
   ii) predict noise levels at sensitive locations
e) assessment of the adequacy of mitigation and management measures, for instance alternative location of noise generating activities, design, location or management strategies to reduce impacts
f) if relevant, outline a monitoring program including location of monitoring sites
g) outline any noise licence requirements from EPA and the extent to which these will be met by the proposal.

(g) Energy and Greenhouse Issues

Issues to consider include:

a) outline energy requirements including back-up facilities; consider the feasibility of alternative sources and potential greenhouse implications
b) outline any new or upgraded transmission facilities including power or gas lines or substations, the potential impact from the provision of these facilities.
c) assessment of the efficiency of energy use
d) Outline alternative energy management procedures, design measures and energy sources for energy efficiency or for the use of renewable sources of energy
e) Identify likely greenhouse gas implications including from energy use, transport, composting of organic matter

(h) Social Issues

Issues to consider include:

a) a review of the community consultation process; outline relevant issues raised in community consultation and how it is proposed to address these issues
b) assess the effect of the proposal on future development in the area; potential impact on the community's profile, structure or cohesion
c) potential impacts of the construction or operation (including predation management) on the amenity of the area considering factors such as public access, noise, visual, recreational amenity and public safety
d) outline likely impacts on the amenity of near by residneces from predation management methods, pumps and other noisy activities
e) outline proposed methods for conflict resolution should complaints arise.
f) social equity considerations, such as means to offset any inequities from loss of amenity.

(i) Health

Issues to consider include:

a) potential chronic and acute health implications resulting from the proposal: consider if relevant
   i) any health implications from changes in water quality in any waterbody affected by the proposal or from the management of waste water and solid waste material
   ii) identify community members or oyster farm which may be directly or indirectly susceptible to health impacts from the proposal; potential exposure pathways; sensitivity of the community likely to be affected
b) outline of the application of the Hazard Analysis Critical Control Point (HACCP) to the proposal; consideration of any Safe Food guidelines

c) potential health implications from the quality of the products under both normal operational conditions as well as if incidents or accidents occur; if relevant consider:
   i) potential risks associated with water quality in the ponds/tanks and food sources
   ii) potential risks associated management and processing practices
d) outline any health compliance requirements and the extent to which these will be meet by the proposal under normal or exceptional operational conditions; outline proposed measures to management any potential impacts.

(j) Visual issues

For aquaculture facilities located in visually sensitive areas, issues to consider include:

a) the location of the proposal in the context of any landscapes of local or regional significance
b) the potential visibility of the facility from surrounding areas; visual impacts from strategic viewpoints adjacent to and in the vicinity of the site from any clearing of vegetation, from structures such as ponds, buildings, or other structures for waste disposal or the use of lights
c) proposed mitigation measures to reduce visual impacts such as layout, design or visual treatment, landscaping or protocols for maintenance and management of waste.

(k) Hazards issues

For facilities which store or use potentially hazardous chemicals, store water or waste water in dams or are in areas of bushfire or flooding risk, all potential hazards and associated scenarios should be identified, and their significance assessed taking into consideration mitigation measures including provision for training and maintenance

Flooding

For facilities located on flood prone areas, the following issues should be considered:

a) flooding status, including the likely frequency, given the climate, surrounding topography and on-site management practises
b) if flood liable, consider:
   i) direction and duration of flood flows, the likely frequency of flooding, and the probable maximum flood events; if adjoining an estuary, consider the influence of tidal activity and the longer term implications of possible climate change on flooding status
   ii) assess the vulnerability of facilities to inundation or damage considering the site, design and layout, location of bunds, protocols to prevent accidental release of stock or wastewater to the environment
   iii) identify potential impacts from inundation on the cultivation and post cultivation facilities
c) assess the potential for the proposal to change local flooding patterns or to increase the flood liability of surrounding land by earthworks such as construction of dams, ponds/tanks or bunds; assess the potential impacts of any increased flooding levels
d) assess the adequacy of measures to minimise or prevent flooding impacts on the site or on surrounding land including
   i) management of inundation impacts including the provisions for dewatering the site, stock management during and after flooding (eg removal, withholding periods)
   ii) consideration of alternative sites, layout, design or management
e) where relevant, whether the proposal complies with the Floodplain Management Manual or any local council flood policy.

Bushfire hazards

For facilities located in high bushfire hazard areas consider measures to reduce the risks of bushfire during construction and operation of the proposal and the adequacy of firefighting provisions on the site including access.

Dam safety

For facilities that with significant water storage dams, consider the design performance of the dam during exposure to natural hazards such as flooding or severe storms, the impacts of subsidence or earthquakes on the integrity of any proposed dam and the impacts on the biophysical and human environment should the dam be inundated or rupture and cause flooding on the site or adjoining areas.

Coastal hazards

For facilities located so as to be subjected to likely impacts from coastal and estuarine processes, consider:

a) identify potential hazards, for instance erosion, coastal recession, shoaling, coastal entrance migration, sand drift, coastal inundation, slope and cliff stability and effects of future climate change (see *NSW Coastal Management Manual 1990* and *Estuary Management Manual 1992).*
b) identify potential risks for the facilities given the storm, climate and historical patterns and location of the facility relative to major landforms which may influence future patterns
c) if impacts are likely to be significant, consider relocation of the proposal or the implementation of design criteria and management and maintenance strategies to consider coastal hazards

Chemical hazards

For facilities that storage of quantities of dangerous chemicals, the need for a preliminary hazards analysis under *SEPP 33 - Potentially Hazardous and Offensive Industries* should be considered. Issues to consider include:

a) list dangerous /hazardous chemicals and the quantities and the proposed method of storage and use
b) identify potential causes of hazards associated with these substances, the likelihood of occurrence and the consequences for public safety or impact on the environment of a hazardous event
c) outline operational and organisational safety controls to reduce hazard risks and emergency procedures involving the dangerous or hazardous chemicals.

(l) Heritage issues

This section is relevant 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 that may need to be considered include:

a) Identifying any items of heritage significance on the site (including underwater items), in the area affected by the proposal. This should include two steps:
   Step 1: collate information from any relevant heritage study or conservation plan for the site or area — this source may need to be supplemented with information from the following:
      i) relevant historical research on the area
      ii) consultation with the Aboriginal Land Council, local historical societies and the local council
      iii) inspection of heritage registers, schedules, databases or lists, including the Heritage Council Register and Shipwrecks Register, heritage and conservation registers (various government

agencies), local or regional environmental plans, archaeological zoning plans, Aboriginal Sites Register (National Parks and Wildlife Service (NPWS)), Register of the National Estate (Australian Heritage Commission), other registers (National Trust, Institution of Engineers Australia, Royal Australian Institute of Architects)

Step 2: survey the area likely to be affected, to identify any items of potential heritage significance.

b) Consider the acceptability of impacts on heritage significance and assess the adequacy of the measures to mitigate impacts during all stages of the proposal.

Non-Aboriginal heritage:

a) assess the significance of any non-Aboriginal heritage items identified on the site, using criteria for assessing heritage significance published in the NSW Heritage Manual 1996
b) assess the potential impacts of the proposal on the heritage significance — non-Aboriginal heritage items, protected under the Heritage Act 1977 or a conservation instrument, require approval from the Heritage Council before disturbance can be undertaken; items identified in planning instruments require the consent of the nominated consent authority (usually council); shipwrecks protected under the Historic Shipwrecks Act 1976 require the approval of the Director of the NSW Heritage Office
c) propose measures to mitigate impacts to conserve items of 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.

Aboriginal heritage

The requirements for assessment are found in NPWS *Aborigianal Cultural Heritage Standards and Guideline Kit*

a) assess the archaeological and anthropological significance of any Aboriginal relic or place identified on the site in consultation with the Land Council, Local Aboriginal Community and NPWS
b) assess the potential impact of the proposal on the heritage or cultural significance; Aboriginal relics or places cannot be disturbed without written consent from the Director-General of National Parks and Wildlife
c) propose measures to mitigate impacts or to conserve the heritage significance of the area, relic or place — if items of significance are to be disturbed, a conservation management plan may need to be prepared in consultation with the NPWS, Land Councils, the Department of Aboriginal Affairs and the Heritage Office.

Natural Heritage

a) assess the heritage significance of any natural areas including geomorphological features and ecological communities
b) assess the potential impact of the proposal on the heritage significance (note: items identified in planning instruments or in conservation areas require the consent of the nominated approval authority to disturb these areas)
c) propose measures to mitigate impacts or to conserve the heritage significance — if natural areas of heritage significance are to be disturbed a conservation management plan may need to be prepared in consultation with the relevant authorities.

(m) Economic issues

Issues to consider include:

a) the cost and benefits of providing, operating and maintaining the facility taking into consideration the environmental impacts identified in the EIS/SEE as well as the project factors; significant non-monetary costs and benefits should be described and qualitatively assessed; if relevant, the economic analysis should consider:
   i) any economic implications on resources in the region or on valuation and pricing of environmental resources
   ii) any economic implications associated with the need to augment any infrastructure; consider any flow-on cost from the need to augment any infrastructure and the offset of s.94 contributions or other contributions for the provision or upgrading of infrastructure
   iii) the direct or indirect flow on benefits and cost to business or industry in the area or region; potential impact on property values
   iv) any additional employment as a result of the proposal
   v) any impacts on economic activities in the region, such as industrial development, agriculture or activities likely to be affected by the proposal
b) costs and benefits should be discussed in terms of ESD principles
c) any proposal for a performance bond or financial assurance — any bond could consider failure of safeguards resulting in a significant environmental impact.

(n) Cumulative issues

Impacts may result from a number of activities with similar impacts interacting with the environment in a region. They may also be caused by the additive, synergistic and antagonistic effects of impacts. They may be due to the temporal and/or spatial characteristics of the activities and impacts. Issues to consider that relate to aquaculture proposals include:

a) the potential for cumulative impacts from
   i) existing or proposed aquaculture facilities in the area or region
   ii) nearby point or non-point activities with similar impacts (eg other aquaculture facilities, feedlots or sewage treatment works)
b) advantages (such as service provision and specialisation), or disadvantages (such as cumulative impacts), of clustering similar proposals in the area
c) likely long-term and short-term cumulative impacts having regard to surface water and groundwater quality issues, air quality, noise or traffic disturbance, public health, visual impacts or loss of heritage items, vegetation or fauna habitat
d) the receiving environment's ability to achieve and maintain the water quality objectives established for that system.

5.6 An Environmental Management Plan (EMP)

A critical component in the EIS/SEE is the mitigation strategy demonstrating how the proposal and its environmental safeguards can be implemented and managed in an ecologically sustainable manner. At this stage of the process, it is essential that the applicant can demonstrate that the proposal is capable of complying with statutory obligations under other licences or approvals. The mitigation strategy should include:

- the environmental management principles which would be followed when planning, designing, constructing and operating the proposal, including locational, layout, design or technology features (which should be described in detail in other sections of the EIS/SEE)

- an outline of an environmental management plan (EMP) (see below) which provides a framework for the ongoing management and monitoring of potentially significant impacts - in some circumstances, separate strategies should be outlined for the construction and operational stages of the project.

This outline of an environmental management plan (EMP) should provide a framework for managing or mitigating environmental impacts for the life of the proposal.

An EMP is a tool to ensure that the commitments in the EIS/SEE, subsequent assessment reports and approval or licence conditions are fully implemented. It is a comprehensive technical document that is finalised during or following detailed design of the proposal after approval of the project. This level of detail is not considered necessary for the EIS/SEE although these documents should contain enough detail to satisfy the consent authority that such a plan can be developed and that it can deliver appropriate environmental outcomes. It is likely that the EMP outline can be based on the impact mitigation measures developed during the preparation of the EIS/SEE.

The EMP should contain two sections: one setting out the program for managing the proposal and the other outlining the monitoring program with a feedback loop to the management program.

(a) Environmental management outline

The management strategy should demonstrate sound environmental practice during the construction, operation and decommissioning of the proposal including:

i) management of construction impacts; if appropriate include erosion, sedimentation, acid sulfate soils and revegetation plans for areas disturbed by construction activities
ii) management of operational impacts; if appropriate include provisions for:
    - management of water, acid sulfate soils, air emissions, waste water and solid waste, chemicals and fuel and health
    - maintenance plans
    - contingency plans to respond to emergencies, incidents and operational abnormalities or any breakdown in environmental performance
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 the plan can be integrated into the organisation's broader environmental management framework
vi) an indication of how compliance with licensing and approval requirements will be achieved and due diligence attained
vii) if applicable, a reporting mechanism on environmental performance

(b) Monitoring outline

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

viii) parameters relating to critical operational issues for instance in relation to stock health issues or waste management
ix) surface or groundwater parameters
x) if relevant, noise, air or odour parameters
xi) if land application of wastewater, soil parameters

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 location, intervals and duration
iii) procedures to be undertaken should the monitoring indicate 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.

5.7 Justification for the proposal

Reasons justifying undertaking the proposal in the manner proposed should be outlined, taking into consideration the potential health, biophysical, economic and social impacts, including costs and benefits and the compliance with the principles of ecologically sustainable development.

The sustainability of the proposal should be outlined in terms of the ability of the proposal to:

a) demonstrate resource efficiency in the life-cycle management of stock, water and land and in the use of energy.
b) demonstrate economic efficiency in meeting the short- and long-term industry needs and community requirements
c) meet environmental performance requirements including improved conservation of natural resources with minimisation of environmental costs
d) meet site specific environmental performance requirements considering the vulnerability of the groundwater, surface waters, soil, ecological communities, heritage or social factors
e) safeguard public health
f) contribute to the long term economic well-being of the region
g) contribute to a sustainable aquaculture industry in the region or NSW
h) contribute other local or regional benefits.

Appendix 1. Environmental Impact Statements - Schedule 2 of the EP&A Regulation

Schedule 2 outlines the matters that must be addressed in an EIS pursuant to clauses 51 and 84 of the Environmental Planning and Assessment Regulation 1994

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.

The Principles Of Ecologically Sustainable Development

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

1 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.
In the application of the precautionary principle, public and private decisions should be guided by:
(a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
(b) an assessment of the risk-weighted consequences of various options.

2 Intergenerational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

3 Conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.

4 Improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:
(a) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
(b) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
(c) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

Appendix 2. Threatened Species Procedures

This appendix contains provisions for assessing impacts on the conservation of critical habitats and threatened species, populations or ecological communities and their habitats in the Threatened Species Conservation Act 1995 and the Fisheries Management Act 1994.

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. or Part 7A of the Fisheries Management (FM) Act. Threatened species, populations or ecological communities and threatening processes are prescribed in Part 2 and Schedules 1 and 2 of the TSC Act and Part 7A and Schedules 4, 5 and 6 of the FM 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 and Division 6 of Part 7A of the FM 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 (***8 Part Test*** under S5A of the EP&A Act):

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 and section 221J of the FM Act, the general requirements on the form and content of an SIS are as follows.

(1) General information

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.

(2) Information on threatened species and populations

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.

(3) Information on ecological communities

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

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

The requirements 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/SEE. If the SIS is separate to the EIS/SEE, it must be exhibited concurrently with the EIS/SEE.
- The SIS must be in writing and be signed by the principal author of the document and the applicant/proponent.

Appendix 4. Designated Development — Schedule 3 of the EP&A Regulation

This appendix is an extract from Part 1 of Schedule 3 of the EP&A Regulation 1994 and prescribes aquaculture facilities that are designated under Part 4 of the EP&A Act.

Part 1 of Schedule 3 does not apply to proposals under the North Coast Aquaculture Strategy.

AQUACULTURE

Aquaculture or mariculture for the commercial production (breeding, hatching, rearing or cultivation) of marine, estuarine or freshwater organisms, including aquatic plants and animals (such as fin fish, crustaceans, molluscs or other aquatic invertebrates), involving:

(1) supplemental feeding in
- (a) tanks or artificial water bodies
  - (i) located in areas of:
    - high water table; or
    - acid sulfate soils; or
  - (ii) with a total water storage area of more than 2 hectares or a total water volume of more than 40 megalitres:
    - located on a floodplain; or
    - that release wastewater or sludge into a natural waterbody or wetlands or into groundwater;
    - or with a total water storage area of more than 10 hectares or a total water volume of more than 400 megalitres;
- (b) any other waterbody (except for trial projects that operate for a maximum period of 2 years and are approved by the Director of NSW Fisheries); or

(2) farming of species not indigenous to New South Wales located:
- (a) in or within 500 metres of a natural waterbody or wetlands; or
- (b) on a floodplain; or

(3) establishment of new areas for lease under the Fisheries Management Act:
- (a) with a total area of more than 10 hectares and that in the opinion of the consent authority, are likely to case significant impacts;
  - (i) on the habitat value or scenic value; or
  - (ii) on the amenity of the waterbody by obstructing or restricting navigation, fishing or recreational activities; or
  - (iii) because other leases are within 500 metres; or
- (b) with a total area of more than 50 hectares

Appendix 5. When are Alterations or Additions Designated Development?

This appendix is an extract from Part 2 of Schedule 3 of the EP&A Regulation 1994 and prescribes when alterations and additions to aquaculture facilities are designated under Part 4 of the EP&A Act. The DUAP has prepared a guideline "Is an EIS required for Alterations and Additions?" to assist in determining the level of assessment and approval for changes to projects.

Part 2 of Schedule 3 do apply to proposals under the North Coast Aquaculture Strategy.

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.

2. **Factors to be taken into consideration:**
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, licenses, 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:
  - the scale, character or nature of the proposal in relation to the development; and
  - 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
  - the degree to which the potential environmental impacts can be predicted with adequate certainty; and
  - the capacity of the receiving environment to accommodate changes in environmental impacts; and

(c) any proposal:
  - to mitigate the environmental impacts and manage any residual risk; and
  - to facilitate compliance with relevant standards, codes of practice or guidelines published by the Department of Urban Affairs and Planning