

Marinas and Related Facilities

E I S G u i d e l i n e

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

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Pubs No 96/50

ISBN 0 7310 8936 7

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Executive summary

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

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

A high priority should be given to:

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

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

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

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

Key issues for marinas and related facilities usually include:

- visual impact
- noise
- traffic and parking issues
- hydrological and water quality issues.

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

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

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1. Purpose and scope of the guideline

1.1 Background

The purpose of this guideline is to outline issues which may be relevant for the environmental impact assessment of marinas and related facilities. The issues in this guideline apply whether an environmental impact statement (EIS), a statement of environmental effects (SEE) or review of environmental factors (REF) is being prepared.

Not all matters outlined in this guideline will be applicable to every proposal. The EIS should be tailored to suit the potential impacts of the specific proposal. It is essential to focus on key issues. If the relevant matters identified in this guideline are addressed, there should be sufficient information for the appraisal of most proposals. Early identification of issues relevant to government agencies will also be facilitated by the guideline.

In many cases, use of this guideline alone will not be sufficient to prepare an environmental impact statement for marinas and reference to other EIS guidelines such as *Extractive Industries - Dredging and other extraction in riparian and coastal areas* and *Sewerage Systems*, may be necessary.

The *Environmental Guidelines for Marinas and Slipways* (EPA, 1995), *Marina Guidelines* (Public Works, 1987) and *Australian Standard AS 3962-1991 — Guidelines for design of marinas* (Standards Australia Committee on Marinas, 1991) should be considered when designing and developing marinas and related facilities.

This guideline applies to all marinas in NSW whether on the 'shoreline' of an ocean, river, lake, dam or any other waterbody.

1.2 Marinas and related facilities covered by this guideline

Marinas and related facilities are shoreline facilities that service boats and include water-based as well as land-based facilities for the boats and the users. The facilities may include:

- a) berthing, mooring and docking facilities such as jetties, wharves, pontoons, moorings, wet-berths, ramps, holding piles
- b) navigation and safety facilities such as harbours, channels, breakwaters, groynes, wave barriers, navigational markers
- c) dry storage facilities such as hard stands, stacks (partly or wholly enclosed), racks, cradles, hoists, cranes, straddle-carriers, fork-lifts
- d) boat maintenance, repair and construction facilities such as dry-docks, slipways, engine, electrical or instruments workshops, shipwrights, sail makers, storerooms (including for chemicals), boat washing facilities
- e) services such as refuelling facilities, fuel storage, pumpout facilities, waste collection, treatment or disposal facilities, water storage and supply facilities, fire control services, amenities
- f) parking, passenger or heavy vehicle access, public access, landscaping
- g) commercial and retail service facilities such as chandleries, provisions and food outlets, boat sales
- h) ferry, boat hire and charter services
- i) related tourist or accommodation facilities, boat club facilities.

Throughout the remainder of this document, these facilities are referred to by the generic term 'marinas'.

1.3 When is an EIS required?

Under Part 4 of the *Environmental Planning and Assessment (EP&A) Act 1979* (the Act), marinas may require development consent under an environmental planning instrument. Where consent is required, Schedule 3 of the *EP&A Regulation 1994* (the Regulation) provides designation thresholds based on size, sensitivity of the environment and performance standards (see Appendix 6 for full designation). An EIS must accompany a development application for designated development.

Two other circumstances require consideration:

- a) environmental planning instruments may designate marinas and may specify different thresholds to those in Schedule 3 (e.g. Murray REP No. 2)

- b) although the proposal may not be designated because of the size and type of marina facility, ancillary components may be designated due to their scale or nature, e.g. dredging or sewerage works.

Under Part 5 of the Act a determining authority must consider whether an activity has the potential to cause significant environmental impacts before determining an application.

If significant impacts are likely to result, then an EIS must be considered prior to any approval being granted. In deciding whether a marina

proposal has the potential to significantly affect the environment, determining authorities should refer to the guideline *Is an EIS required?* (Department of Planning, 1995).

For some marinas, the land-based facilities may require development consent under the provisions of an environmental planning instrument and fall under Part 4 of the Act while the water-based components may not require consent and hence could fall under Part 5. In these circumstances, the provisions of both Part 4 and Part 5 must be complied with (see Appendix 2 for the assessment process under Parts 4 and 5).

2. Factors to consider when preparing an EIS

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

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

2.1 Early consideration of the strategic context

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

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

2.2 Early assessment of options

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

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

2.3 Identifying issues

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

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

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

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

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

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

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

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

2.4 Prioritising issues

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

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

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

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

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

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

2.5 Impact analysis, prediction and presentation

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

a) Presentation

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

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

b) Baseline information

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

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

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

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

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

c) Predictions of impacts and mitigation

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

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

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

d) Reference to standards or indicators

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

e) Mitigation strategies

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

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

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

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

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

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

2.6 A question of adequacy

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

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

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

2.7 Ecologically sustainable development

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

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

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

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

3. Consultation

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

Effective consultation should enable an applicant to:

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

The following consultation procedures are recommended:

3.1 Consultation with government agencies

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

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

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

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

- relevant local councils
- Department of Urban Affairs and Planning
- Environment Protection Authority
- National Parks and Wildlife Service
- Department of Land and Water Conservation
- NSW Fisheries
- Office of Marine Safety and Port Strategy and Waterways Authority (if relevant).

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

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

3.2 Formal consultation required under legislation

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

If a proposal is on land that contains a 'critical habitat' or is likely to significantly affect threatened species, populations or ecological communities or their habitats, the Director-

General of National Parks and Wildlife should be consulted regarding the contents of a species impact statement (see Appendix 3 for further information).

3.3 Consultation with the community

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

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

4. Site selection procedures

Principles of site selection for marina proposals

Consideration must be given to whether:

- the land use is permissible
- environmentally sensitive areas are avoided
- the use is compatible with nearby land uses
- initial site investigations indicate the site is fundamentally suitable for marinas.

4.1 Site selection

The appropriate location of a marina is an important environmental management tool in ensuring that the facility operates in an environmentally acceptable manner. While operational and market considerations are important factors in selecting sites, the environmental and social characteristics of the location should also be given high priority. Careful site selection will:

- reduce the potential environmental impacts and consequently, the need for impact mitigation and ongoing management measures
- reduce levels of public controversy and
- avoid potential delays in the approval process.

It is recommended that the following matters be considered when selecting a site for a marina.

4.2 Permissibility of proposal

At a very early stage in the site selection process, it is essential to consult with the local council to ensure that the proposal is a permissible use under the relevant planning controls. If the proposal is not permissible under the zoning, then discussions should be held with councils about the appropriateness of changing the zoning, or seeking an alternative site.

4.3 Initial site assessment

An initial assessment of the intended location can help ensure that the proposal can be operated in an environmentally acceptable manner. An initial site assessment can provide a basis for the

comparative evaluation of potential sites. It is recommended that an initial assessment be undertaken before committing to a particular site or proceeding with a more detailed assessment in an EIS or SEE.

This initial site assessment should focus on the characteristics of the site itself, as well as the surrounding environment. Matters to consider in an initial locational assessment are shown in Table 1. The list is not necessarily exhaustive. In addition to biophysical factors, the locational assessment should also consider community amenity. Conflicts often arise when the community perceives that its amenity is being threatened by particular impacts such as traffic, noise or water quality impacts. Any potential conflicts and possible options for resolving them should be considered as early as possible. In general, if marinas are designed to manage traffic, parking and noise impacts, there will be wider locational options.

When assessing if a proposed site is acceptable, consideration should be given to its compatibility with surrounding land uses. Consideration may need to be given to acquiring sufficient land to provide adequate on-site separation from nearby sensitive land uses. Such separation can help minimise impacts and maintain the amenity of the surrounding areas. Factors to consider in determining appropriate separation distances include:

- the character of the surrounding environment and its sensitivity to impact
- the characteristics of the impacts, in particular their predictability
- proposed impact mitigation and management strategies and their predictability.

However, separation distances should not be viewed as the primary means of ameliorating impacts as this can lead to unnecessary land sterilisation. Instead, separation distances should be thought of in the context of a locational attribute providing confidence that the amenity of existing land uses can be maintained. The EPA does not accept impact reduction solely by separation distances for air or water pollution. Therefore, the role of site separation as an impact mitigation measure should simply reinforce the impact mitigation measures provided by other means.

Table 1. Matters to be Considered in Initial Site Assessment

Operational requirements	<ul style="list-style-type: none"> • Does the site provide sufficient land area for present and future requirements? • Is this an efficient site relative to the market? • Can services be efficiently supplied to the site (e.g. power, water)?
Topographic & meteorological assessment	<ul style="list-style-type: none"> • Are the rainfall patterns or prevailing wind directions likely to cause management difficulties? • Are the local climatic conditions (e.g. air movement, rainfall) in combination with the topography likely to result in microclimatic conditions which will adversely increase impacts on the community?
Water issues	<ul style="list-style-type: none"> • Are there any site constraints which make on-site water management difficult (including both process water and stormwater)? • Are there risks of surface water pollution because of the proximity or pathways to waterbodies? Can any required separation distances from waterbodies under any existing legislation or guidelines be complied with? • Are there risks of groundwater pollution because of shallow or rising groundwater tables, or proximity to groundwater recharge areas, or areas with a high vulnerability to pollution? (This will require consultation with the Department of Land and Water Conservation) • Is the site susceptible to flooding? • Is a groyne, breakwater or channel diversion required? • Is reclamation proposed? • Will regular maintenance dredging be required? • Will water quality be affected due to limited tidal flushing or current?
Flora and fauna issues	<ul style="list-style-type: none"> • Can clearing of natural vegetation be avoided? • Can clearing of vegetation of high significance be avoided (e.g. vegetation used for visual screening, riparian vegetation, vegetation used as corridors for the movement of fauna)? • Are threatened flora or fauna species, populations and ecological communities or their habitats likely to be affected? Will a SIS be required? • Will a development application for vegetation clearing be required under SEPP 46? • Will wetlands, littoral rainforest or seagrass be affected?
Geological or soils issues	<ul style="list-style-type: none"> • Are there any topography or geological characteristics which will cause difficulties in managing impacts (subsidence, slippage, seismic)? • Are the soils highly erodible? Identify any potential sediment management problems. • Is bank erosion likely? • Are there existing soil problems (e.g. contaminated soils, acid sulfate or saline soils)?
Transport issues	<ul style="list-style-type: none"> • Can the standard and capacity of the road network accommodate traffic likely to be generated by the proposal? • Can truck traffic avoid residential areas, hospitals, schools and commercial areas? • If inadequacies exist, can the road network or traffic management be changed to minimise any impacts particularly on residential areas? • Are there parking or access constraints?
Community issues	<ul style="list-style-type: none"> • Is the proposal likely to be compatible with surrounding existing or proposed land uses, particularly any residential, special uses (such as schools, hospitals, community buildings), any sites of outstanding natural or environmental value or high tech industries? • Will nearby aquaculture, fish breeding or fishing grounds be affected? • Is there likely to be a problem in meeting sustained compliance with dust, noise or water quality requirements due to the proximity and nature of nearby land uses? • Is the proposal likely to pose health risks? • Is the proposal likely to affect the heritage significance of any Aboriginal or non-Aboriginal heritage items found or likely to be found on the site? • Is the site highly visible? Will there be significant visual impacts? • Will access to public land or waterways be restricted?
Cumulative issues	<ul style="list-style-type: none"> • Is the proposal at this site likely to contribute to any existing cumulative problems?

5. Summary of EIS requirements

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

A summary of the specific requirements for an EIS for a marina are provided in the box on the right. These requirements are discussed in detail in Part 6. All issues nominated will not have the same degree of relevance 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 EIS should be tailored to the specific proposal and should focus on the key issues.

Summary of requirements

A. Executive summary

B. The proposal

1. Objectives of the proposal
2. Description and layout of the proposed marina and associated facilities
3. Site preparation and construction
4. Infrastructure considerations
5. Other marinas in the locality
6. Consideration of alternatives and justification for the preferred alternative

C. The location

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

D. Identification and prioritisation of issues

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

E. The environmental issues

1. Land surface issues
2. Hydrological issues
3. Water quality and waste management issues
4. Air quality
5. Noise
6. Visual impact
7. Flora issues
8. Fauna issues
9. Social issues
10. Land transport and parking issues
11. Water transport issues
12. Heritage issues
13. Hazards assessment
14. Economic issues
15. Cumulative impacts

F. List of approvals and licences

G. Compilation of mitigation measures

H. Justification for the proposal

6. Specific requirements for an EIS

A. Executive summary

An executive summary should be provided in the EIS and be available separately for public information. The summary should give a short overview of the proposal and the potential environmental impacts. The summary should include a clear map or aerial photograph of the location and it should be written in non-technical language to facilitate understanding by all readers.

B. The proposal

1. Objectives of the proposal

There should be a clear statement of the objectives of the proposal having regard to the following:

- a) size and type of marina facilities including number and type of berths, and capacity of repair and ancillary facilities
- b) the range of services provided such as boat accommodation, boat provisions and waste management services, boat maintenance, repair, building or sales services, ferry, boat hire or charter services, boat club, tourist or accommodation services
- c) staging and timing of the proposal and any plans for future expansion.

2. Description and layout of the proposed marina and associated facilities

The following information should be provided:

- a) maximum land and water area affected by the proposal
- b) on-site plans, layout, photo-montages or similar and cross sections (above and below water) identifying the location of:
 - i) existing and proposed facilities and services
 - ii) existing and post-proposal physical features such as shoreline characteristics and vegetation communities
- c) a description of works to provide boat access, improved navigation or mooring safety

- d) water or land-based temporary and permanent boat berthing, mooring or docking facilities
- e) boat maintenance, repair and construction facilities including boat lifting equipment and slipways
- f) boating services including wash down areas, pumpout, water supply, refuelling and waste collection services, lighting and security
- g) quantities, use or storage (including bunding) of fuels, chemicals or other hazardous materials
- h) on-site surface water management systems; identification of drainage lines, bunding, pollution and sediment control structures and systems
- i) waste storage and disposal systems, sewage or wastewater treatment plants
- j) on-site parking for vehicles or boat trailers, access roads including for semi-trailers and cranes, level of parking congestion in the area
- k) commercial and retail facilities including chandleries, boat, provisions or food sales
- l) related tourist or residential development
- m) on-site infrastructure including electricity, gas, water supply, fire fighting equipment
- n) employment during construction and operation
- o) hours of operation including use of lighting
- p) landscaping.

3. Site preparation and construction

Describe the works required prior to commencement of marina operations, including:

- a) timing, staging and hours of construction work
- b) proposed construction methods, the equipment to be used and methods of transport of the equipment to the site
- c) pollution control systems such as erosion and sediment control systems, bunding, wastewater holding tanks, noise mitigation strategies
- d) any land clearing or disturbance of underwater vegetation, or disposal of cleared material
- e) any earthworks including dredging, reclamation, excavation or landfill; the quantities of material to be moved, the

- method and site of disposal of excess material, the source of any material to be brought to site
- f) any bank stabilisation structures such as retaining walls and revetments.

4. Infrastructure considerations

The following factors should be considered:

- a) electricity supply requirements, energy conservation measures, use of alternative energy sources
- b) measures to protect any easements, submarine cables or pipelines which may be affected
- c) water requirements, proposed supply or storage, water recycling and reuse options
- d) solid and liquid waste disposal requirements, proposed methods and locations for recycling or disposal
- (e) land and water transport requirements, provisions for public transport
- (f) controls to compensate for poor flushing.

5. Other marinas in the locality

Where applicable, outline:

- a) the nature of any past or existing marinas or other facilities on the proposed site or other sites within the immediate locality
- b) past environmental performance, including the impacts of the operation on the environment and the effectiveness of any impact mitigation; previous controls which applied on the site
- c) the relationship of the proposed development to previous or existing operations.

6. Consideration of alternatives and justification for the preferred alternative

The EIS should include an assessment of the environmental impacts or consequences of adopting alternatives, including:

- a) the location of the marina
- b) site layout
- c) the type and level of services
- d) breakwater, basin or marina design
- e) inlet channel positioning and alignment to river or tidal flow
- f) management or administrative practices;
- g) mitigation and rehabilitation options.

Consideration should also be given to the consequences of not carrying out the proposal.

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

- a) type, quality and scale of services offered — justification for the facilities should include reference to any supporting surveys and market research
- b) environmental factors including biophysical, economic and social factors
- c) the principles of ecologically sustainable development (see Appendix 1).

C. The location

1. Planning context

The following information should be provided:

- a) zonings, permissibility and land use constraints
- b) compatibility of the proposal with:
 - i) any strategy such as management plans for catchments, rivers, estuaries, floodplains, coastal areas
 - ii) provisions of any environmental planning instrument or development control plan;
 - iii) plans and policies of interstate bodies when the proposed marina is adjacent to a state border
 - iv) existing land and water uses both on the site and on adjacent land and water
 - v) any heritage items or environmental protection areas (including classified waters, wilderness areas, marine and estuarine protected areas, National Parks, aquatic reserves, foreshore protection zones) or areas affected by conservation or international agreements.

2. Site description and locality information

The following information should be provided:

- a) title details, land tenure, owner's consent if not the proponent
- b) where Crown land is involved, any constraint associated with the form of lease or tenure — where appropriate, the Native Title status of the land should be considered and an outline provided of the procedures to be followed to satisfy the requirements of the Commonwealth's *Native Title Act 1993*

- c) the site description and maps, plans or photographs clearly identifying the location of the proposal relative to:
 - i) waterbodies and wetlands
 - ii) vegetation communities
 - iii) infrastructure; roads, utilities including transmission lines, pipelines, submarine cables or easements, bridges, weirs, boat ramps, jetties, wharves, navigation lanes, ferry services, public parking areas, pedestrian paths, cycleways, wastewater pumpout facilities
 - iv) other land and water uses.

3. Overview of the affected environment

An overview of the environment should be provided in order to place the proposal in its local and regional context. This overview may be general — specific details will be provided when assessing the environmental impacts of the proposal.

General information to be provided includes:

- a) meteorological factors which may influence erosion, flooding, water quality, air quality or noise impacts such as rainfall intensity, frequency and duration and wind direction and intensity
- b) geomorphological factors such as major landform features; evidence of historical morphological change; shoreline characteristics
- c) hydrological and water quality factors
- d) predominant aquatic and terrestrial communities on the site, their habitat or conservation values
- e) any buildings, items or places of conservation or heritage significance likely to be affected by the proposal.

D. Identification and prioritisation of issues

1. Overview of the methodology

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

- a) the outcome of a review of relevant sources of information on potential issues, including:
 - i) any relevant guidelines issued by government authorities

- ii) the provisions of any relevant environmental protection legislation
 - iii) any industry guidelines
 - iv) EISs for similar projects, and any relevant commission of inquiry reports, determination reports and conditions of approval
 - v) relevant research or reference material
 - vi) relevant strategic plans or policies
 - vii) relevant preliminary studies or pre-feasibility studies
- b) the outcome of consultation with stakeholders including:
 - i) planning focus meetings, community focus meetings, community workshops or issues groups
 - ii) meetings with stakeholders (e.g. government agencies, particularly EPA, councils, major market representatives)
 - c) the use of methodology such as the guideline *Is an EIS required?* (Department of Planning, 1995) or checklists or similar approaches.

2. Outcomes of the process

Summarise the outcome of the identification and prioritisation process including:

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

E. The environmental issues

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

Assessment of potential impacts

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

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

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

1. Land surface issues

If the surface characteristics (above or below water) are likely to be disturbed or altered, issues to consider include:

- a) existing above and below water surface characteristics, including contours and soil characteristics, terrain stability, slope gradient and length, susceptibility to erosion or landslip
- b) potential direct or indirect disturbance or alteration, (above and below water) — describe:
 - i) disturbance from:
 - demolition, erection or maintenance of structures
 - earthworks; dredging (including maintenance dredging), reclamation, excavation or landfill
 - boating activity; wash, wake, anchors, propellers
 - changes to sediment transport processes
 - ii) final surface characteristics (above and below water)
- c) any materials to be disturbed or altered or to be used for landscaping — include the source of any fill and destination and use of excavated or dredged material; characteristics that may be relevant include:
 - i) the physical or chemical properties of soil or sediment including depth, particle size

distribution, permeability, dispersibility, pH, suitability of soil for landscaping or reclamation

- ii) the presence of acid sulfate or sulfidic materials (usually found in tidal rivers and surrounding areas at locations within 3 metres of current sea level) — the issues to be considered include:
 - a testing program to identify the likely presence and extent of acid sulfate material — refer to *Assessing and Managing Acid Sulfate Soils* (Environment Protection Authority, 1995)
 - the assessment of potential impacts from the disturbance of sulfidic material, acid run-off from stockpiles or the acidification of sulfidic fines, sale or use of material containing sulfidic material
 - a proposed management program to mitigate potential impacts including minimisation of disturbance — the program should include a clearly defined monitoring program and a description of response strategies, should deleterious impacts be observed
- d) proposed mitigation and management measures to control impacts and to ensure compliance with relevant standards including an estimate of mitigation effectiveness; measures include:
 - i) stabilisation works for cuttings, embankments and open channels
 - ii) erosion and sedimentation control structures
 - iii) landscaping and revegetation proposals
- e) maintenance programs for all mitigation measures to ensure effective operation
- f) the proposed monitoring to determine the effectiveness of mitigation and to verify predictions.

2. Hydrological issues

Issues to consider include:

- a) existing drainage patterns; the range of water heights, wave climate, tidal patterns, daily flushing regime, storm surge or flood levels; the flood liability of sites and adjacent land; the depth to and condition of groundwater likely to be affected by the proposal
- b) changes in water movement patterns,

- groundwater hydrology, flushing and sediment transport processes and mechanisms from:
- i) demolition, erection or maintenance of structures
 - ii) earthworks; dredging, reclamation, excavation or landfill
 - iii) boating activity
- c) potential impacts on structures (such as bridges, breakwaters, groynes, flood mitigation or foreshore works, aquaculture establishments) resulting from changed hydrology or sediment transport patterns
- d) the provisions of any relevant waterbody management plans
- e) if located in estuaries or on the coast:
- i) any issues in the New South Wales Coastal Policy, *Coastline Management Manual* (NSW Government, 1990) or *Estuary Management Manual* (NSW Government, 1992)
 - ii) impacts on coastal landforms (including estuaries and river mouths), coastal and estuarine hydrodynamics
 - iii) potential impacts from extreme tides
- f) if located on floodplains:
- i) issues raised in the *Floodplain Development Manual* (NSW Government, 1986)
 - ii) impact on flood regime
 - iii) potential impacts from flooding or rising water-tables such as inundation or hazardous materials entering waterbodies
- g) proposed mitigation and management measures to control impacts including an estimate of mitigation effectiveness
- h) proposed monitoring to determine the effectiveness of mitigation and to verify predictions.
- iii) particulate matter (e.g. turbidity, light penetration)
 - iv) chemical contaminants such as specific biocides (e.g. for antifouling and treatment of jetty timbers), hydrocarbons and trace metals
 - v) dissolved oxygen
 - vi) gross pollutants
 - vii) river salinity (in non-estuarine areas)
 - viii) if acid sulfate material is disturbed, refer to *Assessing and Managing Acid Sulfate Soils* (Environment Protection Authority, 1995) for monitoring indicators
- b) potential sources of change to water quality from direct, secondary or cumulative effects of the marina construction or operations consider:
- i) potential accidental, incidental, deliberate or managed discharge or release of materials from shore or water-based activities
 - ii) individual sources of change including:
 - chemicals and other contaminants from spillage of fuels or lubricants, scrapings, washings, painting, antifoulants, materials used in jetty construction (including any chemicals used for preservation of materials) or other potentially harmful chemicals
 - waste disposal including litter or solid waste, sewage, grey water, bilge or ballast water, run-off from washdown, slipway and hardstand areas, run-off from road, parking and other sealed areas
 - dredging or other construction or operational activities leading to changes in nutrient and contaminant levels, salinity, stratification, sediment or changes to flushing
- c) proposed mitigation and management measures to control impacts and to ensure compliance with relevant standards including an estimate of mitigation effectiveness; measures include:
- i) drainage, stormwater, wastewater and emergency management systems; include:
 - pumpout and collection facilities (indicate proximity to any water supply take-off)
 - sediment controls such as sediment traps and silt curtains
 - gross pollutant traps and trash racks, oil separators, grease traps, drip trays, filters, control of build-up of debris in the vicinity

3. Water quality and waste management issues

If water quality is likely to change as a result of the proposal, issues to consider include:

- a) the existing condition of any waterbody or groundwater that may be changed as a result of the proposal; discussion should focus on relevant characteristics that may alter as a result of the proposal and may include the following classes of indicators:
 - i) faecal coliforms
 - ii) nutrients (e.g. nitrogen and phosphorus)

- controls to compensate for poor flushing
 - controls (such as bunding) to prevent contamination of water from maintenance, repair activities or from accidental leakage or spillage of potentially harmful substances
 - response strategies, containment and recovery facilities including location of materials used in response strategies
- ii) procedures for storage, transport and disposal of waste for all hazardous and dangerous materials used on land and water
 - iii) details of solid and liquid waste storage and disposal facilities; the impact of treatment methods on receiving water or soil
 - iv) the vulnerability of hazardous and waste storage and treatment facilities to flooding or rising water tables
 - v) maintenance programs for all mitigation measures to ensure effective operation
- d) the proposed monitoring to determine the effectiveness of mitigation and to verify predictions;
 - e) an assessment of the need for a waterway or bay management plan.

4. Air quality

If air quality is likely to change as a result of the proposal, issues to consider include:

- a) fixed and mobile sources of air pollution from construction and operation of the marina
- b) the likely impact of the proposal on air quality — if this is a significant issue then include:
 - i) baseline data on the ambient quality of the air, including consideration of prevailing meteorological conditions and topographic features which may influence noise impacts
 - ii) projected emission and deposition rates
 - iii) frequency and times of emissions
- c) proposed mitigation and management measures to control impacts and to ensure compliance with relevant standards, including an estimate of how effective this mitigation is expected to be; measures include:
 - i) ceasing air polluting activities during certain meteorological conditions
 - ii) sealing or watering roads and access areas
 - iii) controlling materials to avoid wind erosion; planting or landscaping to reduce wind impacts

- d) the proposed monitoring to determine the effectiveness of mitigation and to verify predictions.

5. Noise

If noise is likely to be produced from the proposal, issues to consider include:

- a) noise levels from fixed and mobile noise sources including:
 - i) construction sources such as pile-driving equipment, dredging, blasting, earthmoving equipment, compressors, delivery of materials by land and water
 - ii) operational sources of noise such as:
 - vehicle movements
 - marina noise such as halyards slapping on masts, engine noise, pumps, amplification systems
 - workshop equipment or plant and its usage
- b) the likely impact of the proposal on noise — if this is a significant issue, include:
 - i) baseline data on the existing acoustic environment including the consideration of prevailing meteorological conditions and topographic features which may influence noise impacts
 - ii) the proposed hours for construction and operation including land and water traffic movements
 - iii) predicted noise levels at potentially affected sites, including dwellings, adjacent recreation areas, sensitive natural areas
- c) proposed mitigation and management measures to control impacts and to ensure compliance with relevant standards including an estimate of mitigation effectiveness; measures include:
 - i) suppressers or silencers on equipment
 - ii) bunding (size, type and location) or noise shield proposals
 - iii) alternative marina layouts or alternative locations of marina plant, parking, queuing or vehicle routes to reduce noise
 - iv) excluding watercraft from near sensitive natural areas such as nesting grounds
 - v) operational strategies to reduce impacts such as limiting hours of operation
- d) the proposed monitoring to determine the effectiveness of mitigation and to verify predictions.

6. Visual impact

If the proposal is likely to have a visual impact, issues to consider include:

- a) visual impacts from adjoining properties and from surrounding land and water — consider potential impacts such as changed or obstructed views from:
 - i) the facility form, bulk, colour, reflectivity
 - ii) lighting from security requirements or night operations
 - iii) boat mooring and movements
 - iv) the clearing of vegetation
- b) proposed methods of reducing visual impacts such as landscaping, materials selection and management measures.

7. Flora issues

If terrestrial or aquatic flora or their habitat are likely to be disturbed, issues to consider include:

- a) identifying terrestrial and aquatic plant habitats, ecological communities and where appropriate, populations and species in areas that may be directly or indirectly affected by the proposal
- b) 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 Schedule 1 or 2 of the *Threatened Species Conservation Act 1995* (see Appendix 3)
 - ii) protected species listed in Schedule 13 of the *National Parks and Wildlife Act 1974*
 - iii) rare species listed in *Rare or Threatened Australian Plants* (ROTAP) (Briggs J.D., 1988)
 - iv) areas protected under SEPP No. 14 — Coastal Wetlands, SEPP No. 26 — Littoral Rainforest, SEPP No. 44 — Koala Habitat Protection or other environmental planning instruments
 - v) vegetation protected under the *Fisheries Management Act 1994*
 - vi) trees listed in councils' Significant Tree Registers
- c) potential impacts on flora:
 - i) directly through removal by clearing or dredging
 - ii) indirectly by:
 - sedimentation, access to light, induced

bank collapse, a change in substrata, effects of boat wash

- changes in water quantity, quality, movement or groundwater regime;
- d) the sensitivity of species or communities to disturbance; the potential impacts of disturbance on biodiversity; the potential for recolonisation following any disturbance
 - e) the significance of flora for other biota, including biota not directly affected by the proposal but which interact with potentially disturbed flora
 - f) landscaping proposals, including compensatory planting of indigenous species, details of proposed mitigation methods to protect indigenous species including the seed stock in topsoil stockpiles
 - g) identifying potential weed and introduced species (including marine seaweeds), and describing measures to control and prevent infestations at the site and to control spread into localities adjacent to the proposal
 - h) the proposed monitoring to determine the effectiveness of mitigation and to verify predictions.

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

8. Fauna issues

If terrestrial or aquatic fauna or their habitat are likely to be disturbed, issues to consider include:

- a) identifying terrestrial and aquatic animal habitats, ecological communities and where appropriate, populations and species in areas that may be directly or indirectly affected by the proposal
- b) 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 Schedule 1 or 2 of the *Threatened Species Conservation Act 1995* (see Appendix 3)
 - ii) species protected under the *Fisheries Management Act 1994*

- iii) indicate the economic significance of any potentially affected species
- c) potential impacts on fauna:
 - i) directly through removal by clearing or dredging
 - ii) indirectly by:
 - sedimentation, access to light, induced bank collapse; a change in substrata; the effects of boat movement, noise
 - changes in water quantity, quality, movement or groundwater regime, e.g. impacts on the distribution and lifecycles of fauna
 - impacts on the number, distribution and size of aquatic habitats such as seagrasses, mangroves, saltmarshes, sand flats and mud flats
- d) the sensitivity of species or communities to disturbance; the potential impacts of disturbance on biodiversity; the potential for recolonisation following any disturbance — if relevant assess the significance of the area for koalas under the provisions of SEPP No. 44 — Koala Habitat Protection
- e) the significance of fauna for other biota, including biota not directly affected by the proposal but which interact with potentially disturbed fauna
- f) mitigation proposals such as compensatory restocking of indigenous species, provision of new appropriate habitat, opportunities for colonisation, considered timing of major disturbances
- g) identifying potential vermin, feral and introduced species (including those from ballast water); measures to control and prevent infestations at the site and to control spread into localities adjacent to the proposal
- h) compatibility with the provisions of NSW Fisheries' *Habitat Protection Plans*
- i) the proposed monitoring to determine the effectiveness of mitigation and to verify predictions.

Note: Appendix 3 provides guidance on determining when a species impact statement (SIS) is required. A SIS must accompany any proposal in critical habitat or where there is

likely to be a significant effect on threatened species, populations or ecological communities or their habitats.

9. Social issues

In addition to social issues identified already, issues to consider include:

- a) health and safety issues
- b) employment issues
- c) amenity issues
- d) access issues such as disabled access and access to public land and waterways.

10. Land transport and parking issues

A traffic study should be undertaken for all proposals involving significant numbers of vehicle movements. Studies could also be carried out where vehicle movements or on-street parking are likely to significantly affect the amenity of the community because of the characteristics of the location. Issues to consider include:

- a) assessing the impact of traffic generated by marina construction and operation on the local and regional road network — consideration should be given to:
 - i) vehicle sizes and types — consider general usage and extreme cases such as transport by road of large vessels or delivery of large plant or machinery, and the effect of load sizes if applicable
 - ii) usage rates at various times of day and year — assess the need for restrictions at night or peak periods
 - iii) road safety issues, including safe access to the site — consider the need for improved sight lines, turning bays, traffic lights and improved road maintenance programs
 - iv) traffic noise
- b) estimating the average and peak parking demand for vehicles and trailers; include:
 - i) the assessment of the adequacy of on-site facilities to service the demand
 - ii) the off-site parking options and the potential availability of space in average and peak use periods; the potential for conflict with the community affected by off-site parking.

11. Water transport issues

If the proposal is in a sensitive area or is likely to significantly increase water transport, issues to consider include:

- a) the effect of construction and operation including the increased boating activity generated by the proposal on:
 - i) commercial shipping, navigational lanes and markers; the need for changes to signage or markers
 - ii) naval waters and activities
 - iii) commercial fishing grounds and aquaculture
 - iv) ferries (vehicular and passenger); routes, terminals and pick-up points
 - v) sea planes; aerodromes, terminals, fuelling or parking areas
 - vi) recreational boating, fishing, swimming, baths, boat hire, boat ramps, public wharves
- b) boating safety issues, including:
 - i) the navigable width of the marina entrance, layout and widths of interior channels, warning signs, speed limits, channel maintenance
 - ii) rescue and emergency services
 - iii) provision for educational and informational material such as signage, brochures, maps and notices detailing:
 - local aquatic hazards
 - safety measures and procedures relating to refuelling, spillage, rescue.

12. 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 which may need to be considered include:

- a) identifying any items of heritage significance on the site (including underwater) and 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, Heritage Council 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)), National Estate Register (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.

For 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.

For Aboriginal heritage:

- a) assess the archaeological and anthropological significance of any Aboriginal relic or place identified on the site in consultation with the Land Council, Department of Aboriginal Affairs and NPWS
- b) assess the potential impact of the proposal on the heritage 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.

For natural heritage:

- a) assess the heritage significance of any natural areas including geological or palaeontological features or 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)
- 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.

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

13. Hazards assessment

Issues to consider include:

- a) identifying all materials stored which have a Dangerous Goods Classification, quantities and proposals for safe storage and handling
- b) the applicability of SEPP 33 — Hazardous and Offensive Development
- c) identifying potential hazards from:
 - i) fire, explosion or release of chemicals or polluted waters
 - ii) natural occurrences such as floods, storms, bushfire, landslip
- d) identifying nearby sensitive areas
- e) proposed mitigation and management measures to control impacts and to ensure compliance with relevant standards, including an estimate of how effective this mitigation is expected to be and consequences of failure — measures include bunding, fire walls, segregation of chemicals, fire fighting systems, use of inflammable materials.

14. Economic issues

Issues to consider include:

- a) current market demand for the services being offered in a local and regional context; an analysis of regional supply, future demand for the types of services to be offered on the site
- b) the effect of the proposal on other marinas, boat users, boating services and the supply of moorings; an assessment of the affordability of marina services
- c) employment at the site and in the community as a result of the proposal
- d) potential economic impacts on other industries both within the immediate locality and the wider community, such as tourist facilities, agriculture, aquaculture, commercial fishing, boat building
- e) potential impacts on land values.

15. Cumulative impacts

Issues to consider include:

- a) existing or past marina operations in the same location or the immediate vicinity; other forms of industry in the vicinity which may have similar impacts
- b) an assessment of any likely cumulative impacts having regard to:
 - i) river, estuary, lake or coastal morphology; bed, bank or beach degradation or aggradation, tidal or wave patterns; water quality
 - ii) vegetation or fauna habitat (including fishing grounds, fish breeding areas and aquaculture)
 - iii) water or road vehicular activities, noise or visual impacts and loss of heritage items
 - iv) loss of access to public land and waterways
- c) the advantages or disadvantages of clustering marina operations in the area
- d) the compatibility of mitigation measures
- e) the compatibility with existing (or proposed) waterbody management plans or flood mitigation works.

F. List of approvals and licences

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

G. Compilation of mitigation measures

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

The mitigation strategy should outline the environmental management principles which would be followed in the planning, design, establishment and operation of the proposal and include:

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

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

An environmental management plan (EMP)

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

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

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

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

At the development approval stage, it is essential for the applicant to establish that the environmental impacts can be managed in an integrated and feasible manner.

Two sections should be included, one setting out the program for managing the proposal (section a. below), and the other outlining the monitoring program with a feedback loop to the management program (section b. below).

a) Environmental management outline

The management strategy should demonstrate that sound environmental practice will be followed during the establishment, operation, rehabilitation and end use of the marina. This should include:

- i) the management of construction impacts; if appropriate, erosion and sedimentation management and revegetation plans for areas disturbed by construction activities
- ii) management of operational impacts; if appropriate include details of:
 - materials management on site, including petroleum products, chemicals and fuel
 - water and air quality management
 - transport and parking management
 - maintenance and site security plans
 - contingency plans to respond to emergencies, incidents 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 scheme
- iv) training programs for operational staff and incentives for environmentally sound performance
- v) an indication of how compliance with licensing and approval requirements will be achieved and due diligence attained
- vi) if applicable, reporting mechanism on environmental performance and performance bond and relevant performance parameters.

b) Monitoring outline

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

Parameters which may be relevant include:

- i) performance indicators in relation to critical operational issues including:
 - quality of water discharged or leaching to groundwater, surface water or soil
 - noise and air quality
 - any relevant public health indicators
- ii) waste management; performance indicators in relation to recycling and reuse
- iii) monitoring of complaints received.

The program outline should describe the following monitoring details:

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

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

H. Justification for the proposal

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

The principles of ecologically sustainable development are:

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

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

- a) meet project objectives
- b) meet environmental performance requirements including improved conservation or protection of natural resources and reduced environmental costs
- c) meet site specific environmental performance requirements considering the vulnerability of the air quality, groundwater, surface waters, soil, ecological communities, heritage or social factors
- d) safeguard public health.

Appendix 1. Schedule 2 — Environmental Impact Statements

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

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

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

6. A compilation (in a single section of the environmental impact statement) of the measures referred to in item 4 (d).
7. A list of any approvals that must be obtained under any other Act or law before the development or activity may lawfully be carried out.

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

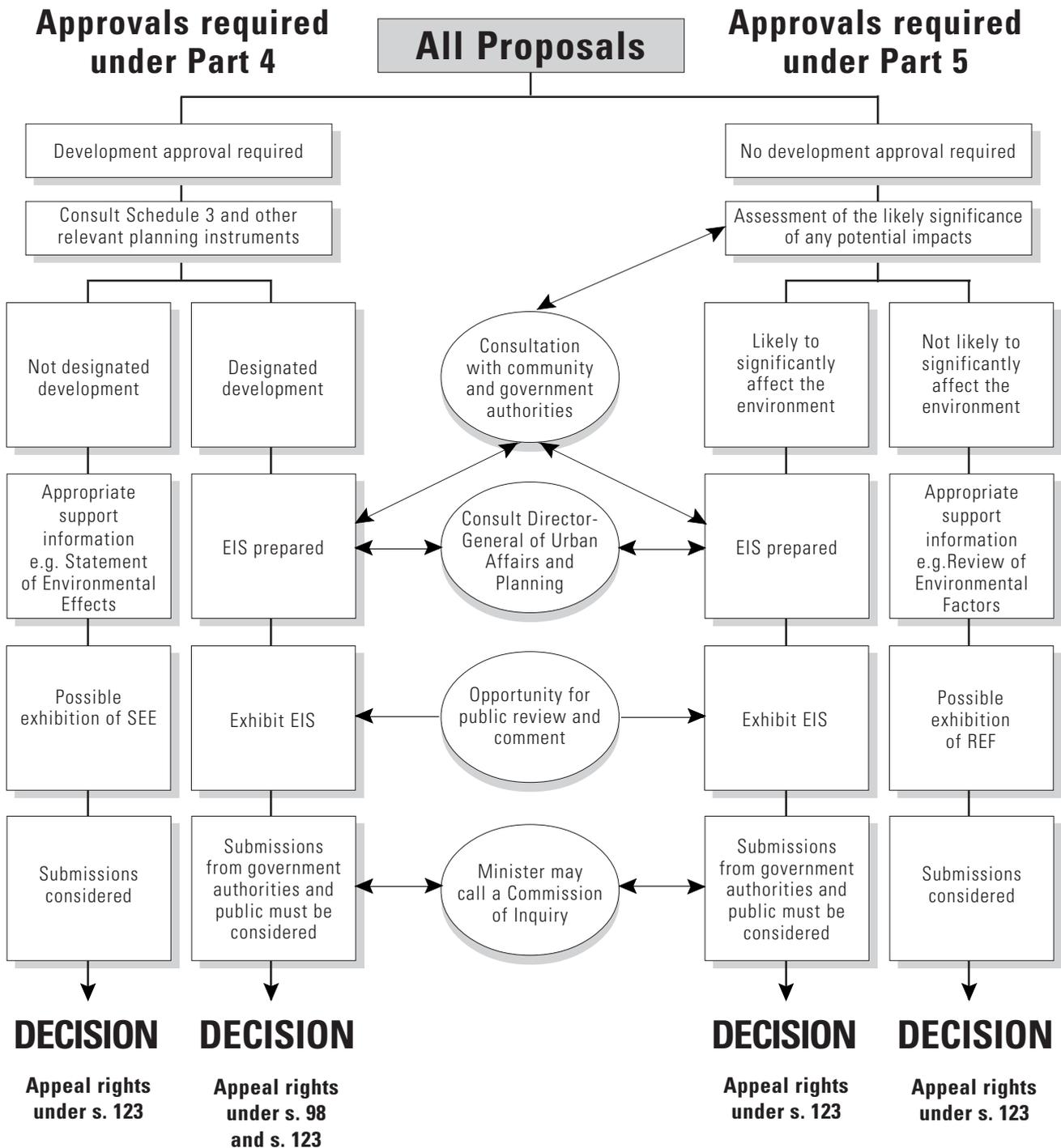
- a) The precautionary principle — namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- b) Inter-generational equity — namely, that the present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

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

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

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

Appendix 2. EIA procedures under the EP&A Act



Appendix 3. Threatened Species Conservation Act

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

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

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

When is a Species Impact Statement required?

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

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

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

Factors when deciding if an SIS is required

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

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

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

Form and content of an SIS

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

General information

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

Information on threatened species and populations

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

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

Information on ecological communities

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

Credentials of persons undertaking an SIS

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

State-wide conservation status

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

Procedures for preparing an SIS

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

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

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

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

Appendix 4. Consultation and approvals

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

Approvals or consultation which may be required include:

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

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

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

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

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

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

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

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

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

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

WorkCover for responsibilities regarding handling of dangerous goods and hazardous substances

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

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

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

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

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

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

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

State Forests of NSW in relation to impacts on State Forests

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

Catchment Management Committees or Trusts

Local Aboriginal Land Councils

relevant industry organisations

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

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

Appendix 5. References

The following are some references that may be of assistance in preparing an EIS for marina proposals. This list is by no means exhaustive.

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Appendix 6. Schedule 3 — Designated development

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

Marinas or other related land and water shoreline facilities that:

1. moor, park or store vessels (excluding rowing boats, dinghies or other small craft) at fixed or floating berths, at freestanding moorings, alongside jetties or pontoons, within dry storage stacks or on cradles on hardstand areas:
 - a) with an intended capacity of 30 or more vessels and
 - i) are located:
 - in non-tidal waters; or
 - within 100 metres of wetlands or an aquatic reserve; or
 - ii) require the constructions of a groyne or annual maintenance dredging; or
 - iii) the ratio of car park spaces to vessels is less than 0.5:1; or
 - b) with an intended capacity of 80 or more vessels; or
2. repair or maintain vessels out of the water (including slipways, hoists or other facilities) with an intended capacity of :
 - (a) one or more vessels 25 metres or longer; or
 - (b) 5 or more vessels at any one time.

Are alterations or additions designated development?

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

1. Development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority, the alterations or additions do not significantly

increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development.

Factors to be taken into consideration

2. In forming its opinion, a consent authority is to consider:
 - a) the impact of the existing development having regard to factors including:
 - i) previous environmental management performance, including compliance with:
 - conditions of any consents, licences, leases or authorisations by a public authority; and
 - any relevant codes of practice; and
 - ii) rehabilitation or restoration of any disturbed land; and
 - iii) the number and nature of all past changes and their cumulative effects; and
 - b) the likely impact of the proposed alterations or additions having regard to factors including:
 - i) the scale, character or nature of the proposal in relation to the development; and
 - ii) the existing vegetation, air, noise and water quality, scenic character and special features of the land on which the development is or is to be carried out and the surrounding locality; and
 - iii) the degree to which the potential environmental impacts can be predicted with adequate certainty; and
 - iv) the capacity of the receiving environment to accommodate changes in environmental impacts; and
 - c) any proposals:
 - i) to mitigate the environmental impacts and manage any residual risk; and
 - ii) to facilitate compliance with relevant standards, codes of practice or guidelines published by the Department of [Urban Affairs and] Planning or other public authorities.