

Residential development, Peel-Harvey

Swan Coastal Plain Catchment of the Peel-Harvey Estuary

Various proponents

**Report and recommendations of the
Environmental Protection Authority**

**Environmental Protection Authority
Bulletin 478
December 1990**

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Introduction

The Peel-Harvey estuarine system is badly degraded. The system shows signs of severe eutrophication (nutrient enrichment), which results in excessive algal growth. The algae live on the nutrients, and multiply rapidly, stifling life in the Estuary in warmer weather. The algae accumulate on the shores of the Estuary and rot, causing odour problems, polluting the shore, and killing wildlife and fish. This results in a significant reduction in the recreational, environmental, social and economic values of the area.

The cause of the eutrophication is an inflow of nutrients (mainly phosphorus and nitrogen) from the coastal plain catchment into the Estuary. The nutrient inflow is currently far above the Estuary's ability to cope - hence the huge production of algae.

Although the primary source of the nutrients is agricultural runoff from the sandy soils of the catchment which have been extensively cleared and drained, it is now recognised that other land uses such as residential, industrial and commercial can also contribute significant amounts of nutrients to the Estuary.

The Government has taken specific action to rescue the Estuary. Ministerial Conditions were set on 3 January 1989 under Section 45 of the Environmental Protection Act for the Peel Inlet - Harvey Estuary Management Strategy (Stage 2). A copy of the conditions is reproduced in Appendix 1.

These conditions which impose constraints on existing and proposed developments in the catchment with the objective of reducing the flow of nutrients into the Estuary to about half their present level can be summarised as follows:

- a moratorium on further clearing and drainage in the catchment until the Minister for the Environment is satisfied that these activities would be environmentally acceptable;
- the specification of interim target levels for the quantity of phosphorus flowing into the estuary;
- a requirement for the proponents of the Management Strategy to prepare an Environmental Protection Policy and a Catchment Management Plan designed to meet the targets; and
- a requirement that, for the present, decisions on developments which may release phosphorus or nitrogen to the environment in the Peel-Harvey Estuary area and coastal plain catchment should be conservative.

In view of the substantial Government commitment to restoring the Peel Harvey estuarine system, the Environmental Protection Authority has adopted an interim strategy for dealing with development proposals in the Peel-Harvey catchment which may conflict with the Ministerial Conditions. Until such time as an Environmental Protection Policy and a Catchment Management Plan are prepared, and while the moratorium on clearing and drainage is in place, the Environmental Protection Authority has decided to assess all significant development proposals.

Owners of existing broadacre agricultural holdings have, by and large, accepted the recommended constraints by making a significant reduction in the rates of phosphorus fertilisers applied to their properties, and by the planting of large numbers of trees. The approval of new residential developments involving excessive applications of nutrients to the soil or large scale clearing or drainage would raise concerns over equity, and may jeopardise the progress already made.

Implementing plans for the coastal catchment of the Estuary takes time, and in the meantime the Environmental Protection Authority is still receiving proposals for development. Some of these proposals conflict with the plans to save the Estuary, and the Authority will recommend against these. Some others can be environmentally acceptable, provided the appropriate controls are in place to protect the environment and especially the Estuary.

This Report examines proposals for residential development. This form of development can involve clearing, drainage, on-site sewage disposal, and the fertilising of public open space and domestic gardens, all of which can be environmentally unacceptable in the coastal plain catchment of the Estuary. However, in some situations it is possible to plan a residential development with appropriate controls on these activities, given the co-operation of the Local Authority, so as to make the development environmentally acceptable.

With regard to existing residential development in the catchment, the plans being developed for the catchment will among other things provide a means of reducing the nutrient loss to the Estuary from all existing activities.

Proposals

The Environmental Protection Authority has received a number of proposals for residential development in the Peel-Harvey coastal plain catchment. Developments in the catchment are constrained by the Ministerial conditions set for the Peel-Harvey Stage 2 proposal because of the need to reduce by about half the quantity of nutrients flowing from the catchment into the Estuary. The Authority therefore determined that formal assessment of the proposals was required, and set the level of assessment for each proposal at Consultative Environmental Review.

The proposals are listed in Schedule 1, and their location shown on Figure 1.

No.	Proponent	Property location Area	Number and size of lots proposed	Sewage Disposal
1	Encourage Pty Ltd	Pt Lot 200 Wanjeep Road and Birchley Street Mandurah, City of Mandurah 5 ha	20 lots 5-600 m ²	sewerage
2	Dale Estates Pty Ltd	Lot 107 Hardey and Leslie Street Serpentine, Shire of Serpentine-Jarrahdale 2.8 ha	12 lots 2000 m ²	septic tank /leach drains
3	Mr & Mrs JA & O Heyman	Lot 94 Tonkin Road Serpentine, Shire of Serpentine-Jarrahdale 2 ha	5 lots 4000 m ²	septic tank /leach drains
4	Menat Pty Ltd	Lots 95, 96, 97 Lefroy Street Serpentine, Shire of Serpentine-Jarrahdale 2 ha	17 lots 1000 m ²	septic tank /leach drain systems

Consultation

The Environmental Protection Authority received comments on the proposals from the following groups and agencies:

- Conservation Council of Western Australia;
- River Districts Association;
- Peel Preservation Group;
- Water Authority of Western Australia;
- Department of Planning and Urban Development;
- Health Department of Western Australia; and
- Shire of Serpentine-Jarrahdale.

Environmental assessment

The Authority has assessed the proposals on the basis of:

- the information provided in the referral documents;
- submissions received from government agencies and the public;
- the Authority's knowledge of current residential developments and their environmental effects;
- the Authority's knowledge of the current status of the Peel-Harvey estuarine system and associated catchments,

and in the context of the Ministerial Conditions for the Peel Inlet-Harvey Estuary Management Strategy (Stage 2).

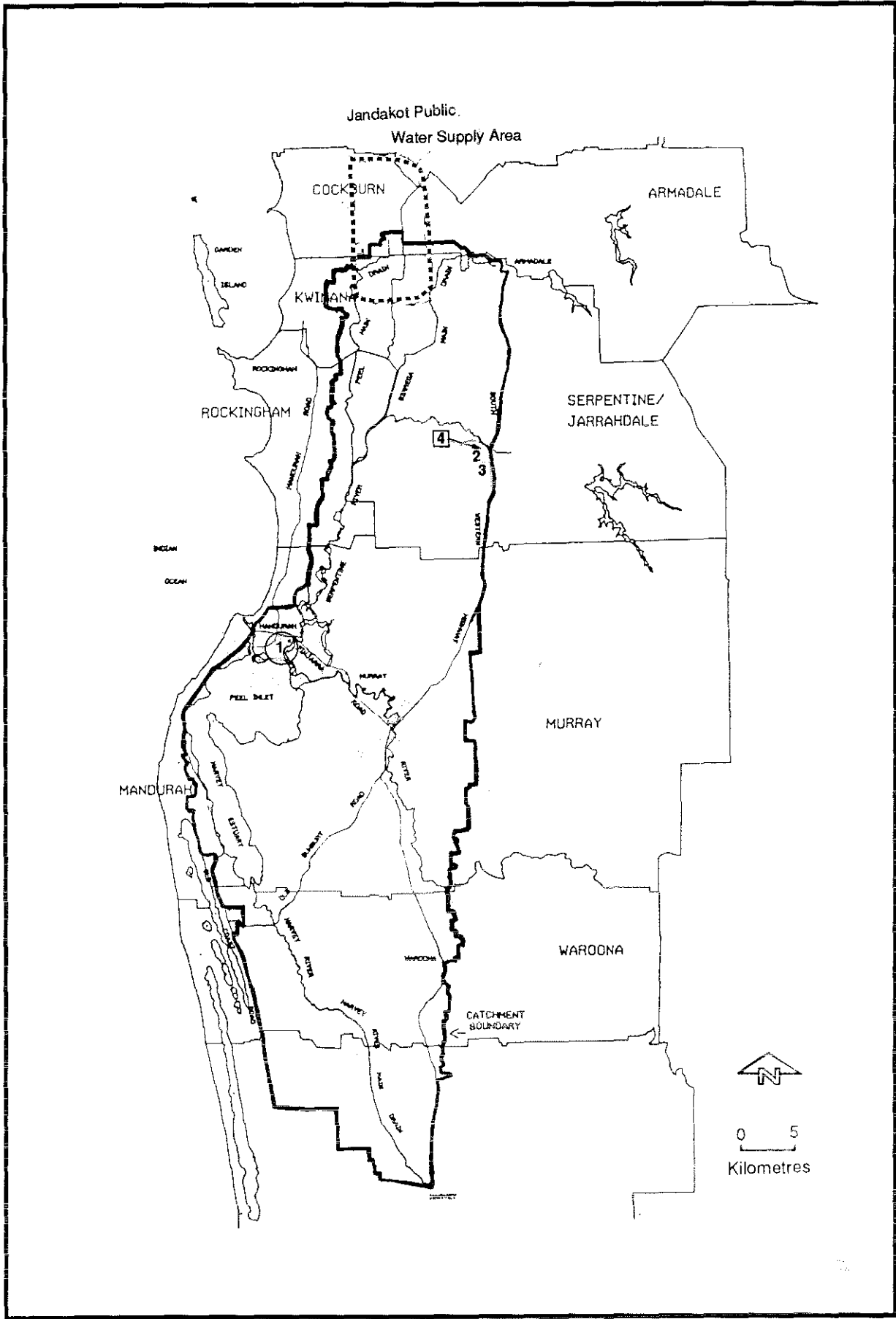


Figure 1. Location of residential development proposals.

The Authority considers the objective for residential development proposals (lot sizes up to 2000m²) in the Peel-Harvey catchment to be a reduction in long term nutrient application rates to the site to no greater than half that of broad acre rural land on that particular soil type. If this is not feasible, as will be the case with uncleared land, a compensatory reduction of phosphorus loss from a parcel of land elsewhere in the coastal catchment will need to be undertaken.

The specific development design and management provisions which should apply to residential development in the Peel-Harvey coastal catchment are connection to reticulated sewerage, on-site containment of drainage, water sensitive design and management, maximum retention of indigenous vegetation, appropriate management of public open space, and vegetation buffers along watercourses and drains.

The following proposal is generally consistent with the Authority's objective for residential development in the Peel-Harvey coastal catchment.

No.	Proponent	Property location Area	Number and size of lots proposed	Sewage Disposal
1	Encourage Pty Ltd	Pt Lot 200 Wanjeep Road and Birchley Street Mandurah, City of Mandurah 5 ha	20 lots 5-600 m ²	sewerage

Recommendation 1

The Environmental Protection Authority has concluded that proposal No. 1 would be environmentally acceptable, providing the following design constraints and management provisions are applied:

- the residential lots are connected to a reticulated sewerage service;
- a stormwater disposal system capable of containing a 1 In 10 year storm event on site is designed and constructed to the satisfaction of the Environmental Protection Authority on the advice of the City of Mandurah; and
- management plans for the control of dust and noise generated during development are prepared and subsequently implemented to the satisfaction of the Environmental Protection Authority on the advice of the City of Mandurah.

In addition the Authority would encourage the retention and reinstatement of indigenous vegetation through the public open space system, on as much other public and private land as possible, and along watercourses and drains. Also, the Authority suggests the residential development be designed, developed and managed to encourage reduced water consumption, increased water retention, and minimal nutrient application (particularly to public open space).

The Authority's experience is that it is common for details of a proposal to alter through the detailed design and construction phase. In many cases alterations are not environmentally significant or have positive effect on the environmental performance of the project. The Authority believes that such non-substantial changes, and especially those which improve environmental performance and protection, should be provided for.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.

Proposals 2,3 and 4 involve lot sizes which are larger (from 1000 to 4000 m²) but unsewered. In its assessment of proposals for rural residential developments in the Peel/Harvey catchment (Bulletin 482) the Authority has indicated that on the better soil types, and given strict controls on land use, proposals involving on-site sewage disposal can be acceptable with lot sizes of 2ha or more. This assessment was based partly on the quantity of nutrients released by a normal domestic septic tank and leach drains. Proposals 2, 3 and 4 involve from 5 to 20 times more septic tanks per hectare. These proposals (listed below) are therefore inconsistent with the Government's objectives for development in the Peel-Harvey coastal catchment.

2	Dale Estates Pty Ltd	Lot 107 Hardey and Leslie Street Serpentine, Shire of Serpentine-Jarrahdale 2.8 ha	12 lots 2000 m2	septic tank /leach drains
3	Mr & Mrs JA & O Heyman	Lot 94 Tonkin Road Serpentine, Shire of Serpentine-Jarrahdale 2 ha	5 lots 4000 m2	septic tank /leach drains
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Recommendation 2

The Authority concludes that these proposals would not be environmentally acceptable, and recommends they not proceed.

As a final comment, the Authority suggests the issue of effluent disposal in the Serpentine townsite be investigated by the relevant authorities as a matter of priority with a view to finding an method of effluent disposal which will satisfy all planning, environmental and public health requirements.

Appendix 1

Ministerial conditions



MINISTER FOR ENVIRONMENT

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

PEEL INLET-HARVEY ESTUARY MANAGEMENT STRATEGY - STAGE 2

MINISTER FOR TRANSPORT
MINISTER FOR AGRICULTURE
MINISTER FOR WATERWAYS

This proposal may be implemented subject to the following conditions:

1. The proponents shall adhere to the proposal as assessed by the Environmental Protection Authority and shall fulfil the commitments made and listed in Appendix 2 of Environmental Protection Authority Bulletin 363, as amended (copy of commitments attached).
2. The proponents shall develop proposals for control of phosphorus through catchment management, to the satisfaction of the Environmental Protection Authority, and shall implement them as rapidly as possible so that, in conjunction with the Dawesville Channel, the following objective is met:

. the Peel-Harvey System becomes clean, healthy and resilient.

To achieve this objective, the following interim targets should be used:

- (1) annual phosphorus input to the system shall not exceed 85 tonnes in more than four years out of ten (on average) and shall not exceed 165 tonnes in more than one year out of ten (on average). [These are based on 60 and 90 percentile loads]; and
- (2) average phosphorus concentration in estuary water shall not exceed 0.2 milligrams per litre in nine years out of ten (on average).

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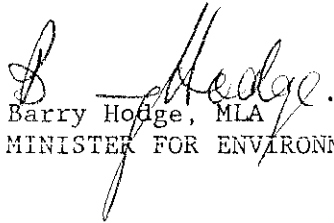
These target figures shall be reviewed by the Environmental Protection Authority after 3 years or sooner if environmental conditions dictate, in the light of measured performance of the System and may subsequently be varied by the Environmental Protection Authority.

3. The proponents shall jointly prepare an Environmental Protection Policy for the Peel-Harvey catchment in consultation with such persons and agencies as Government may specify, to the satisfaction of the Environmental Protection Authority, in accordance with the objective and targets specified in Condition 2 above. The target date for the Draft Policy (under Section 26 of the Environmental Protection Act 1986) is 31 December 1989.
4. The proponents shall develop in consultation with such persons and agencies as Government may specify, an integrated catchment management plan designed to meet the objective and targets specified in Condition 2 above, to the satisfaction of the Environmental Protection Authority, and which shall be in accordance with the principles to be developed in the Environmental Protection Policy for the area pursuant to Condition 3. The target date for the implementation of the integrated catchment management plan shall be 31 December 1990.
5. The proponents shall ensure that the moratorium on clearing and drainage in the Peel-Harvey coastal plain catchment proposed in the Stage 2 Environmental Review and Management Programme (Commitment 3.6) continues until the Minister for Environment is satisfied that these activities would be environmentally acceptable.
6. Relevant decision-making authorities shall ensure that all developments within 2 kilometres of the Peel-Harvey Estuary System (as defined in the Estuarine and Marine Advisory Committee Report to the Environmental Protection Authority, Department of Conservation and Environment Bulletin 88, March 1981.) include appropriate nutrient-attenuating waste disposal systems and management practices, to the satisfaction of the Environmental Protection Authority.
7. Prior to construction, a dredging and spoil disposal management plan for the Dawesville Channel shall be prepared by the proponents, to the satisfaction of the Environmental Protection Authority. Dredging not already forming part of the proposals in the Stage 2 Environmental Review and Management Programme shall be the subject of separate assessment by the Environmental Protection Authority.
8. The proponents shall ensure that weed harvesting and control is continued and increased as necessary to manage the expected initial increase in the occurrence of nuisance macroalgae.

9. Decisions on developments which may release phosphorus or nitrogen to the environment in the Peel-Harvey Estuary area and coastal plain catchment area should be conservative until the new assimilative capacity of the Peel-Harvey Estuary System is determined and the effects of the management elements have been measured or are being managed. To this end, such proposals for development in these areas shall be referred to the Environmental Protection Authority for assessment. These developments include new and expansion of existing intensive horticultural and intensive animal industries.
10. The Peel-Harvey regional park concept, as originally proposed in the System 6 Redbook report (Conservation Reserves for Western Australia: The Darling System - System 6, Department of Conservation and Environment Report 13, Parts I and II, October 1983.) shall be implemented within such time as to be determined by the Minister for Environment.
11. If the Dawesville Channel is constructed, the proponents shall be responsible for ensuring that mosquito management is effective and is carried out in an environmentally acceptable manner, to the satisfaction of the Minister for Environment and the Minister for Health.
12. The proponents shall be jointly responsible for the environmental aspects of:
 - (1) the construction, operation, monitoring and maintenance of the Dawesville Channel and its impacts within the estuaries and within the immediate marine environment;
 - (2) the management and required monitoring of the catchment, and collection of data necessary for the development of the integrated catchment management plan for the Peel-Harvey catchment; and
 - (3) all in-estuary monitoring and management, including weed harvesting.

All of the above shall be carried out to the satisfaction of the Environmental Protection Authority.
13. Prior to the construction of the Dawesville Channel, the proponents shall prepare in stages, a monitoring and management programme, to the satisfaction of the Environmental Protection Authority. This programme shall include:
 - (1) essential additional baseline monitoring required to be in place as soon as possible and prior to construction commencing;

- (2) construction stage impacts and monitoring, prior to construction; and
- (3) operational and long-term monitoring, in stages, to be determined by the Environmental Protection Authority.


Barry Hodge, MLA
MINISTER FOR ENVIRONMENT

MANAGEMENT COMMITMENTS MADE BY THE PROPONENTS

The following list has been amended by the EPA and accepted by the proponents to reflect the 'whole of Government approach' which is essential for management of this proposal.

1. DAWESVILLE CHANNEL

- 1.1 The proponents will conduct a detailed survey to locate, assess and offer protection to Aboriginal sites and heritage.
- 1.2 During construction of the Dawesville Channel, the proponents will ensure the continuity of road access, power supply, communications, and water and sewerage services that require relocation, and will minimize dust and noise impacts upon nearby residential areas.
- 1.3 Spoil from the excavated channel will be used in redeveloping the fill areas as a stable and varied landscape, reflecting naturally occurring topography elsewhere on the coastal strip.
- 1.4 The proponents will manage spoil disposal to minimize disturbance to important land elements, including coastal dunes, tree belts along Old Coast Road and near the estuary foreshore. Spoil disposed of adjacent to the undisturbed coastal dunes will be contoured to co-ordinate with natural dune topography in order to minimize the potential for erosion.
- 1.5 The land area used to dispose of excavated material will be contoured to facilitate possible future development into a prime residential and holiday area. Views from existing residences near the estuary will be retained, taking into consideration that these views may have been ultimately reduced by foreshore development and landscaping, irrespective of the proposed channel development.
- 1.6 Littoral sand drift northwards along the ocean coast will be mechanically bypassed beyond the channel entrance, to minimize siltation within the channel and to avoid adverse effects on beaches to the north and south.
- 1.7 The Dawesville Channel will be maintained as a navigable waterway, although, as with the existing Mandurah Channel, sea conditions at the ocean entrance may frequently preclude its use by small boats.
- 1.8 The estuary will be closely monitored to evaluate the management strategy's success in reducing the algal nuisance and to enable the development of appropriate management strategies to mitigate any deleterious effects that may occur. Current and proposed future monitoring studies in the estuary are described in Section 13 of the ERMP and Section 11 of the EPA assessment report.

2. CONTROL OF WEED ACCUMULATIONS

- 2.1 Weed harvesting will be continued most likely at an increased rate, until the weed nuisance in the estuary is successfully reduced.
- 2.2 Possible methods of improving the efficiency of harvesting operations, and the possible use of algicides to control weed growth, will be evaluated by the proponents and implemented if shown to be practicable.

2.3 The Peel Inlet Management Authority will continue the existing programme of shoreline management and will rehabilitate areas where weed accumulations or harvesting operations cause excessive retreat of the shoreline.

3. CATCHMENT MANAGEMENT

3.1 The proponents will continue to provide advice to farmers on fertilizer requirements, based on accurate assessment by paddock-specific soil tests.

3.2 The proponents will encourage further development and use of individual-nutrient fertilizers, and will undertake detailed investigations of ways to overcome existing economic constraints to their production and use.

3.3 The proponents will ensure that large-scale field trials are carried out to ascertain the technical and economic feasibility of converting use of sandy soils from agriculture to forestry. Private enterprise involvement in these studies will be encouraged.

3.4 The EPA and the Department of Agriculture will continue to provide advice to producers to define and implement practicable and cost-effective waste management strategies for control of point sources of phosphorus.

3.5 The Department of Agriculture will coordinate the preparation and implementation of a detailed catchment management plan aimed at reducing phosphorus losses to the estuary to less than 85 t/a in a 60 percentile year with minimal economic or social disruption to the catchment community.

3.6 The proponents will implement a moratorium on further clearing and drainage in the catchment, pending determination of the success of the catchment management plan in reducing phosphorus losses from existing cleared land.

3.7 The success of catchment management measures in reducing phosphorus losses to the estuary will be monitored by the proponents and audited by the EPA. The social and economic effects of catchment management measures upon the catchment community will be closely monitored by the proponents. Current and proposed future monitoring studies are described in Section 13 of the ERMP and in Section 11 of the EPA assessment report. The catchment management plan will be regularly reviewed by the EPA.