Mangles Bay marina

Department of Marine and Harbours

Report and recommendation
of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 693
July 1993

THE PURPOSE OF THIS REPORT

This report contains the Environmental Protection Authority's environmental assessment and recommendations to the Minister for the Environment on the environmental acceptability of the proposal.

Immediately following the release of the report there is a 14-day period when anyone may appeal to the Minister against the Environmental Protection Authority's report.

After the appeal period, and determination of any appeals, the Minister consults with the other relevant ministers and agencies and then issues his decision about whether the proposal may or may not proceed. The Minister also announces the legally binding environmental conditions which might apply to any approval.

APPEALS

If you disagree with any of the contents of the assessment report or recommendations you may appeal in writing to the Minister for the Environment outlining the environmental reasons for your concern and enclosing the appeal fee of $10.

It is important that you clearly indicate the part of the report you disagree with and the reasons for your concern so that the grounds of your appeal can be properly considered by the Minister for the Environment.

ADDRESS

Hon Minister for the Environment
12th Floor, Dumas House
2 Havelock Street
WEST PERTH WA 6005

CLOSING DATE

Your appeal (with the $10 fee) must reach the Minister's office no later than 5.00 pm on 13 August 1993.

Environmental Impact Assessment (EIA)

Process Timelines in weeks

Date	Timeline commences from receipt of full details of proposal by proponent	Time (weeks)
26 October 1992	Proponent Document Released for Public Comment	
21 December 1992	Public Comment Period Closed	8
29 January 1993	Issues Raised During Public Comment Period Summarised by EPA and Forwarded to the Proponent	6
30 June 1993	Proponent response to the issues raised received	22
30 July 1993	EPA reported to the Minister for the Environment	4

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Summary and recommendations

The Department of Marine and Harbours has proposed a marina for Mangles Bay. The marina would be built between the Garden Island Causeway and Hymus Street at the southern end of Cockburn Sound. The marina would have an ultimate capacity of 500 pens and cater for boats up to 20 metres in length. Three options were put forward because of the acknowledged concerns about the potential loss of seagrass in Mangles Bay specifically, and Cockburn Sound in general. A previous proposal from the John Holland Group in 1985 for a smaller marina had been assessed by the Authority and found to be environmentally acceptable in spite of concern about the potential loss of seagrass, some of which it was thought at the time could regenerate.

The Environmental Protection Authority required a Public Environmental Review (PER) for this proposal because of the potential for significant environmental impacts, particularly in Cockburn Sound. The proposal was originally referred to the Environmental Protection Authority in 1989, and since that time, a number of alternatives has been explored by the proponent in consultation with the Authority. The Public Environmental Review was released for public comment on 26 October 1992 for an eight week period to 21 December 1992. During this time some 66 submissions were received from members of the public, private organisations and State Government Departments. Subsequent to the submission period, approximately 10 further telephone calls and written comments were received.

Following the submission period, further discussions with the proponent resulted in another modified proposal being put forward. This was as a result of the process whereby the Environmental Protection Authority as a part of its overall process endeavours to assist the proponent in the finding of environmentally acceptable solutions. The Authority was concerned that decisions being made were in the best interests of the environment, were consistent with previous decisions, and enabled the proponent and the public to have maximum opportunity to have input to an environmentally acceptable solution.

Key environmental issues

The major issue identified by the Environmental Protection Authority and raised by the public was the loss of seagrass. Seagrasses play an important role in maintaining the function and stability of temperate marine ecosystems in many coastal regions of Western Australia, are important in maintaining the stability of adjacent coastlines, and are known to provide shelter and habitat for a wide range of animals including juveniles and adults of many recreationally and commercially important species of fish.

Estimates of the extent of loss vary, with published reports estimating that approximately 90% of seagrass in Cockburn Sound has already been lost, largely due to industrial and domestic waste discharges. The last remaining seagrass meadows on the southern margin of Cockburn Sound are located on Southern Flats and in Mangles Bay.

It was previously considered that seagrass could be re-established, however current scientific understanding indicates that this optimism may not be justified. Long term re-colonisation with *Posidonia* has not been reported anywhere in the world, and numerous attempts in Cockburn Sound have so far not been very promising. *Posidonia* has very slow rates of lateral spread and even under the most favourable conditions, re-colonisation from existing plants would take decades if not centuries. Further, the building of the marina in this location would decrease the optimal conditions needed by the effects of dredging, spoil, increased turbidity, light reduction, reduced flushing, and the potential for increased nutrients in the partially enclosed embayment which would result from the construction of the marina.

A number of other environmental concerns were also raised, including protection of fish and crab nursery grounds, tidal flushing, nutrient inputs and water quality. These all relate to the issue of seagrass protection, and although many of the issues may be individually manageable, the loss of seagrass is not.

Two specific matters which the Authority considered were the damage which is done to the seagrass from the existing swing moorings, and from the nutrient inputs from the Lake Richmond Drain.

The Environmental Protection Authority has concluded that alternative moorings to provide a minimised impact facility should be considered to overcome this existing problem. The Environmental Protection Authority is of the view that there should be no new swing moorings and that existing moorings should be converted to cyclone or other low-impacting moorings. Whereas the chances for regeneration of seagrasses already damaged appear negligible, it is essential that there be no further avoidable losses.

The concern with regard to the protection of seagrass in the area from nutrients, a significant proportion of which come from the Lake Richmond Drain is a matter for the City of Rockingham. The City of Rockingham could investigate the feasibility of facilitating discussions between the City, the Water Authority of Western Australia, and the Office of Catchment Management in an attempt to resolve these issues through an improved management system as a matter of priority.

The Environmental Protection Authority encourages the City of Rockingham to consider what alternatives could be implemented to avoid the impacts of nutrients and pollutants from the Lake Richmond drain on the waters of Mangles Bay.

In addition, concerns were expressed about disturbance to public amenity for existing users of the area, community groups and local residents and the effects on existing Mangles Bay fishers and boat users, both professional and amateur. Although there was some support for small scale safe haven for boating, there was less for the extensive development proposed. Concerns about pollution controls and safety management were also raised, and although these are clearly important it is likely that these could have been satisfactorily dealt with through appropriate management plans and environmental conditions. Although the issues raised have been referred to in the text, they have not all been dealt with in detail in this Report as the Environmental Protection Authority believes the loss of seagrass which would result from the implementation of the proposal in any of its three options is unacceptable and not amenable to appropriate protection or amelioration through management procedures. Accordingly, the Environmental Protection Authority is of the view that none of the options proposed for the marina project are environmentally acceptable and that therefore none of the options should proceed.

Recommendation 1

The Environmental Protection Authority concludes that the proposed marina at Mangles Bay is environmentally unacceptable and should not proceed.

In reaching this conclusion, the Authority identified the main environmental factor as the significant impact on the remaining seagrass in the Mangles Bay area and the ecological significance of preserving the small amount of seagrass that remains in Cockburn Sound.

1. Introduction

The Department of Marine and Harbours has a proposal for a marina in Mangles Bay.(See Location Map -Figure 1)

An earlier marina proposal in 1985 from the John Holland Construction group had been found environmentally acceptable at the time, however considerable additional information has since become available regarding the importance of seagrass, and the extent of its loss from Cockburn Sound. Even in the 1986 Report and Recommendations following on the Public Environmental Review some cautions were noted:

"The major environmental impact of the marina would be the loss of 10-15 ha of healthy seagrass meadow...As the seagrass meadows underpin the ecology of Cockburn Sound and Mangles Bay, this loss must be regarded as important. Nevertheless, as the area involved approximates 1% of the seagrass meadows, the loss would not cause major ecological disruption. It would, however, emphasise the need for future proposals that could affect seagrass in Mangles Bay and Cockburn Sound to be closely scrutinised as to their ecological effects"

The current proposal is for a large marina with an eventual potential capacity of 500 boats. The PER document refers to the possibility of a later expansion to 900 boats at some time in the future, but not as a part of the current PER. When the proposal was first referred to the Environmental Protection Authority in 1989, it was estimated that the eventual capacity could be 1000 to 1200 boats. At that time it was proposed that the Department of Marine and Harbours would own, construct and manage the marina. This has since been modified and under the proposal as it now stands, the Department of Marine and Harbours would intend calling for expressions of interest from the private sector once environmental approvals have been obtained.

The Environmental Protection Authority considered that the likely environmental impacts of the 1989 proposal, especially on the seagrass in the Mangles Bay area were unlikely to be environmentally acceptable. The Department of Marine and Harbours was encouraged to re-submit a modified proposal examining alternative sites not currently vegetated by seagrass meadows and/or alternative marina designs.

In October 1992 the Department of Marine and Harbours released a Public Environmental Review listing three alternative designs for a marina in Mangles Bay. The public review period closed on 21 December 1992. Some 66 written submissions were received up to that time, and since then there have been further telephone calls and additional written submissions.

Following the submission period, further discussions were held with the Department of Marine and Harbours in an attempt to have them modify the design in order to minimise seagrass loss and thus achieve greater environmental acceptability. In 1993 a modification to the proposal was submitted, and members of the Authority visited the site, and held discussions with the proponent.

2. The proposals

In 1989 when the proposal was first submitted to the Authority it was estimated that it may eventually cater for 1000 to 1200 boats. A Draft PER was submitted to the Authority in 1991, but because of the concern over the extent of seagrass loss, the proponent was advised to resubmit a modified proposal.

Subsequently, in 1992 a new PER was submitted, containing three proposals for a marina to cater for some 500 boats, with the possibility of increasing this to 900 at some time in the future. Since then, a further modification has been received. Basic design plans are included at Appendix 1.

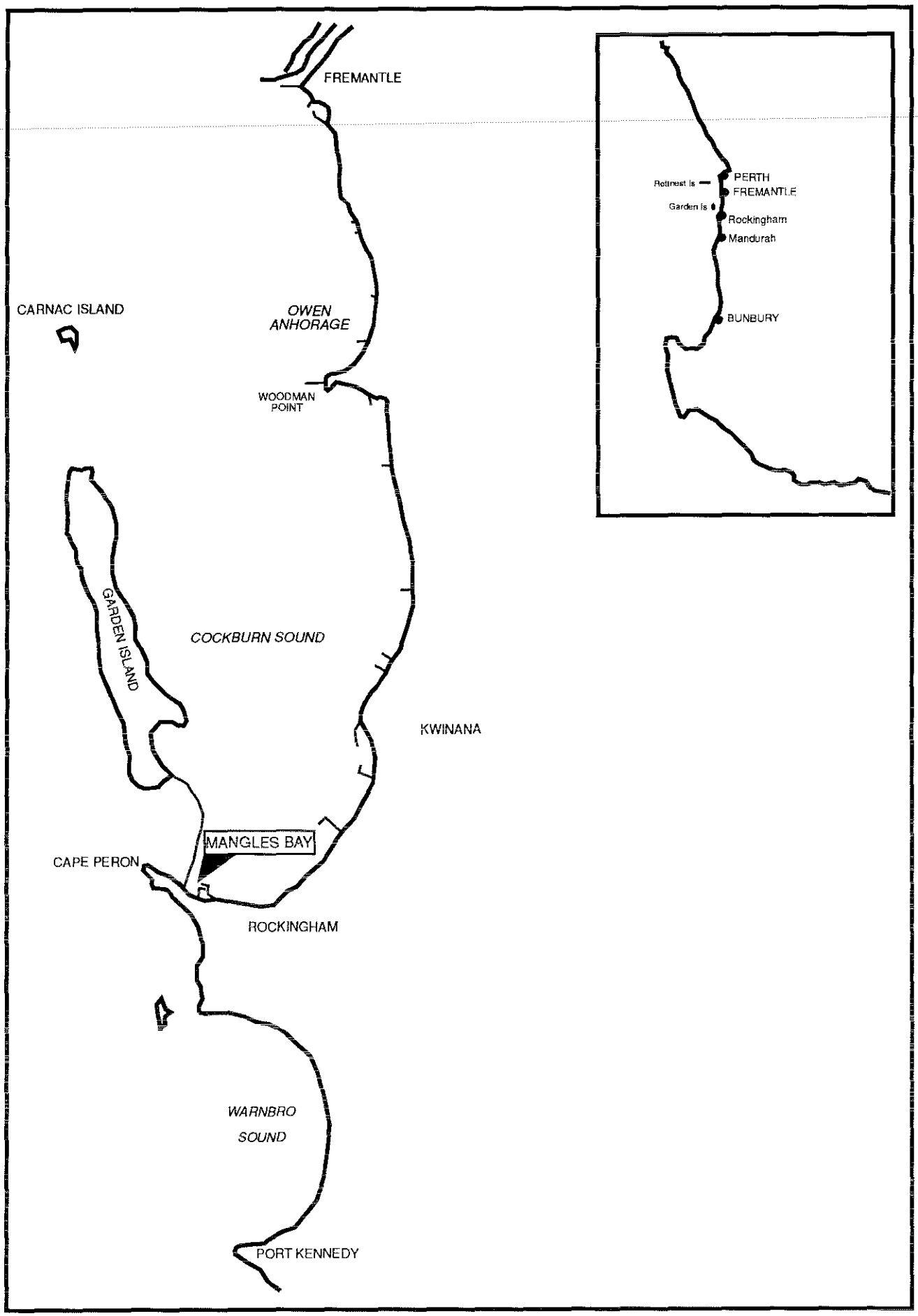


Figure 1: Location map

Option 1

Option 1, which is favoured by the Department of Marine and Harbours would have a capacity of approximately 510 boats, up to 20 metres in length. Two five hundred metre breakwaters would enclose 15 hectares of protected waters. The harbour basin would be dredged to -4.2m AHD, and the spoil used to create a 17.5 hectare peninsula of landfill, which, with the 12.5 hectares of foreshore land available, would result in 30 hectares of land available for development. The development would include a Yacht Club (to be leased to a 'recognised Yacht club'), chalets, a boatel/motel, a commercial centre, lodge, caravan parks and camping area, a sports complex, an area of 1.45 hectares for light marine industry, public open space and picnic areas, boat hardstanding areas of 2.56 hectares and roadways and public parking areas.See Figure 2 for a comparison of proposed land uses.

The construction of this option would result in the direct destruction of some 32 hectares of seagrass (18.4 ha described by the proponent as "healthy" and 13.7 ha described as "patchy").

Option 2

In this option the general layout of the marina itself would be retained, but the area of landfill would be reduced to about 14 hectares. This option would result in the direct destruction of 26 ha of seagrass (13.3 ha "healthy" and 12.7 ha "patchy").The overall development would be essentially similar, with the major change being a reduction in the public open space and picnic areas. See Figure 2.

Option 3

The designs for Option 3 resulted from advice to the Department of Marine and Harbours that the first draft proposal submitted in 1989 which would have resulted in at least 30 hectares of seagrass loss was unlikely to be found environmentally acceptable. It is not an option favoured by the Department of Marine and Harbours as the 19 hectares of land available for development would result in diminished returns on investment. This option, while still retaining the concept of providing for about 500 boats in the marina, would see the motel/boatel deleted, and also the caravan park and camping areas. Other facilities would also be reduced in available area.

Unlike Options 1 and 2 , Option 3 would be built adjacent to the Garden Island Causeway, which may cause some conflict with the Department of Defence, as, although the waters used are under the control of the Department of Marine and Harbours, they are immediately adjacent to Naval waters, and there is some concern that security, even if not compromised, would be rendered more difficult. Unlike the John Holland proposal in 1985, access to the marina via the Causeway does not now appear to be an option.

In addition, siting Option 3 adjacent to the Causeway would mean that much of the land available for development would fall within the restricted use buffer zone for the Point Peron Sewerage treatment works. All forms of residential development are excluded within that buffer. To expand development into adjacent reserves would conflict with the recommendations of the Cape Peron Study.

Although there are some superficial similarities between Option 3 and the John Holland Construction 1985 proposal, in that both would be built alongside the Causeway, there are also significant differences. The 1985 proposal would have resulted in less seagrass loss, and since that time, not only have there been increased seagrass losses, but the importance of seagrass has become better known and understood.

The earlier proposal was for a marina for 330 boats, from 8 metres to 15 metres in length. The current proposals all envisage at least 500 pens, to accommodate boats to a maximum of 20 metres. The enclosed water area would have been approximately 5 hectares for the 1985 proposal, as compared to the envisaged 15 hectares for all three options now being considered.

Land Use	Option 1 (ha)	Option 2 (ha)	Option 3 (ha) (See insert below)
Chalets	6.63	6.72	4.90
Boatel/motel	1.36	1.36	-
Yacht Club	0.65	0.65	1.00
Commercial Centres			
Tavern, shops, town square, restaurants, DMH and CALM offices, chandlery (including fuel, bait, boat sales etc)	1.81	1.04	1.80
Caravan park and camping areas	2.46	1.99	-
Lodge	0.53	0.85	0.50
Sports complex			
Health club, tennis courts, mini golf	1.75	1.6	0.50
Light marine industry	1.45	2.2	0.70
Boat hardstanding, dingy trailer park	2.56	2.38	2.70
Public open space, green belts, conservation areas, foreshore public space, public toilets, picnic areas, etc	8.00	2.63	2.20
Roads and public parking	3.18	2.10	4.70
TOTAL	30.38	23.52	19.00

	Option 3	Option 3(a)
Reclamation area	6.5 ha	5.8 ha
Basin and channel	13.0 ha	12.0 ha
Breakwater	1.0 ha	0.9 ha
total cut/fill	20.5 ha	18.7 ha
Area of seagrass	19.0 ha	17.0 ha
Area of undredged seagrass within the basin	2.1 ha	2.1 ha

The 1985 John Holland proposal affected about 15 ha of seagrass.

The reduction in area has been made by:

* reducing the width of the access road reserve from 20m to 15m;
* reducing the lease area available for a yacht club;
* reducing the commercial lease areas and relocating some carparks;
* reducing the length of the north breakwater, the length of the entrance channel and the area of the basin near the entrance.

Figure 2: Land use comparisons (Source: PER document p35 and correspondence DMH)

The marina would have been built from a breakwater to be built some 30 metres from the Causeway and parallel to it, in order to form a carpark. The area of landfill based developments has been vastly increased, even in Option 3 with an estimated 12.5 hectares plus the breakwater. Although the aspect of the marina in Option 3 faces the Causeway, and is somewhat reminiscent of the 1985 proposal, and Options 1 and 2 show a different configuration, the Department of Marine and Harbours has indicated that in all three options "...reduction in the mooring area is not considered an option..." (PER p 34) This is important in that the key environmental issues is the area of seagrass which would be lost.

Option 3(a)

The subsequent plan submitted, which is a variation on Option 3, marginally reduced the area of the built landfill, but in order to use the dredge spoil, would have resulted in a slightly higher development. Road access width would be slightly reduced, from 20m to 15m, the reclamation area reduced from 6.5ha to 5.8 ha, and the breakwater reduced from 1 ha to 0.9ha. The overall result of these marginal reductions would be to reduce the expected direct loss of seagrass from 19 ha to 17ha. This was a constructive attempt, but there has been no design which minimises seagrass loss, either in the location of the proposed marina, or in the dredge and fill design, which, with some size variations is similar for all four options considered.

3. Environmental impacts

The principal environmental concern with the proposed marina for all three options is the loss of seagrass. In 1985 it was thought that some seagrass lost could be re-generated, but more recent publications indicate that this now appears unlikely. A comparative table of estimated seagrass loss is shown in Table 1.

Table 1. Comparative Seagrass loss from different options

SEAGRASS LOSS COMPARISONS

Project-plan	Estimated seagrass loss	Comments
John Holland 1985	15 hectares	PER estimates 15 hectares lost, with a possible 4 hectares regenerated. -estimated impact on 10-15 hectares.
1992 -option 1(preferred by DMH)	32	comprising 18.4 hectares 'healthy'; and 13.7 hectares 'patchy'
1992-option 2	26	13.3 hectares 'healthy' and 12.7 hectares 'patchy'
1992-option 3	19	'healthy' seagrass
1993 -option 3(a)	17	'healthy'

Apart from the loss of seagrass, there were a number of other issues raised by people and organisations who made submissions on the PER document. The summary of issues raised in shown in Appendix 2, and the response from the proponent is in Appendix 3

3.1 The importance of seagrass

The PER document included a report on "Expected Impact of the Mangles Bay Marina on Seagrass Communities in Cockburn Sound " by Hillman & Bastyan. The report worked on the assumption that the marina would cause a loss of 26 ha of seagrass, which corresponds to Option 2 as currently proposed. They point out that the proposed development would result in the loss of the healthiest stand of *Posidonia* in the southern half of Cockburn Sound, and further, that "In view of the severe seagrass dieback already experienced in Cockburn Sound, a further loss of 26 ha is undesirable". The authors also express the view that "...whilst the loss should not seriously affect the existing ecology of the Sound, it is nonetheless undesirable, particularly at a time when the eastern fringe of the Southern Flats meadows appear to be receding."

Hillman and Bastyan note that seagrasses are unlikely to re-establish in the marina, but may eventually recolonise the approach channel. They further note that plant production would decline during site development, though adjacent seagrass beds would not be expected to suffer long-term serious deleterious effects. They also note a caution that any input of contaminants to the Sound or increased sediment deposits or water turbidity would be deleterious.

Seagrasses play an important role in maintaining the function and stability of temperate marine ecosystems in many coastal regions of Western Australia. These meadows contribute to sediment stability through the action of 'baffling' water movement[1,2], the *in-situ* formation of calcareous sediments[3], trapping and binding of sediments[4] and organic matter[5]. Offshore seagrass meadows contribute to coastal stability through provision of sediment and dampening of wave energy[6,7] and to ecosystem and fisheries maintenance through their contribution to primary production[8]. The provision of habitat for commercially important adult and juvenile animals[9,10] and many other aquatic animals[11,12,13] by seagrass meadows and nearshore accumulations of detached material[14] is well documented.

Clearly, significant losses of seagrass meadow coverage or organic matter production, either through direct removal or via more indirect routes such as the effects of eutrophication can have serious effects in, or adjacent to, areas where seagrasses are the dominant primary producing organisms.

Recent published advice suggests that approximately 90% of seagrasses have been lost from Cockburn Sound with the last remaining seagrass meadows on the southern margin being located in Mangles Bay and on Southern Flats. Indications are that seagrass decline is continuing on the Southern Flats (PER Appendix 6). Whereas distinctions have been made between 'healthy' and 'patchy' seagrass, it needs to be noted that while live seagrasses remain, even if the overall meadow has been somewhat depleted, leaving a 'patchiness', they still perform significant ecological functions.

The loss of seagrass which would occur as a result of the marina construction was considered within a local context and within the overall context of the regional losses of seagrasses as a result of industrial and domestic waste discharge into Cockburn Sound in the 1960s and 1970s.

Probable magnitude of seagrass loss

The DMH preferred option in the proposal before the EPA involves the direct loss of some 32 ha of seagrass habitat in Mangles Bay and is likely to cause further 'indirect' losses of habitat to the periphery of the marina area. It is suggested in the PER that '...this (direct) loss may be offset to some degree by regeneration in the unused swing mooring areas and possible recolonisation of the marina basin and entrance channel, but this is only likely to occur in the very long term.' The current scientific understanding of seagrass ecology clearly indicates that *Posidonia* seagrasses have very slow rates of lateral spreading and therefore, re-growth into the areas denuded by swing moorings would take decades to centuries under favourable conditions. Long-term recolonisation by *Posidonia* seedlings has not been reported anywhere in the world.

For these reasons, loss of *Posidonia* seagrass meadows is considered irreversible change and therefore the potential for re-growth or re-colonisation should be dismissed in the assessment of the likely impacts of this proposal on the seagrass meadows of Cockburn Sound.

In addition to the predicted direct losses of seagrasses there is a high potential for additional 'in-direct' loss of a further 30 ha (approx.) of seagrass in the area between the Garden Island Causeway and the Marina as a result of the marina construction. Water circulation will be restricted and retention times increased as a result of construction of the breakwaters which in turn is likely to have a significant detrimental effect on the already poor health of this seagrass meadow. The partial enclosing of the waterbody will increase the nutrient loadings received and will affect more seagrass than that which is actually lost by the area taken up by the marina itself. Additionally, stage 2 of the marina development, flagged in the PER document but not a component of this proposal, would overtop this section of meadow and directly cause its death. The actual loss of seagrass for the preferred Option 1 will be at least 32ha through initial direct effects and most probably about 60ha in the long-term taking into account likely indirect effects.

Ecological consequences of seagrass loss from Mangles Bay

The seagrass meadow in Mangles Bay has been affected in parts by the action of swing moorings. Further, there are high levels of algae growing on the leaves of the seagrass, presumably as a result of high inorganic nitrogen in the water. These algae reduce light reaching the seagrass. However, the seagrass in Mangles Bay still maintains an important ecological function at present, including the production of organic matter, the provision of habitat, and as a significant nursery area for fish.

Organic matter production has been estimated at between 3 and 5 tonnes/ha/year in the remaining seagrass meadows in Cockburn Sound[15]. The loss of 32 ha of meadow would result in a reduction in organic matter production of between 100 and 160 tonnes/year. If the seagrasses between the proposed marina and the causeway were also lost , the estimated loss of leaf production would increase to between 200 and 320 tonnes/year. This represents a significant loss in food source for fish, crabs and prawns.

Seagrasses are known to provide shelter and habitat for a wide range of animals including juveniles and adults of many recreationally and commercially important species of fish. Preliminary results of a study being conducted by Murdoch University (L. Jonker pers.comm.) indicate that this meadow supports a significant population of fish larvae; equivalent to sites on the eastern margin of Garden Island in terms of species diversity and composition and higher in terms of abundance. As such it maintains an important ecological role as a nursery area for these animals.

Clearly, *Posidonia* seagrass meadows are important to the functioning and stability of the temperate marine ecosystems in Western Australia and to the stability of the adjacent coastline. Recent information suggests that the seagrass meadows in Mangles Bay, albeit degraded, still function as important nursery areas for fish life.

The Environmental Protection Authority is also concerned that the existing swing moorings in Mangles Bay have a detrimental effect on seagrass. The areas affected are largely what has been called 'patchy' seagrass, however such areas are still ecologically important and should be protected.

The Environmental Protection Authority has concluded that alternative moorings to provide a minimised impact facility should be considered to overcome this existing problem. The Environmental Protection Authority is of the view that there should be no new swing moorings and that existing moorings should be converted to cyclone or other low-impacting moorings. Whereas the chances for regeneration of seagrasses already damaged appear negligible, it is essential that there be no further avoidable losses.

In assessing the environmental acceptability of activities which may impact seagrass meadows, losses in areal coverage must be considered irreversible. Given that only about 10% of the original area vegetated by seagrass in Cockburn Sound proper remains, activities that result in damage, either direct or indirect, to seagrass meadows of Cockburn Sound are considered environmentally unacceptable in the context of the cumulative impacts through time on the seagrass meadows. The Environmental Protection Authority can not, therefore, support proposals which would result in increased seagrass losses.

3.2 Other issues raised

Appendix 1 gives the list of issues as raised by public submissions to the marina proposal PER document. The principal concern was the loss of seagrass, with attendant losses to fish nursery grounds, and crab nursery grounds. Other environmental issues referred to perceived problems with tidal flushing, nutrients, pollution of the waters (and increased eutrophication) of Cockburn Sound, and effects on the beach environments.

The high nitrogen loading to Mangles Bay from the Lake Richmond Drain identified in the PER document (Appendix 12) is clearly detrimental to the health of the local seagrass communities and to a lesser extent to the health of the Cockburn Sound ecosystem as a whole. It is possible that greater controls on phosphorus inputs, and the more rapid export from the Lake to the sea may reduce the likelihood of blue-green algal blooms fixing atmospheric nitrogen, and thus increasing the nutrient problems. One of the key issues here is the flushing of the nutrients into Mangles Bay. As indicated in the consultants report in Appendix 12 of the PER "..a marina does represent a partially enclosed waterbody that will receive a definable nutrient loading." As indicated later in the same report, elimination of this input to the marina precinct would be most desirable, as would rapid flushing. It should be noted that the location of the drain outflow to the waters of Mangles Bay would especially flow into enclosed and contained waters for Options 1 and 2, thus again having a severe impact on the seagrasses. Option 3 shows the drain flowing into a somewhat more open stretch of water, but again, the impact of the marina development would curtail the rapid dispersal of these already very high nutrients, and thereby contribute to further damage to the seagrasses.

This concern with regard to the protection of seagrass in the area from nutrients, a significant proportion of which come from the Lake Richmond Drain is a matter for the City of Rockingham. The City of Rockingham could investigate the feasibility of facilitating discussions between the City, the Water Authority of Western Australia, and the Office of Catchment Management in an attempt to resolve these issues through an improved management system as a matter of priority.

The Environmental Protection Authority encourages the City of Rockingham to consider what alternatives could be implemented to avoid the impacts of nutrients and pollutants from the Lake Richmond drain on the waters of Mangles Bay.

Many submissions referred to losses in public amenity, and lifestyle changes which the proposed development would engender. Other concerns focussed on safety issues, and emergency plans to safeguard water quality (e.g. from fuel spills or failures in fuel lines) to safety of people in the area. In addition, the proximity to gazetted Naval Waters and the potential for security problems was raised as an issue by the Department of Defence.

There were some submissions which gave some support to the proposal, including from private consultants acting on behalf of unnamed principals who may have a further interest in the development once approvals had been obtained. Of some concern was the view that all commercial sites should be made available as freehold, and that in some cases private ownership of beachfront or foreshore areas may be desirable. This is in direct conflict with EPA principle that public access to beaches and foreshores should be protected in perpetuity.

Further it was suggested that approval should not lock in any particular design and that approval for modifications should be made without further formal or public assessment.

This report will not deal in detail with other issues raised, except to note that there was considerable opposition to this proposal on environmental and social grounds. The principal issue, however, remains the unacceptability of seagrass loss in an area which has already lost some 90% of seagrasses in the last two to three decades, and the increased information to hand on the vital importance of seagrasses. Clearly further research is needed, and a policy outlining the importance of seagrasses, similar to that for the preservation of mangrove habitats is required.

4. Conclusions

Approximately 32 ha of seagrass meadow (comprising 18.4 ha of healthy seagrass and 13.7 ha of `patchy' meadow) would be destroyed via dredging and filling operations associated with the marina construction under preferred Option 1. This loss is environmentally unacceptable. Under Options 2 and 3 the area of seagrasses directly lost, but would be less but still an environmentally unacceptable loss. Under Options 1 and 2 an additional 30 ha is considered likely to be severely affected and most probably lost as a result of the marina development. This would be in the area between the development itself and the Causeway. Construction of a marina at this location will inevitably have a significant impact on remaining seagrass meadows within Cockburn Sound. Assuming that 750 ha of seagrass remain in Cockburn Sound, the construction of the marina will cause irreversible loss to the remaining seagrass in Cockburn Sound.

The major ecological implications of this loss would include a reduction in primary productivity and a significant reduction in the available nursery area for juveniles and habitat for the adults of many important animal species.

Given the ecological significance of seagrasses and that about 90% of the original area vegetated by seagrass in Cockburn Sound in the 1960s has been lost, the level of acceptable cumulative impact has been grossly exceeded. Therefore, the Authority considers that activities that result in further significant irreversible damage, either direct or indirect, to seagrass meadows of Cockburn Sound are environmentally unacceptable. It is considered essential that any proposal for a marina would have to be located and designed so as to minimise seagrass losses. None of the proposals currently before the Authority have succeeded in achieving this.

In the interests of consistency of advice, comparisons were made with the 1985 John Holland proposal, even though the approval time frame had long since expired. The John Holland proposal was for a considerably smaller marina of 330 berths, taking smaller boats (from 8 to 15 metres) as compared to the current proposal which would berth up to 500 boats of up to 20 metres. It was expected that the proposed breakwaters for this small marina would enclose a water area of some 5 ha as compared to the 15 hectares which these proposals would enclose.

The Environmental Protection Authority therefore makes the following recommendation

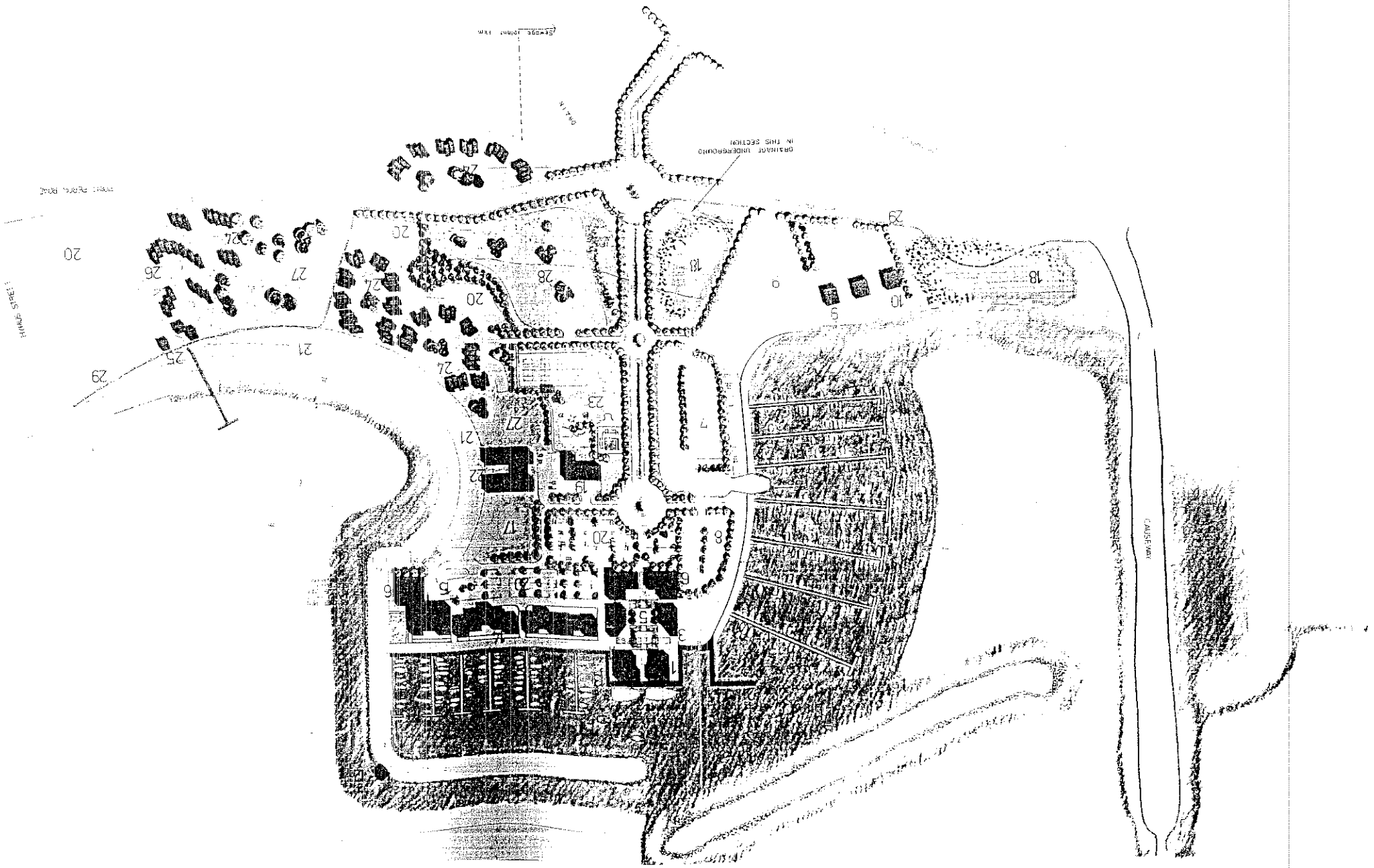
Recommendation 1

The Environmental Protection Authority concludes that the proposed marina at Mangles Bay is environmentally unacceptable and should not proceed.

In reaching this conclusion, the Authority identified the main environmental factor as the significant impact on the remaining seagrass in the Mangles Bay area and the ecological significance of preserving the small amount of seagrass that remains in Cockburn Sound.

Appendix 1

Diagrams of proposed marina options(including JHC 1985)



DMH OPTION 1 1992

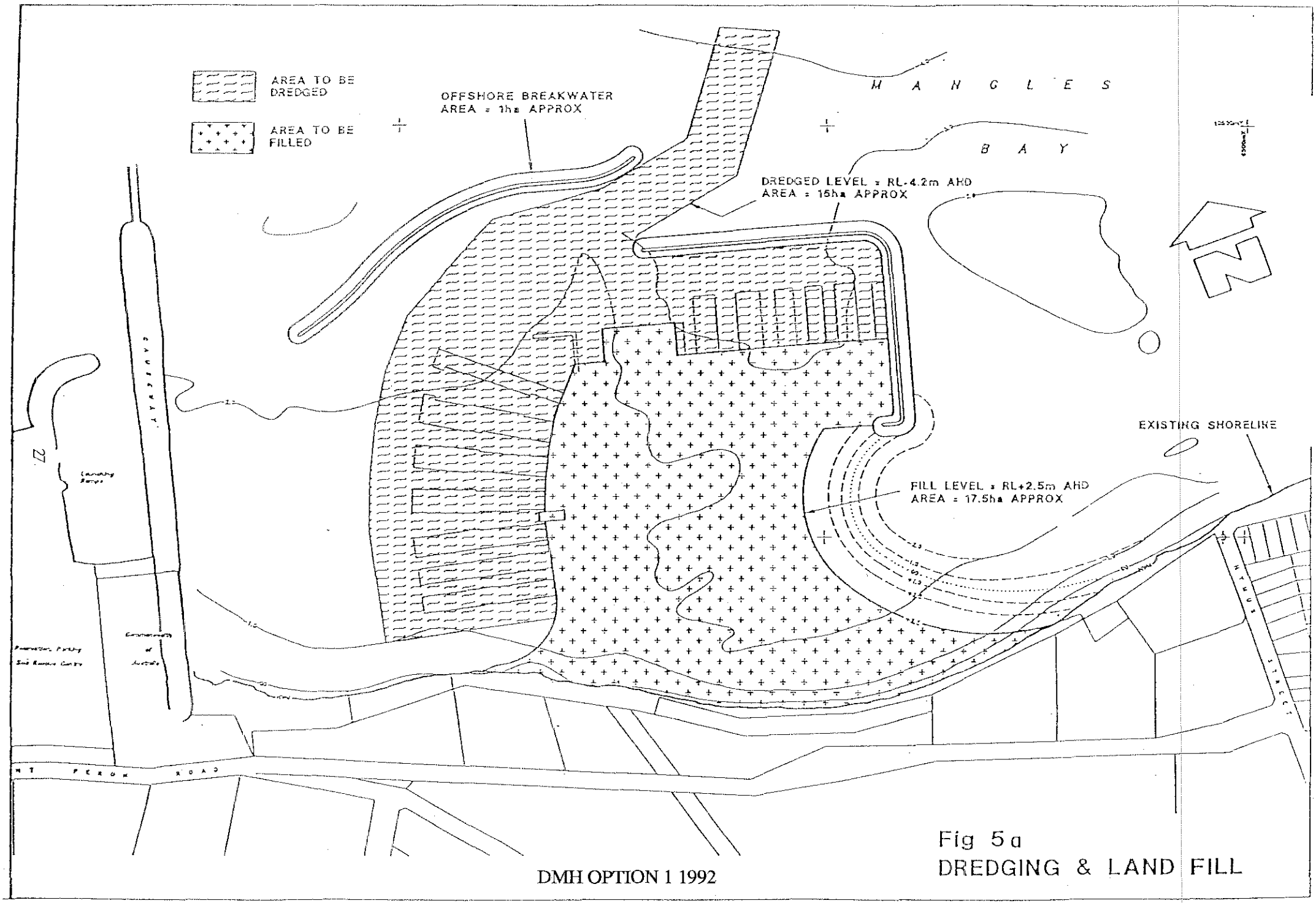
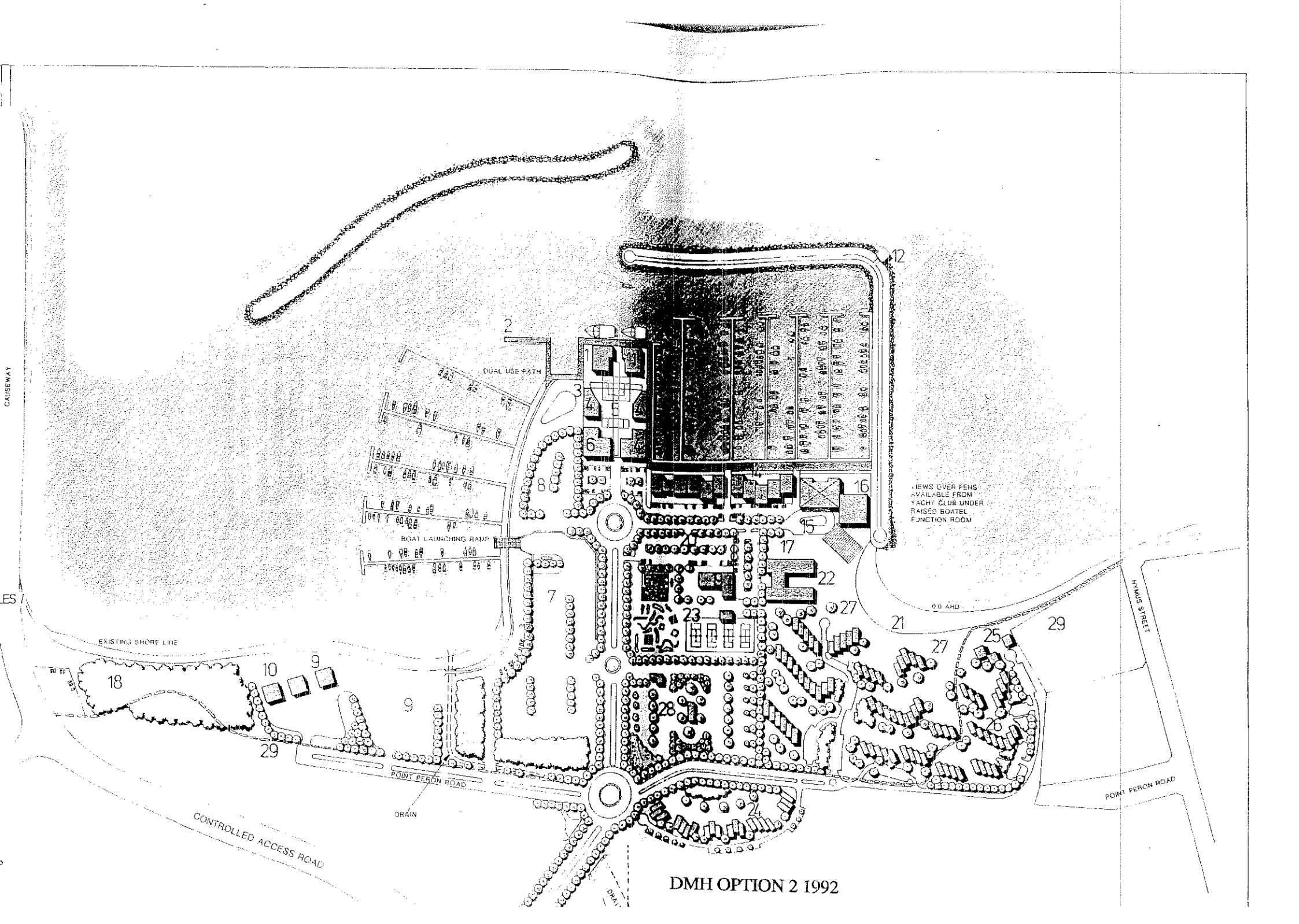


Fig 5a
DREDGING & LAND FILL



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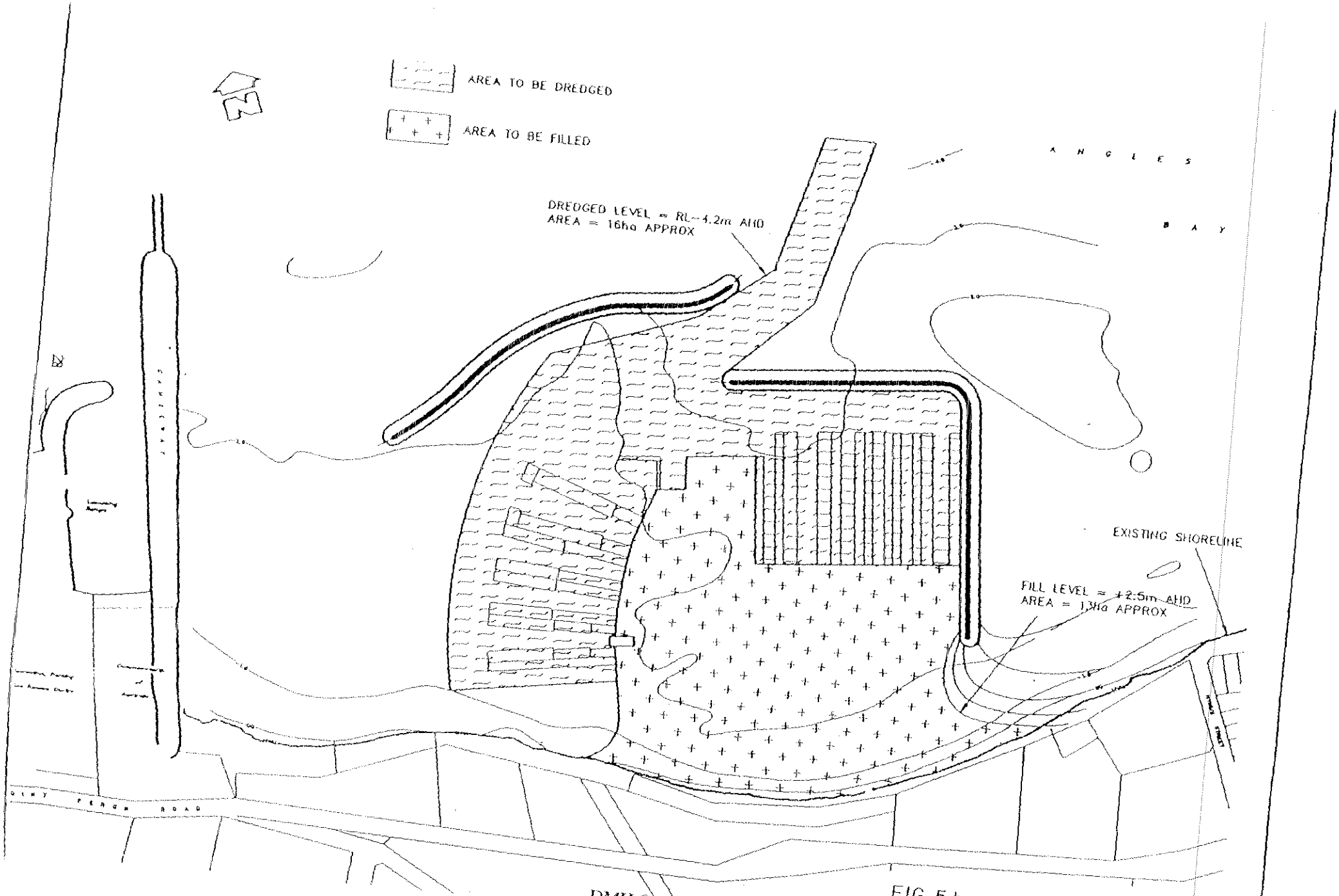
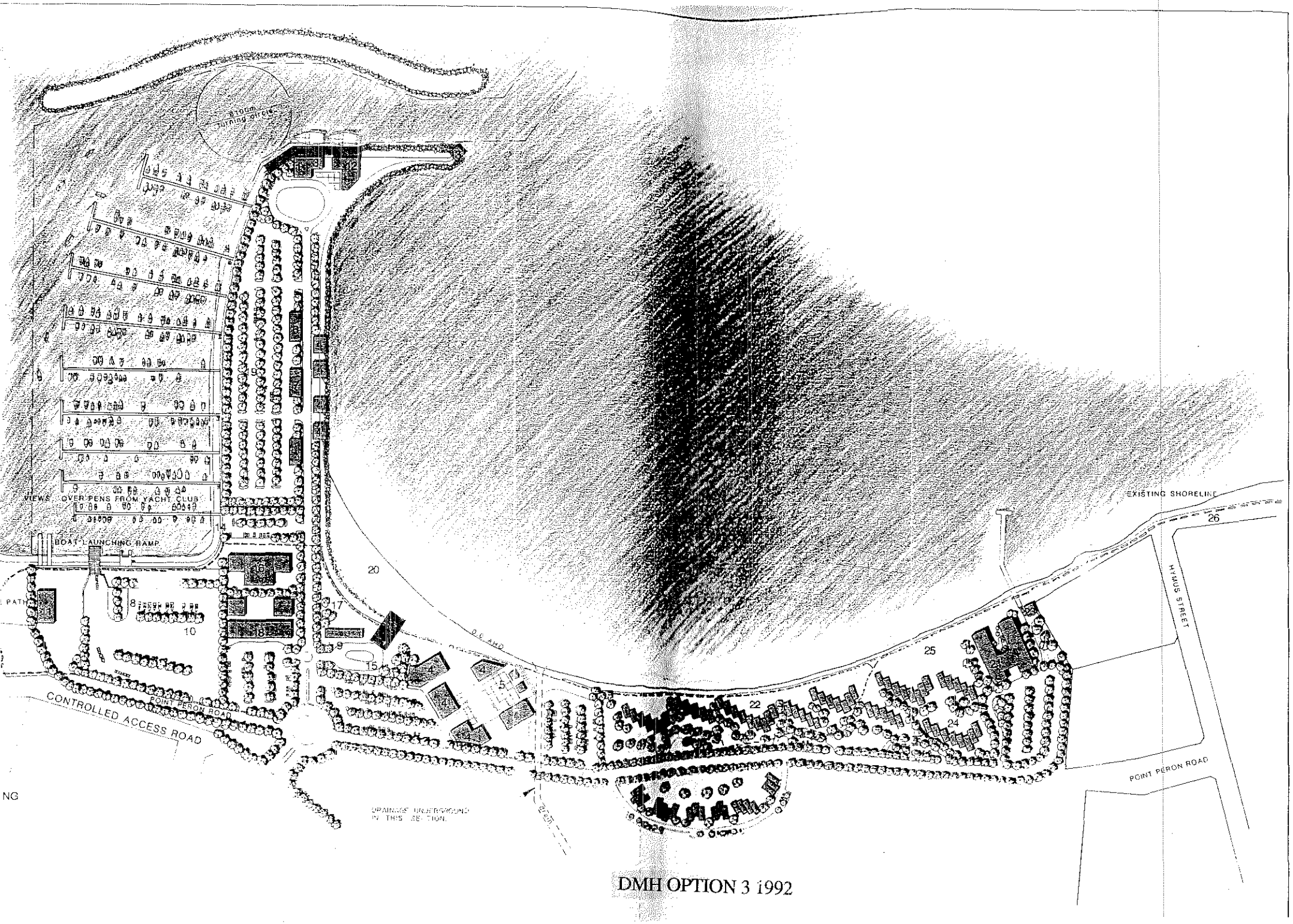


DMH ORTION 2 1992

FIG 5b
DREDGING & LANDFILL -
ALTERNATIVE PROPOSAL



DMH OPTION 3 1992

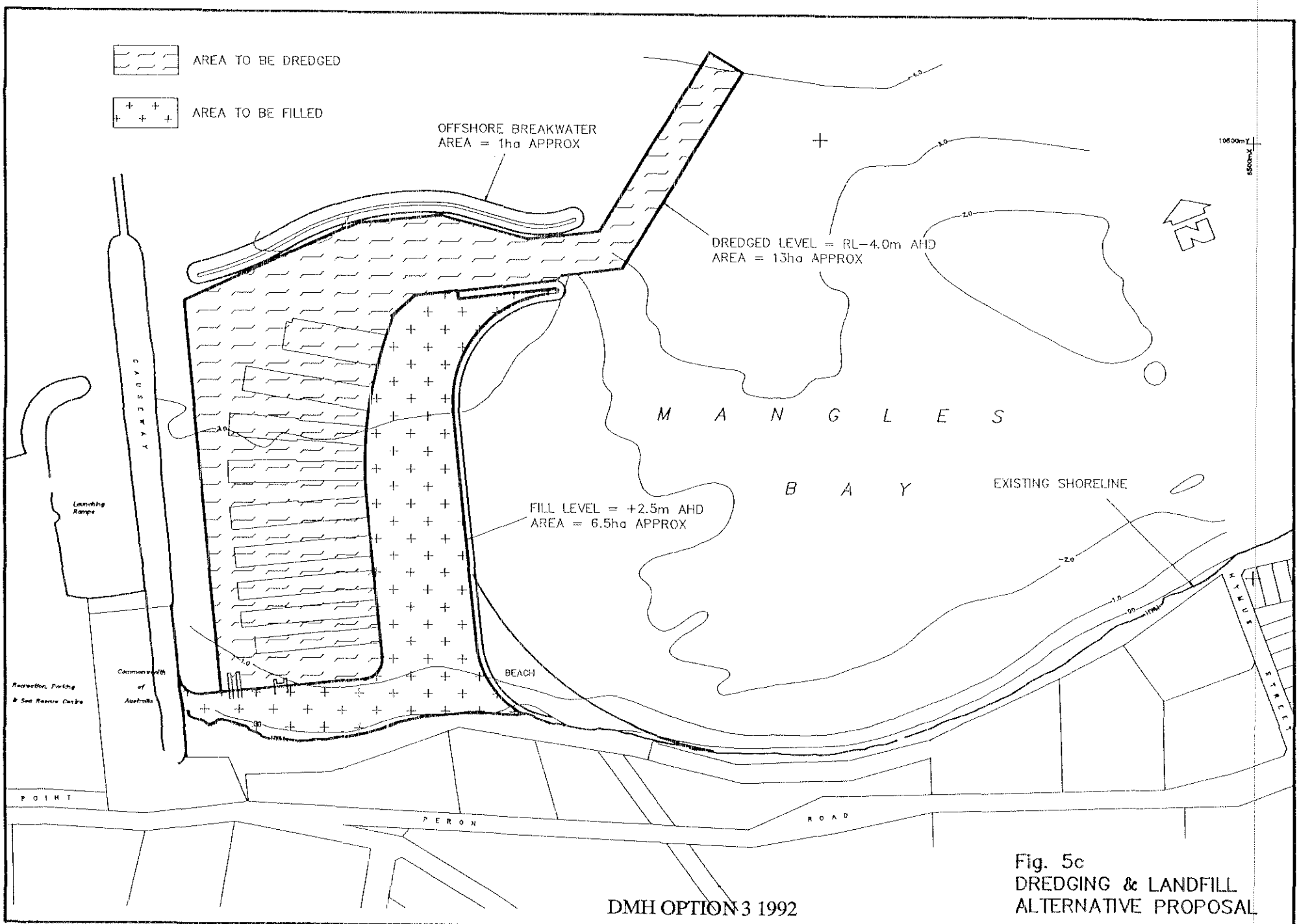


Fig. 5c
DREDGING & LANDFILL
ALTERNATIVE PROPOSAL

DMH OPTION 3(a) 1992

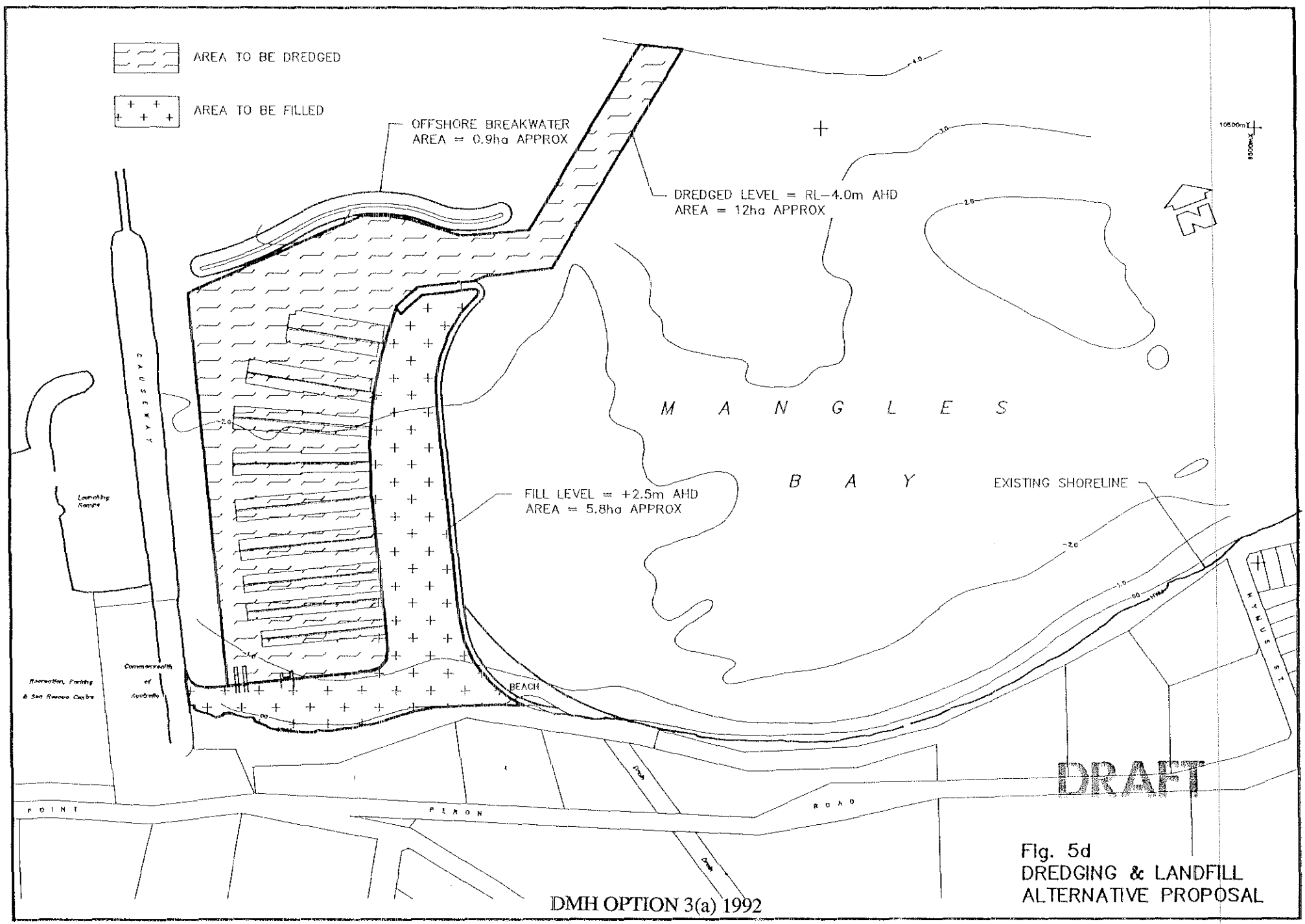
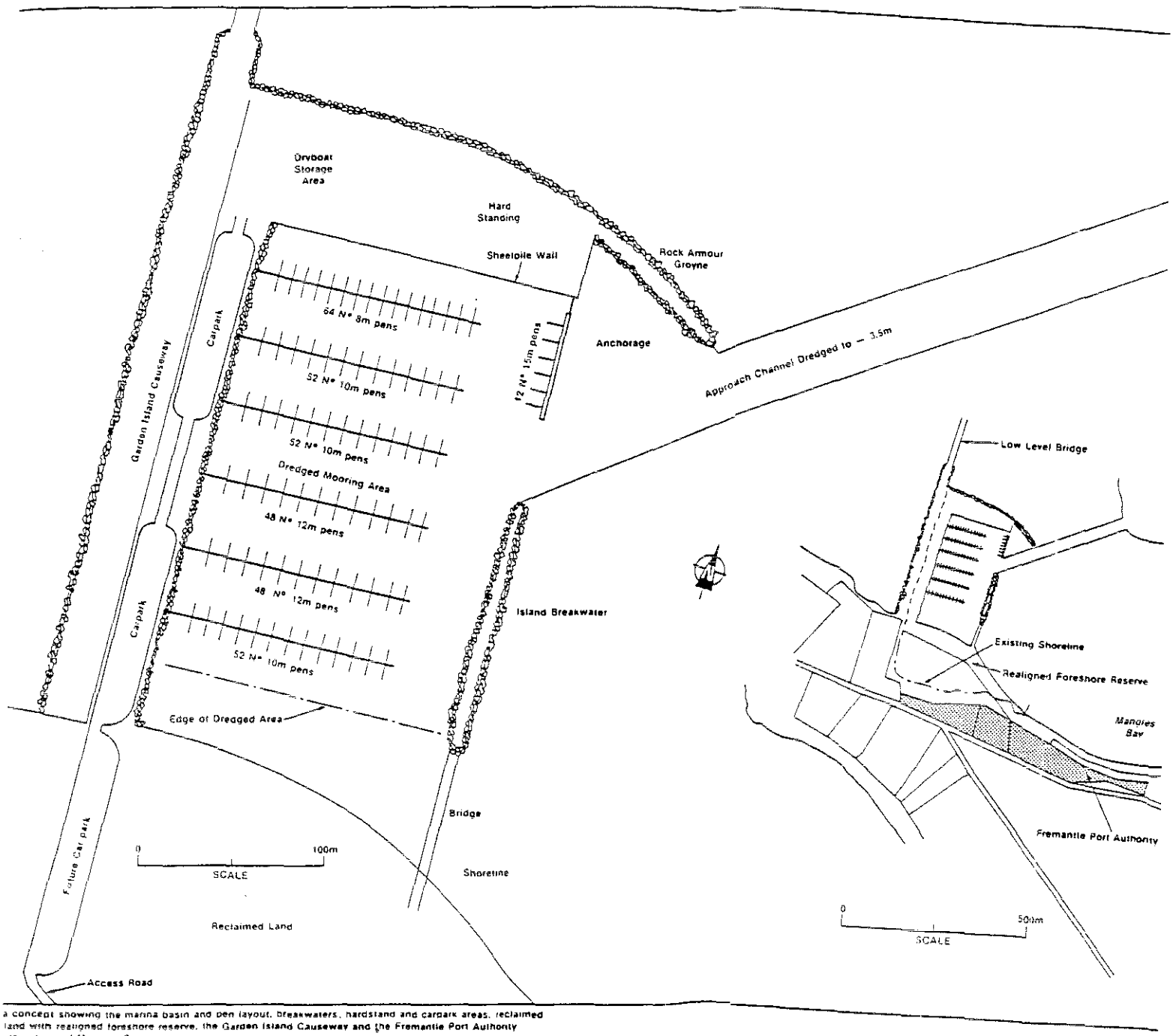


Fig. 5d
DREDGING & LANDFILL
ALTERNATIVE PROPOSAL



a concept showing the marina basin and pen layout, breakwaters, hardstand and carpark areas, reclaimed
land with realigned foreshore reserve, the Garden Island Causeway and the Fremantle Port Authority
) the shore of Mangles Bay.

John Holland Constructions (1985)

Appendix 2

Summary of issues raised during public submissions

AN ENVIRONMENT WORTH PROTECTION

Executive Director
Department of Marine and Harbours
PO Box 402
Fremantle WA 6160

Your ref:
Our ref: 76/85
Enquiries: Katrin Wilson

Attention: Mr Peter Boreham

MANGLES BAY MARINA (ASSESSMENT 247)

Further to previous discussions on answers to questions raised during the public submission period, please find attached a list of questions for your response.

A copy of these questions and your responses will be appendicised in the Environmental Protection Authority's assessment report. The Authority will, if necessary, include specific comments on issues with potential environmental impacts which are not adequately covered by your response.

Under the Environmental Protection Act 1986, the Authority's report is subject to a 14 day appeal period. During this period the public may appeal the Authority's Report and Recommendations. An incomplete answer to any of the attached questions could cause the public to appeal and this would delay the setting of Ministerial conditions. Accordingly, please ensure that you give a full and reasoned answer to each question.

The general issues of concern in the submissions include:

1 Loss of seagrass

A considerable number of submissions referred to the estimated loss of seagrass in the building of the Marina. The environmental significance of the remaining seagrass in Mangles Bay was the most frequently noted matter of concern. Some queried the percentages quoted, but the effects on the marine ecosystems, on fish and crab nursery grounds, and the already severe depletion of seagrass, whether due to swing moorings, pollution or other causes were noted to be unacceptable by many submitters.
One of the issues raised with regard to seagrass referred to studies which had demonstrated that even degraded seagrass meadows still have significant ecological importance.

Environmental
Protection
Authority
Westralia Square
141 St Georges Terrace
Perth Western Australia 6000
Telephone 09 222 7000
Facsimile 09 322 1598

Although degraded seagrass areas were found to have lower biodiversity, there was a greater abundance of those fish species which were found in the Mangles Bay area. This added concern about loss of degraded seagrass to the more commonly expressed concern about healthy seagrass meadows which would either be destroyed or significantly degraded or diminished by the proposals. It was noted that the loss of seagrass has serious implications both for the stability of the seabed and for the health and replenishment of aquatic biota.

2 Protection of the fish and crab nursery grounds

This relates to the loss of seagrass, but was specifically mentioned by a number of respondents who were concerned not only for the marine ecosystem as a whole, but specifically about the impacts on professional and amateur fishing stocks.Concern was also expressed that the proposed development would alienate the area where people can currently access crabbing grounds.

3 Effects on the fragility of the landscape in the Cape Peron area, beach, dune and sand erosion

Concerns were expressed about additional vehicular traffic on foreshore roads, and increased people pressures, as well as the effects of the construction and use of the proposed marina itself on sand movements, beach and dune erosion, and the environmental effects on the fragile landscape. Also of concern was the destruction of remnant native vegetation in the area. Others expressed additional concerns about wind erosion. One submission noted that the stretch of natural beach at Mangles Bay is part of a finite resource which should be preserved for future generations.

4 Water quality, tidal flushing.

Some concerns were expressed about the effects of the marina on water quality. There was concern that there would be some silting up of the water, leading to stagnation, that there would be inadequate tidal flushing, and that litter, pollution from, among other things, fuel spills, as well as over-fishing, and anchor drag would severely affect water quality in the Mangles Bay, with consequent effects both on the environment and on general amenity of the area. The closer the marina to the causeway, the greater the potential for stagnation of water in the south-west corner between the causeway and the marina, and the greater the potential for tidal flushing to be inadequate.

5 Impacts of dredging and filling

Concern has been expressed that it seems illogical to fill in the bay (the deep part where boats are currently moored) and yet dredge the shallow part. The issue has also been raised that an artificial promontory on the east will not protect Mangles Bay from north-west winter gales, and so will not only cause seagrass destruction, (see issue 1),but is in the wrong place.

6 Design of the proposed marina

A number of submissions focussed on the design of the marina. For instance, it was noted that boats entering in the afternoon would need to go up a channel against the prevailing south-west wind, whereas a north wall may provide some protection from both south westerly afternoon winds, and north-westerly winter gales. Other suggestions included the idea of a sea-wall to be built from Hymus Street to the Causeway, with culverts to allow for water flow (to overcome predicted flushing problems e.g. issue 4).

Other submitters noted that the site was unsuitable as masted vessels travelling could not pass under the Garden Island bridge, and would have to go north to come south into the marina.

A similar point was made when it was indicated that it was doubtful that boats in transit would find the marina a suitable safe refuge. As the proposed site is some 30-45 minutes sailing time from Fremantle, boats travelling south would remain in Fremantle in inclement weather.

On the other hand, those travelling north would be well advised to make for Fremantle, or take refuge in Safety Bay, which is protected from northerly storms, rather than attempt to enter the waters of Cockburn Sound between Point Peron and Garden Island, or go north around Garden Island, to turn south again into an area not well protected from northerly or north-westerly storm winds.

A number of other submissions regarded the proposed development as far too elaborate for the needs of the area. Suggestions were made that a small pylon jetty would be preferable, that a small breakwater to provide shelter from the north, or that some upgrading of existing facilities would be desirable, but nothing as expensive or environmentally damaging was warranted. One submission noted the need for properly designed and sheltered pens, but with provision for facilities for existing users.

7 Compatibility with Cape Peron Study

In line with the previous issues, concern was expressed that the marina proposals were released before finalisation of the Cape Peron Study land use plans for Cape Peron .

It was noted by several submitters that when Point Peron was transferred to the State from the Commonwealth an agreement was reached that the area was to be used for recreational purposes. The inclusion of commercial ventures in the proposed marina was regarded as going against that agreement. One suggestion was that the rationale for the land-fill was so that commercial ventures could then be built on land which may technically not be part of the Point Peron area. Other comments on the need for compatibility with the Cape Peron study noted that parts of the Cape area may be suitable for a regional park to be managed by the National Parks and Nature Conservation Authority. In general, there was some unease among submitters that uncertainty in relation to the integration of plans for the Cape Peron area made it difficult to predict all the likely impacts of the marina proposals.

8 Chemical Plumes in Cockburn Sound

Reference was made to a study of industrially generated chemical plumes in Cockburn Sound, which may challenge some conclusions in the PER, especially in relation to water quality, and effects on seagrass. A further point was raised which suggested that expected contaminant loadings to the marina (largely from the Lake Richmond Drain)would be of sufficient magnitude as to contradict Government Policy to protect and rehabilitate the W.A. coastal area wherever possible. Stringent environmental management programmes and controls will be needed.

9 Upstream effects. Effects of other developments.

Concern was expressed about both the ecological and social effects of the proposed marina on other areas of the Cockburn Sound and nearby coastal area, as well as the effects which other nearby developments may have on the marina proposals themselves. For instance, similarities in development proposals for Port Kennedy and Secret Harbour were noted to reduce or obviate the need to duplicate such facilities at Mangles Bay. It was also suggested that there should be no more developments in Cockburn Sound because of previous damage to the waters and coastline of the Sound.

10 Need for more studies

Apart from the Cape Peron Study Report, a number of submitters expressed the view that a number of other studies, some of which were already well advanced, should have their findings published before any approvals were given to the marina proposals. These include the Southern Metropolitan Coastal Waters Study, and the above-mentioned study of contaminant loadings into Cockburn Sound. Environmental Quality Objectives are still being established, and this should be done to protect Cockburn Sound before developments such as the proposed marina proceed.It was also noted that there was a need for clearly defined guidelines on the protection of seagrass, similar to those criteria being proposed for determining the conservation significance of mangroves.A study of the significance of the area as a crab nursery area was also requested.

Another issue raised was a need for further study of siltation problems on the foreshore at the southern end of Cockburn Sound, right through to the Kwinana grain jetty. As with many of the other requests for more studies and more information, it was noted that Cockburn Sound had suffered significant degradation, and the development of a marina was considered premature, especially in the absence of more studies which could provide reassurance that further environmental damage would not occur.

11.Naval Waters and Navy Property

Concern was expressed that a marina adjacent to the Causeway would place the development very close to, if not actually inside gazetted Naval Waters under the control of the Naval Waters Act. As such, the Navy's ability to close off Naval Waters in times of emergencies could be compromised. As well, the situation would be exacerbated by the permanent siting of many small boats close to one entrance of HMAS Stirling.

Further, Options 1 and 3 were seen to involve buildings being sited close to Naval property, and thus the potential for conflicts in future developments or expansion of facilities required by either the Navy or the marina developers.The proposed marina may also cause beach erosion which could have adverse consequences for the Navy's carpark and the causeway.

12 Effects on existing Mangles Bay boat users

A number of sub-issues were raised. For instance, concern was expressed that access to low-cost moorings for the present users of the area would be severely restricted. Many of those who now use the area are retirees and pensioners, and the expected costs of the marina, and access to it, as well as the loss of existing facilities was seen as a major negative impact of the entire marina proposals. It was noted that there appeared to be no transitional arrangements from present low cost use to the proposed marina facilities, which were seen as catering exclusively for people, largely from outside the area, with considerable financial resources, leaving the present users with few alternatives to the high cost of leased pens.Some noted limited support for upgraded facilities, for properly designed and sheltered pens, but with continued provision of low cost facilities for existing users.There was an expressed need for low cost facilities such as swing or pile moorings.

13 Future of existing low-cost accommodation, holiday camps.

This was again a major issue raised by many submitters.

It was noted, for instance, that leases were to be terminated in 1993 for a number of low cost holiday accommodation places which had been used for many years by charity and social groups. This was seen to be a significant loss of social amenity for people of restricted financial means. Concern was expressed for property owners whose places would be resumed by a marina development. Any commercial development in the Cape Peron area, apart from being seen to contravene the Commonwealth State agreement, was also seen as leading to the eviction of long term tenants and residents, an end to cheap holidays for people of meagre means, and a locking out of lower income people from an area which has traditionally been used for the provision of this public and social amenity.

One respondent noted the need for short term accommodation available to the general public, while others expressed concerns that the marina development would preclude such short term accommodation being available at low cost. The needs and wishes of existing tenants and lessees were seen to have been disregarded in the plans for the marina development.

14 Disturbance of public amenity for existing users, community groups and local residents

Issues raised included a generalised view that existing users of the area would have their lifestyles and public amenity disrupted, and that any social benefits which may accrue would not include them. For example, the provision of new commercial premises was seen as meaning a loss in clientele, and hence livelihood for existing shopkeepers.

It was noted also that the Mangles Bay Fishing Club, for instance, would lose its registered jetty, ramp and hard-stand area.Others noted that the Cruising Yacht Club would lose it's foreshore area, and that a number of holiday camps, having served a valuable community function for many years, would be forced out. Concern was also expressed that there was a need to maintain a jetty for unloading commercially caught fish, and provision did not appear to have been made to maintain existing facilities.

A number of submitters noted that many 'locals' were retirees and pensioners who had moved to the area, or used the facilities there for many years because they were inexpensive. The impression was that they were being displaced in favor of 'outsiders' with money.One short submission noted the writer to be "in total disagreement with this proposal and feel the area should be left to its current use and not developed. There are plenty of areas further south between Safety Bay and Mandurah without interfering with areas in current use by the community groups". This was the general tenor of many submissions, as well as an expressed dissatisfaction with the amount of public participation and information.

15. Marina Emergency Plans and Safety Management

Concern was expressed at the apparent lack of integration of Emergency Plans and Safety Management Systems. A series of questions has been posed with regard to this.

i) What education process will be implemented by the proponent with regard to

*small craft navigation in Fremantle Port Authority waters

*Boat owners' liability with regard to large vessel movement

*boat owners refuelling within the proposed Marina?

Appendix 3

Response to submissions

DEPARTMENT OF
MARINE & HARBOURS
WESTERN AUSTRALIA

1 ESSEX ST., FREMANTLE
P.O. BOX 402 FREMANTLE, W.A. 6160
TELEPHONE (09) 335 0888
TLX: 94784 FAX: 335 0850

Your Ref:
Our Ref: PB/330/88
Enquiries: P Boreham

6 April 1993

Chairman
Environmental Protection Authority
Westralia Square
36 Mounts Bay Road
PERTH WA 6000

Attn: Ms K Wilson

MANGLES BAY MARINA (ASSESSMENT 247)

The following is our response to the questions raised during the public submission period as listed in your letter of 29 January 1993.

1. Loss of Seagrass

The loss of seagrass has been recognised in the PER as the most significant environmental impact resulting from the marina construction. As concluded in the PER, the Department of Marine and Harbours and the Marina Steering Committee believe that the advantages to the community of a marina at this site are significant and outweigh the disadvantages of the loss of a small amount of the remaining seagrass in Cockburn Sound.

The seagrass loss will be within the marina basin, and the seabed stability will not be affected. See PER, Section 7.2.2.

2. Protection of the Crab & Fish Nursery Grounds

Concerns have been expressed about the loss of seagrass on the basis that the seagrass meadows are important fish and crab breeding grounds.

As the population increases, so will the demand for moorings in this area. If a marina is not available, then there will be an increased demand for swing moorings and, based on demand predictions, this could increase the size of the swing mooring area five-fold over the next twenty years. The widespread damage to the seagrass meadows, which would result from this, would be unacceptable, and it is likely that restrictions would have to be placed on swing mooring.

(mb18)6es

3. Effects on the Fragility of the Landscape in the Cape Peron Area, Beach, Dune & Sand Erosion

These issues have been addressed in the following sections of the PER:

6.2.4	The Terrestrial Environment
7.3.4	Terrestrial
7.4.1.1	The Beaches
7.4.5.2	Dust
7.4.6	Traffic
8.5.3.2	Beach stability

The existing land area behind the beach has been highly disturbed and the habitat value is low. Existing *Acacia* groves will be substantially retained. When the development is completed, there will be more extensive quality vegetated areas than presently exist. If the development proceeds, it is inevitable that existing dunes and beaches within the harbour reserve will be modified. The development will be designed to ensure that the beaches remain stable. Any potential problems can be managed.

4. Water Quality, Tidal Flushing

The effects of the marina on water quality have been dealt with in considerable detail in the PER (Section 7.2.5), including the management of rubbish, fuel spills and general pollution. Tidal flushing is dealt with in Appendix 11. The implications of contaminant loading from the Lake Richmond Drain are dealt with in Appendix 12.

The marina provides for the development of mooring pens and, therefore, anchor drag will not be an issue. In any event, the bed of the marina basin will be clean sand.

Discharges from the Lake Richmond Drain have not caused any previous concerns. It has been acknowledged that there should be some monitoring to determine whether the present situation is worsened by routing this discharge through the marina basin. It has been agreed that action would be taken to remedy any problems caused by the build-up of nutrients from the drain. It is believed that, with proper management, the marina will not cause any net worsening of water quality in and around the marina site.

5. Impacts of Dredging & Filling

Clearly, there are many options for a marina development in this area. The options submitted by the Department are considered to be satisfactory from a planning and operational point of view, given that there are a number of known constraints.

Each of the three options has been designed to provide adequate protection for boats moored in the marina. Analysis to determine a design wave for the marina is shown in the PER, Appendix 4.

ii)Will the proponent integrate the proposed Marina Emergency Plan with that of the Fremantle Port Authority?

iii)Will the proponent establish a Safety Management System for the Marina so as to mitigate risk to the satisfaction of the appropriate Authority? Will any Emergency Plan be prepared?

iv) Will the proponent consult with the Fremantle Port Authority with respect to consequences of any incident that has potential to impact on the area under that Authority's legislative control?

v)What standards will be applied with respect to fuelling facilities? Will refuelling be supervised? Will there be drip trays under the jetty? How will these standards be maintained?

vi)In the event of a catastrophic failure in the fuel pipeline, what procedures are proposed by the proponent to prevent resultant pollution impacting on the Fremantle Port Authority's area of control? What measures are proposed to prevent pollution of marine and terrestrial environments?

16 Support

There were several submissions which indicated partial or unqualified support for the project. Some indicated a preference for one or other option, and others suggested that there should be a greater flexibility with regard to design, tenure of sites (including proposed commercial developments), and beach and foreshore access. Some clarification of proponent view on these issues would be of assistance.

The Authority looks forward to an early response so that it can finalise its assessment.

Should you have any queries about the attached questions, please contact Katrin Wilson on 222 7019

J Malcolm
ACTING DIRECTOR
EVALUATION DIVISION

29 January 1993

Manglesissues290193kwi

6. Design of the Proposed Marina

It is believed that each of the proposed marina layouts would provide adequate protection against wind-induced waves from any direction. It is also believed that they provide for adequate flushing.

The option of connecting the harbour breakwater to the Garden Island Causeway was considered but not recommended because of security concerns expressed by the Royal Australian Navy (see PER, page 19). The option of constructing a breakwater from the Causeway to Hymas Street was considered to be overly expensive. It would also enclose a greater area of water than is necessary.

The siting of a marina at Mangles Bay is primarily to provide a facility for boats operating within Cockburn Sound, which is a world renowned yachting and power boating area. It is also well located for boats operating west of Garden Island or in transit along the coastline. It is acknowledged that the Garden Island Causeway Bridge is an obstacle for high masted vessels, but this should not prevent the Marina from becoming a significant yachting base. It is acknowledged that the Marina is more than adequate for the present boating demand but, once established, it is important that it should be capable of expansion to accommodate future boating needs. Facilities within the protected water area can be developed in stages to meet actual demand.

7. Compatibility with Cape Peron Study

The Department of Marine and Harbours was involved in the preparation of the Cape Peron Study and is familiar with its recommendations and its rationale. The marina proposal has been developed after close consultation with the authors of the Cape Peron Study, and considerable effort has been made to ensure that the marina development is both compatible with and complementary to the recommendations of the Cape Peron Study. This is clearly stated in the PER (see pages 2 and 4).

8. Chemical Plumes in Cockburn Sound

Contaminant loadings in the Marina and the effect of discharges from Lake Richmond are discussed in great detail in the PER. Appendix 5 contains detailed reports from the Water Authority regarding discharge from and water quality in Lake Richmond. We are not aware of any reports on industrially generated chemical plumes in Cockburn Sound which would affect the conclusion on water quality in the marina basin that was reported in the PER. We are not aware of any concerns expressed by the Environmental Protection Authority to the Water Authority about the quality of water discharged from its Lake Richmond drain.

9. Upstream Effects - Effects of Other Development

The current situation relating to other development proposals is reported in the PER (see pages 17 and 20). It is believed that the proposed Port Kennedy Marina (if developed) would only serve locally generated boating needs. It is not realistic to develop Port Kennedy as a base for boats wishing to operate in Cockburn Sound. It

is understood that Secret Harbour is now a land development, and no longer has a marine component.

10. Need for More Studies

There have been numerous studies into different aspects of Cockburn Sound and, doubtless, there will be many more. There is, however, a demonstrated need for a marina to be developed in Mangles Bay, and it is unreasonable to delay environmental approval of the project indefinitely by waiting for further studies.

There is sufficient information on the movement of sediment in and around Mangles Bay to conclude that the proposed marina will have no adverse impact on coastal dynamics. This information is contained in the PER (see Sections 6.1.6, 7.2.1 and 7.2.2).

The claim that development of a marina at Mangles Bay is premature has been noted. It is not consistent with the results of previous planning studies which recommend a marina in this area. It takes no account of the information on mooring demand presented in the PER, Appendix 3. Before the development proceeds, there may be a need for closer economic evaluation of the marina concept, but this is a separate process which will not happen unless the project has received environmental approval.

11. Naval Waters & Naval Property

As shown in the PER (Figure 3), the Marina will be located entirely in waters controlled under the Marine and Harbours Act. No part of the Marina would be in gazetted Naval Waters. Discussions were held with the Navy during the planning stage, and their views on any development in the vicinity of the Causeway or within Naval Waters were noted and observed.

The proposed Marina is on land vested in or owned by the Minister for Transport, and does not require access to land owned or controlled by the Navy. It is expected that the State Government would co-operate with any requirement by the Navy to close Naval Waters.

The effect of the Marina on beach stability is discussed in the PER and, at most, only minor movement of the beach near the Causeway is expected. As stated in Appendix 2, the developer would be responsible for maintaining beach stability.

12. Effects on Existing Mangles Bay Boat Users

Although the existing hardstanding and swing moorings are used primarily by local residents, there are already many users from outside the area. It is certainly true that the proposed Marina is intended to be an important regional resource, but local residents would still be the main beneficiaries of the improved facilities.

Appendix 3 of the PER deals with mooring demand in some detail. The estimated increase in boat ownership in the area is around 4% per year and, within ten years, the demand for boat hardstanding and boat mooring could double. This would double the area required for swing moorings and, given the present concern regarding

damage to seagrass from swing moorings, it is probable that the State would have to take action to restrict mooring in the area, as has happened in the Swan River and at Rottnest. Availability of the existing free swing moorings could not be expected to continue forever. It is anticipated that mooring control regulations inevitably would have to be implemented at some stage, and those presently enjoying free swing moorings would be required to pay a mooring fee.

As stated in Section 7.4.2 of the PER, incentives will be offered to boat owners presently using the area to relocate to the Marina. Relocation of boats from open swing moorings to protected pen moorings will become inevitable as demand grows for moorings within the limited available mooring space. Different types of moorings will be provided to meet customer demand.

13. Future of Existing Low-Cost Accommodation & Holiday Camps

A recommendation was made in the Cape Peron Study to close those holiday camps which do not provide a benefit to the general community. This recommendation was made because, although they are on public land, these camps are only accessible to select groups within the community. The leases for these camps expire in 1993. A part of the land vacated by the camps could be developed as a holiday recreational area to serve the wider community, with chalets similar to those developed by the Rottnest Island Authority..

14. Disturbance of Public Amenity for Existing Users, Community Groups & Local Residents

The land used by the Mangles Bay Fishing Club (previously the Point Peron Professional Fishermen's Association) and the Cruising Yacht Club is either owned by the Minister for Transport or vested in the Minister for "Harbour Purposes". It is land leased to these Clubs by the Minister for their exclusive use. As clearly stated in the PER (Section 6.3.3), land within the Marina would still be available for lease to these bodies. As also stated in the PER (Section 5.9), additional land would be made available to the general public for boat hardstanding. If the Mangles Bay Fishing Club and the Cruising Yacht Club choose to lease land in the Marina, they would still be able to offer private boat hardstanding to their members, if they so desire. It is expected that harbour tenants would be able to construct private jetties and boat ramps within the harbour, if their leased land abuts the marina basin.

The proposed fuel jetty would also serve as a service jetty and be available for loading and unloading of boats, including commercial fishing boats. The commercial fleet presently operating from Mangles Bay is small, and a special jetty to serve this fleet is not considered necessary. However, if the fleet were to increase in size, it may become feasible to construct a dedicated commercial fishing jetty.

15. Marina Emergency Plans & Safety Management

As noted in Section 7.2.7 of the PER, the Department would prepare an Emergency Plan to deal with a range of threats. The Plan has not been detailed in the PER, as it would be influenced by the final layout and shape of the harbour development. It is expected that, in accordance with past practices, the preparation and approval of

this Plan would be a condition of environmental approval. The Department already has several of these plans in place for its various facilities, and normal practice is to consult with all relevant parties (e.g. Environmental Protection Authority, Fire Brigade, Police, Water Authority, etc) when preparing the plans, and include these bodies in meeting operational requirements of the plan as required.

The Fremantle Port Authority would be consulted during the preparation of the Emergency Plan and would be kept informed on any incident which has the potential to impact on their operations or areas under their control. The Marina Emergency Plan would be integrated with the Port Authority's Emergency Plan to the extent required by the Port Authority.

The Department of Marine and Harbours is the government body responsible for boating safety in nearshore waters, including Fremantle Port Authority waters. The Department already facilitates or operates a range of education programs aimed at training boat operators, including the Small Craft Proficiency Certificate. Cockburn Sound, including the Fremantle Port Authority waters, is already one of the State's most popular nearshore recreational boating areas, and it is not envisaged that the proposed Marina would generate any particular need for special new programs.

Boat owners already refuel at a number of points around the coast and in the Swan River. Licensed fuel suppliers are required to install, operate and maintain their facilities in accordance with the appropriate Australian Standards, Mines Department's Flamable Liquids Regulations, and guidelines on pollution determined by the Environmental Protection Authority.

In the unlikely event of a fuel pipeline failure, fuel would discharge into the Marina Basin. It is most unlikely that any fuel spill within the Marina would be sufficiently large to have any significant impact on the Fremantle Port Authority's area of control. It would probably evaporate very quickly. If not, the Marina Manager would have access to a range of equipment for the containment of oil spills, some of which is stored at the Fremantle Port Authority and can be accessed as part of the State Emergency Plan. This would ensure that any significant spill could be contained and removed.

16. Support

The Department favours Option 1A for development. Following environmental approval of a development concept, the approved development would be offered to the private sector as a development opportunity. Depending on the level of investment, leases could be entered into for periods of up to 21 years with renewal options. Fair market rentals would apply. Final designs would be influenced by the market; however the basic development concept, as described in the PER, would remain unchanged.

STUART HICKS
EXECUTIVE DIRECTOR

28 APR 1993

(mb18)6cs

Your Ref:
Our Ref 330/88
Enquiries: P. Boreham

DEPARTMENT OF
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Attn: Ms K Wilson

MANGLES BAY MARINA (ASSESSMENT 247)

As a result of recent discussions, the Department has revised the alternative marina layout (SK14) proposed in the PER. A copy of the revised layout (SK15) is attached.

The relative areas of SK14 and SK15 are given below.

	SK14	SK15
Reclamation area	6.5 ha	5.8 ha
Basin and channel	13.0 ha	12.0 ha
Breakwater	1.0 ha	0.9 ha
total cut/fill	20.5 ha	18.7 ha
Area of seagrass	19.0 ha	17.0 ha
Area of undredged seagrass within the basin	2.1 ha	2.1 ha

The 1985 John Holland proposal affected about 15 ha of seagrass.

The reduction in area has been made by:-

* reducing the width of the access road reserve from 20 m to 15 m;
* reducing the lease area available for a yacht club;
* reducing the commercial lease areas and relocating some carparks;
* reducing the length of the north breakwater, the length of the entrance channel and the area of the basin near the entrance.

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A balanced cut and fill exercise was planned, using the dredged spoil for landfill for the SK14 marina option. It is expected that this will still be the case, but that finished levels will be higher than originally proposed.

Should you have any further queries on this matter, please contact the Project Engineer, Mr Peter Boreham, on (090) 3350 841.

R F BRINDLEY
A/DIRECTOR FACILITIES

30 June 1993

Appendix 4

References on importance of seagrass

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