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Stockton Bight environmental study



STOCKTON BIGHT ENVIRONMENTAL STUDY AND MANAGEMENT PLAN



Part C

MANAGEMENT OPTIONS AND STRATEGIES



AUGUST 1995

Prepared for:

**NEWCASTLE BIGHT CO-ORDINATION AND LIAISON COMMITTEE ON BEHALF
OF PORT STEPHENS COUNCIL AND NEWCASTLE CITY COUNCIL**

**STOCKTON BIGHT
ENVIRONMENTAL STUDY
PART C
MANAGEMENT OPTIONS AND
STRATEGIES**

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SECTION 1.0
METHODOLOGY

1.0 METHODOLOGY

The methodology utilised to determine the preferred management strategies for landuse planning of Stockton Bight follows a sequential approach from the identification of major issues through to action strategies for particular parcels of land. The major strategic issues emerged from the resource inventory. These issues were consistently highlighted through the research process of the resource inventory and public consultation.

Against each of these major strategic issues, various management options were developed. The preferred option emerged through consultation with both the Consultative Committee and the Newcastle Bight Co-Ordination and Liaison Committee.

Precinct boundaries were determined as a combination of the following:

- the major strategic issues;
- historical land associations;
- land title and reservations;
- landform;
- site assessment; and
- resource inventory.

Management strategies addressing each of the major strategic issues were then developed for each precinct. Each precinct was subdivided into sub-precincts and action strategies developed for each sub-precinct. Each action strategy was further examined to determine the appropriate body for implementation, the priority for the work and an estimate of initial cost and recurrent cost.

Implementation of the Management Plan will rest with government agencies. Several options were examined and discussed. Five models are presented for consideration in **Section 6.0**.

SECTION 2.0

COMMUNITY CONSULTATION

2.0 COMMUNITY CONSULTATION

Consultation with local community, regional users and government stakeholders at all levels was seen as critical to the success of the study; development of management strategies and ultimately its implementation. The NBCLC provided the key access into state and local government agencies ensuring continuity and freedom of information, participation, ownership and a breath of local/technical expertise.

Accessing community input in terms of attitudes and priorities as well as local knowledge, history and experience was considered fundamentally important and provided the basis for identification of major strategic issues. The aim, therefore, was to establish a credible consultative mechanism and a process which enabled a two way flow of information and ideas. A consultation strategy was adopted which was progressively modified to reflect community input and the evolution of the study process. It involved establishing a series of public meetings.

This public meeting process was complemented and enhanced through the establishment of a smaller community working group known as the Bight Consultative Committee. The BCC's constitution of members reflected the issues areas identified at the first meeting. Members of this committee helped the study team better understand the communities' priorities and concerns covering such areas as recreation, business, environment, development, drainage, agriculture, transport and tourism. This group met formally five times during the study process, their participation in the community and business life of the area enabled them to gather and disseminate information on the project on almost a daily basis.

A Draft report was prepared in consultation with the consultative committee. The Management Strategy has been viewed and discussed with the committee, and where appropriate their comments have been incorporated. While some members are not in agreeance with aspects of the strategy there is general agreement with its direction.

C2:2

The Draft report was exhibited for a two month period. In response to the exhibition, written submissions were received from individual landowners and community groups. Submissions were also received from government authorities.

The following tables are a summary of issues in respect of each submission received together with comment from the Newcastle Bight Co-ordination and Liaison Committee, where relevant.

C2:3

Group/Landowner Individual	Address	Summary of Issues	Newcastle Bight Co-ordination and Liaison Committee Comment
Hunter Valley 4WD Tours	45 Duns Creek Road, Duns Creek	<ul style="list-style-type: none"> • overall management plan proposal is good. • NPWS not compatible with existing users. • support need for sth 4WD access. • ecotourism already exists within Nelson Bay Road corridor. • disagree with Fern Bay. • sewage treatment must be improved at Stockton. 	
B & N Kofer	Marsh Road, Bobs Farm	<ul style="list-style-type: none"> • Bobs Farm is not poor quality farm land. • drainage is good contrary to Study. 	
?	25 Thomas Street, Wallsend	<ul style="list-style-type: none"> • acid sulphate soils issue should be considered. 	
Oakvale Farm & Fauna World Port Stephens	Nelson Bay Road, Salt Ash	<ul style="list-style-type: none"> • Nelson Bay Road reserve - object. 	The intent of the 400 m road reserve was more as an area of investigation rather than nominating a restrictive control. The document does explain this issue clearly.
G. Maynell	Nelson Bay Road, Bobs Farm	<ul style="list-style-type: none"> • object to proposal 9(a) coastal zone. • Nelson Bay Road corridor - object. 	9(a) zone is proposed to cover all vegetated and non-vegetated lands north of Coxs Lane. It would enable the continued use of existing activities but would be restricted to public lands in order to give effect to the management structure.
D. G. & C. J. Kafer	Marsh Road, Bobs Farm	<ul style="list-style-type: none"> • object to coastal zone - restrict use. • object to Nelson Bay Road Corridor - devalue land. 	
Michael Smith	34 Galsona Drive, Nelson Bay	<ul style="list-style-type: none"> • demolition and removal of huts is unnecessary as they represent an important feature for ecotourism 	The huts do contribute to some degree to providing a feature for ecotourism. They are nonetheless unauthorised and should be removed.

C2:4

Group/Landowner Individual	Address	Summary of Issues	Newcastle Bight Co-ordination and Liaison Committee Comment
Aussie Ewe & Lamb Centre Pty Ltd	165 Gan Gan Road, Anna Bay	<ul style="list-style-type: none"> • proposed 400 m road corridor would restrict future tourist development. • object to National Park as it would restrict future tourist development. • not consulted. • no detailed summary of current beach users. • tourism for the Bight only is too restrictive. • controlled, well planned development should be allowed on Nelson Bay Road. • features not included on maps. • Marsh Road not an area of poor agricultural land. 	At the time of preparing the Resource Inventory, user statistics were up to date.
Benjamin Bray	Port Stephens Street, Raymond Terrace	<ul style="list-style-type: none"> • supports a National Park. • Fern Bay should not have been rezoned. • high ecotourism potential 	
Newcastle University, Students Association		<ul style="list-style-type: none"> • support declaration of a National Park 	
K. & M. Manning	3120 Marsh Road, Bobs Farm	<ul style="list-style-type: none"> • road needs fixing 	
David R. Watson	75 Roxburgh Street, Stockton	<ul style="list-style-type: none"> • generally the study is well received. • object to 400 m Nelson Bay Road corridor. 	
Raymond Terrace 4WD Club		<ul style="list-style-type: none"> • support Model No. 2. • do not support any NPWS control. 	
National Parks Association of NSW - Hunter Branch		<ul style="list-style-type: none"> • support Model No. 5 under NPWS control. • any other form of management would not adequately protect the conservation value of the Bight. 	Study Team believes that the preferred Crown Reserve/Council Committee (Model No. 2) will adequately protect the Bights conservation values.

Group/Landowner Individual	Address	Summary of Issues	Newcastle Bight Co-ordination and Liaison Committee Comment
Econetwork - Port Stephens Inc.		<ul style="list-style-type: none"> • commends community consultation process. • highest environment protection possible is warranted. • National Park supported and should provide for: <ul style="list-style-type: none"> - existing users to continue - specific consultative procedures - use of fees in an ecotourism context - closure of non essential access points. • NPWS must receive more funding. • Aboriginal archaeology be protected - to be integrated with a nature based tourism programme. • little likelihood of sand extraction being rationalised. • a select Parliamentary Committee be set up to facilitate rationalisation of sand extraction. • further detailed study of flora and fauna. • strict environmental controls be placed on Fern Bay development. 	
Newcastle Bight Coastal Park Coalition	Heritage Centre, Newcastle	<ul style="list-style-type: none"> • report is flawed and contradictory. • more detail required in respect of flora and fauna. • Study accepts Fern Bay proposal. • ignores acid sulphate soils issues. • support National Park Model. • Study presents as an Exploitation Study and does not reflect the Bight's conservation values. 	<p>The Study Team acknowledges that more investigation is required in respect of flora and fauna and this is stated in the Study.</p> <p>The issue of acid sulphate soils has been further addressed.</p>
Esme Hall	20 Abundance Road, Medowie	<ul style="list-style-type: none"> • support National Park. • objects to Fern Bay. • moratorium on sand mining. • include military history. • agrees with Nelson Bay Road Corridor. 	

Group/Landowner Individual	Address	Summary of Issues	Newcastle Bight Co-ordination and Liaison Committee Comment
Marsh Road Progress Association	Secretary	<ul style="list-style-type: none"> • need ongoing commitment for real community involvement. • negative impact of Nelson Bay Road corridor on private property rights. • incorrect statement re: poor soil quality and not worthy for protection for agriculture. • 400 m road reserve not warranted and does not reflect existing topography and land use. • Bobs Farm has viable farms albeit small. • should allow well funded tourist, commercial and private development along Nelson Bay Road. • concern to ensure integrity of ground water is maintained. • existing users right re: groundwater - maintained. 	<p>A Trust Board under Crown Reserve Model would include landowners and community.</p> <p>Some limited tourist related development may well be satisfactory on Nelson Bay Road, and the Study does not discount this.</p>
L. J. & R. R Chesworth	Marsh Road, Bobs Farm	<ul style="list-style-type: none"> • supports tighter land use controls along Nelson Bay Road. • support land capability suitability classifications. • management plan should consider feral animals. • hazard reduction fire burning should be seen as an environmental threat. • could be more importance placed on protecting the aquifer. • supports rationalising sand mining activity. • proposed road reserve to the east of Nelson Bay Road should be abandoned. • need for a centralised drainage authority. 	<p>The Study recommends that the Long-bight Study be implemented. A further recommendation will be made that a single authority be responsible for drainage.</p>
David Thomas	Nelson Bay Road, Salt Ash	<ul style="list-style-type: none"> • objects to any strategy which impedes any reasonable use of the land. 	
Northern Parks and Playgrounds Movement		<ul style="list-style-type: none"> • community consultation has been unsatisfactory. • a National Park is needed to exhibit and protect the natural features of the Bight. • road reserve through dunes should be abandoned in favour of upgrading existing Roads. • better management of ribbon development along Nelson Bay Road. 	

C2:7

Group/Landowner Individual	Address	Summary of Issues	Newcastle Bight Co-ordination and Liaison Committee Comment
Andrew Barnsley	PO Box 20, Hamilton	<ul style="list-style-type: none"> • poor consultation with land owners. • objects to Nelson Bay Road corridor. • objects to rezoning of Rural Land. • management strategy should provide for opportunities for local residents. • drainage system in Tilligerry Creek is satisfactory. • SEPP 14 Wetlands legislation is biggest threat to the levee and drainage system. 	Community representatives would be invited to participate in any ultimate management structure.
Jack McMasters	25 Thomas Street, Wallsend	<ul style="list-style-type: none"> • concerned to ensure that issue of acid sulphate soil is acknowledged. 	Some supplementary comments are made regarding acid sulphate in consultation with Soil Conservation Service in Part B, Section 2.0.
Stockton Community Group		<ul style="list-style-type: none"> • disagree with Fern Bay. • quality of Stockton Aquifer south of Coxs Lane. • concur with upgrading of Stockton Sewage Works. • support National Park. 	
Newcastle Bight Nature Reserve Group	26 Forest Road, Duns Creek	<ul style="list-style-type: none"> • insufficient consultation. • not enough consideration to National Park. • disagree with Nelson Bay proposal. • native vegetation on hind dunes offers for greater stability to off-set sandrift then does revegetation. • no effective mechanism to monitor and regulate sandmining and extraction. • disappointed that Fern Bay was not investigated. 	
Port Stephens Design Services	57 Donald Street, Nelson Bay	<ul style="list-style-type: none"> • advise they are proceeding to prepare an EIS for Johnstons sandpit at Anna Bay. 	

Group/Landowner Individual	Address	Summary of Issues	Newcastle Bight Co-ordination and Liaison Committee Comment
Bernadette Smith	Coxs Lane, Fullerton Cove	<ul style="list-style-type: none"> • inadequate community consultation. • lack of independent research. • failure to seriously consider National Park. • consider Nelson Bay Road issue as an impediment to growth as it would create an expressway. 	
TollbulkSands	Williamtown	<ul style="list-style-type: none"> • quarrying of non-vegetated transgressive dune causes no environmental damage. • do not quarry from vegetated dunes. • key to stabilisation of dune system is the frontal dunes, not the mobile dunes. 	
Tourism Organisation of Port Stephens	PO Box 435, Nelson Bay	<ul style="list-style-type: none"> • lack of direct consultation with tourism activity operators in the Study Area. • is it the intention to regard the Bight Area as separate entity to the rest of Port Stephens. • no discussion of Councils 4WD permit scheme. • Nelson Bay Road reserve proposal is excessive. 	
NSW Farmers Association	Hon Secretary, 4 Cromarty Lane, Bobs Farm 2316	<ul style="list-style-type: none"> • study appears to do little more than recommend further research and committees. • reject Nelson Bay Road corridor. • support an alternative route on public land. • infrastructure needs are understated. • language in report tends to be emotive rather than scientific, this detracts from the validity of the report. • public and private lands should be treated separately in the Management Plan. • should be no restraint on existing or future land use rights. 	<p>An alternate road through the dunal system is not supported on environmental grounds.</p> <p>The Management Plan does acknowledge that separate issues pertain to private lands as distinct from public lands.</p>

Authority	Government Authorities Summary of Issues	Newcastle Bight Co-ordination and Liaison Committee Comment
Dept of Urban Affairs and Planning - Heritage Branch	Focus of maritime archaeology needs to relate more tightly to study area.	Study has reconsidered this aspect.
Dept of Urban Affairs and Planning - Hunter and Central Coast Office	Raise matters of clarification particularly now that Fern Bay is to proceed.	
NSW Dept of Mineral Resources	Models 1 and 2 best address the continuing operations of sand extraction. Further detail is provided to update estimates of foundry sand and distribution of industrial and construction sand resources.	
Land and Water Conservation (formerly CaLM)	Raises matters of clarification required re: <ul style="list-style-type: none"> • conservation values; • indication of funding sources for implementation options and precinct plans. 	Study is modified accordingly.
NSW Public Works - Hunter / New England Region	Implementation of the Longbight/Williamtown Report does not include the Bobs Farm area. Development of longterm management strategies for Stockton Beach should be a priority given recent erosion of the foreshore dunes between the breakwater and the sewage treatment works.	Area Action Plans address coastal erosion.
Hunter Water Corporation	<p>Management Model Legal opinion indicates National Park would prevent installation, maintenance, operation and extension of borefield infrastructure in the Water Reserves.</p> <p>Extension of Water Reserves Supports quick resolution of extending the Water Reserve to Anna Bay town limits</p> <p>Extractive Industries Concerned re impact of mining on the Water Reserves. Need for modelling studies to assess likely impact before mining proceeds.</p> <p>Mineral Sand Concerned re impact on iron levels in the water. Further investigations are required prior to expansion of existing mining operations.</p> <p>Impact of Dunal Transgression Support the concerns re impact devegetation may have on the magnitude of surface leaching of salts and their consequent impact on the aquifers.</p>	

SECTION 3.0

MANAGEMENT STRATEGIES

3.0 MANAGEMENT STRATEGIES

The major strategic issues emerged from the Resource Inventory (Part B) and are restated below. Against each of these, management strategies are discussed and the preferred strategy outlined. The implementation of these strategies and the localities to which each applies is set out in the Area Action Plans (**Section 5.0**).

3.1 SAND DRIFT/SAND EXTRACTION

MAJOR ISSUES

- Stockton Bight contains the largest unvegetated coastal dune system in NSW. This mobile dune is transgressing inland up to 10 m/yr and at an average rate of 4.1 m/yr. Its inland movement is generally uncontrolled.
- In the absence of controlling measures, the mobile dunes will continue to move inland towards Nelson Bay Road and within the next 100 years could inundate and destroy 1,650 ha of vegetated land.
- The ecological significance of the vegetated land at threat from the mobile dune has not been quantified.
- There is increasing sand extraction from the Bight.
- Approximately 1.2 million tonnes of sand is currently being extracted from Stockton Bight annually. The majority of this is extracted from freehold land.
- There are 12 existing significant sand extraction operations in Stockton Bight, mostly on freehold land in woodland areas.

- Sand extraction within the Bight could be rationalised and used as a means of ameliorating sandrift.

STRATEGIC OBJECTIVES

- To ameliorate sand drift threatening private property and existing vegetation and fauna corridors on Crown Lands through selective sand extraction, rehabilitation measures and alternate land use options.
- To rationalise sand extraction operations in order to protect existing vegetation and fauna corridors.

DISCUSSION OF ISSUES

The western movement of sand will, over time, result in the significant loss of native vegetation, wildlife corridor and habitat, and is impacting upon private property, most noticeable at Anna Bay. The area inundated is estimated to increase from the current 2,420 ha to 4,100 ha in 100 years. Over this time some 1,650 ha of vegetated relic dune ridges will be inundated by the transgressive dunal system, while the dunal area of the existing water reserve will increase from 640 ha to 1,440 ha. Privately owned lands will be inundated from the present 520 ha to 1,310 ha.

Managing sand drift at Stockton should be considered in relative degrees of intervention. From the research carried out to date, there is clearly insufficient information known as to the extent of sand "generation" on Stockton Bight. While it appears the range is between 1.2 and 2.6 million m³ annually, further detailed photogrammetric analysis is required.

The management strategies range from doing nothing and "let nature take its course" or intervening in a significant manner so as to limit the impact upon property (Anna Bay) and vegetation communities.

The mechanism available to achieve the latter is through allowing sand extraction to occur along the face of the prograding hind dune at a rate consistent with the level of sand generation in that locality.

Currently, most of the sand extraction operations occur on freehold land and involve the removal and subsequent rehabilitation of vegetation. If these operations were gradually relocated to the hind dune areas, then the resultant environmental impact would be lessened. However, to date, insufficient research has been carried out to ensure that this approach would not result in consequential environmental impact over the larger term. It is unlikely that all the existing sand extraction operations can be relocated to the hind dune due to the varying quality of the sand. Further investigation is needed.

The dune stabilisation work being undertaken at Anna Bay and proposed at Fern Bay are positive examples of how sand extraction operations can complement rehabilitation works and result in considerably lower rehabilitation costs. These works are appropriate to protect urban development from sand drift and the same approach should be investigated to "halt" the sand drift in the rest of the Bight. Equally, stabilisation of the frontal dunes must be incorporated in an overall strategy.

PREFERRED MANAGEMENT STRATEGY

Due to the consequential loss of vegetation, and impact on private property, the preferred option is to undertake a pro-active approach to sand drift at Stockton Bight. The process to achieve this would include:

- Establishing a working committee of sand miners, land owners, conservationists, Hunter Water Corporation, LaWC, Councils, Department of Mineral Resources, Department of Planning and Department of Water Resources.

- Undertake research to establish "sand generation" levels, potential consequential impacts, the quality of sand available, the ecological value of the vegetated dunal system, etc.
- Preparation of sand resource suitable maps;
- Prepare a sand extraction Management Plan for Stockton Bight incorporating both private and public lands. This plan should seek to provide for a sustainable sand extraction industry in Stockton Bight over the long term with the resultant benefits returning to the Bight through improved resource allocation and on-site environmental management. Removal of sand from unvegetated areas is preferred.
- Implementation of the sand extraction management plan would be through co-ordination with Council and LaWC. Royalties from the sand should be utilised in the provision of recreation and tourism facilities in the Bight.
- Implementation of the sand extraction/rehabilitation plans on all affected lands, and particularly at Anna Bay and Fern Bay, as well as the frontal dunes.

AFFECTED LANDS

The transgressive dunes and vegetated relic dunes.

3.2 HYDROLOGY

MAJOR ISSUES

- The sub optimal network of drains and tidal gates when releasing surface water to Fullerton Cove and Tilligerry Creek, do not perform effectively at times of coincident local catchment flooding and Hunter River floods.

- Lack of a single public authority for primary drainage network linking Fullerton Cove and Port Stephens.

STRATEGIC OBJECTIVES

- To prevent flooding of residential land and drain water from most farm land before crops and pastures suffer long term drainage.

DISCUSSION OF ISSUES

Major drainage problems occur in the Tilligerry Creek catchment. Prime areas of concern are at Williamtown and Bobs Farm (Marsh Road). The existing network of drains and tidal gates does not perform to a satisfactory level and further development (RAAF, Nelson Bay Road) is expected to exacerbate the existing situation.

Fragmented management practises of the past have led to an unco-ordinated and inadequate drainage system ill equipped to handle even low level flooding.

There is currently no single public authority with responsibility for the primary drainage network linking Fullerton Cove and Port Stephens. While several flooding/drainage studies have been undertaken to address isolated drainage issues, a comprehensive study has not been undertaken.

An appropriate management strategy should address four principal concerns:

- existing lack of knowledge of the hydrology of the Fullerton Cove/Tilligerry drainage system;
- development of a drainage management plan;
- need for single management body;
- sources of funding/funding mechanisms to implement drainage management plan.

These issues were highlighted in the Longbight - Williamstown Area Report (March 1992), and in part, in the recent Lower Hunter River Flood Study. A series of recommendations were made which dealt with:

- Institutional issues (i.e. management).
- Regulatory issues.
- Design/construction issues - two levels of priority for civil works.

To date, few of these recommendations have been implemented due to the drains not being the responsibility of one authority.

PREFERRED MANAGEMENT STRATEGY

The recommendations of the Longbight/Williamstown Report (March 1992) be implemented.

AFFECTED LANDS

All lands in the Study Area draining into Tilligerry Creek and Fullerton Cove.

3.3 GROUNDWATER

MAJOR ISSUES

- Stockton Sand Member contains good quality water and is a valuable community resource and should be protected from the impacts of alternate landuses.

STRATEGIC OBJECTIVE

- To protect the integrity of existing underground water reserves through a land use regime allowing continued access and protection of water quality.

DISCUSSION OF ISSUES

The Study Area probably contains good quality groundwater which should be appropriately managed to avoid contamination. The Stockton Sand Member underlies most of the Study Area and is estimated to contain about 230 GL of groundwater. In February 1995 the Department of Land and Water Conservation (Water Resources) released a technical review of the Tomago/Tomaree/Stockton groundwater, as part of the process of developing a groundwater management plan. The plan should be completed by the end of 1995.

Currently there is insufficient evidence to suggest that any existing land use has resulted in a negative impact on the quality of groundwater. The quality of groundwater probably varies throughout the Study Area but is likely to be high in most parts. The existing water reserve lands and Crown Land to the north incorporate the majority of the high quality aquifer.

The DWR Aquifer Study, identified a number of land uses which may impact upon the quality of groundwater. These include:

- sand extraction;
- sewage disposal;
- housing;
- heavy mineral mining.

Until such time as the potential impact of these uses is known, it is recommended that a precautionary approach is taken to prospective land use change within the area identified as containing high quality water. Development proposals should be assessed against potential impact on the aquifer.

PREFERRED MANAGEMENT STRATEGY

- Completion and implementation of the management plan for the Stockton aquifer by Department of Water Resources.

- Development proposals which may impact upon the quality of groundwater be required to carry out an aquifer impact assessment. This provision to be incorporated into the Port Stephens LEP.

AFFECTED LANDS

Lands lying above the Stockton Sand Member as identified by DWR.

3.4 ENVIRONMENTAL PROTECTION / CONSERVATION

MAJOR ISSUES

- The Stockton Bight area is considered to have unique conservation value primarily due to the mixture of sand dune wilderness and dunal vegetation communities. The significance of existing vegetation is its relationship to the large transgressive dunal system and its relatively undisturbed nature.
- The relatively undisturbed vegetation could provide a valuable habitat for a number of threatened fauna species.
- Vegetation is unique within the Region and supports many diverse forms of wildlife, including likely rare and endangered species.
- Land forms of the Bight represent a geological record of coastal evolution and are of scientific interest.
- Bushfire hazard within the vegetated dunal system is high.
- Noise levels in the vicinity of Williamtown Airport limit urban development potential.
- The Bight has significant archaeological resources; Aboriginal, Maritime and Military.

- Beach pollution arises from a number of sources including flotsam and jetsam and personal litter associated with recreational beach uses.
- Sand extraction is occurring within the woodland area of the hind dune.
- The low lying estuarine areas of Fullerton Cove, Williamtown and Tilligerry Creek have potential acid sulphate soils.

STRATEGIC OBJECTIVES

- To recognise and protect the flora and fauna communities.
- To protect areas of archaeological significance.

DISCUSSION OF ISSUES

Unfortunately, insufficient investigation has been undertaken to date to determine both the quality and quantity of fauna in the vegetated dunal communities. The extent of habitat for endangered species which may exist is also not known. Therefore, appropriate research and investigation is required in order to determine the impact various activities may have on flora and fauna communities. Until such studies are undertaken, a precautionary approach is considered appropriate.

Geological, Aboriginal and Maritime archaeology are of significance within the Bight. Detailed studies of Aboriginal archaeology, in particular by Sullivan (1994), reveal areas of high archaeological sensitivity and there is a need to precisely identify site locations. A precautionary approach to activities likely to impact on these areas in the meantime is appropriate.

There are potential acid sulphate soils in the estuarine environment around Fullerton Cove and Tilligerry Creek. If these soils are drained and exposed to air, acidic conditions can arise and

adversely impact on general land degradation, water quality and the biotic environment.

Any proposed landuses require site assessment and implementation of appropriate management measures.

PREFERRED MANAGEMENT STRATEGIES

- Undertake a comprehensive study of flora and fauna to determine particular areas of vegetation which provide habitat for endangered or rare fauna.
- Prepare a Flora and Fauna Management Plan. This is most likely to include the development of a network of vegetation/wildlife corridors throughout the Study Area.
- Further destruction of vegetation should not occur until detailed flora/fauna studies are completed, and wildlife corridors determined.
- Preparation of an archaeological zoning plan incorporating Marine, Aboriginal and Historic archaeology.
- Establish an environmental research fund to assist in ongoing ecological research including:
 - establishing a geological record of coastal evolution;
 - study of coastal habitat;
 - bushfire management;
 - rehabilitation measures - old dunes;
 - impact of recreation/tourism on wildlife;
 - identify areas of high archaeological sensitivity for conservation and protection.

Funding sources could be explored through the NSW Government's Dune Care, Environmental Trusts, Heritage Assistance Scheme and National Estates Grant through the Australian Heritage Commission. Federal Government Coast Care and Land Care programmes are administered by the NSW Government and could also be sources of funding.

- An acid sulphate soil management plan be prepared for all proposals likely to disturb acid sulphate soils.

AFFECTED LANDS

All naturally vegetated lands, the exposed dunal system, Marine and Aboriginal archaeology sites, and the estuarine environment.

3.5 DEVELOPMENT

MAJOR ISSUES

- Fort Wallace, Stockton Hospital, Rifle Range comprise properties likely to be under pressure for alternate urban development.
- The Fern Bay proposal area is identifiable as having urban development potential. Environmental studies support urban development of this land.
- The Boral land is identified as having urban development potential but requires comprehensive environmental assessment.
- Nelson Bay Road is the main thoroughfare to Port Stephens and can be regarded as a "tourist gateway". This corridor is visually unattractive due to ad hoc ribbon development. Proposals by PSC/RTA to upgrade the road on or near its current alignment will satisfy long term transport needs and thus eliminate the need to "reserve" a future road corridor east of Nelson Bay Road.

- Better quality agricultural land occupies the low lying terrain generally between Nelson Bay Road and the hind dunal system.
- Any proposal for infrastructure should establish that a route through The Bight is preferred on environmental grounds. Further destruction of vegetation should be avoided.
- Opportunities exist immediately south of Anna Bay urban area for appropriate sensitive development on the Crown Land as a means of ameliorating sand drift in the area.
- The unauthorised huts while not a major issue, require resolution in the short term.

STRATEGIC OBJECTIVES

- To assess whether those lands which have been previously identified as having urban development potential, have the capacity to accommodate development with minimal environmental impact.
- To identify land suitable for urban or infrastructure development.
- To reduce visual and environmental impact of existing and future man made developments.
- To ensure the future operations of the RAAF are not restricted through inappropriate development.

DISCUSSION OF ISSUES

Urban Development

The capability of The Study Area to accommodate urban development was examined following the completion of the resource inventory. The area is significantly constrained by:

- Sand Drift - 100 year progradation zone (up to 620 m).
- Flooding - Tilligerry Creek system, high water table.
- RAAF ANEF zones.
- Agricultural land - maintain viability of large rural properties in the Williamstown area.
- Geotechnical constraints - transgressive dunes.
- Stockton aquifer - high protection zone (lands north of Coxs Lane).
- Nelson Bay Road - visual corridor - tourist gateway to Port Stephens.
- Coastal Zone - including the beach front, frontal and hind dunal system.
- Areas of flora and fauna habitat potential.
- Provision of infrastructure.

The abovementioned constraints reduce the area for potential urban development to land lying south of Coxs Lane. Development of these lands however would be subject to thorough environmental assessment.

In respect to specific lands, the following conclusions are made:

Fern Bay Development Proposal Area

An extensive environmental study has been undertaken in respect to a proposed residential development at Fern Bay. The Fern Bay Residential Development Local Environmental Plan was gazetted on 17 March 1995 and rezones a significant portion of land to part Residential 2(a), part Environment Protection (Wetlands) 7(a) and part Environment Protection (Flora and Fauna Conservation) 7(k). Approximately one third of the eastern area has been deferred by the Minister and remains partly zoned Rural 1(a) and part Environment Protection (Water Catchment) 7(c) and 6(a) Open Space.

Boral's Land

This land adjoins the area of the Fern Bay development proposal and exhibits similar environmental characteristics. To date no comprehensive land capability study has been undertaken to assess the impact urban development may have upon the land system.

Consequently it has not been possible to determine the lands suitability for any high order land use activity. Further detailed environmental studies will be required if alternate land use is to be considered.

Anna Bay

Additional urban development potential south of Anna Bay has been discounted for the following reasons:

- Transgressive dunal system.
- Urban development will result in visually obtrusive ribbon development.
- Will result in a proliferation of access points onto a busy main road.
- Likely to detract from the existing urban settlement at Anna Bay.

Hind Dune Area

No urban development is favoured for this area as it would adversely impact on the water aquifer.

Bobs Farm

Urban development potential is constrained because of:

- Low lying flood prone land.
- Poor soil quality.
- Infrastructure cost likely to be prohibitive.

Williamtown/Salt Ash (including low lying area to east of the Nelson Bay Road)

There may be limited opportunities adjacent to existing urban areas. An area of land has been identified off Richardson Road which appears suitable for residential development provided services are available.

However, generally the high water table in these areas, together with likely flood inundation and the need to protect viable agricultural activities do not provide obvious urban development potential.

The larger rural holdings, surrounding Williamtown, occupy the better agricultural land and should not be considered for urban development.

Land in the vicinity of RAAF zone necessarily restricts development potential.

Stockton Precinct

If the Fern Bay development proceeds, alternate uses for the Rifle Range, Stockton Hospital and Fort Wallace could be investigated. For a large extent, the future of this area will remain unresolved due to Government ownership. However, these lands are capable of supporting forms of urban development and further detailed environmental studies are needed to identify preferred land use alternatives.

In particular, the environmental issues affecting this precinct are predominantly related to the coastal zone. These include coastal erosion, particularly at the southern end of Stockton Beach, and dune stabilisation.

Any redevelopment of the Rifle Range land should critically assess stabilisation of the dunal system.

Unauthorised Huts on Crown Land

These huts are illegal and efforts should be made for their removal. There is no justifiable reason why they are needed. The owners should be given three years to remove them after which the Council should proceed with their demolition and removal. A temporary licence can be granted for the three year period, and a fee charged from which LaWC could recoup the cost of removal.

The need/demand for overnight occupancy on the beach could be met through the establishment of an environmentally friendly wilderness resort (i.e. solar power, waste recycling), budget accommodation, ecotourism and fishing centre; a possible location for this facility could be Fort Wallace.

INFRASTRUCTURE

Nelson Bay Road Corridor

The Council/RTA alignment is considered appropriate. The future road alignment as provided on PSC LEP 1987, traverses vegetated dunal areas. It should be abandoned and replaced with the Council/RTA route.

In order to ensure Nelson Bay Road retains a high level of service and provides a pleasant visual experience for motorists travelling to Port Stephens, restrictions on land use should be investigated.

Along most of the current alignment there has been an undesirable proliferation and ad hoc development.

A rezoning review is required to investigate removal of the provisions which allow unsightly ribbon development and to identify service orientated land uses only within, or adjacent to, existing urban settlement.

The road should be promoted as a tourist corridor to Port Stephens.

Opportunities may exist for specific tourist related activities, however these must not be located on Nelson Bay Road. They would preferably be located on the western side of the road.

Stockton Sewage Treatment Works

The upgrading of sewage treatment facilities for Stockton and Fern Bay are required following a determination of development at Fern Bay. Irrespective of this decision, it is likely that the existing system will require upgrading and any EIS should examine a range of disposal methods.

Port Facilities

In 1990 the MSB advised that the Bight is no longer considered an alternative to the Port of Newcastle and is not required to be reserved for future port facilities.

Electricity Corridor

A proposed transmission line easement from Williamstown to Anna Bay should not result in significant loss of vegetation and undesirable visual impact.

PREFERRED MANAGEMENT STRATEGY

Urban Development

- The northern limit of urban development potential is Coxs Lane.
- The area proposed for urban development at Fern Bay (which has been subject to significant environmental investigation in conjunction with the preparation of a Local

Environmental Plan by Port Stephens Council gazetted on 17 March 1995), has urban development capability.

- Any additional proposals for urban development south of Coxs Lane must meet recognised environmental guidelines including investigation into the impact on the aquifer and should not proceed until an assessment has been carried out on the Bight's ecotourism potential.
- A study be undertaken to establish the area of the Nelson Bay Road corridor and those land uses which lessen the motorists' visual experience when travelling along the road.
- The Port Stephens LEP be amended so as to recognise the Nelson Bay Road Corridor as a tourist gateway and significantly restrict/limit future development within the corridor.
- Studies be undertaken of the Rifle Range, Stockton Hospital and Fort Wallace to identify long term land use options. Improved linkages between Stockton and the proposed Fern Bay development should be thoroughly examined.
- Investigation be carried out to ameliorate erosion of Stockton Beach and determine the source of the erosion.
- The owners of the illegal huts be advised that they have three years to vacate after which time demolition will take place and that a temporary licence be issued over each of the huts for this period.
- An augmentation of the Stockton Sewage Treatment Works is required. Any proposed method of waste disposal should examine the potential impact upon the aquifer and /or the Bight.

- The Port Stephens LEP 1987 be amended to support the land use strategy proposed in the Management Plan.
- Amendment to the Newcastle LEP 1987 is not recommended in the short term due to public ownership issues and lack of investigation into alternate landuses.

AFFECTED LANDS

- Specific sites as detailed in the report.
- LEP amendment would cover all the Study Area.

3.6 TOURISM

MAJOR ISSUES

- Stockton Bight is identifiable as an area of unique coastal wilderness with ecotourism attributes.
- Opportunities exist to promote The Bight as a tourist destination, and complement the established tourism destination of Port Stephens.
- Uncontrolled activities which lessen the geomorphological and ecological value of the Bight will reduce tourism opportunities.
- Marine and Aboriginal archaeology and Military Heritage of the Bight should be managed in such a manner so as to contribute to the tourism experience.

STRATEGIC OBJECTIVES

- Ensure the Bight's ecological, geomorphological and archaeological attributes are researched, documented, protected and managed in a manner so as to support a local ecotourism industry.
- To promote the tourism attributes of the Bight.

DISCUSSION OF ISSUES

The limited amount of eco-tourism activity which occurs at present supports the suggestion that there is a growing interest in the Bight. This interest would expand if the attributes of the Bight were promoted and tourist access provided onto the beach at Stockton.

While the area cannot be compared with better known areas of Uluru or Daintree, its close proximity to one of the largest domestic markets in Australia (i.e. Sydney), provides sufficient support for some research to be undertaken leading towards the preparation of an ecotourism plan for the Bight.

This plan would identify opportunities which should be capitalised upon, and should address such issues as:

- on-site accommodation;
- educational tours;
- access - tour routes;
- archaeological sites - interpretive signage;
- cost benefits;
- environmental impact; and
- management.

The area covered by the ecotourism plan should encompass the Nelson Bay Road corridor as this road represents the access spine upon which any ecotourism activity is likely to depend.

As the demand for ecotourism and recreation activity in the Bight grows, there will be increased pressure to provide onsite accommodation. Although the transgressive dunal system lacks mainstream tourist accommodation appeal, the siting of an ecologically "friendly" sand wilderness resort just behind the fore dune has potential to stimulate significant ecotourism interest. This facility would replace the unauthorised huts, and provide a venue for both recreational fisherman and tourists.

A data base of marine and Aboriginal archaeology, geomorphology, sand drift, flora and fauna should be prepared and form the basis of an educational package. Information markers could be placed along the beach and relate to shipwrecks, natural features and form part of an ecotourism trail.

A cycleway corridor has merit but would require detailed investigation, particularly in regards to sand drift and impact on flora/fauna. Consideration should be given to utilising existing informal routes and developing a cycle network from the Nelson Bay Road corridor.

Preferred tourism strategies would be those which facilitate the flow of money back into the Bight.

PREFERRED MANAGEMENT STRATEGIES

- Investigation and preparation of an ecotourism plan for Stockton Bight. This plan would provide direction to prospective tourism operators, promotional activities, and medium to long term options for on site accommodation.

AFFECTED LANDS

All lands in Study Area and Nelson Bay Road Corridor.

3.7 RECREATION

MAJOR ISSUES

- The Recreational Plan for Birubi Point, Newcastle Bight (AWACS 1993) provides a sound foundation for a strategy for recreational planning and management of the area.
- Stockton Bight is utilised by an extensive range of recreation pursuits.
- The existing Lavis Lane 4WD access requires upgrading and implementation of an ongoing maintenance programme.
- Provision of a southern 4WD access requires further investigation.
- There appears to be an identifiable need for a mid 4WD access point. However, the transgressive dunal system makes 4WD access difficult to maintain at this location.

STRATEGIC OBJECTIVES

- To accommodate an extensive range of recreation pursuits which do not significantly impact upon the existing environment.
- To manage recreational interests so that they co-exist with each other and with other land uses.
- To continue to permit 4WD vehicles in areas which cause minimal environmental impact.
- To promote the Bight's recreational opportunities.

DISCUSSION OF ISSUES

The range of recreation activities occurring in the Study Area is extensive. While 4WD activity (fishing and driving) is the predominant recreational use, the Bight accommodates a wide variety of recreational pursuits from dog walking, surfing, hang gliding, RVs and horse riding.

The Bight is large enough to accommodate the existing recreational users with little conflict. Increased recreational activity is likely to occur over time and dependant upon appropriate management, increased usage could easily be accommodated.

The most pressing issue is the provision of a southern access for 4WD vehicles. The existing Lavis Lane access is of poor standard and although it could be improved, maintenance costs would be high.

An opportunity exists to investigate the provision of a southern 4WD beach access. Other issues associated with 4WD access include:

- Demand for access to southern portion of the Bight is considered to be high due to the place of origin of most 4WD vehicles (i.e. Newcastle, Lake Macquarie, Sydney).
- Access for other uses appears adequate.
- Anticipated growth of other recreational uses indicates no need for additional access points.
- Whilst there is an identified need for mid access points, the transgressive dunal system makes access difficult to maintain. Future long term planning should however not discount this, if sufficient resources are available to maintain an access (particularly in respect of costs).

- Demand for future ecotourism may hasten consideration of additional access points.
- Distance markers along beach (associated with shipwrecks) would improve safety and assist in education, promotion and ecotourism.

The Recreation Plan for Birubi Point, Newcastle Bight and Shelley Beach (AWACS November 1993) was examined and its findings are endorsed. Port Stephens Council, LaWC and PWD should proceed to implement the Plan's action strategies. Further to the findings of that study the following additional findings are made:

Dogs

- Existing opportunity for walking dogs unleashed on Stockton Bight (in Port Stephens Council area) should remain.
- In Newcastle City Council area consideration should be given to a restricted unleashed dog walking area.

RV Uses

- Generally unmuffled Recreational Vehicles are considered satisfactory for designated areas.

Buildings for Recreational Uses

- Recreation facilities should be located within existing urban areas. There is no justification for additional commercial services, particularly along Nelson Bay Road.
- Any proposed recreation/tourist facility within Stockton Bight should be visually unobtrusive, not viewed from Nelson Bay Road or the beach front.

Other Issues

- 4WD's should be prohibited from vegetated dunal areas and be generally confined to the beach area and designated access routes.
- No great evidence of physical environmental impact from existing users. The 4WD clubs tend to be self regulatory, while increasing numbers of other users are becoming more environmentally aware. Additional education and promotion in relation to conservation values of the Bight would further assist this trend.
- Management of waste from recreational users. Provision of waste disposal bins at access points should be investigated.

The principal area for recreational activities is the beach/frontal dune area. In order to ensure the Bight can successfully accommodate growth in recreational activities in this area, a Recreational Management Plan for these lands extending the length of the Bight should be prepared. This plan should indicate clear definition of uses between beach (active area) and dunal system (passive) - recognise existing user groups and not preclude activities which are environmentally "friendly". This plan could be extended to include the vegetated dunal lands when recreational activity in these areas demanded better site management. Council's LEP should be amended to give effect to the management plan, namely to ensure the zoning of the beach zone is consistent along the total length of the Bight.

PREFERRED MANAGEMENT STRATEGIES

- Implementation of the Birubi Point Newcastle Bight Recreational Plan.
- Preparation of a Recreation Management Plan covering the total beachfront area (i.e. 32 km).
- Examine opportunities for the provision of a southern beach access for 4WDs.

- Promote the Bight as the Hunter's "coastal recreational park".

AFFECTED LANDS

Beachfront and all Crown Land north of Coxs Lane.

3.8 MANAGEMENT CO-ORDINATION AND STATUTORY FRAMEWORK

MAJOR ISSUES

- Sand extraction activities could be rationalised and used to ameliorate sand drift threatening private property, however this requires co-operation between government, citizens and the sand mining industry.
- The multiplicity of recreational activities within the Bight continue to co-exist without apparent environmental impact or adequate management.
- Port Stephens Local Environmental Plan requires amending to prevent ad hoc ribbon development along Nelson Bay Road and give effect to the preferred management strategy for the Study Area.
- Any overall management strategy for the Bight, and the dunal system in particular, should acknowledge the existing stakeholders and their activities.
- Increased pressure to utilise the area for a mixture of mining, rural, development, recreation and tourism activities in future years will lead to land use conflict and the current management structure is ill equipped to handle these challenges.

STRATEGIC OBJECTIVES

- To provide a statutory framework through which the Stockton Bight Management Plan can be effectively administered.
- Establish a managerial structure through which to implement the Stockton Bight Management Plan in the interests of local citizens and stakeholder groups.

DISCUSSION OF ISSUES

The Port Stephens LEP 1987 does not provide sufficient direction or land use control over activities in the Study Area.

Both the provisions of the LEP and the map will require extensive amendment in order to give effect to the directions proposed by the Management Plan. Of particular concern is the current 1(a) zoning along the Nelson Bay Road Corridor which does not give effect to protecting the existing visual corridor or "tourist gateway".

Much of the dunal area suggested for sand extraction activities is zoned 7(c) or 7(f1). Within these zones sand extraction is a prohibited development.

In order to give effect to the Management Plan, it is suggested that a new zone be investigated, covering all public owned lands lying north of Coxs Lane. This zone could provide for a range of land uses with site specific management co-ordination via the Management Plan and subordinate plans. This legal structure would allow for the changing nature of the transgressive dune system and the various conservation and resource management plans to flow from subsequent investigations.

Decisions relating to long term land use management of the Bight have been ad hoc for many decades. Port Stephens Council, LaWC and HWC have all played passive roles in land use management of the Study Area. This loose arrangement will not be sufficient if the

Management Plan is to be effectively implemented. Thus an improved management structure will be required. Various management models are discussed in Part 5.

PREFERRED MANAGEMENT STRATEGIES

- Port Stephens LEP 1987 be amended to give effect to the provisions of the Management Plan. A review of the LEP be carried out to investigate flexible provisions to enable resource extraction (sand, water), recreation and tourism uses, primarily applying to public land. This would support several resource management plans and subprecinct land management plans.
- A management framework be set up which can effectively implement the Management Plan and provide for continuing input from government, citizens and stakeholder groups.

AFFECTED LANDS

All lands in the Study Area plus those lands lying within the visual corridor of Nelson Bay Road.

SECTION 4.0

PRECINCTS

4.0 PRECINCTS

The Study Area was divided into four Precincts and each of these divided into a varying number of sub-precincts (see **Figure 12**). A description of each Precinct is detailed below:

1 *STOCKTON/FERN BAY PRECINCT*

This precinct includes all lands south of Cox's Lane and includes the proposed Fern Bay development area, Newcastle Golf Course, the Rifle Range, Fern Bay, Stockton Hospital, Fort Wallace and the Sewage Treatment Works. It includes 10 kilometres of Stockton beach. The precinct transgresses the boundary between Newcastle and Port Stephens LGA's. The northern boundary was selected on the basis of:

- Existing public/private property boundary; and
- The southern limit of the existing water reserve.

The precinct is divided into five sub-precincts:

- 1.1 Beachfront
- 1.2 Sewage Works to Rifle Range
- 1.3 Fern Bay Development Proposal
- 1.4 Boral Land
- 1.5 Beachfront (surf zone to rear of frontal dune)

2 *WILLIAMTOWN/SALT ASH PRECINCT*

The precinct extends 14 kilometres along Stockton Bight, with Nelson Bay Road being the western boundary. The northern boundary extends to the limit of the existing water reserve. Approximately half the precinct comprises Crown Land.

The precinct is characterised by extensive sand extraction, large rural holdings, drainage problems, ribbon development along Nelson Bay Road and recreation uses (RV and 4WD's). Hunter Water Corporation hold a reservation over the Crown Land for water extraction.

Sub-precincts comprise:

- 2.1 The Beachfront
- 2.2 The dunal system
- 2.3 Rural lands
- 2.4 Nelson Bay Road corridor including small lot subdivision at Salt Ash

3 BOBS FARM PRECINCT

Bobs Farm precinct comprises lands lying west of Nelson Bay Road to Marsh Road. It comprises predominantly private land holdings. These holdings are fragmented and most not capable of sustaining economic levels of agricultural production due to the small size of the holdings and high water table. Drainage is a significant issue for the lower lands.

The Precinct is divided into two sub-precincts being:

- 3.1 Hind dune area (Nelson Bay Road)
- 3.2 Low Land (Marsh Road)

4 ANNA BAY PRECINCT

The Anna Bay precinct includes those lands lying north of precincts Two and Three and includes eight kilometres of beachfront. The majority of the precinct comprises unreserved Crown Land. Sand extraction operations characterise the northern area of the precinct while ribbon development extends along Nelson Bay Road. Potential sand encroachment is most significant in the Anna Bay precinct and will extend to cover over half the area of the precinct over the next century.

The precinct is divided into four sub-precincts:

- 4.1 Beachfront
- 4.2 Anna Bay - sand extraction/rehabilitation
- 4.3 Nelson Bay Road corridor
- 4.4 Dunal lands

SECTION 5.0

AREA ACTION PLANS

5.0 INDICATIVE AREA ACTION PLANS

In addition to the preferred Management Strategies set out in **Section 3.0**, an Action Plan has been developed for each of the precincts with strategies for each identified sub-precinct.

For each of these strategies, recommendations are made regarding the appropriate body for implementation, the priority for the work and an estimate of initial and recurrent costs, where appropriate. These are presented in the following **Tables**.

Ultimately, implementation of these strategies is dependent upon the level of ongoing Government commitment to funding.

If an alternate implementation option to that recommended in **Section 6.0** proceeds, then Area Action Plans will require modification.

Prior to proceeding to implementation of Area Action Plans, and together with resolution of the preferred Implementation Option, all existing redundant reserves will require revocation.

C5:2

STOCKTON						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
1.1	Investigate provision of southern 4WD access.	NCC/PSC		1996		
	Investigate a "free leash" area for dogs.	NCC	Medium			
	Implementation of a Beach Pollution Reduction Programme in respect of: (i) Sewerage Outfall; (ii) Bilge Waste; and (iii) Beach Waste.	HWC MSB NCC/PSC	High			
	Carry out further detailed assessment of maritime archaeology and preparation of a Conservation Plan	NCC/PSC	Low	1997	\$20,000	
	Development of a long term beach stabilisation strategy	NCC/PWD	Medium to High	1995/96		
	Extend the beach patrols within NCC area	NCC	High	1997		
1.2	Investigate alternate uses for Fort Wallace e.g. tourist / museum / residential	NCC/Landowner	Low/Medium	1996/7		
	Undertake a Land Capability / Suitability Study for the Rifle Range	PSC/Landowner/ NCC	Medium	1996/7		
	Consider alternate uses for Stockton Hospital	PSC/NCC	Medium	2000		
	Undertake planning strategy for precinct to determine long term potential landuses (preferred strategy and timing dependent upon Fern Bay proceeding).	PSC/NCC/Major Landowners	Medium to High (depending on Fern Bay proceeding)	1997		
	Augmentation works/alternate site for sewage treatment works depending upon future development proceeding.	HWC	Medium	1996		
	The existing beach outfall from Stockton Treatment Plant be repositioned to prevent visual and environmental pollution.	HWC	High	1996		

C5:3

STOCKTON						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
1.3	A DCP be prepared for this area having regard to adjoining landuses and linkages to Stockton.	PSC	High (depending on Fern Bay)	1996		
1.4	Further detailed environmental studies be carried out over area to determined future use.	Landowner/PSC	Low	1996		
	Further extension of sandmining activities should be deferred pending detailed environmental impact assessment.	Landowner/PSC	Medium/High	1996		
	Provision of beach access to Signa be investigated.	PSC	Medium	1996		
1.5	A further southern 4WD access point be investigated in the Fern Bay proposal proceeds.	PSC/NCC/ Landowner	Medium	1995/6		
	Installation of beach marker poles	Manager of PSC	High	1995		

C5:4

WILLIAMTOWN / SALT ASH						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
2.1 Beachfront	Implementation of a Beach Pollution Reduction Programme in respect of: (i) Sewerage Outfall; (ii) Bilge Waste; and (iii) Beach Waste.	PSC/MSB	High	1996		
	Carry out further detailed assessment of maritime archaeology and preparation of a conservation plan.	PSC/LaWC	Low/Medium	1997		
	Upgrade and maintain Lavis Lane 4WD access in accordance with Birubi Point Study.	PSC	Medium/High	1996/7	\$30,000	\$5,000 (Maintenance)
	Installation of beach marker poles.	PSC	High	1996	\$30,000	\$5,000
	Implementation of user environmental awareness education programme to contain 4WD activity to frontal beach zone to protect the Little Tern, as part of existing permit system.	PSC/Trust/NCC	Medium	1997		
	Removal of unauthorised huts.	PSC/LaWC	Medium	1997/8	\$10,000	
	Development and implementation of user environmental awareness education programme.	Councils/ Landowners	Medium	1997		
2.2 Dunal System	Detailed investigation of sandrift and long term impact on conservation value and resource allocation.	Council/LAWC	High	1996		
	Identify areas for rationalising sand mining activities within the transgressive dunal system having regard to nature of sand drift and conservation value of the area.	Mineral Resources/Councils /NPWS	High	1996		
	Market demand investigation for sand.	Mineral Resources	High	1996		

C5:5

WILLIAMTOWN / SALT ASH						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
2.2	Ensure access to underground water reserve is available to HWC or its successor and that land use management does not adversely affect water quality.	LAWC	High	1996		
	Rehabilitation of degraded areas to promote a flora/fauna corridor.	NPWS LAWC	Medium	1997		
2.3	Rehabilitation plans be prepared for each existing sand mining / extraction operation.	Landowners	Medium	1997		
	Investigate in appropriate north-south tourist trail with pedestrian/cycle access to beach and Nelson Bay Road	LAWC/PSC	Low	1997		
	A bushfire management plan be prepared	LAWC/PSC	Low	1997		
	Deletion of 5(c) Arterial road zoning from PSC LEP	PSC	Low	1997		
	Investigate provision of waste recepticals at key tourist roads i.e. Lavis Lane.	LAWC/PSC	Medium/High	1996/7		
	Amend LEP to ensure non-proliferation of ribbon development Nelson Bay Road	PSC	High	1996		
	A single authority / organisation be allocated task of co-ordinating drainage improvement and maintenance works for the network of main drains.	PSC/PWS	High	1996		
	Consider and adopt the recommendations of the Steering Committee's Report Future Requirements of Drainage Facilities in the general Longbight-Williamstown Area, dated March 1992.	PSC/PWS	High	1996		

C5:6

WILLIAMTOWN / SALT ASH						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
2.4	Amend LEP to ensure non-proliferation of ribbon development along Nelson Bay Road	PSC	High	1996		
	Implement an area improvement programme to improve visual corridor associated with road re-alignment.	PSC/RTA	Medium	1996/97		
	LEP be amended to provide for ecotourism activities / facilities excluding the Nelson Bay Road corridor.	PSC	High	1996		
	Consider and adopt recommendations of the Steering Committee's Report dated March 1992 in respect of drainage and establishment of a singular co-ordinating authority.	LAWC/PSC	High	1996		
	Promote Nelson Bay Road as a tourist gateway to Port Stephens.	PSC	Medium	1997		
	Continuance of maintenance works to existing drainage network.	PSC	High	1996		
	The existing noxious weeds removal programme continue on an ongoing basis.	PSC	High	1996 ongoing		
	ANEF zones be included on LEP maps and appropriate reference be made in the planning instrument.	PSC	Low	1997		
	Examine opportunities to retain exposed sand dune at southern end.	PSC/LAWC	Low	1997		

C5:7

BOBS FARM						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
3.1	Completion of Council initiated flood mitigation works.	PSC/Landowners	High	1996		
3.2	Amend LEP to ensure non-proliferation of ribbon development along Nelson Bay Road.	PSC	High			
	Promote Nelson Bay Road as a tourist gateway to Port Stephens.	PSC/RTA	Medium			
	Forested road corridor to be maintained with Nelson Bay Road re-alignment proposal.	RTA/PSC	Medium			

C5:8

ANNA BAY						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
4.1	Implementation of a Beach Pollution Reduction Programme in respect of: (i) Sewerage Outfall; (ii) Bilge Waste; and (iii) Beach Waste.	HWC MSB NCC PSC	High	1996		
	Carry out further detailed assessment of maritime archaeology and preparation of a conservation plan.	NCC/PSC	Low	1997		
	Installation of beach markers.	PSC	High	1996		
	Development and implementation of user environmental awareness education programme.	PSC/NCC/ HVFMT	Medium	1997		
	Birubi Point plan of management in respect of facility improvements be implemented.	PSC	High	1996		
	Seek expressions of interest regarding development of "Robinson's" Lease area of James Patterson Street.	LaWC	High	1996		
4.2	Detailed investigation of sand drift and long term impact on conservation value and resource allocation.	See 2.2	High	1996		
	Identify areas for rationalising sand mining activities within the transgressive dunal system having regard to nature of sand drift and conservation value of the area.	See 2.2	High	1996		
	Ensure that access to underground water reserves is available to HWC or its successor and that landuse management does not adversely affect water quality.	See 2.2	High	1996		
	Extension of the Water Reserve be resolved.	HWC/LaWC	High	1996		

C5:9

ANNA BAY						
Sub-Precinct No.	Action	Responsibility	Priority	Timing	Cost	Recurring Cost
4.2	Rehabilitation of degraded areas to promote a flora/fauna corridor.	LaWC	Medium	1997		
4.3	Promote Nelson Bay Road as a tourist gateway to Port Stephens.	PSC/RTA	Medium	1997		
	Forested road corridor to be maintained with Nelson Bay Road realignment proposal.	RTA/PSC	Medium	1997		

SECTION 6.0

IMPLEMENTATION OPTIONS

6.0 IMPLEMENTATION OPTIONS

It is most important that the approved management strategies for Stockton Bight can be effectively implemented either through the existing legislative framework or an alternative mechanism. It is evident from a reading of the Action Plan that several Government agencies will be responsible for implementation of a range of measures. While Port Stephens Council will play the most significant role, other agencies, in particular LaWC, Water Resources, HWC and Mineral Resources will play major roles in overseeing the implementation of the Management Plan.

Five organisational models were examined and the strengths and weaknesses of each discussed with the Consultative Committee and Government Agencies. All five models assume that a new LEP is gazetted which gives effect to the Management Plan. The LEP would include all lands in the Study Area and include the Nelson Bay Road corridor.

MODEL NO.1 STATE RECREATION AREA AND COUNCIL COMMITTEE

This model proposes that the land held in public ownership lying north of Cox's Lane be proclaimed a State Recreation Area pursuant to Division 1A of National Parks and Wildlife Act 1974.

These provisions provide for:

- mining of the land;
- retention of existing leases, reservations etc;
- management of the land in accordance with an approved management plan.

The SRA would be administered by National Parks and Wildlife Service.

The private lands would be managed by Port Stephens and Newcastle Councils via a joint

Council committee established under the Local Government Act, 1993. This committee would comprise Councillors and staff, citizens, landowners, interest groups and one trustee of the SRA. The role of this committee would be to advise Council on the implementation of the Management Plan and provide advice on various development applications within the area covered by the Management Plan.

Strengths

- Coastal land administered through existing legal framework.
- Responsibilities defined on land ownership.
- Recreational activities could be administered by LaWC or Port Stephens Council.
- State Government responsible for administration and management i.e. not at cost of local residents.
- Body of management expertise available through NPWS and Councils.
- Resource bodies could liaise directly with LaWC re: resource utilisation.
- Royalties from sand could off-set management costs.
- Regulatory and management functions separate to ensure accountability.

Weaknesses

- Implementation of management strategies split in two.
- Existing unco-ordinated approach to land management would continue.
- Council still the determining authority for resource utilisation in State Recreation Area, unless specifically excluded by legislation.
- Resolution of sand extraction management would be more complex ie. public v's private land management systems.
- Proponents of activities which traverse both land systems would require approvals from two separate bodies.
- No appointment of trustees to provide ongoing input from stakeholder groups and local community.

MODEL NO.2 CROWN RESERVE AND COUNCIL COMMITTEE

This model proposes that the land held in public ownership lying north of Cox's Lane be dedicated as a Crown Reserve pursuant to Part 5 of *Crown Lands Act* 1989.

These provisions provide for the establishment of a dedicated reserve trust. A reserve trust is charged with the care, control and management of the reserve of which it is appointed trustee. The reserve may be administered by either:

- a trust board with between 3 and 7 members appointed by the Minister;
- a corporation or a council appointed by the Minister; or,
- an administrator appointed by the Minister.

Preference is for the establishment of a trust board with trustees representing recreational, conservation, tourism and sand mining interests.

The private lands would be managed by Port Stephens and Newcastle Councils via a joint Council committee established under the Local Government Act, 1993. This committee would comprise Councillors, citizens, landowners, interest groups and one reserve trust member. The role of this committee would be to advise Council on the implementation of the Management Plan and provide advice on various development applications within the area covered by the Management Plan.

Strengths

- Coastal land administered through existing legal framework.
- Responsibilities defined on land ownership.
- Recreational activities would be administered by the reserve trust and Port Stephens Council.
- State Government responsible for administration and management i.e. not at cost of local residents.

C6:4

- Body of management expertise available through LaWC, NPWS and Councils.
- Resource bodies could liaise directly with the trust re: resource utilisation.
- Royalties from sand could off-set management costs.
- Appointment of trustees to provide ongoing input from stakeholder groups and local community.

Weaknesses

- Implementation of management strategies split in two.
- Existing unco-ordinated approach to land management may continue.
- Council still the determining authority for resource utilisation in the dedicated reserve, unless specifically excluded by legislation.
- Resolution of sand extraction management would be more complex ie. public v's private land management systems.

Proponents of activities which traverse both land systems would require approvals from two separate bodies.

MODEL NO.3 STOCKTON BIGHT MANAGEMENT TRUST

This model involves the establishment of the Stockton Bight Management Trust. This body would be set up under its own legislation and comprise representatives of major interest groups similar to the *Hunter Catchment Management Trust*. The Trust would be responsible for land management of the Study Area and the Nelson Bay road corridor. The Trust would not override Council's planning powers, however, certain development proposals would require the concurrence of the Trust. The Trust would be financed through a local land rate collected by the Councils. Alternatively, funds could be raised through a special levy on sand extraction. The role of the Trust would be to co-ordinate the implementation of the Management Plan, direct research, assist in the resolution of landuse conflict and provide for the Bight's long term sustainability.

Strengths

- Only one body responsible for the implementation of the Management Plan.
- LaWC's role not compromised by not having to wear two hats i.e. land owner and resource allocator.
- Provides an independent and solely focused organisation.
- Financially self sufficient.
- Can co-ordinate various competing user groups.
- Marketing and promotional benefits.
- Acknowledges management issues extend beyond public/private landuse.

Weaknesses

- New legislation required.
- Establishment of an additional bureaucracy.
- Removal of management role away from LaWC and Council.
- Possible lack of accountability in decision making.

MODEL NO.4 STOCKTON BIGHT CATCHMENT MANAGEMENT AND SAND DRIFT COMMITTEE

This Model retains the existing management team and organisation structure.

Planning and landuse management of Stockton Bight is co-ordinated through an inter-governmental committee administered by LaWC (the Stockton Bight Catchment Management and Sand Drift Committee). This committee comprises representatives from:

- Department of Water Resources;
- Newcastle and Port Stephens Councils;
- LaWC;

- Department Public Works;
- Department of Planning;
- Hunter Water Corporation;
- Department of Mineral Resources;
- Department of Defence;
- NPWS; and
- Hunter Valley Catchment Management Trust.

The committee's mandate would be expanded to include the implementation of the Management Plan.

Strengths

- Committee already established.

Weaknesses

- Lack of resources to implement plan.
- LaWC as major land owner would continue to play major management role.
- Inability for Committee to take proactive stance on land management issues i.e. existence not recognised by legislation, role not defined.
- Influence over Council's development control process may not be significant.
- Possibly not able to administer funds in its own right.
- Ability to promote the area or defend it against various pressures is questioned.

MODEL NO. 5 NATIONAL PARK AND COUNCIL COMMITTEE

This model proposes that the land held in public ownership be dedicated as a National Park Pursuant to the NSW National Parks and Wildlife Act, 1974 (as amended).

The Park would be under the care, control and management of the NSW National Parks and Wildlife Service.

The private lands would be managed by Port Stephens and Newcastle Councils via a joint Council committee established under the Local Government Act, 1993. This committee would comprise Councillors, citizens, landowners and interest groups. The role of this committee would be to advise Council on the implementation of the Management Plan and provide advice on various development applications within the area covered by the Management Plan.

Strengths

- Coastal land administered through existing legal framework.
- Responsibilities defined on land ownership.
- All activities would be administered by the NPWS.
- State Government responsible for administration and management i.e. not at cost of local residents.
- Body of management expertise available through NPWS.
- Provides a high profile for tourism marketing.
- Maintenance of access to Water Resources.

Weaknesses

- Implementation of management strategies split in two.
- Perceived incompatibility of National Park with recreational vehicles and sand extraction activities.
- Perceived legislative difficulties regarding compatibility and ongoing flexibility of resource utilisation within a National Park.
- No appointment of trustees to provide ongoing input from stakeholder groups and local community.
- In the context of an existing multi-use area a National Park model is not likely to provide flexibility to enable ongoing rationalisation of sand extraction as a means of ameliorating sandrift on public land.

- Potential for payment of compensation to existing sand extraction operations on public land.
- The existing range of recreational uses occurring through the entire Bight are likely to be rationalised and reduced.
- Availability of long term funding for rehabilitation of dunal system and implementation of management strategy.

DISCUSSION OF PREFERRED OPTION

All of the five options have merit and would be effective in implementing the Management Plan. Each of the options needs to be assessed against several criteria these being:

- Compatibility with existing legislation.
- Effectiveness and flexibility in resolving land use management.
- Marketing impact.
- Cost/benefit.
- Local autonomy in land management.

Values from 1 (lowest) to 5 (highest) have be placed against each criteria for each option.

Option	Criteria					Total
	A	B	C	D	E	
1	4	4	3	2	4	17
2	5	4	4	2	4	19
3	2	5	3	2	5	17
4	3	2	1	4	3	13
5	5	2	5	3	1	16

While the above approach is fairly crude, it does highlight that there is little difference between each of the options. Option 2 scores highest, however, Options 1, 3 and 5 cannot be discounted.

All models examined have relative strengths. The most identifiable weakness is the legislative framework required to enact the recommended management strategy. While not a prerequisite it is necessary to more closely examine models which pose the least number of barriers to implementation.

On the basis of this somewhat crude assessment of alternate models, Model No. 2 is revealed as having the least barriers to implementation and is therefore the favoured option. A dedicated Crown Reserve offers a similar level of future security for the Bight as a National Park while enabling ongoing stakeholder and local community involvement in its management.