

# **Port Bouvard urban and canal development Stage 1, Southport**

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**Wannunup Development Nominees Pty Ltd**

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

Environmental Protection Authority  
Perth, Western Australia  
Bulletin 663  
December, 1992

#### 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 recommendations.

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 assessment report 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 6000

#### CLOSING DATE

Your appeal (with the \$10 fee) must reach the Minister's office no later than 5.00 pm on 18th December, 1992.

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## Summary and recommendations

In 1988 a decision was made by the Western Australian State Government to proceed with the construction of a channel between the Peel - Harvey estuarine system and the ocean in the vicinity of Dawesville south of Mandurah, to improve water quality within the estuary. This channel has become known as the 'Dawesville Channel'. The channel is presently under construction, under the supervision of the Department of Marine and Harbours, and is expected to be completed in early January 1994.

In 1991 the Environmental Protection Authority reviewed a 'Strategy Plan' for the development of land adjacent to the Dawesville Channel. This strategy plan was prepared jointly by the Department of Marine and Harbours and Wannunup Development Nominees Pty Ltd, in accordance with a formal rezoning requirement of the Department of Planning and Urban Development, and formed the basis for Amendment No. 126 to the City of Mandurah Town Planning Scheme No. 1A. This amendment proposed the creation of the 'Dawesville Channel Development Zone', which outlined the general planning objectives for future development within the zone.

In view of the Authority's previous assessment of the 'Peel Inlet and Harvey Estuary Management Strategy Stage 2 Environmental Review and Management Programme' in 1988 which acknowledged the fact that land adjacent to the channel would be likely to be the subject of future urban development, the Authority determined that the plan would not be subject to formal assessment. The Authority's informal advice on the strategy plan identified aspects of the development proposed as part of the plan which would require further assessment by the Authority.

In April 1992 Feilman Planning Consultants on behalf of Wannunup Development Nominees Pty Ltd referred to the Environmental Protection Authority a proposal to develop three urban and canal estates on the land immediately north and south of the Dawesville Channel alignment, in Mandurah. This proposal is known as 'Port Bouvard Urban and Canal Development', and involves the construction of three nodes of urban development, referred to as 'Northport', 'Southport' and 'Eastport'.

This proposal was assessed by the Environmental Protection Authority as a 'Public Environmental Review' (PER) in view of the likely potential environmental impacts associated with it. The eight week public review period for the PER ended on 16 November 1992.

On 24 November 1992 the Minister for the Environment directed the Environmental Protection Authority to report immediately on the development known as Southport, as described within the Port Bouvard PER. In view of this direction, the Authority determined that the Port Bouvard PER should be reported on in two stages. This assessment report involves the assessment of the Southport development only. The Northport and Eastport proposals as described within the PER will be subject to a separate report by the Authority.

The development known as 'Southport' refers to land south of the Dawesville Channel and west of Old Coast Road. Two options are presented by the proponent within the PER, which include a golf course, boat haven, and residential lots. One option includes plans for a canal estate.

Following assessment of the Southport proposal as described within the PER document, and consideration of issues raised within the public submissions and the proponent's response to these issues, the Environmental Protection Authority has concluded that it has no objection in principle to the canal estate or boat haven as proposed. However, in view of the fact that the groundwater is severely polluted through contamination from leachate originating from the tip site, the Authority recognises that it may be difficult to obtain and maintain acceptable water quality within the canal estate. If the proponent wishes to pursue the development of a canal estate (Option 2), and can demonstrate that the water within the canals can be maintained to an acceptable standard, these details should be forwarded to the Authority for consideration.

### **Recommendation 1**

The Environmental Protection Authority has concluded that it has no objections in principle to the development of the Southport proposals Option 1 and 2 as described within the Public Environmental Review.

In reaching this conclusion, the Environmental Protection Authority identified the main environmental issues as:

- impact on the coastal dunes;
- impact on native vegetation within Caddadup Reserve;
- water quality within the proposed artificial waterways; and
- nutrient management within the golf course.

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the proponent's environmental commitments listed as Appendix 2 and the following recommendations.

### **Recommendation 2**

The Environmental Protection Authority recommends that should the proponent intend to develop a canal estate as described in Option 2 of the Southport Development, the proponent should submit to the Environmental Protection Authority prior to construction of the waterway plan to manage water quality within the canal system so that an acceptable standard can be maintained within the waterway.

### **Recommendation 3**

The Environmental Protection Authority recommends that an agreement for the long term management for the boat haven or canal development (i.e. post five years) should be finalised by the proponent prior to the waterway becoming operational.

### **Recommendation 4**

The Environmental Protection Authority recommends that a monitoring programme of the superficial groundwater resource in and around the existing tip site should be undertaken by the proponent, to ascertain water quality and any implications of use of the water for supply to domestic residential properties. Preferably, this programme should be prepared in consultation with the City of Mandurah and the Water Authority of Western Australia.

### **Recommendation 5**

The Environmental Protection Authority recommends that detailed design and rehabilitation measures to protect the dune system during and post construction of the golf course be undertaken by the proponent in consultation with the Department of Planning and Urban Development, to achieve the following objectives:

- minimise impact on native vegetation;
- restore degraded dune areas; and
- minimise modification of existing dune landform.

This detail should be included within the proposed Foreshore Management Plan for Southport, and be completed prior to construction of the golf course.

#### **Recommendation 6**

**The Environmental Protection Authority recommends that during construction of the golf course, the proponent should minimise disturbance to existing stands of native vegetation within Caddadup Reserve, on advice from the Department of Conservation and Land Management.**

#### **Recommendation 7**

**The Environmental Protection Authority recommends that management measures for the proposed artificial lakes within the golf course be incorporated within the proposed Golf Course Management Plan. Further, any future plans for the application of treated reticulated sewage to the golf course should be prepared in consultation with officers of the Environmental Protection Authority, and incorporated as part of this plan.**

# 1. Introduction

## 1.1 Background

In 1991 the Environmental Protection Authority reviewed a 'Strategy Plan' for the development of land adjacent to the Dawesville Channel. This strategy plan was prepared jointly by the Department of Marine and Harbours and Wannunup Development Nominees Pty Ltd, in accordance with a formal rezoning requirement of the Department of Planning and Urban Development, and formed the basis for Amendment No. 126 to the City of Mandurah Town Planning Scheme No. 1A. This amendment proposed the creation of the 'Dawesville Channel Development Zone', which outlined the general planning objectives for future development within the zone.

In view of the Authority's previous assessment of the 'Peel Inlet and Harvey Estuary Management Strategy Stage 2 Environmental Review and Management Programme' in 1988 which acknowledged the fact that land adjacent to the channel would be likely to be the subject of future urban development, the Authority determined that the plan would not be subject to formal assessment. The Authority's informal advice on the strategy plan identified aspects of the development proposed as part of the plan which would require further assessment by the Authority.

In April 1992 Feilman Planning Consultants on behalf of Wannunup Development Nominees Pty Ltd referred to the Environmental Protection Authority a proposal to develop three urban and canal estates on the land immediately north and south of the Dawesville Channel alignment, in Mandurah. This proposal is known as 'Port Bouvard Urban and Canal Development', and involves the construction of three nodes of urban development, referred to as:

- 'Northport' - this refers to land north of the Dawesville Channel alignment and west of Old Coast Road, and proposes the development of a canal estate, shopping centre, community facilities, residential lots and group housing sites;
- 'Eastport' - refers to land north of the Dawesville Channel and east of Old Coast Road, and proposes a canal estate, and residential lots. (A public marina is also proposed within the site by the Department of Marine and Harbours, which is planned to be incorporated within the development); and
- 'Southport' - refers to land south of the Dawesville Channel and west of Old Coast Road. Two options are presented within the plan, which include a golf course, boat haven, and residential lots. One option includes plans for a canal estate. (See Figures 1 and 2).

The Authority determined that this proposal should be assessed as a 'Public Environmental Review' (PER) in view of the likely potential environmental impacts associated with it. This document was subsequently prepared in accordance with guidelines issued by the Authority, and released for an eight week public review period, ending on 16 November 1992.

## 1.2 Assessment of the Southport proposal

On 24 November 1992 the Minister for the Environment directed the Environmental Protection Authority to report immediately on the development known as Southport, as described within the Port Bouvard PER. In view of this direction, the Authority proposes to report on the Port Bouvard PER in two stages.

This assessment report will assess the Southport development only. The Northport and Eastport proposals as described within the PER will be subject to a separate report by the Authority.

## **2. The proposal**

The area proposed to be developed as part of the Southport proposal involves land currently in the ownership of the proponent, and land currently under the ownership of State government authorities and which is to be transferred to the proponent under an existing legal agreement. The proposal will also impact on a portion of 'A' Class Crown Reserve No. 2851, known as Caddadup Reserve. This Reserve is approximately 116 hectares (ha) in area and is currently vested within the City of Mandurah for the purposes of 'Camping and Recreation'.

Two options for the development of the area are presented within the PER.

### **2.1 Southport Option 1 (Figure 1)**

This option proposes the creation of a 40 hectare public residential golf course estate. The golf course includes 9 holes on privately owned land. Approximately 230 residential lots, resort hotel, golf club, and a boat haven (8,500 square metres in area) surrounded by 90 residential units are proposed. A further 9 holes of golf course are proposed for the adjacent Caddadup Reserve.

### **2.2 Southport Option 2 (Figure 2)**

This option proposes an 18 hole golf course (40 ha) on Caddadup Reserve, and 340 residential lots, 110 group housing sites, and a 7 ha canal waterway surrounded by 90 canal estate lots on the privately owned land.

Both options retain public access along the channel alignment. Both golf course options also include artificial lakes.

The Southport development is proposed to be sewered via a gravity system of underground pipes to a pump station. At present there is no existing treatment works in the vicinity. However, the Water Authority of Western Australia (WAWA) proposes to construct a temporary sewage treatment facility on Caddadup Reserve south of the proposed golf course. This facility would take the form of lined open ponds. A permanent sewage treatment plant is proposed for the Tims Thicket area south of the development site in the long term.

Water requirements for the irrigation of the golf course and regional recreation reserve are estimated to be 440,000 kilolitres per annum, and is proposed to be obtained from local groundwater bores, tapping into the local superficial aquifer, and the deeper Leederville Formation. These bores will require an abstraction licence from the WAWA. Groundwater is proposed to be pumped into lined temporary storage lakes which will be located at selected sites around the course. Treated residential wastewater is also being considered as a longer term supplementary water source by the proponent. However, this is not described within the PER document.

Golf course construction is proposed to be undertaken concurrently with residential subdivision, as a staged development in response to market demand. According to present construction timetable estimates, the Dawesville Channel is expected to be completed and available for use by members of the public for activities such as boating in January 1994.



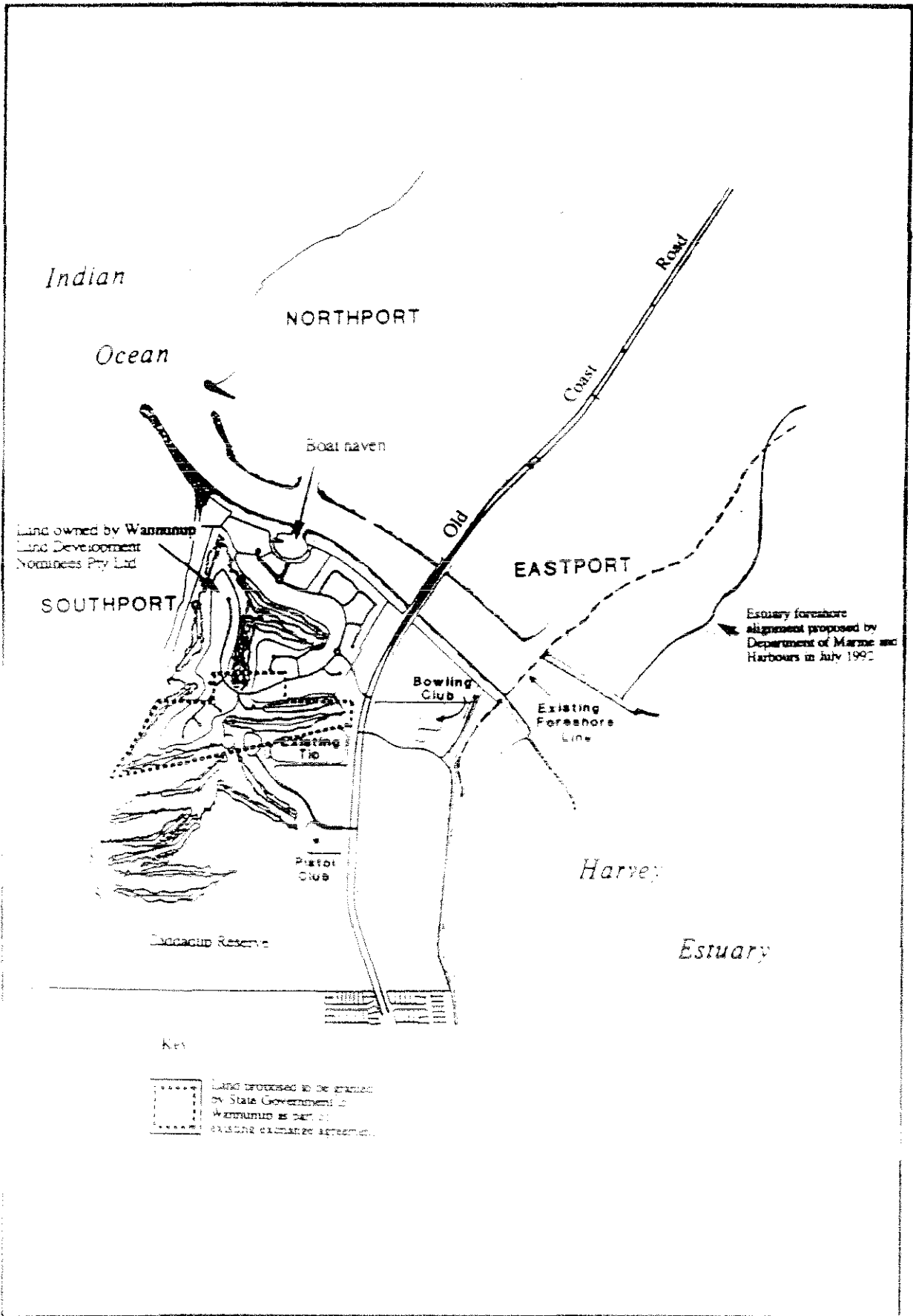


Figure 1. Southport development Option 1.

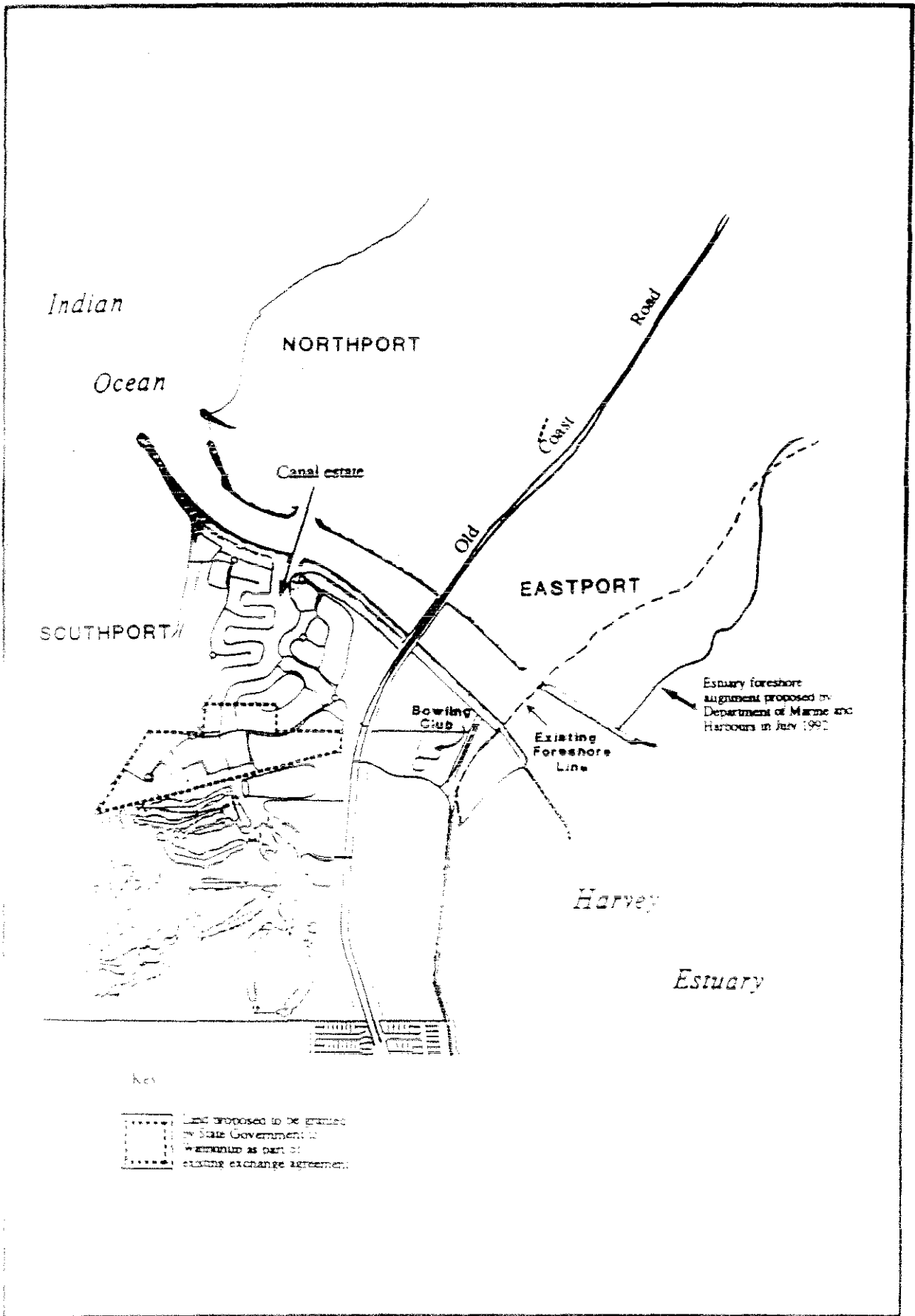


Figure 2: Southport development Option 2.

### **3. Public review**

Seven submissions from interested members of the public were made on the Port Bouvard proposal which make specific reference to the Southport development. Submissions were also received from the Water Authority of Western Australia, Agriculture Department, Department of Marine and Harbours, Department of Planning and Urban Development, the City of Mandurah and the Peel Inlet Management Authority.

The following specific issues were raised.

#### **Impact on 'A' Class Reserve (Caddadup Reserve)**

Several submissions raised the point that in view of long term urban development north and south of the channel, Caddadup Reserve is likely to become a significant area of regional open space, containing representative woodland species. The 'Flora and Vegetation Survey of the Coast of the City of Mandurah' (1992) documents a unique nature of stands of tuart forest and woodland within the Caddadup Reserve. Submissions claimed that the amount of vegetation which will be affected or destroyed by construction of the golf course has not been quantified within the PER and therefore an accurate assessment of the potential impact cannot be made. The reserve also has significant value as a faunal corridor between the coast and the Estuary.

The implication made in the PER document that a golf course at this location would rehabilitate and improve the area is considered by some submissions to be misleading in part, as rehabilitation implies encouraging and replanting natural species, not constructing a golf course and the planting of exotic grass species. It was claimed that a golf course is likely to use pesticide, herbicide and fertilizers, which may have an unacceptable impact on the adjacent environment. Some submissions claim that these issues have not been adequately addressed by the proponent within the PER, and that greater protection and rehabilitation measures should be identified.

Some submissions recommend that the reserve be retained in a natural state as a natural bushland area, and degraded areas within it rehabilitated to an acceptable level. The reserve would then become of regional significance, and retain its value as a continuous vegetated link and faunal corridor between the coast and estuary. It was claimed that this corridor would effectively break the continuous linear urban development currently taking place along the coastal strip.

#### **Inappropriate land use**

The question of 'privatising' what is presently 'public open space' for a golf course use was raised in some submissions, and whether the option to provide a public reserve area instead of a golf course and sewage treatment facility for the site was considered. Concern was also expressed that construction of the golf course will utilise most of the open space contribution made by the developer required as part of the planning approval process, leaving none for the creation of new reserves near the estuary.

Some submissions also questioned the need for a golf course in this vicinity because there are already two under-utilised golf courses in the vicinity. Is there a need for another one?

#### **Impact on coastal dunes and coastal foreshore reserve**

Several submissions stated that the site would be unsuitable for a golf course as the area is a steeply dissected dune system supporting a relatively sparse cover of coastal vegetation. The coastal area is considered to be very fragile and construction of the golf course would disturb and de-stabilise the primary dunes leading to unacceptable land degradation. Any increase in storm activity along the coast may also be exacerbated if the development were to proceed. Further, spoil disposal is likely to further damage the foreshore and any remaining vegetation.

Discussion within the PER relating to the coastal foreshore is considered by some submissions to lack information in terms of land capability, mapping and statistical data to determine the extent of the primary dune system, and detail on how the proponent will address any potential problems encountered. It is considered that there is insufficient information to determine what sort of development this landform can sustain, exactly how far the proposed golf course will extend, and subsequent impact on the coastal dunes.

Other issues raised in the submissions included:

- impact of proposed bore on local groundwater sources;
- need for mosquito control measures in proposed 'pools' within the golf course;
- suitability of Caddadup Reserve as a site for a temporary sewage treatment plant; and
- potential impact of contaminated groundwater from leachates emanating from the tip site on nearby urban residents

A copy of the proponent's response to issues raised within the public submissions is included within Appendix 1.

## **4. Environmental impacts**

### **Recommendation 1**

**The Environmental Protection Authority has concluded that it has no objections in principle to the development of the Southport proposals Option 1 and 2 as described within the Public Environmental Review.**

**In reaching this conclusion, the Environmental Protection Authority identified the main environmental issues as:**

- **impact on the coastal dunes;**
- **impact on native vegetation within Caddadup Reserve;**
- **water quality within the proposed artificial waterways; and**
- **nutrient management within the golf course.**

**Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the proponent's environmental commitments listed as Appendix 2 and the following recommendations.**

### **4.1 Artificial waterways**

#### **4.1.1 Canal water quality**

In view of the fact that the groundwater is severely polluted through contamination from leachate originating from the tip site, the Authority recognises that it may be difficult to obtain and maintain acceptable water quality within the canal estate. If the proponent wishes to pursue the development of a canal estate (Option 2), and can demonstrate that the water within the canals can be maintained to an acceptable standard, these details should be forwarded to the Authority for consideration.

### **Recommendation 2**

**The Environmental Protection Authority recommends that should the proponent intend to develop a canal estate as described in Option 2 of the Southport Development, the proponent should submit to the Environmental Protection**

**Authority prior to construction of the waterway plan to manage water quality within the canal system so that an acceptable standard can be maintained within the waterway.**

#### **4.1.2 Waterway management**

Southport Option 1 includes the development of a 'small boat haven'. It is noted that the proponent has undertaken a commitment to prepare a 'Water Quality Management and Monitoring Plan' (Commitment 8.1.3, Appendix 2) following approval to rezone the land to 'Canal Zone' under the local Town Planning Scheme in consultation with officers of the Peel Inlet Management Authority, and Environmental Protection Authority for the first five years of operation. Results of this monitoring should be submitted on a regular basis to the Authority, and a summary report prepared after the first five years of operation.

The Authority also notes that the boat pump out and sewage facility to service the proposed boat haven is expected to be incorporated in the Department of Marine and Harbours marina proposal described as part of the Eastport development. In view of the staged assessment of the Port Bouvard proposal, approval for this boat haven as part of the Southport proposal does not imply that environmental approval has been granted for the marina at Eastport, which will be the subject of separate assessment by the Authority. In the event that the marina proposed as part of the Eastport development does not proceed, the Authority will require the proponent to forward alternative plans for sewage service facilities for boats using the Southport boat haven prior to the boat haven becoming operational.

Finally, the Authority notes that responsibility for the long term management (i.e. post five years following construction) of the boat haven has not been determined.

#### **Recommendation 3**

**The Environmental Protection Authority recommends that an agreement for the long term management for the boat haven or canal development (i.e. post five years) should be finalised by the proponent prior to the waterway becoming operational.**

#### **4.2 Groundwater abstraction**

The PER states that the golf course is proposed to be reticulated from a groundwater bore into the Leederville formation. Advice from the Water Authority of Western Australia indicates that this is a confined aquifer, which is unlikely to be contaminated by polluted groundwater emanating from the tip site (as discussed in Section 4.1.1 above).

An additional bore is also proposed to be constructed, to tap water from the superficial aquifer at the site. Water from this superficial bore may be used to supplement domestic water supply for nearby residential properties. The Authority considers that water from this superficial aquifer which may be contaminated from leachates from the tip site could be appropriate for irrigation purposes.

In view of the potential contamination of the groundwater via leachate from the existing tip site, and possible use by local residents, the Authority considers that a superficial groundwater monitoring programme should be prepared by the proponent. The Water Authority has advised that no superficial groundwater abstraction licence will be granted until this programme has been undertaken, results identified and remedial action identified and instituted if considered

#### **Recommendation 4**

**The Environmental Protection Authority recommends that a monitoring programme of the superficial groundwater resource in and around the existing tip site should be undertaken by the proponent, to ascertain water quality and**

any implications of use of the water for supply to domestic residential properties. Preferably, this programme should be prepared in consultation with the City of Mandurah and the Water Authority of Western Australia.

### **4.3 Temporary sewage treatment plant**

The PER states that a temporary sewage treatment plant to service Southport will be constructed by the Water Authority on Caddadup Reserve. The Authority considers the location of this plant should minimise clearing of native vegetation, and provide an appropriate buffer. The plant will require a Works Approval and Licence from the Authority, and its environmental performance will need to comply and meet conditions set under these approvals.

### **4.4 Impact on coastal dunes**

As documented within the PER (Appendix 'B'), the coastal dunes adjacent to the Southport development are characterised by unconsolidated sands overlying limestone. These dunes are particularly vulnerable to erosion through pedestrian and vehicle traffic.

The Authority has been advised that the Southwest Region Planning Committee (established by the State Planning Commission in 1992 to review planning matters in the south west) has reviewed the Southport proposal and has resolved that the location of the golf course on the dunes is approved in principle, subject to the detailed construction, design and rehabilitation measures, which should be prepared in accordance with the Department of Planning and Urban Development's 'Country Planning Policy' (Policy DC 1.6).

In view of the close proximity of the urban and golf course development to the coast, and the increased recreational pressure it will experience, the Authority fully endorses the proponent's commitment to prepare a 'Foreshore Management Plan' prior to construction of the development (Commitment 8.1.2, Appendix 2). This should include details of proposed pedestrian and vehicle access to the ocean foreshore, and proposed measures to protect dune area during construction of the golf course. The design of the golf course should be sympathetic to existing landforms, minimise clearing of native vegetation, and restore areas of dune vegetation which have been degraded.

### **Recommendation 5**

**The Environmental Protection Authority recommends that detailed design and rehabilitation measures to protect the dune system during and post construction of the golf course be undertaken by the proponent in consultation with the Department of Planning and Urban Development, to achieve the following objectives :**

- minimise impact on native vegetation;
- restore degraded dune areas; and
- minimise modification of existing dune landform.

**This detail should be included within the proposed Foreshore Management Plan for Southport, and be completed prior to construction of the golf course.**

### **4.5 Impact on Caddadup 'A' Class Reserve**

As stated within Section 5.1.2 of the PER document, the north end of Caddadup Reserve has been degraded where a domestic refuse site, sullage disposal pit, rifle and off-road vehicle activity has caused clearance and disturbance to native vegetation. However, vegetation stands in the southern portions of the Reserve are acknowledged to be in good condition.

This area has been recognised as having a high regional conservation value due to diversity of different types of vegetation in good condition (Trudgen, 1992).

While the proposed use of the reserve is consistent with the vesting purpose of 'Camping and Recreation', the Authority considers that the native vegetation within the reserve should be retained wherever possible.

#### **Recommendation 6**

**The Environmental Protection Authority recommends that during construction of the golf course, the proponent should minimise disturbance to existing stands of native vegetation within Caddadup Reserve, on advice from the Department of Conservation and Land Management.**

### **4.6 Nutrient management**

The Authority notes that the proponent has undertaken a commitment to prepare a nutrient management programme within a 'Golf Course Management Plan' prior to the construction of the golf course (Commitment 8.1.1, Appendix 2). This is proposed to include a staged nutrient management programme designed to minimise fertiliser application, and identify soil sampling and monitoring techniques.

The Authority considers that the golf course management plan should also identify management measures for the proposed artificial 'lakes' within the golf course, including mosquito breeding control.

The Authority also notes that mention is made within the PER of provision of reticulated treated effluent application onto the golf course.

#### **Recommendation 7**

**The Environmental Protection Authority recommends that management measures for the proposed artificial lakes within the golf course be incorporated within the proposed Golf Course Management Plan. Further, any future plans for the application of treated reticulated sewage to the golf course should be prepared in consultation with officers of the Environmental Protection Authority, and incorporated as part of this plan.**

## **5. References**

- Environmental Protection Authority (1992) Environmental Protection Authority advice on the Dawesville Channel Strategy Plan (unpublished report).
- Feilman Planning Consultants (1992) Public Environmental Review - Port Bouvard Urban and Canal Development. Volumes 1 and 2. Perth, Western Australia.
- Trudgen, M (1992) A Flora and Vegetation Survey of the Coast of the City of Mandurah. Department of Planning and Urban Development, Perth, Western Australia.

## **Appendix 1**

**Proponent's response to issues raised in public submissions**



FEILMAN PLANNING CONSULTANTS PTY LTD TRUSTEE FOR THE FPC TRUST

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1st December 1992

Our Ref: WDN/DVODP69.DOC

Environmental Protection Authority  
Westralia Square Building  
38 Mounts Bay Road  
Perth WA 6000

Attention: **Ms E Bunbury**

Dear Sir

Re: **Port Bouvard Urban and Canal Development  
Public Environmental Review - Stage 1: Southport**

We refer to your letter dated 27th November 1992 requesting the proponents response to the public submissions received in regard to Southport.

In behalf of the proponent, Wannanup Development Nominees Pty Ltd, we have prepared a response on the issues raised, a copy of which is attached. For ease of reference we have adopted the Authority's summary headings, identified the salient issues under sub-headings and provided comment on each.

We trust the above is to your satisfaction and look forward to the Authority's early assessment. Should you require any further information or clarification of points raised in our submission please do not hesitate to contact Erwin Roberts of this Office on 322 3033.

Yours faithfully

*Erwin Roberts*  
Feilman Planning Consultants Pty Ltd

Feilman Planning Consultants Pty Ltd

Erwin Roberts  
E. Bunbury  
11/12/92

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## 1. PROPOSED GOLF COURSE

### 1A. Impact on 'A' Class Reserve [Caddadup Reserve]

- (i). By utilising the above heading the significance of the vesting order for the Caddadup Reserve has been overlooked. The Reserve is vested in the City of Mandurah for "Recreation and Camping". This is in recognition of the lands importance to the locality as a resource for development for future recreation purposes.

Since its inception, the Reserve has been utilised for recreation purposes; formally in regard to the development of the Port Bouvard Pistol Club and more informally through the use of the Reserve by off-road vehicles. The fact is that the Reserve has been set aside and used for the last 34 years for recreational purposes, and the proposal for a golf course is an extension and consolidation of the present uses and as such complies with the vesting order over the land.

As a final comment it is considered unreasonable that the appropriateness of a golf course in the Caddadup Reserve is questioned, where this use is in accordance with the Reserve's vesting order, whilst the use of parts of the Reserve as a refuse disposal site, septage disposal site and sand quarry - all of which can not be considered as uses which accord with the vesting order of "Recreation and Camping" - have been allowed to take place.

The proposal for the golf course facilitates the closure of these inappropriate land uses and provides for the lands rehabilitation, as well as accommodating a change of land use which is more appropriate, and is in accordance with the Reserves vesting order.

It is worth noting that the System 6 Report which so comprehensively studied the conservation requirements of South-West forest and coastal areas did not recommend that this designation for the particular area should be upgraded to a primary purpose of conservation.

Nonetheless the conservation value of the Reserves vegetation assemblages as reflected in the "Flora and Vegetation Survey of The Coast of the City of Mandurah" is recognised - as is the significant damage done to the area by past refuse disposal activity, spread of weeds and continued off-road vehicle and pedestrian access through the Reserve.

Reference by the Authority to the "Flora and Vegetation Survey of the Coast of the City of Mandurah" (1991) which "...documents a unique nature of the stands of Tuart Forest and Woodlands within the Caddadup Reserve" is noted and has been allowed for in the proposal for the golf course. The Survey is not specific in its documentation of

the Caddadup Reserve, however the golf course proposal makes allowance for the stands of Tuarts located south of the refuse disposal site and on the high ground west of the Pistol Club site. The majority of these areas will be preserved by the golf course proposal and the vegetation retained. Other, less significant stands of Tuarts can still be retained, as the golf course provides an opportunity for the integration of existing vegetation within the overall development. As a recreational use within the Reserve [recognising that the future use of the Reserve is for recreation and/or camping purposes] the golf course provides the best recreational opportunity for the minimisation of disturbance and retention of existing vegetation.

With the increase in the neighbourhood population associated with the Port Bouvard development, recreational demands will place increasing stress on the Reserve, whether it is developed or is retained in its natural state. The use proposed within the PER therefore aims to strike a balance between catering for recreational demands whilst preserving much of the tuart and peppermint forest/woodland within the area. At the same time the proposed golf course development will establish a management presence that will, in its own interests, ensure continued maintenance and protection of the area.

Option 1 in the PER provides a faunal corridor in the southern portion of the Caddadup Reserve of between 350 and 500 metres in width in accordance with the environmental and conservation recommendations.

An undisturbed natural link will be retained between the estuary and the ocean in the southern-most portion of the reserve which will not be impacted by the golf course development. This, together with the areas of woodland and forest to be retained along the dunal ridges over the balance of the reserve, will ensure that a faunal corridor is maintained between the ocean and the estuary.

However, the relevance and significance of retaining a "faunal corridor" is questionable in that the presence of the major highway link to the South West [Old Coast Road] forms a significant barrier to east-west movement.

The statement in the PER that a golf course in this location would involve the rehabilitation and general improvement of the area is not misleading. Whilst the construction of a golf course would result in a modified environment, this is contained to those areas where development will take place for fairway construction and only involves 9 holes of the golf course. The balance of the land outside of the fairways including the ridges between fairways, are retained in their natural state, and permit "...encouraging and replanting natural species", as alluded to by the Authority. The introduction of "exotic

grass species" is restricted to the [generally] 60 metre wide fairways and in and around the green and tee-off points, whilst the vegetation on the balance of the land between the fairways is retained and enhanced.

As stated in the PER, parts of the Caddadup Reserve have been badly degraded by past land use practices. The development of the land as a golf course affords the opportunity for the rehabilitation of the Reserve, and whilst it is true that some of this work will involve construction of fairways, much of the existing environment will be rehabilitated through the planting of native species. There are many examples in Western Australia of the successful integration of golf course with the existing environment. The Vines Resort in the Swan Valley has successfully retained its natural bushland setting - to the extent that in the development stage seeded mulch was spread along the sides of the fairways to assist in the regeneration of the natural flora. At Meadow Springs in Mandurah the fairways are dominated by towering 200 year old Tuart trees retained and integrated into the golf course design.

To the north, fairway development will be the basis for rehabilitating the disturbed ground within and adjoining the rubbish tip. In the forested dunes to the south, the fairways will be carefully sited to minimise impacts on the peppermint and tuart, being largely confined to swales so that the intervening dunal ridges remain undisturbed. To the west, the fairways will provide the basis for rehabilitating those areas of the reserve where vegetation has been degraded by encroaching sand drift. This rehabilitation will use introduced turf species on the fairways themselves, but within the frontal dune and berm immediately behind the beach native and naturalised groundcovers and shrubs will be propagated to establish an effective trap for any further incoming sand.

The development of the Reserve for a golf course also allows for the total rehabilitation and stabilisation of the several blowouts located along the coastline and intruding into the Caddadup Reserve. Furthermore, the success of such work, including rehabilitation within the Reserve is assured as the golf course provides total management and therefore control over land use, whereas at present due to lack of resources, no management exists to the detriment and ultimate degradation of the Reserve.

The assumption that a golf course uses high levels of water, pesticide, herbicide and fertilisers and therefore has an unacceptable impact on the adjacent environment is misleading.

As the fairways where these are to be applied will be largely in swales between the dunal ridges, there will be little potential for leachates or

surface runoffs to affect the undisturbed native vegetation on these fringing ridges. Furthermore demand for water and pesticides will be reduced by amending the fairway sands with bauxite residue. This will also ensure that leaching of nutrients to groundwater is minimised.

In regard to water, whilst it is accepted that a golf course is a substantial user of water, at Port Bouvard, the Water Authority of Western Australia has already issued a water extraction licence for the golf course and proposed five hectare District Open Space site. In considering the application the Authority's decision will have taken account of future demands as well as the appropriateness of issuing an approval for the use of the water for the total recreational needs.

In respect of pesticides and herbicides a golf course is *not* a high user of such chemicals. There is now sufficient knowledge and a range of chemical products available which provide for short-term and not long-term persistence. The use of pesticides involves minimal application on the greens only which represents 1 to 2 hectares of the total irrigated area of approximately 35 hectares [of which only half will be located in the Reserve]. Furthermore the greens are treated bi-annually re-inforcing the minimal application. Whilst herbicides have a more general application-applied over all irrigated areas once or perhaps twice a year - within three months of application, the residue is almost non-existent. The application of fertiliser is controlled and managed and monitored through the preparation of the Nutrient and Irrigation Management Plan. This is a commitment of the PER.

The statement that the Reserve should be retained as a natural bushland area and that degraded areas be rehabilitated does not recognise that in its present state the Reserve has been degraded and funds have not been available for rehabilitation. Furthermore, the success of any rehabilitation work would be threatened by the same land use practices which in the past have led to the present degradation of the Reserve. To reiterate, the golf course represents a recreational land use which conforms with the Reserve's vesting order, and its development as such provides a form of rehabilitation which will include total management and control of land uses for the betterment of the Reserve. In addition the argument for the retention of the Reserve as "...a continuous vegetated link and faunal corridor between the coast and estuary" is questioned in view of the major barrier provided by Old Coast Road.

The statement that retention of the Reserve as a natural bushland area would produce a break in the "...continuous linear urban development..." is largely a planning issue and not an environmental concern, however development of portion of the Reserve as a golf course, including the integration of the existing vegetation will still provide the desired "break" in urban development.

The concept of a golf course at Port Bouvard on the Caddadup Reserve has been the subject of three separate advertising periods [Amendment No 176 - December 1991 to January 1992; Outline Development Plan - August 1992; and PER-September 1992 to November 1992] which has provided ample opportunity for the Departments of Agriculture and Conservation and Land Management to make an assessment of the golf course and provide comments and advice on the lands suitability etc.

### 1B Inappropriate Land Use

The appropriateness or otherwise of a golf course as a use within the Caddadup Reserve is a land use planning matter and not an environmental consideration. However the following comments are made in response to those submissions which question the appropriateness of the golf course:

- i) The golf course is an appropriate land use as the Reserve is vested for the purpose of "Recreation and Camping";
- ii) The statement that the golf course "privatises" the use of the land is totally incorrect - the golf course will be a public course, and it was on this condition that the application for a water extraction licence was approved. The construction of the golf course will provide the public with the opportunity to use and enjoy the Reserve.
- iii) As a land use planning matter, the relevant planning approval authorities (ie the Mandurah City Council and the South West Region Planning Committee) have approved the Outline Development Plan supporting the use of the land for a golf course.

The statement that the golf course "...will utilise most of the open space contribution made by the developer..." is incorrect. Whilst a golf course provides both active and passive recreation opportunities and is recognised as improving and enhancing the general amenity of the area, it falls outside the State Planning Commission's Policy for the provision of Public Open Space.

The question of demand for a golf course in this particular locality is not an environmental issue - rather it falls within the jurisdiction of the planning approval authorities. The statement however is irrelevant as the golf course will not be constructed until it is demonstrated that a course would be commercially viable - a position that is supported by current planning in the Florida, Melros, Dawesville and Wannanup areas which provides for an increased population of approximately 20,000 people.

## 1C Impact on Coastal Dunes and Coastal Foreshore Reserve

- (1) Whilst the proposed fairway development within the dunes will have an impact on the ecology of this area, replacing native dunal heath with grassed surfaces, will not destabilise the dunes. On the contrary, the introduction of irrigated turf will provide a less fragile vegetation cover which will effectively protect dunal stability. This is evidenced by foredune parkland developments elsewhere along the WA coastline, including locations in the Perth Metropolitan Area such as Safety Bay, Kwinana Beach and South Beach, Fremantle.

The construction of the fairways in the dune system will only take place in the swales between the dunes with the integrity of the dune ridges being retained. No part of the golf course is proposed to be constructed on top of or forward of the primary dune.

The management which will accompany such development to ensure the investment in fairways and greens is protected can be expected to at least match - and more likely exceed - the level of management which would normally be expended on a natural dune system. This too is demonstrated at many locations in the Metropolitan region where foredunes have been stabilised by compatible development.

The fact that vegetative cover will thus be retained over the dunes will ensure that storm damage is no greater than under the natural condition, while the suggestion that "...storm activity along the coast would be exacerbated if the development were to proceed...", attributes to the developer a power which one would have thought resides only with the Almighty.

It is unclear what is sought in the request for mapping and statistical data on the primary dune system. Appendix B to the PER Volume 2 provides detail in Section 2.1.1 on the stratigraphy of the dunes and on coastal stability in the area, indicating that the shoreline here is stable and that the dunes are underlain by three pre-Holocene limestone units.

South from Avalon Point these limestone units provide a sound barrier to any future wave erosion. This has clear implications for development capability as discussed in Section 3.1 of Appendix B which indicates that residential development will be restricted to backslopes of the primary dune system, leaving a substantial foreshore reserve which meets the objectives of SPC Country Coastal Planning Policy. At the same time it should be emphasised that this Policy does not, as the Authority seems to imply, require a 100 metre setback; rather it specifies under item 4.3.1 that "A setback of 100 metres should be regarded as a guideline..."



Furthermore the proposal for three holes of the golf course in the dune system does not constitute private residential or commercial development. The golf course is a public recreational facility which complies with, and therefore is not in conflict with, the Commissions Policy for a setback area "...for public recreation purposes..."

Section 3.1.4 of Appendix B provides more detail on how the foreshore zone will be managed and gives an undertaking on preparation of a Foreshore Management Plan which will address the question of ongoing maintenance of this area and the manner in which potential problems will be managed. In this respect it should again be emphasised that the proposal leaves a fully adequate foreshore reserve along a stable coastline underlain by limestone. Serious contingencies such as wave erosion threatening development to the rear of this reserve are thus not anticipated, while any threat to the near-shore fairways within the reserve will be of limited consequence: the dunes with the fairways are, in essence, expendable.

#### 1D Groundwater Abstraction

The PER does address groundwater abstraction - sufficiently so, that the Water Authority has approved the allocation of groundwater for the golf course.

#### 1E Mosquitos

The "open lined" ponds are designed to eliminate the potential as mosquito breeding grounds. The water areas are irrigation ponds where the water is continually turned over and managed so that the establishment of breeding grounds does not occur. Reference can be made to a number of golf courses, such as Meadow Springs, where the creation of artificial lakes has not resulted in a mosquito problem.

### 2 TEMPORARY SEWERAGE TREATMENT PLANT

The location of a temporary sewerage treatment plant in the Caddadap Reserve is not a proposal by the proponent, but rather one initiated by the Water Authority. The treatment plant is proposed as a temporary facility to meet the perceived demands of development at Dawesville, and surrounding localities and Port Bouvard.

### 3 & 4 USE OF GROUNDWATER/SOUTHPORT DEVELOPMENT OPTION 2

It was because of the proximity of the proposed canal at Southport to the existing refuse disposal site and the subsequent high potential for contamination from leachates that Option 1 was developed as the preferred alternative. Option 1 provides an alternative to waterway development which also results in providing a greater distance between future residents and the tip site through the placement and use of golf fairways as a buffer.

In regard to the control of leachates from the tip this is not the responsibility of the proponent of the Port Bouvard Project, but rather is the responsibility of the Mandurah City Council as the manager of the tip's operation and ultimately the manager responsible for the tip's closure. It should be noted however that the proponent in conjunction with the Mandurah City Council, the Health Department and CSIRO is assisting in the preparation of a Post Tip Closure Management Plan. Furthermore the Department of Marine and Harbours are to place bore holes around the tip for long-term monitoring purposes.

With reference to future private groundwater users, the subject land falls within the South West Coastal Groundwater Area where future groundwater abstraction from the shallow aquifer is subject to application to, and approval from, the Water Authority.

#### **5. PROPOSED RESORT HOTEL**

The resort hotel will not restrict public access to the southern groyne and beaches as access is provided along the sites northern boundary. In regard to the suggestion that the site be setback from its present location, this matter will be addressed as part of the development application which will be submitted and require the approval of the Mandurah City Council and the State Planning Commission at the appropriate time.

## **Appendix 2**

### **List of proponent's commitments**

## 1.0 COMMITMENTS

These are the commitments undertaken by the proponent:

### 1.1 Pre-Construction

The following management plans will be prepared prior to construction of the relevant components:

#### 1.1.1 Golf Course Management Plan

A staged nutrient management programme will be prepared to minimise nutrient export which will:

- minimise fertiliser application through the use of slow release fertilisers and foliar feeding
- **involve regular soil sampling and tissue testing to assess soil and plant nutrient levels.**

The management plan will detail fairway layouts and proposed water usage and will be prepared upon receipt of development approval for the golf course. The management plan will be prepared to the satisfaction of the Environmental Protection Authority.

#### 1.1.2 Foreshore Management Plan

A foreshore management plan will be prepared for the coastal dune (for the extent of the proponents land and will detail):

- areas to be managed and rehabilitated;
- the nature of rehabilitation including earthworks, temporary stabilisation including earthworks, temporary stabilisation measures, stockpiling of vegetation, revegetation species and techniques;
- location, design and management of accessways;
- maintenance requirements; and
- maintenance of golf course fairways where these impact on the dunes.

The management plan would be prepared as a condition of subdivision approval for the land immediately adjoining the coast and would be prepared to the satisfaction of the EPA and the Coastal Planning Branch of the Department of Planning and Urban Development.

#### 1.1.3 Water Quality Management and Monitoring Plan

A water quality management and monitoring programme will be prepared to confirm the predictions concerning water quality in the receiving waters. The programme will be prepared to the satisfaction of the EPA.

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## 1.2 During Construction

### 1.2.1 Dune Protection

Where development enters the dunes the area of disturbance will be minimised to ensure that the majority of existing vegetation cover is retained. Vegetation which is cleared to facilitate roads and pathways, golf course fairways and residential development will be stockpiled to be used as stabilising brush cover on areas which are to be rehabilitated.

### 1.2.2 Noise, Traffic Management and Dust Control Measures

Work involved in the bulk earthworks and residential subdivision development will be undertaken in accordance with the Local Authority's standards and where required the Environmental Protection Authority's standards for noise, traffic management and dust control measures.

### 1.2.3 Community Awareness

The proponent will respond to local enquires or complaints regarding elements relevant to the construction of the canals and urban development.

## 1.3 Post Construction

- All development within the Port Boulevard project will be undertaken in accordance with the requirements and conditions of the Peel-Harvey Statement of Planning Policy 1993 and the Environmental Protection Policy - Peel-Harvey Estuarine System (2001).
  - The Water Quality Management and Monitoring Plan as referred to in Section 1.1.3 will be implemented to provide a management and monitoring programme for five years following construction of the respective canals.
  - The Waterway Management Plan (section 1.1.4) will be implemented in accordance with the requirements of the Department of Planning and Urban Development Plan Number 27.1.1 and to the satisfaction of the Manouran City Council and the Department of Planning and Urban Development.
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rezoning to "Canal Zone". The design of the programme will be undertaken in consultation with PIMA and the EPA and will include the following:

Summer and winter monitoring of the water quality at four sites in the canal estates and two reference stations. One reference station would be located in the ocean and the other in the estuary. The surface and bottom water at each site would be analysed for salinity, temperature, pH, dissolved oxygen, total phosphorus phosphate, total nitrogen and copper.

The surface sediments from all six sites would be analysed for build up of total phosphorous and copper. This would be undertaken two years after the completion of construction of the canal estates.

The plan will also include procedures for the investigation and introduction of appropriate measures if unacceptable water quality occurs.

The monitoring programme would span five years and the results submitted to PIMA and the EPA for review.

#### **1.1.4 Waterway Management Plan**

In accordance with the Department of Planning and Urban Development Policy for Canal Estates (Policy No. DC1.8) a management agreement will be prepared with the City of Mandurah to address responsibilities for a long term maintenance of the canal estates. This normally requires the proponent to attend to general maintenance for the first 5 years and the Local Authority thereafter. The Management Agreement would be prepared as part of the statutory documentation for the "Canal Zone" and would be prepared in consultation with the Mandurah City Council and the Department of Planning and Urban Development.

#### **1.1.5 Archeological and Ethnographic Survey**

Following development approval for the proposed golf course an archaeological and ethnographic survey will be undertaken over the southern portion of the Caddakup Reserve in accordance with the requirements of the Aboriginal Heritage Act and in consultation with the relevant authorities.

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