CANAL ROCKS PTY LTD

SUSSEX LOCATION 413
YALLINGUP – SMITHS BEACH

STRATEGIC ENVIRONMENTAL ASSESSMENT (EPA ASSESSMENT NO. 1597)

VOLUME I

VERSION 4

JULY 2007

REPORT NO: 2006/175

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INVITATION

The Environmental Protection Authority (EPA) invites people to make a submission on this proposal, as outlined in the Strategic Environmental Assessment (SEA) document. The environmental impact assessment process is designed to be transparent and accountable, and includes specific points for public involvement, including opportunities for public review of environmental review documents. In releasing this document for public comment, the EPA advises that no decisions have been made to allow this proposal to be implemented.

Canal Rocks Pty Ltd is proposing to develop part of Sussex Location 413 in the Shire of Busselton for tourism and residential purposes. The proposed development is located adjacent to Smiths Beach between Yallingup and Canal Rocks on the south-west coast of Western Australia. In accordance with the *Environmental Protection Act 1986*, an SEA has been prepared which describes this proposal and its likely effects on the environment. The SEA is available for a public review period of 8 weeks from **27 August 2007,** closing on **22 October 2007**.

Comments from government agencies and from the public will assist the EPA to prepare an assessment report in which it will make recommendations to government. If you are able to, the EPA would welcome electronic submissions in particular, emailed to the project assessment officer or via the EPA's Website (see address below).

Note: Submissions on the separate "Development Guide Plan Sussex Location 413 Smith's Beach" documents (August 2007) should be made directly to the Shire of Busselton.

Where to get copies of the SEA document

Printed copies of the SEA document (Volume I) and a CD of the technical appendices (Volume 2) may be purchased for $10.00 (including postage) or a CD-Rom version of both Volumes 1 and the Technical Appendices (Volume 2) may be purchased for $5 (including postage and packaging) from:

ATA Environmental
Dilhorn House
2 Bulwer Street
PERTH WA 6000
Telephone: 6462 7900

Volume 1 has been prepared to describe the potential environmental impacts. The Technical Appendices (Volume 2) contain the more technical details in support of Volume 1, and can be obtained on CD-Rom, or as hard copy if required.

Copies of the SEA may also be obtained from **http://www.smithsbeach.com.au**

Why write a submission?

A submission is a way to provide information, express your opinion and put forward your suggested course of action - including any alternative approach. It is useful if you indicate any suggestions you have to improve the proposal.

All submissions received by the EPA will be acknowledged. Electronic submissions will be acknowledged electronically. The proponent will be required to provide adequate responses to points raised in submissions. In preparing its assessment report for the Minister for the Environment, the EPA will consider the information in submissions, the proponent's responses and other relevant information. Submissions will be treated as public documents unless provided and received in confidence subject to the requirements of the Freedom of Information Act, and may be quoted in full or in part in each report.

Why not join a group?

If you prefer not to write your own comments, it may be worthwhile joining with a group or other groups interested in making a submission on similar issues. Joint submissions may help to reduce the workload for an individual or group, as well as increase the pool of ideas and information. If you form a small group (up to 10 people) please indicate all the names of the participants. If your group is larger, please indicate how many people your submission represents.

Developing a submission

You may agree or disagree with, or comment on, the general issues discussed in the SEA or the specific proposals. It helps if you give reasons for your conclusions, supported by relevant data. You may make an important contribution by suggesting ways to make the proposal environmentally more acceptable.

When making comments on specific proposals in the SEA:

- clearly state your point of view;
- indicate the source of your information or argument if this is applicable;
- suggest recommendations, safeguards or alternatives.

Points to keep in mind.

By keeping the following points in mind, you will make it easier for your submission to be analysed:

- attempt to list points so that issues raised are clear. A summary of your submission is helpful;
- refer each point to the appropriate section, chapter or recommendation in the SEA;
- if you discuss different sections of the SEA, keep them distinct and separate, so there is no confusion as to which section you are considering;

- attach any factual information you may wish to provide and give details of the source. Make sure your information is accurate.

Remember to include:

- your name,
- address,
- date; and
- whether you want your submission to be confidential.

The closing date for submissions is: **22 October 2007**

The EPA prefers submissions to be sent in electronically. You can either e-mail the submission to the following address:

submissions.eia@dec.wa.gov.au

OR

use the submission form on the EPA's website:

www.epa.wa.gov.au/submissions.asp and click on the EIA Assessment Submission option

OR

You can post your submission to:

The Chairman
Environmental Protection Authority
Locked Bag 33
Cloisters Square
PERTH WA 6850

Attention: Alice O'Connor

DISCLAIMER

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QUALITY ASSURANCE

ATA Environmental has implemented a comprehensive range of quality control measures on all aspects of the company's operation and has Quality Assurance certification to ISO 9001.

An internal quality review process has been applied to each project task undertaken by us. Each document is carefully reviewed by core members of the consultancy team and signed off at Director level prior to issue to the client. Draft documents are submitted to the client for comment and acceptance prior to final production.

Document No: CRP-2006-002-REPT_001_pvdm_V4

Report No: 2006/175

Checked by: Signed: 

Name: Dr Paul van der Moezel Date: 4 July 2007
Principal

Approved by: Signed: 

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Principal

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Refer to rear of this report for additional appendices, which form part of Appendix 13 (Epcad).

EXECUTIVE SUMMARY

Proposal Justification and Alternatives

The draft DGP for the project area has undergone a number of iterations each of which have resulted following discussions and outcomes of a series of workshops, presentations, public meetings and through consultation with members of the community, the project team of consultants and relevant government agencies.

Strategic Environmental Assessment

The proposed development of Location 413 was referred to the Environmental Protection Authority (EPA) by Canal Rocks Pty Ltd (the proponent) in August 2005 with a request that the development of the nominated area be assessed as a Strategic Environmental Assessment (SEA). The EPA resolved to set the level of assessment for the project as a SEA in September 2005 (Assessment No. 1597).

An SEA is a formal level of assessment under the requirements of the *Environmental Protection Act* 1986. The SEA process initially requires the preparation of an environmental scoping document which identifies the scope of the environmental investigations to be undertaken. The scoping document was endorsed by the EPA in July 2006 (ATA Environmental 2006a) following a 2 week public review period. An SEA document is then prepared (this document) and released for public review. Submissions are sought from the community, relevant decision-making authorities and Government agencies. The EPA will then take into account the proponent's SEA review document, submissions and other information it considers appropriate and will prepare an assessment report to the Minister for the Environment. The assessment report must set out what the EPA considers to be the environmental factors identified in the course of the assessment and its recommendation as to whether the proposal may be implemented, and if it is recommended that implementation be allowed, the conditions and procedures to which implementation should be subject. The EPA's assessment report is made public and is subject to appeal by any person.

The Minister for the Environment, in consultation with relevant decision-making Authorities and other Ministers will then decide if the proposal can be implemented and conditions and procedures, if any, to which implementation should be subject.

If it is subsequently decided that the proposal can be implemented, the EP Act provides for conditions to be applied to future development proposals.. Future significant proposals within the development area can be determined by the EPA as derived proposals and the Minister for the Environment applies the conditions recommended by the EPA when it assessed the strategic proposal. Effectively this means that further formal environmental assessments under s48A of the *Environmental Protection Act* (scheme amendments) and s38 of the Act (subdivision or development proposals) will not be required unless the significant proposal is different from that predicted in the strategic assessment, or raises new or different environmental issues not addressed in the strategic assessment.

The overall objective of the SEA is to determine an appropriate development footprint in which future tourism and residential development can be located. The SEA will also identify the part of Location 413 that needs to be protected from future development and managed for its long-term conservation values.

The SEA provides a description and justification of the proposed development on a site-specific, local and regional scale. Consultation has been undertaken with various stakeholders and interested parties (refer to Section 2).

The SEA describes the impact of the proposed development of Location 413 on a number of environmental factors that were identified in the Scoping Document and identified as follows:

Integration
- Sustainability

Biophysical
- Terrestrial Flora - Vegetation
- Terrestrial Flora – Declared Rare and Priority Flora; Flora of Conservation Significance (including Threatened Ecological Communities)
- Terrestrial Fauna
- Terrestrial Fauna – Specially Protected (Threatened) Fauna
- Conservation Areas – Leeuwin-Naturaliste Ridge National Park
- Landscape and Landforms
- Karst

Pollution Management
- Surface Water Quantity and Quality
- Groundwater Quality
- Air Quality - Dust and Particulates
- Air Quality – Greenhouse Gases
- Noise

Social Surroundings
- Aboriginal Heritage
- Visual Amenity

These environmental factors have provided a framework against which the structure and scope of this SEA document have been written with each of the factors individually addressed in detail in Section 5 of this report.

The SEA also responds to the Environmental Methodologies that are required as part of the Shire of Busselton's Development Guide Plan (DGP) process. The Environmental Methodologies is part of a suite of 'Methodologies' that were the subject of a two-year process of agency and public consultation, and which are adopted as formal Town Planning Scheme Policies under the Shire of Busselton's District Town Planning Scheme (DTPS) No. 20.

Proponent Commitments

The proponent has made a number of commitments in this SEA to wherever possible enhance the environment and where necessary to minimise the environmental impact of the proposed development. A summary of these commitments is provided in Table 1.

TABLE 1
SUMMARY TABLE OF PROPONENT COMMITMENTS

	Topic	Objective	Action/Commitment	Timing	Advice
1.	**Sustainability**	To ensure, as far as practicable, that a development proposal meets or is consistent with the sustainability principles in the EPA's *Position Statement No. 6 Towards Sustainability* (EPA 2004e) and *The Western Australian State Sustainability Strategy* (Government of Western Australia 2003).	All development applications pertinent to Location 413 will be reviewed to ensure compliance with the relevant sections of the Sustainability Checklist.	Pre-construction	DPI Shire of Busselton
2.	**Vegetation Protection**	To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystems levels through the avoidance or management of adverse impacts and improvement in knowledge.	An Environmental Management Plan (EMP) for the Principal Ridge Protection Area will be prepared as a condition of the DGP approval. The EMP will address issues including access, fencing, signage, management of the Cape to Cape track, fire management, weed control, rehabilitation and integration with surrounding areas. A Vegetation, Flora and Fauna Management Plan will be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton and will include but not be limited to: • Fauna relocation programme; • Weed eradication programme; • Revegetating and restoring POS areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access; • Soil and plant source material hygiene; • Encouraging community involvement and awareness promoting control of pets (eg. dogs); • Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site; • Water conservation principles; • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Responsibilities for implementation; • Progress and compliance reporting; and	Pre-construction	Shire of Busselton DEC

	Topic	Objective	Action/Commitment	Timing	Advice
			• Timing and implementation schedule. The development will attempt to retain as many *Dryandra sessilis* var. *cordata* plants as possible within lots, road reserves and public open space. In addition, *Dryandra sessilis* var. *cordata* is readily propagated from seed and a seed collection exercise will be undertaken to obtain the seed from the plants on-site prior to clearing and propagating for use in revegetation and landscaping on-site. A Dieback (*Phytophthora cinnamomi*) Management Plan to be prepared as a condition of the DGP and approved prior to any major works commencing on-site.		
3.	**Native Vertebrate Fauna Protection**	To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	Protection of fauna and fauna habitat will be addressed in the Vegetation, Flora and Fauna Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to: • Fauna relocation programme; • Weed eradication programme; • Revegetating and restoring POS areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access; • Soil and plant source material hygiene; • Encouraging community involvement and awareness promoting control of pets (eg. dogs); • Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site; • Water conservation principles; • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Responsibilities for implementation; • Progress and compliance reporting; and • Timing and implementation schedule.	Pre-construction	Shire of Busselton DEC
4.	**Specially Protected (Threatened) Fauna**	Protect Specially Protected (Threatened) Fauna and Priority Fauna species and their habitats,	A Western Ringtail Possum Management Plan will be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton.	Pre-construction	Shire of Busselton DEC

	Topic	Objective	Action/Commitment	Timing	Advice
		consistent with provisions of the *Wildlife Conservation Act 1950* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* protect other fauna of conservation significance.	The Plan will include but not be limited to: • Identification of WRP habitat and individual trees currently providing high possum values and that must be retained; • Management prescriptions and ongoing maintenance requirements for a defined corridor habitat; • Procedures to be followed in the event that land holders seek, or are required, to undertake modification to vegetation that may harm habitat and linkage values for possums; • A programme of tree plantings to be undertaken on public or other lands to maximise linkage opportunities for possums between the habitat areas; • Environmental offsets or off-site mitigation in the event that the WRP cannot be fully managed on-site and translocations are required to be undertaken; • A monitoring programme to measure: - use of linkage habitat by possums and inter-mixing of populations at either end of linkage corridors; - vegetative health and requirements for replanting or other vegetation maintenance required within the possum corridor; and • Education programmes including signage, pamphlets and other means, to engage property owners and the broader community about the function of the WRP and its habitat requirements.		
5.	**Leeuwin-Naturaliste National Park**	To protect and enhance the environmental values of areas identified as having significant environmental attributes.	Management of direct and indirect impacts (e.g. weeds, *Phytophthora cinnamomi* and other plant diseases and trampling) to the conservation managed areas within the proposed development, and to ensure no direct and indirect impacts upon the National Park occur will be addressed in a Vegetation, Flora and Fauna Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to: • Fauna relocation programme; • Weed eradication programme;	Pre-construction	Shire of Busselton DEC FESA

	Topic	Objective	Action/Commitment	Timing	Advice
			• Revegetating and restoring POS areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access through fencing and formalising accessways; • Soil and plant source material hygiene; • Encouraging community involvement and awareness promoting control of pets (eg. cats and dogs); • Water conservation principles; • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Responsibilities for implementation; • Progress and compliance reporting; and • Timing and implementation schedule. A Fire Management Plan has been prepared by the proponent and responsibilities for implementation are specified within the Plan (refer to Appendix 7). The Plan has been developed to incorporate fire management methods such as: • Strategic firebreaks system; • Dwelling construction and setbacks; • Building protection zone; • Hazard separation zone; • Hazard reduction; • Introduction of a town/scheme water supply; and • Driveways.		
6.	**Coastal Foreshore**	To maintain the integrity of landscape and landforms by maintaining their integrity, ecological functions and environmental values.	A draft Foreshore Management Plan has been prepared for the Smiths Beach foreshore reserve (refer to Appendix 2). The Plan includes the following elements: • Comprehensive weed eradication programme; • Revegetating and restoring foreshore POS adjoining conservation areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access; • Provision of public facilities; • Fire management including provision of fire hydrants; • Encouraging community involvement and awareness promoting control of pets (eg. cats and dogs); • Water conservation principles; • Monitoring criteria to determine the success of the	Pre-construction	DPI Shire of Busselton DEC

	Topic	Objective	Action/Commitment	Timing	Advice
			revegetation and weed eradication programme; • Progress and compliance reporting; and • Timing and implementation schedule.		
7.	**Air Quality – Dust and Particulates**	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting accepted guidelines, standards and criteria.	A draft Construction Management Strategy (CMS) consistent with best management practices will be prepared by the proponent to the satisfaction of DEC and other relevant authorities (refer to Appendix 14). A key element of the CMS will include a dust management plan taking into account seasonal influences and distance to sensitive premises and incorporating any or all of the following measures: • Where possible retaining vegetation; • Limiting areas of exposed soil; • Hydro-mulching or alternative effective stabilisation immediately following completion of bulk works; • Applying water to increase moisture in soil in sensitive or high traffic areas; • Minimising "fetch" distance; • Wind fencing; • Timing of earthworks (daily and seasonally); • Consideration of wind direction and strengths (eg sea breezes) when planning bulk earthwork 'cells'; • Consideration of distance to and direction of sensitive locations (e.g. may construct closer to residents during time of year when dust not expected to be as much of a problem); • Appropriate shape/layout of earthworks area (boundary perpendicular to problem wind direction); • Staging of subdivision (need to consider dust in the early stages of planning, not just at time of construction); and Site perimeter monitoring including sensory alarms or dial out capability.	Pre-construction	DEC Shire of Busselton
8.	**Surface Water Quantity and Quality**	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting Statutory requirements and acceptable standards.	Prior to commencement of site works, an Integrated Water Management Plan incorporating the principles and best management practices described in the stormwater strategy and the *Stormwater manual for Western Australia* will be prepared to the satisfaction of the DoW and Shire of Busselton. The Plan will be implemented during and post-construction.	Prepared prior to construction and implemented during and post construction.	DoW Shire of Busselton

	Topic	Objective	Action/Commitment	Timing	Advice
9.	**Groundwater Quality**	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting Statutory requirements and acceptable standards.	An Effluent Disposal Management Strategy has been prepared (Refer to Appendix 11) and includes: • Provision of reticulated sewerage for the entire development; and • Provision for the connection of services to the Water Corporation's Dunsborough Waste Water Treatment Plant.	Prepared prior to construction and implemented during construction phase	Water Corporation DEC
10.	**Greenhouse Gases**	To minimise emissions to levels as low as practicable on an on-going basis and consider offsets to further reduce cumulative emissions.	As an input to the development strategies identified for implementation of the proposed development, measures to minimise greenhouse emissions through practical measures such as reducing the need for car use within the site will be considered.	During construction phase	DEC
11.	**Noise**	To protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring the noise levels meet statutory requirements and acceptable standards.	Construction noise received at nearby sensitive premises will be managed to comply with the requirements of the *Environmental Protection (Noise) Regulations* 1997. To ensure compliance with these regulations, their management will be described in the CMS that will be prepared to the satisfaction of the DEC and implemented by the proponent as a condition of subdivision approval.	Pre-construction	Shire of Busselton
11.	**Visual Amenity**	To ensure that visual amenity is considered and measures are adopted to reduce adverse visual impacts on the surrounding environment as low as reasonably practicable.	A Landscape and Visual Assessment prepared for the project area will establish a framework for the landscape and urban design of the site, which responds to both the site and surrounding landscape characteristics. All development applications will be reviewed to ensure compliance with this Assessment. Design Guidelines are being prepared for the detailed architecturalresponse to the site. The guidelines will be adopted by the Shire as a policy to guide design and the planning approval process for individual buildings and developments. The Design Guidelines are architectural guidelines that will supplement the DGP submission. They deal with detail and will be implemented by a Town Architect or Committee.	Pre-approval	Shire of Busselton DEC DPI

List of Abbreviations: DEC = Department of Environment and Conservation; DoW = Department of Water; DPI = Department for Planning and Infrastructure; FESA = Fire and Emergency Services

1. THE PROPOSAL

Canal Rocks Pty Ltd (the proponent) is planning to develop part of Sussex Location 413 in the Shire of Busselton for tourism and residential purposes. The proposed development is located adjacent to Smiths Beach between Yallingup and Canal Rocks on the south-west coast of Western Australia (Figure 1).

Immediately adjacent on the northeastern side of the site is Location 364, the former Smiths Beach caravan park site which is currently being redeveloped as a resort. To the south, and upslope of the site, is part of the Leeuwin-Naturaliste National Park that incorporates Canal Rocks. The National Park also includes land to the north-east of the site including Smiths Beach and the Torpedo Rocks scenic lookout. To the immediate east is a tourist development (Chandler's Chalets) and cleared rural land (Figure 2). Further detail of the proposal is provided in Section 1.3.

1.1 Current Zoning

Location 413 (40.4 ha) is situated within the Shire of Busselton and is predominantly zoned Tourist and Additional Use – Residential, with the western area (9.7 ha) Reserved for Recreation under the Shire's District Town Planning Scheme No. 20 (DTPS 20).

1.2 Project Background

Comprehensive planning for Location 413 commenced in the mid 1980s prior to the release of the first Leeuwin Naturaliste Region Plan that identified Smith's Beach as a 'Tourist and Recreation Site'.

The *State Planning Strategy* prepared by the Western Australian Planning Commission (WAPC) recognised the regional and State significance of the Leeuwin-Naturaliste Ridge area and the challenges the area faced from increasing land use conflicts and opposing views on management of natural and economic resources (WAPC 1997). At a State level it was recognised that a regional planning approach was required to protect the policy area. As a result of a collaborative approach between the WAPC and the Shires of Busselton and Augusta-Margaret River, a strategic planning tool was developed in the form of the draft Leeuwin-Naturaliste Ridge State Planning Policy (LNRSPP) which was released by the WAPC in May 1997.

In 1998 the State Planning Policy for the Leeuwin Naturaliste Ridge was gazetted (LNRSPP). The LNRSPP revised the land use vision for the ridge area, examined settlement patterns throughout the region, acknowledged the need to accommodate an increasing range of land uses in the area and formally recognised the Smiths Beach site as a Tourism Node.

It is the proponent's view that the proposed development of Smiths Beach is consistent with the LNRSPP strategy which aims to accommodate regional growth while at the same time protecting the maximum possible extent of environmentally sensitive areas and reducing development pressure and fragmentation of rural land in the Cape to Cape Region. The LNRSPP strategy is designed to facilitate the development of selected 'Nodes', such as Smiths Beach, in areas that are already at least partly degraded and which offer opportunities for living and holidaying.

The WAPC requested the EPA to provide advice under s16(j) of the EP Act in parallel with the public review period for the draft SPP document. The EPA's advice, published in Bulletin 883, acknowledged that the SPP is proposed to be a "high level" planning document and that its implementation would be through subsequent strategic and statutory planning instruments and

that the purpose of the EPA's advice was to provide guidance to the planning agencies on the environmental issues relevant to subsequent strategic and statutory planning mechanisms (EPA 1998).

The EPA determined that the following environmental matters were relevant to the SPP (EPA 1998 p. 1):

- Vegetation – retention and conservation of remnant vegetation;
- Water – protection of significant water resources;
- Coastal Development – protection of coastal processes and coastal environment;
- Karst – protection of karst areas and related areas of influence;
- Roads and Other Access – avoidance of adverse environmental impacts; and
- Landuse Buffers – protect sensitive land uses from adverse off-site environmental impacts.

The EPA's advice regarding those environmental matters relevant to the site is included in this report.

In December 2000, in accordance with the requirements of the Shire of Busselton's DTPS No. 20 and the endorsed LNRSPP, Canal Rocks Pty Ltd prepared a Development Guide Plan (DGP) for Location 413 (Figure 3).

The initial DGP that was lodged in December 2000 made provision for the following yields:

• Residential Houses	230
• Tourist Units	360
• Hotel Rooms	100
Total:	590 + Hotel Rooms

The initial DGP was submitted to the Shire of Busselton but was subsequently withdrawn to enable a new design response to be pursued.

Since the withdrawal of the original DGP proposed for Location 413, the proponent has brought together a multidisciplinary team of consultants to undertake a variety of environmental investigations with regard to the site and undertaken a comprehensive process of urban and landscape design for the proposed development. This process resulted in a series of technical reports and management plans being prepared many of which have been utilised in the preparation of the initial Environmental Scoping Document and this SEA document.

The LNRSPP was subsequently amended in 2003 (Amendment No. 1) to provide further clarity on the type of development envisaged at Smiths Beach (refer to Table 1 and LUS 1.21of the LNRSPP document) (WAPC 2003a). The revised LNRSPP retained and reinforced the strategy that Smiths Beach be developed as a mixed use tourist/residential node and recommended residential development be allowed to occur on Location 413. The LNRSPP permits a mix of not less than 70% tourist and not more than 30% residential calculated from the developable land area (PS 1.3). According to the LNRSPP the western portion of the site is included in a Principal Ridge Protection Area. The LNRSPP requires that the proposed development include reticulated water, sewerage and power unless the developer can demonstrate suitable alternative technologies.

An amendment to the Shire of Busselton DTPS No. 20 (Amendment 92) has been initiated by the Shire to reflect the amended LNRSPP. The Shire in Amendment 92 also proposed a number of other amendments not included in the LNRSPP.

The establishment of the Smiths Beach Reference Group in July 2003, which has subsequently convened on seven occasions, has provided critical input into the development of the Draft Development Guide Plan (Draft DGP) and project planning in general (Figures 4a and 4b). The Draft DGP for Smiths Beach arises from the application of four key methodologies in the study of the land, the primary objective being that the proposed development be in sympathy with environment and visual and landscape character (Canal Rocks Pty Ltd. 2007). A range of development patterns was tested against the primary objectives. For further description of the key principles that has resulted in the Draft DGP refer to Section 5.1: Sustainability.

In addition the proponent has undertaken numerous one-on-one meetings between May 2003 to July 2005 and issues raised in both these and reference group meetings has informed the shape of the proposed development in the following ways:

- The number of residential lots has been reduced by over half within a significant reduction of the size of the overall development;
- There has been a significant contraction of the development footprint, especially in the western portion of the site;
- A transition area of chalet and low-density holiday homes has been introduced;
- The number of driveways on site will be reduced by providing co-shared driveways between adjoining properties;
- The roads will meander through the development and blend in with the natural environment;
- The urban design encourages pedestrian movement and minimises vehicular movement;
- Detailed consideration has been given to the built form to ensure it complements, enhances and protects the heritage of the coastal location;
- The Principal Ridge Protection Area will be donated to the community via the National Trust;
- An enlarged system of foreshore reserves, with the development areas set further back from the coast; and
- The plan contains new community facilities and places for community interaction and focus.

1.3 Description of the Proposal

A Draft Development Guide Plan (Draft DGP) has been prepared for the proposed development of Location 413. The Draft DGP is the proposal being considered by the EPA. The Draft DGP is shown in Figures 4a and 4b.

The Draft DGP has been approved for advertising for public comment by the Shire of Busselton. The advertising period will be 60 days.

The Draft DGP is based on the principle of higher density development and high-use areas being concentrated around existing cultural gathering points at the beachfront and development of new community spaces (Figures 4a and 4b). The proposed development is an expansion of an existing minor settlement and is part of a regional planning strategy designed to avoid further sprawl on the perimeter of the urban area of Dunsborough, and to resist inappropriate spot settlements along the coast in areas unable to sustain new communities due to environmental sensitivity and the lack of basic facilities, services and infrastructure.

The Draft DGP consists of the following components as shown in Figures 4a and 4b:

Land Use	Area (ha) approximate
Principal Ridge Protection Area	9.7
Tourist - Beach Club Resort - Cape Spur Tourist Lodge - Camping and Chalets - Attached Units - Semi-detached Units - Cottage Units - Backpacker Camping	14.9
Residential - Green title Residential - Strata Residential	6.4
Privately Managed Conservation Area	5.7
Other Privately Managed Open Space	0.6
Foreshore Reserve and Public Open Space	2.4

More specifically, the draft DGP comprises the following features:

- Retention of native vegetation on the western headland and ridge area within the Principal Ridge Protection Area as well as a privately managed conservation area;
- A resort-style tourist development (Beach Club Resort) located in the lower northern part of the site.
- A second resort-style tourist development (Cape Spur Lodge) in the upper mid-southern part of the site.
- Tourist accommodation in the form of chalets and units.
- A backpackers and camping area in the north-east part of the site.
- Low-density cabin-style tourist accommodation on the western part of the development predominantly located in a transitional zone between the native vegetation of the granite headland and the denser tourist/residential development on the eastern half of the site.
- Residential lots ranging in size from 375m^2 to approximately 1000m^2 (R10-R25). The larger lots are located on the more elevated parts of the property while the smaller lots are generally located in the northwestern portion of the site.
- Retention of a buffer strip of native vegetation between the development and the National Park, to be managed for fire protection purposes (refer to Appendix 7)

Location 413 comprises approximately 40.4 ha. Of this, approximately 21.3 ha of Identified Developable Land Area (as defined in the LNRSPP) is proposed to be developed. The extent of the proposed development has been limited to conceal it from Canal Rocks and to moderate the potential impact on views from Torpedo Rocks and Smiths Beach. The layout of the proposed development has also been designed to conform to the topography of the site. Roads generally follow topographic contours and those going against the contour have been kept to a minimum and aligned askew of main visual directions.

The retention of approximately 15.4 ha (38%) of the native vegetation on the site in its natural condition will serve to protect the visual amenity of the area and will give protection to vegetation considered to be of highest conservation value on-site. Other areas of native trees and some understorey will also be retained within the development footprint. The proposed development has been designed to buffer the National Park located to the south of the site from any impacts of the proposed development. The foreshore area to seaward of Smiths Beach Road will be retained as an enlarged coastal reserve vested in the Shire of Busselton.

Figure 2 shows the adjacent land uses to Location 413.

1.4 Servicing/Infrastructure Requirements

The following is a summary of the servicing and infrastructure requirements for the proposed development (Wood and Grieve Engineers 2005a; Canal Rocks Pty Ltd 2007). The proposed alignment/route for the provision of scheme water and connection to the Water Corporations wastewater treatment plant at Dunsborough are not subject to this environmental assessment process and will be subject to a separate referral under s.38 of the *Environmental Protection Act 1986* if the route is likely to have a significant impact on the environment.

1.4.1 Roads

The alignment of roads will, wherever possible, reflect the natural contours of the land and minimise earthworks and clearing. A limited number of roads are designated main access roads into the proposed development. The remaining roads throughout the proposed development will be 6m in width with no road reserve but still allowing for a reciprocal right of way within the site. In addition, the road surface profile will be consistent with the proposed method of stormwater management.

The majority of the roads within the proposed development will become the responsibility of the strata owners. Only the major spinal road will revert to Local Government ownership (Wood and Grieve 2005a).

The proposed layout of roads as currently shown on the draft DGP is shown in Figure 4a.

1.4.2 Power

Western Power has advised that sufficient capacity is available for power to be supplied without additional major infrastructure works being constructed. Underground powerlines will be installed within common use trenches with other services to minimise disturbance.

1.4.3 Potable Water

The Water Corporation has been granted the license to supply scheme water to Smiths Beach. The proposed development will be serviced with a fully reticulated water supply with scheme water supplied from the Dunsborough Town Water Supply that is sourced from the Quindalup Wellfield. This groundwater source is located in the Busselton-Capel Groundwater area and is licensed with the Department of Water (DoW).

Potable PVC water pipes to normal subdivisional standards will be installed on all lots. Fire hydrants, sluice valves and fittings will be installed in accordance with standard practice.

The Water Corporation's *Domestic Water Use Study* (Loh and Coghlan 2003) provides quantifiable indications of water use for single lot residential households. The Water Corporation has also estimated the likely improvements in water consumption from the adoption of waterwise practices such as the installation of water efficient fixtures and fittings inside the house and implementing waterwise landscaping practices. Table 2 sets out the relevant quantities for both In-house and Ex-house water usage in both the conventional and Waterwise scenarios. The data has been extracted from a number of the tables presented in the Water Corporation's publication (Loh and Coghlan 2003).

It is important to keep in mind that the estimates of household irrigation water consumption (ie Ex-house) presented in the *Domestic Water Use Study* were derived prior to the introduction of watering restrictions over the summer of 2002-2003 (approximately 251 kL/house/yr). An

estimate of the irrigation water (i.e. Ex-house) consumption after the introduction of the restrictions is assumed to be approximately 177 kL/house/yr.

TABLE 2
DOMESTIC WATER USE ESTIMATES

	Conventional		Waterwise		
	Daily	Annual	Daily	Annual	% Convention
	L/house/day	kL/house/yr	L/house/day	kL/house/yr	Demand
In-house					
Bath & Shower	171		161		94%
Washing Machine	139		89		64%
Toilet	112		75		67%
Tap	83		69		83%
Other	18		14		80%
TOTAL	**523**	**191**	**409**	**149**	**78%**
Ex-house					
Irrigation	687 (peak)	177	425 (peak)	155	88%
Total Usage	**1,210 (peak)**	**368**	**833 (peak)**	**304**	**83%**

1.4.4 Wastewater Management

As a result of a detailed investigation on a triple bottom line basis, it was determined that the entire development will be serviced by a reticulated deep sewerage system connected to the existing state of the art wastewater treatment plant at Dunsborough, which disposes to woodlot irrigation. This disposal method involves water reuse on a large scale which is consistent with the objectives of the State Water Strategy. Disposal to reticulated sewer is in keeping with the EPA's s16(j) advice to the WAPC (EPA 1998).

1.4.5 Stormwater Management

Stormwater management will incorporate Water Sensitive Urban Design best practices, as appropriate, to maximise infiltration at source, and to minimise impacts on the natural hydrology of the site. In designing the stormwater management system, significant consideration has been given to the principle that the quality will be no less and the quantity of stormwater no greater post-development than it is pre-development.

1.4.6 Telephone and Security

The proponent's intention is to be able to provide full access to free to air, cable and internet services by cable to each residence together with central security and service management.

1.5 Integration with the Planning Process

1.5.1 Approval of Development Guide Plan

The draft DGP is subject to preparation, consultation and endorsement procedures as laid out under the Shire of Busselton District Town Planning Scheme No. 20 (DTPS 20). The draft DGP is a prerequisite to the subdivision and development approval processes for individual

components of the project. Both the Shire of Busselton and the Western Australian Planning Commission (WAPC) must endorse the draft DGP for it to come into operation.

The draft DGP is to be prepared in accordance with a suite of 'Methodologies' that were themselves subject of a two-year process of agency endorsement and public consultation, and which are adopted as formal Town Planning Scheme Policies under the Shire of Busselton' DTPS 20. The Environmental Methodologies are listed in Table 3 (over page) with a cross-reference to the sections of the SEA where each issue is addressed.

It is intended that the public consultation process for the draft DGP be aligned, insofar as this is practical, with the advertising of this SEA so that each decision making process can inform the other and to minimise duplication and the potential for confusion about the approval processes within the community.

The draft DGP will address the extent (developable area) and spatial layout of the project, and will also contain a series of development controls (Planning Policy Statements) that will be implemented via the later subdivision and development approval processes. The landowner has documented a list of Proponent Commitments dealing with community facilities and services, environmental improvements, project management and social dividends that will form part of the draft DGP and which will also be enforced/implemented by the statutory conditions of development and subdivision approvals.

The draft DGP specifies that the elevated southwestern portion of the developable area containing the proposed Cape Spur lodge and chalets will be the subject of further detailed analysis and consultation within a Detailed Area Plan (DAP) process. The DAP process will be undertaken prior to approvals being issued for the carrying out of development within that area.

A flow chart outlining the draft DGP formulation, consultation and approval steps in the context of the SEA is shown in Figure 5.

TABLE 3
CROSS-REFERENCE OF ENVIRONMENTAL METHODOLOGIES (AS ENDORSED BY THE SHIRE OF BUSSELTON) WITH SECTIONS IN THE SEA

Environmental Methodology	SEA Section
4.0 Planning Context	
The environmental studies will involve the preparation of an Environmental Report that will provide: - A description of the environmental features of Sussex Location 413. - An analysis of those features in terms of environmental statutes, policies, guidelines and other documents. - An environmental impact assessment of the development proposal.	- Sections 4 and 5 - Section 5 - Section 5
5.0 Study Process	
The Study Process and scope of the environmental studies of Sussex Location 413 are to: - Describe, analyse, assess and map the existing environmental features of Sussex Location 413. - Identify any key environmental opportunities and constraints to development (eg. Presence of Declared Rare Flora). - Prepare strategies that are designed to minimise environmental impacts and for the management of key environmental features during and following construction. - Provide an environmental impact assessment of the final development proposal.	- Sections 4 and 5 - Section 5 - Section 5 - Section 5 and Exec. Summary
5.1 Environmental Features of the Location	
Climate - A description of the local climate based on available meteorological data with particular analysis of local wind direction and speed.	- Section 4.1
Topography - A description of topography based on detailed contour map (0.5m interval). - An analysis of topography in terms of slope, orientation and exposure to wind.	- Sections 4.2, 5.7 and Figure 6 - Sections 4.2, 5.7 and Appendix 13
Geology and Soils - A description of the geology based on available information and site assessment including drill holes (including depth of soils to bedrock). - An analysis of the potential for karst formations on the Location. - A description of soils based on published studies and site samples.	- Section 4.3 and Figure 7 - Section 5.8 - Section 4.3
Land Use Capability - A description of natural land use capability based on Tille, P.J. and Lantzke, N.C. (1990) – Busselton Margaret River Land Capability Study, Department of Agriculture Land Resources Series No. 5.	- Section 4.6
Phosphorus Retention Ability	

Environmental Methodology	SEA Section
- A description of phosphorus retention indices (PRIs) of representative soil samples collected on the location.	- Section 4.3
- An analysis of the potential for pollution due to urban run-off.	- Section 4.3
Groundwater	
- A description of groundwater based on site drilling.	- Section 4.5
Wetlands	
- A description of any wetlands on the location, including type, environmental and hydrological function, management category and protection status.	- Section 4.4
The Coast	
- An analysis of coastal processes based on shoreline movement plans and computer modelling of effects of storm erosion and rise in sea level due to global warming.	- Section 5.7.3 and Appendix 8, 9
- Determination of the physical setback necessary to protect development from severe storms, shoreline movement, sea level rise and for the maintenance of natural processes.	- Section 5.7.3 and Appendix 8, 9
- Determination of an appropriate foreshore reserve with reference to the physical setback, ecological values, landscape, visual amenity, cultural heritage, public access, recreation and safety (ie. a Foreshore Management Strategy).	- Section 5.7.3 and Appendix 8, 9
Vegetation	
- A map of vegetation units based on detailed field surveys and aerial photographs.	- Figure 8 and Appendix 5
- A description of vegetation in terms of vegetation associations/structural units based on field surveys.	- Section 5.2.3 and Appendix 5
- A description of the current condition of vegetation units with reference to the methodology of Keighery (1994).	- Section 5.2.3 and Appendix 5
- Identification of any occurrence of dieback disease.	
- Identification of any Threatened Ecological Communities.	- Section 5.2.3 and Appendix 5
- Identification of any vegetation that is unusal, important or restricted in its distribution at a local or regional scale utilizing a range of mapping information including complexes as mapped under the Regional Forest Agreement, Shire of Busselton Remnant Vegetation Study and information from CALM (now DEC).	- Section 5.2.3 and Appendix 5 - Section 5.2.3 and Appendix 5
- A comparison of the vegetation associations with available data on their original extent prior to European settlement, and with their existing extent both in total and within conservation and other reserves.	- Section 5.2.3 and Appendix 5
- An analysis and discussion of development in the context of the *Draft EPA Guidance Statement No. 51 Terrestrial flora and vegetation surveys for Environmental Impact Assessment in WA (March 2003)* and the *EPA Position Statement No. 2 on Environmental Protection of Native Vegetation in WA.*	- Section 5.2.3 and Appendix 5
- A discussion of development in context of the principles and objectives of the National Strategy for the Conservation of Australia's Biological Diversity.	- Section 5.2.3 and Appendix 5
- A description of management strategies designed to protect vegetation within the context of development.	- Section 5.2.5
Flora	
- Results of a survey of flora in all vegetation associations.	- Section 5.3.3 and Appendix 5
- Results of a survey of flora during spring to identify any Declared Rare Flora, Priority Flora, or other significant species. Spring is considered to be the optimal time for flora surveys as more annual species are likely to be present.	- Section 5.3.3 and Appendix 5

Environmental Methodology	SEA Section
- All flora surveys shall be undertaken in accordance with the *Draft EPA Guidance Statement No. 51 Terrestrial flora and vegetation surveys for Environmental Impact Assessment in WA (March 2003).* Sampling should be undertaken in 10mx10m plots related to mapping units and geo-referenced.	- Section 5.3.3 and Appendix 5
- An analysis of the conservation status of any Declared Rare Flora and Priority Flora species by reference to CALM databases and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* lists.	- Section 5.3.3 and Appendix 5
- A description of management strategies designed to protect flora within the context of development.	- Section 5.3.5
Terrestrial Fauna	
- A description and map of all fauna habitats on the location.	- Appendix 6
- A description of the results of a survey of representative major habitats and vegetation associations designed to identify vertebrate fauna that use the site in accordance with the *EPA Position Statement No 3 Terrestrial Biological Surveys as an Element of Biodiversity Protection (March 2002) and EPA Draft Guidance Statement No. 56 – Terrestrial fauna surveys for Environmental Impact Assessment in WA (March 2003).* The survey methods included standardised trapping, searching and observation techniques, eg. CALM trapping grid design for reptiles and mammals, set-time period censuses of birds in the morning and evening, spot-light searches at night, and bat detection and identification using a call recording device.	- Section 5.4.3 and Appendix 6
- A discussion of the status of the vertebrate fauna with reference to available information on regional occurrence including within conservation reserves.	- Section 5.4.3 and Appendix 6
- A description of any restricted habitats such as karst formations and springs that may support invertebrates that may require special management. Identification of invertebrates that may occur in those habitats.	- Section 5.4.3 and Appendix 6
- Identification of any Specially Protected (Threatened) Fauna as listed under the *Wildlife Conservation Act 1950*, Priority fauna species, and any other species of conservation significance.	-Section 5.4.3 and Appendix 6
- An analysis and assessment of the conservation status and local and regional significance of all fauna identified as either occurring or having the potential to occur on the site and immediate adjacent areas. This should not be construed as a requirement to undertake a comprehensive field survey of the National Park.	- Section 5.4.3 and Appendix 6
- Comment on the potential for other Specially Protected (Threatened) Fauna and Priority Fauna on the location based on a review of literature and analysis of habitat preferences.	- Section 5.4.3 and Appendix 6
- Identification of any areas of importance and any ecological linkages (vegetation corridors) between the location and adjacent areas.	- Section 5.4.3 and Appendix 6
- A discussion of the local and regional significance of the area for fauna protection.	- Section 5.4.3 and Appendix 6
- A description of management strategies designed to protect fauna and fauna habitat within the context of development.	- Section 5.4.5 and Appendix 6
Aboriginal Sites	
- A description of the results of an archaeological survey of the location.	- Section 5.14.3
- A description of the results of an ethnographic survey including consultation with representatives of aboriginal community.	- Section 5.14.3
- Advice regarding compliance with the *Aboriginal Heritage Act 1972* and regarding the Department of Indigenous	- Section 5.14.3

Environmental Methodology	SEA Section
Affairs publication "Heritage Matters: Advice for Developers".	
State Planning Policy Leeuwin Naturaliste Ridge (SPPLNR)	
- A description of the environmental sections of the SPP (ie. Policy Statements 2.1 to 2.10 inclusive).	- Section 1.6
- A discussion of the implications of the above Policy Statements for the proposed development.	- Section 5
5.2 Environmental Management Strategies	
Coastal Foreshore	
- A draft Foreshore Management strategy that includes provisions for rehabilitation, access and recreation.	- Appendix 2
Vegetation	
- Development of measures to ensure that all vegetation identified for retention is protected from disturbance during and post construction.	- Appendix 14
- A plan will be prepared to specifically identify the vegetation that is expect to be cleared as part of development and that which can be feasibly retained.	- Figure 13
Fire Management and Prevention	
- A Fire Management and Prevention Plan for the location to be based on the document 'Planning for Bush Fire Protection' (WAPC 2002). Measures for fire management will be assessed for their impact on vegetation clearing, visual amenity and subdivision and building design.	- Appendix 7
- Consultation with the Shire, Fire and Emergency Services Authority and CALM also will occur during the public review phase.	- Appendix 7
National Park	
- Consideration will be given to the design and management interface with the adjacent National Park.	- Section 5.6
- Where required, appropriate buffer distances from the national park are to be accommodated within the site.	- Section 5.6
- A Management Strategy that responds to potential management issues associated with the Leeuwin-Naturaliste National Park in the vicinity of the location (eg. Cape to Cape Trail, management of pets, invasive weeds, human impacts, etc.).	- Section 6.1
- Consultation with CALM will occur during the public review period.	- during public review period
Construction Management	
- A Construction Management Strategy incorporating provisions to minimise impacts on the environment (due to vegetation removal, dieback, potential soil erosion, etc.) during boundary surveys, the installation of services and construction of buildings, and for rehabilitation and landscaping. This will include specifying measures to fence of 'no go' areas during construction.	- Appendix 14
Revegetation and Landscaping	
- A Revegetation and Landscaping Strategy for areas that are disturbed due to development activities and for all other areas where landscaping is required for screening, beautification or other purposes. This strategy will include lists of species suitable for planting in each area and their characteristics (form, height, etc.) and planting schedules, and will	- Appendix 15

Environmental Methodology	SEA Section
specify maintenance requirements.	
5.3 Assessment of the Proposed Development	
An assessment of the proposed development in terms of the environmental features of the property and the proposed management strategies.	- Executive Summary and Section 5
5.4 Commitments	
A list of commitments by the owners of Sussex Location 413 that they will undertake to ensure the implementation of environmental management strategies and other matters designed to promote environmental protection.	- Section 6.1

1.5.2 Subdivision and Development Approval

Following endorsement of the draft DGP by both the Shire of Busselton and the WAPC, separate development and subdivision applications will be lodged with those agencies respectively.

It is likely that the WAPC will initially determine a subdivision application for the layout of the overall project, determining road layouts and the configuration of Super lots for later development. In doing so, the WAPC will be primarily guided by the endorsed DGP, but will also have regard to the provisions of the LNRSPP, DTPS 20 and relevant WAPC policies.

So as to comply with the requirement for 70% tourist and 30% residential development in the context of the necessity to fund the introduction of key water and sewerage service to Smiths Beach and establish a sense of community, the staging of the overall project will be dealt with as part of the subdivision approval by the WAPC in collaboration with the Shire. The subdivision approval will also be conditioned to give practical effect to the various environmental responses and initiatives contained in the DGP and the SEA. The conditions will require the completion and/or securing of the specified works prior to clearance of nominated stages of development, and will in some cases (for example revegetation areas) require arrangements for maintenance of those works by the developer for periods of time prior to handover to the Shire.

The development approval process is the responsibility of the Shire of Busselton. It deals with the construction of the individual buildings and related components that comprise the final built form. As with subdivision, the Shire will primarily be guided by the endorsed DGP in issuing development approvals, but will also have regard to the provisions of the LNRSPP, DTPS 20 and relevant Planning Scheme policies.

In some cases, such as tourist developments, Development Approval will be integrated with strata or land subdivision approval. Certain developments, such as large group dwelling projects or tourist resorts, will also be subject of separate public consultation to provide opportunity for community comment/input on detailed design issues and respond to potential localized impacts.

The subdivision approval process, and more particularly the development approval process, will be linked to Design Guidelines for the overall DGP area that will be endorsed by the Shire and the WAPC as part of the DGP. It is intended that the Design Guidelines also be implemented at the developer/community level via creation of a "Town Architecture Committee" or some such body and that key elements of the Design Guidelines be enforceable by covenants placed on titles by the proponent at the outset of development.

1.6 Statutory Requirements

In addition to meeting the requirements of the *Environmental Protection Act 1986*, the proponent in developing the project area is required to comply with, amongst others, any or all of a number of Acts of Parliament and Regulations at the State or Commonwealth level as listed below. A brief description of some of the more relevant legislation for this proposal is also given.

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Aboriginal Heritage Act 1972*
- *Conservation and Land Management Act 1994*
- *Environmental Protection Act 1986*
- *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*
- *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*

- *Environmental Protection (Noise) Regulations 1997*
- *Health Act 1911 and Regulations*
- *Local Government Act 1995*
- *Metropolitan Water Supply, Sewerage and Drainage Act 1909, or Country Towns Sewerage Act 1914*
- *Native Title Act 1993*
- *Planning and Development Act 2005*
- *Rights in Water and Irrigation Act 1914*
- *Water and Rivers Commission Act 1995*
- *Water Agency Powers Act 1984*
- *Wildlife Conservation Act 1950*
- *Leeuwin-Naturaliste Ridge State Planning Policy*

In addition, the following Commonwealth legislation may be relevant:

- *Environment Protection and Biodiversity Conservation Act 1999*

Aboriginal Heritage Act 1972

The purpose of this legislation, regulated and enforced by the Department of Indigenous Affairs, is to protect relics and significant areas of land from undue interference, while at the same time leaving traditional Aboriginal cultural rights in relation to such objects or areas unaffected, in so far as they are not inconsistent with the provisions of the Act.

The Act establishes the Aboriginal Cultural Material Committee. The Aboriginal Cultural Material Committee (ACMC) provides advice for the assessment of Section 18 Notices which developers are obliged to submit so the ACMC can determine whether or not an Aboriginal site should be disturbed by the development. The ACMC makes a recommendation to the Minister for Indigenous Affairs who makes the final decision as to whether consent for a development should be granted. Sacred beliefs and ritual or ceremonial usage are to be the primary considerations in the evaluation of places under the Act.

The Act also permits the Trustees of the Western Australia Museum to delegate their powers and duties for the care and protection of sites and objects to a representative group of Aboriginal people whom have a traditional interest in the place.

Conservation and Land Management Act 1984

The purpose of this Act, regulated by the Department of Environment and Conservation, is to "make better provision for the use, protection and management of certain public lands and waters and the floras and fauna thereof, to establish authorities to be responsible therefore, and for incidental or connected purposes".

***Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)**
The Act provides protection for matters of National Environmental Significance (NES) and is administered by the Department of Environment and Water Resources and the Commonwealth Environment Minister. These are:

- World and National Heritage properties;
- Ramsar wetlands of international importance;
- Nationally threatened animal and plant species and ecological communities;
- Internationally protected migratory species;
- Commonwealth marine areas; and
- Nuclear actions.

The procedure for joint assessments is identified in the document *Basis for a National Agreement on Environmental Impact Assessment.* These joint assessments generally take the form of the local state process, following which the Commonwealth publishes its own report.

Environmental Protection Act 1986

This Act is administered by the Department of Environment and Conservation (DEC). The Act provides for conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with it. The Act establishes head powers to provide mechanisms for the development of Environmental Protection Policies (EPP), the referral and assessment of proposals (Environmental Impact Assessment - EIA), the control of pollution and enforcement.

The Act also provides for an Environmental Protection Authority (EPA) that is a statutory authority and is the primary provider of independent environmental advice to Government (EPA 2005). The EPA is assisted by the EPA Service Unit comprising the Environmental Impact Assessment and Policy Divisions of the DEC.

Health Act 1911 and Regulations

The objective of this Act is to consolidate the law relating to Public Health. The Minister for Health administers the Act and each Local Government Authority is authorised and directed to carry out the provisions of the Act within its district.

The Act contains far-reaching provisions on a wide range of matters, which are divided into parts: Sanitary Provisions (Part 5), Dwellings (Part 6), Public Buildings (Part 7), Nuisances and Offensive Trades, Animal Produce, Drugs, Medicines, Disinfectants, Therapeutic Substances and Pesticides (Part 7A), Food (Part 8) and various Disease, Hospital and Medical related provisions (Parts 9-13).

Water Agency Powers Act 1984

Under this Act, land developers are required to enter into an agreement with the Water Corporation for the provision of works.

Water and Rivers Commission Act 1995

The Department of Water administers the *Water and Rivers Commission Act 1995* to ensure that the State's water resources are managed to support sustainable development and conservation of the environment, for the long-term benefit of the community.

Wildlife Conservation Act 1950

The *Wildlife Conservation Act 1950* provides for the "conservation and protection of wildlife" and is administered by the Department of Environment and Conservation.

Native flora and fauna are 'protected' under the provisions of Section 14 of the Act. The Act provides penalties for taking protected flora or fauna unlawfully. It also contains provisions for the declaration of species as "rare or likely to become extinct" (ie, endangered). "Fauna" is defined as meaning any animal indigenous to any State or Territory of the Commonwealth or the territorial waters thereof (ie, it includes fish), and "flora" as any plant, which is native to the State. Prior to passage of the *Conservation and Land Management Act 1984*, responsibility for wildlife management and management of nature reserves was held by the Fisheries and Wildlife Development Proposals (Part 8).

Leeuwin-Naturaliste Ridge State Planning Policy

The Leeuwin-Naturaliste Ridge State Planning Policy (LNRSPP) contains policies relating to Conservation, Tourism and Cultural Heritage. The policy statements contained in the SPP regarding environmental issues that may be relevant to the development of Sussex Location 413 are as follows:

PS2.1 This LNRSPP supports the consolidation of the Leeuwin-Naturaliste National Park.

PS2.2 There is a general presumption against clearing of native vegetation.

PS2.3 Clearing of native vegetation will require planning approval and may be supported where:

- The need has been established for safety or for specific building requirements; or
- Removal is for the establishment of horticulture or viticulture within areas defined as Agricultural Protection under this LNRSPP; and
- Removal of native vegetation does not threaten the presence of rare and threatened flora fauna and ecological communities.

PS2.4 A landscape management plan will be required where the clearing of remnant vegetation for installation of service is the only option.

PS2.5 Local environmental corridors will be supported along roads, streams and wetlands, and where they link existing blocks of remnant vegetation.

PS2.6 Proposals for development adjacent to natural bushland areas will be required to include an effective bushfire protection plan that is consistent with conservation values.

PS2.7 Proponents of development must ensure that it does not significantly increase the threat of bushfires nor is to be located in an area of high fire hazard.

PS2.8 Proponents of development must ensure that it does not adversely affect the quality or quantity of surface and groundwater resources where required for the conservation of natural values.

PS2.9 Land use planning on the coast will have regard for the impacts of development on the proposed marine reserve.

PS5.6 Tourism developments adjacent to the National Park or within the National Park influence area will be assessed for their direct and indirect impact on the natural environmental values and management of the park.

PS6.1 Consultation with the custodians of sites of Aboriginal cultural heritage significance will be required at the structure planning stage of the planning process.

2. COMMUNITY CONSULTATION

2.1 Background

Canal Rocks Pty Ltd commenced a community consultation strategy for the Smiths Beach project in May 2003 that involved a broad cross-section of the community and has continued to engage in the community consultation programme through to February 2006. The full report is included as Appendix 1: *Smiths Beach – Community Consultation 2003-2006* (Creating Communities Pty Ltd 2006).

The community consultation strategy was undertaken to ensure that local knowledge, views and perceptions were incorporated into all aspects of the planning process.

The consultation strategy has included presentations to key stakeholders including residents, the local shire, key interest groups and local members of State Parliament. In addition community groups, local business groups, landowners and developers and one-on-one interviews formed part of the consultation strategy for the project. Other methods of informing the general community included press advertising and media releases. The consultation process included the establishment of the Smiths Beach Reference Group (Creating Communities Australia Pty Ltd 2006).

During the consultation people spoke openly about the development, the Canal Rocks area and coastal development in the South West in general. A report prepared on behalf of the proponent documenting the findings and recommendations received through the above methods is included as Appendix 1 in the volume technical appendices (Creating Communities Australia Pty Ltd 2006).

Section 2.2 includes a 'snapshot' of the community consultation process undertaken up to the publication of the Creating Communities report (February 2006).

2.2 Community Consultation Process

2.2.1 Introduction

The methodology adopted for the Smiths Beach consultation process was multi-faceted and comprehensive to ensure a wide cross-section of the community was included in the consultation process.

The consultation objectives were to:

- Understand the community's aspirations, priorities and values to create a community-driven vision for the site.
- Identify community views on key inhibitors to future development of the project.
- Identify community views on potential strategies that will ensure sustainability of the project.
- Gain input into the final project plans.
- Develop community ownership in the final plans.

Table 4 provides a summary of the activities undertaken during the consultative process.

TABLE 4
COMMUNITY CONSULTATION ACTIVITIES

Consultation Activity	Community and Stakeholders Involved
One-on-one interviews	180 one-on-one interviews, phone calls and email contacts occurred with individuals representing all facets of the community. Particular interest areas of the respondents included: tourism industry; environment; fishing; surfing; sea rescue; business; wine industry; local associations and arts.
Presentations to key stakeholders	Information sessions and presentations were conducted with the following agencies and community stakeholders: residents, service and facility providers and business owners in the catchment; the Shire of Busselton staff and Council; key interest groups; local members of State Parliament; State government authorities; service authorities; environment groups; community groups; landowners and developers.
Development of the Smiths Beach Reference Group	The Smiths Beach Reference Group was established following the one-on-one interviews at the request of the Shire of Busselton. Seven meetings have been held with the Reference Group attendees and the project team.
Development of Smiths Beach Community Development Group	During the consultation process from a number of local residents suggested creating the Community Development Group. This group aims to focus on the opportunities for community and economic development in and around Smiths Beach in both the lead up to development and following its establishment.
Brochures	An information booklet detailing the history of the Smiths Beach proposal, development ideas, community recommendations and changes has been provided to the community. Four hundred copies have been disseminated through one-on-one meetings, reference group meetings and community meetings. The booklet outlines the changes the developer has made following community consultation and highlights the importance of ongoing consultation.
Powerpoint presentations of the DGP to assist understanding	A detailed power point presentation of the changes made to the design concept was prepared. This presentation outlined the design option evolution process and the modifications made to the original design concept both during and following community consultation.
1300 information number	An information line was included in the consultation process to enable the community to have easy access to the project team.

2.2.2 One-on-one Interviews

In 2003 one-on-one interviews were conducted with individuals or representatives from community and agency groups to obtain input from the community regarding its aspirations, priorities and values for Smiths Beach. Meetings were conducted with a broad cross-section of the people who live, work and recreate in the Dunsborough, Yallingup, Busselton, Vasse and the Smiths Beach area (refer to Appendix 1/Table 2 for a list of the individuals/group representatives interviewed as part of this community consultation process).

A series of questions was asked at each of the one-on-one meetings and during telephone interviews. Table 5 includes the questions asked of the respondents and the community perceptions, values and responses raised during the interviews.

As a result of the 2003 consultation process, suggestion and ideas collected from the community were used to shape the DGP for Smiths Beach and also led to the establishment of the Smiths Beach Reference Group (Creating Communities 2006).

TABLE 5
COMMUNITY PERCEPTIONS, VALUES AND RESPONSES

Q1. What do you consider the most important aspects of Smiths Beach?	• Pristine beach. • Ridge landscape. • Natural environment. • Viewscape from all directions including from the ocean. • Focus for surfing activities – "It is the best learn-to-surf beach in the district". • Accessible for a broad range of community interests. • Strong focus and emotional connection for families.
Q2. What do you believe inhibits the proposed development?	• Gain input into the final project plans. • Lobby groups may attempt to disrupt/impede/stop any proposed development. • Proposed TPS amendments. • Community Groups and individuals taking a stance against what they believe is inappropriate development in the district i.e. drawing a "line in the sand". • Lack of good communication between all stakeholders, i.e. developer, shire, state government departments, community groups and individuals. • Not engaging all stakeholders in the planning and development process. • Previous history of the project, i.e. preconceived attitudes. • Damaging the natural environment. • Interfering with the aesthetics of the area. • The perceived enormity/scale of the original concept was daunting to many local residents.
Q3. What are the most significant development issues?	• People are not necessarily opposed to development at Smiths Beach but feel strongly that the project should be in keeping with values that are important to local residents. • The strongest opposition to any development at Smiths Beach was based on environmental concerns. • Appropriate infrastructure to cope with increased usage, i.e. roads, car park, water, wastewater. • Retaining accessibility to the beach and ensuring the development is not exclusive. • The need to respect and retain the activities that currently occur on the beach. • The project needs to be innovative, i.e. develop strategies that are distinctive and appropriate from an environmental, economic and community perspective. • It needs to bring something new to the market, not more of the same. • It should be based on best practice in every aspect, i.e. community consultation, planning, concept development etc. • Consider the whole of Smiths Beach i.e. don't plan in isolation. • Don't import a 'style'; build on the Smiths Beach

	experience e.g. more like Noosa than Gold Coast. • Balance between short stay and permanent accommodation.
Q4. What special features could make this project distinctive?	• Finding a way of blending any built-form with the natural environment. • Establishing employment and business opportunities. • Establishing a community hub for the surfing community and lifesaving facility- potential for a joint initiative/partnership. • Further development of untapped tourism opportunities e.g. ecotourism, walking and cycling. • Innovative solutions to future infrastructure requirements. Need to create a vision for the entire Smiths Beach area. • Need to create a vision for the entire Smiths Beach area.

In 2005 a new round of consultation was undertaken. A total of 114 community members were consulted, including one-on-one interviews and phone interviews.

2.2.3 Smiths Beach Reference Group

Between July 2003 and June 2005 the Smiths Beach Reference Group held seven meetings. A list of attendees and meeting notes for each of the Reference Group meetings are included in Section 5 of Appendix 1 (Creating Communities 2006).

2.2.4 Community Consultation

Following the initial reference group meetings and community consultation, considerable design changes were adopted for the Smiths Beach project. In 2005 a new round of consultation was undertaken. A total of 114 community members were consulted, including one-on-one interviews, phone calls, attendance at reference group meetings, the Smiths Beach website and at the Smiths Beach community development group meeting. Table 4 of Appendix 1 presents the list of people consulted in 2005 (Creating Communities 2006).

2.2.5 Stakeholder Presentations

Meetings and presentations have occurred with the aim of clarifying the community consultation role, building working relationships and identifying common goals.

Presentations were facilitated with the following professional groups/associations:

- Naturaliste Volunteer Sea Rescue
- Cape Naturaliste Tourism Association
- Shire of Busselton
- Dunsborough Yallingup Chamber of Commerce
- Surf Community
- Smiths Beach Action Group
- White McMullen Real Estate
- Dunsborough Progress Association

2.2.6 Smiths Beach Community Development Group

At the request of a number of local residents, a community development group was established to determine key ways in which the Smiths Beach project can be positioned as a functioning, sustainable community that adds value for all people in the region. The first meeting of this group was held in September 2005.

2.2.7 Smiths Beach Action Group

The Smiths Beach Action Group is recognised by the proponent as having a particular interest in the proposed development and considerable consultation and input has been received from the group. Four meetings have been held with members of the group and details of the outcomes of these meetings are presented in Section 8 of Appendix 1 (Creating Communities 2006).

3. RELEVANT ENVIRONMENTAL FACTORS

Canal Rocks Pty Ltd referred the proposed development of Sussex Location 413 Yallingup to the Environmental Protection Authority (EPA) on 2 September 2005 requesting that the proposed development of the site be assessed as a Strategic Environmental Assessment (SEA). Under s37B(2) of the *Environmental Protection Act 1986* (EP Act), an SEA is a formal level of assessment. The EPA determined that the proposal is a strategic proposal under the provisions of the EP Act and should be assessed as an SEA (EPA Assessment No. 1597).

The objective of the SEA is to determine the environmental values of the site, assess the impact of the proposed development on the environment and to identify future management of the proposed development to ensure long-term protection of environmental values.

The initial step in the preparation of the SEA for the proposed development was the preparation of an Environmental Scoping Document. The purpose of the Scoping Document is to identify the work required to ensure that all significant environmental issues are properly considered as part of the EPA's environmental assessment of the proposal.

The Scoping Document prepared for the proposed development outlined the studies that had been undertaken to date and described the further investigations that were required to be completed to fulfil the reporting requirements of the SEA.

The Scoping Document was prepared in accordance with the EPA's document *Guide to preparing an Environmental Scoping Document* (Environmental Protection Authority 2004). Due to the high level community interest in the proposed development, the EPA determined that the Scoping Document should be made available to the public for a two-week advertising period. This was undertaken by the proponent with advertisements being placed in both *The West Australian* and local community newspapers. In total 19 submissions were received by the EPA and amendments were subsequently made to the Scoping Document prior to the document being approved by the EPA in July 2006.

The environmental factors relevant to this SEA as identified in the Scoping Document (ATA Environmental 2006a) are:

Integration
- Sustainability

Biophysical
- Native Terrestrial Flora - Vegetation
- Native Terrestrial Flora – Declared Rare and Priority Flora; Flora Of Conservation Significance (Including Threatened Ecological Communities)
- Native Terrestrial Fauna
- Native Terrestrial Fauna – Specially Protected (Threatened) Fauna
- Conservation Areas – Leeuwin-Naturaliste Ridge National Park
- Landscape and Landforms
- Karst

Pollution Management
- Surface Water Quality
- Groundwater Quality
- Air Quality - Dust and Particulates
- Air Quality – Greenhouse Gases
- Noise

Social Surroundings

- Aboriginal Heritage
- Visual Amenity

These environmental factors have provided a framework against which the structure and scope of this SEA document has been written. Each of the relevant environmental factors has been individually addressed in Section 5 of this SEA document.

Table 6 includes a summary of the potential impacts, additional investigations required to be undertaken and proposed management as determined in the EPA approved Scoping Document for each of the environmental factors previously identified for the project area at Location 413 (ATA Environmental 2006a). Table 7 shows the EPA's Principles of Environmental Protection against which the proposed development has been measured.

TABLE 6
ENVIRONMENTAL SCOPING DOCUMENT - RELEVANT ENVIRONMENTAL FACTORS

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
Integration						
Sustainability	Project area (~28ha)	To ensure, as far as practicable, that the proposal meets or is consistent with the sustainability principles in the EPA's Position Statement No. 6 Towards Sustainability (EPA, 2004d) and The Western Australian State Sustainability Strategy (Government of Western Australia, 2003).	• Government of Western Australia (2003) Western Australian *State Sustainability Strategy* • Western Australian Planning Commission (2001) Statement of Planning Policy No. 2: *Environment and Natural Resources* • (EPA 2004e) Position Statement No. 6: *Towards Sustainability*	Future development may proceed in an unsustainable manner resulting in a poor quality urban development and adverse environmental consequences.	Undertake periodic review of the planning development to ensure compliance with the Sustainability Checklist prepared for the development. A range of objective measures specific to the proposed development and against which the project will be measured over time will be prepared and presented within the SEA report. Issues to be addressed will relate to gradual impact/effect with a a three year interval reporting timeframe in relation to the measures.	All development applications will be reviewed to ensure compliance with the relevant sections of the Sustainability Checklist.
Biophysical						
Native Terrestrial Vegetation and Flora	Project area (~28ha)	To maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystems levels through the avoidance or management of adverse impacts and improvement in knowledge.	• EPA (2004b) Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* • *Environment Protection and Biodiversity Conservation Act 1999* • *Wildlife Conservation Act 1950* • Commonwealth of Australia (2001) *National Targets and Objectives for Biodiversity Conservation 2001-2005* • Commonwealth of Australia (1996) *National Strategy for the Conservation of Australia's Biological Diversity* • Shire of Busselton District Town Planning Scheme No. 20	Future development will involve clearing areas of remnant native vegetation.	No further site investigations required. SEA report to include further description of vegetation according to Regional Forest Agreement (RFA) database. SEA report to include discussion on options for managing conservation areas in the proposed development.	The Draft Development Guide Plan will prohibit clearing outside of defined building envelopes, accessways and development nodes. The area to be subject to a Conservation Covenant will require owners to protect and enhance native vegetation and with a covenant or memorial placed on Lot titles as a protective mechanism to ensure that these works are maintained. A further management option to be considered would be including an additional area to the National Park. A Vegetation, Flora and Fauna sections of the Construction Environment Management Plan will be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton.
Terrestrial Flora – Declared Rare and Priority Flora; Flora of conservation significance	Project area (~28ha)	Protect Declared Rare and Priority Flora consistent with the provisions of the *Wildlife Conservation Act 1950*, and the *Environment Protection and Biodiversity Act 1999*.	• EPA (2004b) Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western*	No loss of, or disturbance to any species of Declared Rare Flora and Priority Flora is anticipated.	No further site surveys required. The location of the *Dryandra sessilis* var. *cordata* (P4) plants on site will be recorded by GPS and shown on the vegetation map in the SEA report.	Areas of vegetation not proposed to be cleared will be clearly flagged and specifically identified during site inductions. Some *D. sessilis* var. *cordata* (P4) plants may be retained in vegetation to be retained as individual

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
(including Threatened Ecological Communities)		Protect other flora of conservation significance.	*Australia* • *Environment Protection and Biodiversity Conservation Act 1999* • *Wildlife Conservation Act 1950* • Commonwealth of Australia (2001) *National Targets and Objectives for Biodiversity Conservation 2001-2005* • Commonwealth of Australia (1996) *National Strategy for the Conservation of Australia's Biological Diversity* • Shire of Busselton District Town Planning Scheme No. 20			lots and Public Open Space (POS).
Terrestrial Fauna	Project area (~28ha)	To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	• *Wildlife Conservation Act 1950* • *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) • EPA (2004c) Guidance No. 56 - *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* • Shire of Busselton District Town Planning Scheme No. 20	Potential clearance of vertebrate fauna habitat.	A detailed late spring fauna survey within the project area to address the requirements of the EPA Guidance Statement 56 (EPA 2004) was undertaken in 2005.	Protection of fauna and fauna habitat to be addressed in a Vegetation, Flora and Fauna sections of the Construction Environment Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton.
Terrestrial Fauna – Specially Protected (Threatened) Fauna	Project area (~28ha)	Protect Specially Protected (Threatened) Fauna, consistent with the provisions of the *Wildlife Conservation Act, 1950,* and the Commonwealth *Environment Protection and Biodiversity Act, 1999.* Protect other fauna of conservation significance.	• *Wildlife Conservation Act 1950* • *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) • EPA (2004c) Guidance No. 56 - *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* • Shire of Busselton	Potential clearance of vertebrate fauna habitat, including Threatened Fauna habitat.	A detailed Level 2 late spring fauna survey within the project area to address the requirements of the EPA Guidance Statement 56 (EPA 2004) was undertaken in 2005.	Protection and/or relocation of Threatened Fauna and other species of native fauna to be addressed in a Vegetation, Flora and Fauna sections of the Construction Environment Management Plan to be prepared by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton.

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
			District Town Planning Scheme No. 20			
Conservation Areas	National Park and project area interface	To protect and enhance the environmental values of areas identified as having significant environmental attributes.	• EPA (2004b) Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* • *Environment Protection and Biodiversity Conservation Act 1999* • *Wildlife Conservation Act 1950* • Western Australian Planning Commission (2003) State Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy* • Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy*	Potential indirect impacts include the introduction of further weeds and *Phytophthora* and other plant diseases during construction activities and an increased use of the area by both residents and visitors potentially resulting in trampling of native vegetation and disturbance of fauna. There is a potential for the incidence of fires in the National Park to increase. Conversely, the residents on Sussex Location 413 would be at risk of fire escaping from the National Park or from within the development itself.	No further investigations required.	A draft Fire Management Plan has been prepared by the proponent and will be implemented both during and after construction. Management of direct and indirect impacts (eg weeds, *Phytophthora* and other plant diseases and trampling) to the conservation managed areas within the proposed development and to ensure no impact upon the National Park will be addressed in the Vegetation, Flora and Fauna sections of the Construction Environment Management Plan to be prepared by the proponent as a condition of subdivision approval in consultation with DEC and the Shire. A draft Foreshore Management Plan has been prepared by the proponent and will be implemented both before and during construction as appropriate. A copy of the draft FMP will be included as an appendix of the SEA.
Landscape and Landforms	Project area (~28ha) and adjoining coastline	To maintain the integrity of landscape and landforms by maintaining their integrity, ecological functions and environmental values.	• Western Australian Planning Commission (2003) State Planning Policy No. 2 *Environment and Natural Resources* • *Town Planning and Development Act 1928* • Western Australian Planning Commission (2003) State Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy* • Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy* • Shire of Busselton District Town Planning Scheme No. 20	The increased number of residents and tourists in the area as a result of the proposed development will increase the potential usage of Smiths Beach and surrounding coastline and may result in deleterious impacts on the associated coastal landforms and vegetation.	No further site investigations required. The draft Foreshore Management Plan will be revised to include additional reference to the western coastal area and the integration of the Cape to Cape walking trail. The draft Foreshore Management Plan will include a discussion on the possible inclusion of the foreshore reserve in the Leeuwin-Naturaliste National Park.	A draft Foreshore Management Plan has been prepared by the proponent and will be implemented both before and during construction as appropriate. As preferred in the LNRSPP (LUS 3.4), the Principal Ridge Protection Area will be retained in private ownership with ongoing protection of the site ensured through the establishment of Conservation Covenants and appropriate management controls.
Karst	Project area (~28ha)	To maintain the integrity, ecological functions and environmental values of karst.	• EPA (1999) *Environmental protection of Cape Range Province* EPA Position Statement No. 1 • EPA (2003) *Consideration of*	The proposed development may result in direct disturbance to karst areas as a result of excavation during construction activities.	Undertake a desktop analysis of soil types and a site reconnaissance to identify potential karst landforms. Further investigations involving physical testing will be undertaken should the site reconnaissance identify areas of potential concern.	In the event that karst is found to be on-site, a Contingency Plan will be developed to reduce and manage impacts in the event that a cavern is intersected during development activities. If karst landforms are identified, then advice should be sought from the DEC as to the need for further investigations to address the possibility of the

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
			Subterranean Fauna in Groundwater and Caves during Environmental Impact Assessment in Western Australia EPA Guidance Statement No. 54 • Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy*			presence of troglobitic fauna and, if present, how these will be managed.
Pollution Management						
Surface Water Quality	Project area (~28ha)	To ensure that the quality of water emissions does not adversely affect environmental values or the health, welfare and amenity of people and land uses, and meets statutory requirements and acceptable standards.	Latest updates of the following • Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, October 2000, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000a) • Australian Guidelines for Water Quality Monitoring and Reporting, National Water Quality Management Strategy, October 2000, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000b) • Australian Guidelines for Urban Stormwater Management, National Water Quality Management Strategy, 2000, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000c) • Department of Environment (2004) Stormwater Management Manual for Western Australia, February 2004	Gunyulgup Brook is located approximately 200m to the north east of the proposed development discharging directly into Smiths Beach. There is potential for this discharge to impact on human health.	No further investigations required.	In relation to water supply impacts from the existing Dunsborough Town Water Supply have previously been considered in the licensing of the facility and are not relevant to the proposed development.

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
			• Department of Environment (2005) Decision Process for Stormwater Management in W.A.			
Groundwater Quality	Project area (~28ha)	To ensure that the quality of water emissions does not adversely affect environmental values or the health, welfare and amenity of people and land uses, and meets statutory requirements and acceptable standards.	Latest updates of the following • Australian and New Zealand Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy, October 2000, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000a) • Australian Guidelines for Water Quality Monitoring and Reporting, National Water Quality Management Strategy, October 2000, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000b) • Australian Guidelines for Urban Stormwater Management, National Water Quality Management Strategy, 2000, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000c) • Department of Environment (2004) Stormwater Management Manual for Western Australia, February 2004 • Department of Environment (2005) Decision Process for Stormwater Management in W.A. • Australian Drinking Water	Increased levels of nutrients, pesticides, pathogens, irrigation and stormwater run-off may impact upon groundwater and marine water quality of the surrounding area.	No further investigations required.	A Stormwater Management Plan has been prepared consistent with the DEC Stormwater Manual for Western Australia and includes: • BMPs for stormwater management; • At-source pollutant/nutrient input minimisation; • Water conservation strategy to minimise ex-house potable water use; and • Monitoring programmes to compliance reporting mechanisms. The Stormwater Management Plan will form part of the Construction Environment Management Plan. An Effluent Disposal Management Strategy has been prepared and includes: • Provision of reticulated sewerage for the entire development; and • Provision for the connection of services to the Water Corporation's Dunsborough WWTP. Where there is inconsistency between the Shire of Busselton's Drainage Standards, and Australian Guidelines and Department of Water Policy/Guidelines, then the latter shall take precedence.

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
			Guidelines 2004. • *Rights in Water and Irrigation Act 1914* • *Metropolitan Water Supply, Sewerage and Drainage Act, 1909, or Country Towns Sewerage Act, 1914* • Western Australian Planning Commission (2003) *State Planning Policy 2.7 – Public Drinking Water Source Protection*			
Air Quality - Dust and particulates	Project area (~28ha) and surrounding residences.	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.	• Western Australian Planning Commission (1997) State Planning Policy No. 4.1 - *State Industrial Buffer Policy* • Western Australian Planning Commission (2004) State Planning Policy No. 4.1 – *Draft State Industrial Buffer Policy* • Environmental Protection Authority (2000) *Prevention of Air Quality Impacts from Land Development Sites*. Guidance Statement No. 18, Environmental Protection Authority, Perth • Environmental Protection Authority (2004) *Separation Distances between Industrial – Residential Buffer Areas* Draft Guidance for the Assessment of Environmental Factors, No. 3, June 2004 • *Environmental Protection Act 1986* • National Environment Protection (Ambient Air Quality) Measure. • National Environment Protection (Air Toxics) Measure (2004).	The proposal may generate dust from earthworks, clearing of vegetation and vehicle emissions during construction. Impacts may potentially extend beyond the project area boundaries.	No further investigations required.	Dust management within the project area will need to comply with the requirements of Environmental Protection (Air Quality) Regulations, specifically EPA Guidance Statement No. 18 Prevention of Air Quality Impacts from Land Development Sites *(EPA, 2000b)*. Vehicle emissions within the project area during the construction phase will need to comply with the Environment Protection and Heritage Council (EPHC) National Environment Protection Measures (NEPMs), Ambient Air Quality Measures, 1998 and National Environmental Protection (NEP) Air Toxics- Air Quality Measures, 2004 and other applicable guidance. To ensure compliance with these regulations, issues relating to dust and particulates will be addressed in the proposed Construction Environment Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval.

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
Air Quality - Greenhouse Gases	Project area (~28ha) and surrounding residences.	To minimise emissions to levels as low as practicable on an on-going basis and consider offsets to further reduce cumulative emissions.	• Environmental Protection Authority (2002) *Guidance Statement for Minimising Greenhouse Gas Emissions*, Statement No. 12 October 2002 • Western Australian Greenhouse Task Force (2004) *Western Australian Greenhouse Strategy* • Western Australian Planning Commission (2003) *State Planning Policy No. 2 Environment and Natural Resources*	Implementation of the proposal may result in an increase in greenhouse gas emissions during the construction phase.	Greenhouse gases emissions associated with the proposal will be calculated, as indicated in EPA Guidance No. 12 *Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors* (EPA, 2002).	All development undertaken within the project area will be considered in the context of EPA Guidance Statement No. 12 *Minimising Greenhouse Gas Emissions* (EPA, 2002c) the DPI's *Liveable Neighbourhoods Community Design Code* (WAPC, 2000). Specific measures to minimise the greenhouse gas emissions associated with the proposal will be examined including monitoring of greenhouse gases.
Noise	Project area (~28ha) and surrounding residences.	To protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring the noise levels meet statutory requirements and acceptable standards.	• Environmental Protection Authority (1997) *Environmental Protection (Noise) Regulations 1997*: Regulation 13 "Construction sites" • Department of Environmental Protection (2000a) *Road and Rail Transport Noise* Draft Guidance No. 14 (Version 3) • Western Australian Planning Commission (2005) Draft State Planning Policy *Road and Rail Transport Noise* • Western Australian Planning Commission (2005) Draft State Planning Policy *Metropolitan Freight Network* • Australian Standard *AS2670/1990 Evaluation of human exposure to whole body vibration*	Noise association with construction activities may affect the amenity at nearby sensitive premises and impact on recreational 'wilderness' users in the area such as those hiking the Cape to Cape Trail.	No further investigations required.	Construction noise received at nearby sensitive premises and transient visitors will need to comply with the requirements of the *Environmental Protection (Noise) Regulations* 1997. To ensure compliance with these regulations, their management will be described in the Construction Environment Management Plan that will be prepared and implemented by the proponent as a condition of subdivision approval.
Social Surroundings						
Aboriginal Heritage	Project area (~28ha).	To ensure that changes to the biophysical environment do not adversely affect	• *Aboriginal Heritage Act 1972*	Development may impact Aboriginal sites present at the site.	No further investigations required.	An application to the Aboriginal Cultural Materials Committee under Section 18 of *the Aboriginal Heritage Act 1972-1980* for Ministerial consent to

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
		Aboriginal heritage sites and/or cultural associations within the area and comply with the requirements of relevant Aboriginal and heritage legislation.	• *Native Title Act 1993* • *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* • Environmental Protection Authority (2004h) *Assessment of Aboriginal Heritage* No. 41			disturb a site has been submitted and approved. This approval has been granted subject to the condition that further archaeological monitoring take place following the clearing of bushland areas but before development, to ensure that no significant sites that may be hidden by vegetation are destroyed. Another site (a scatter) is located within the area of proposed public open space to the south and consequently it will not be disturbed by the proposed development.
Visual Amenity	Project area (~28ha) and surrounds.	To ensure that visual amenity is considered and measures are adopted to reduce adverse visual impacts on the surrounding environment as low as reasonably practicable.	• *Environmental Protection Act 1986* • Western Australian Planning Commission (2003). State Planning Policy No. 2 *Environment and Natural Resources Policy* • *Town Planning and Development Act 1928* • Western Australian Planning Commission (2003). State Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy* • Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy* • Shire of Busselton District Town Planning Scheme No. 20 • Shire of Busselton (2001) Draft Development Guide Plan (Withdrawn) – Location 413 Smiths Beach	Potential for construction activities and future development to impact on the visual amenity both within and adjacent to the project area.	No further investigations required.	A Landscape and Visual Assessment being prepared for the project area will establish a framework for the landscape and urban design of the site, which responds to both the site and surrounding landscape characteristics. All development applications will be reviewed to ensure compliance with this Assessment.

TABLE 7
PRINCIPLES OF ENVIRONMENTAL PROTECTION AS APPLIED TO THE PROPOSED DEVELOPMENT

PRINCIPLE	Relevant Yes/No	If Yes, consideration
1. The precautionary principle Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by: (a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and (b) an assessment of the risk-weighted consequences of various options.	Yes	Sufficient knowledge to address potential environmental impacts. Specialist studies (eg flora, fauna, groundwater) have been undertaken to assess the environment and potential impacts, and will, for example, be applied to vegetation types GH4, and undisturbed parts of SH9, LH1, We and W2.
2. The principle of intergenerational equity The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.	Yes	The proponent has incorporated the principles of sustainability into the development of the draft Development Guide Plan.
3. The principle of conservation of biological diversity and ecological integrity Conservation of biological diversity and ecological integrity should be a fundamental consideration.	Yes	Investigations undertaken for flora (remnant vegetation, DRF and TEC) and fauna (priority and scheduled species) have been and will further be undertaken in accordance with the EPA's relevant guidance statements. The findings will be form the basis of a Vegetation, Flora and Fauna Management Plan to be prepared for the project area.
4. Principles relating to improved valuation, pricing and incentive mechanisms • Environmental factors should be included in the valuation of assets and services. • The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement. • The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and ultimate disposal of any waste. • Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solution and responses to environmental problems.	Yes	The draft Development Guide Plan prepared for the project area has been guided by the sustainability principles.
5. The principle of waste minimisation All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.	Yes	A Construction Management Strategy (CMS) will be prepared for the proposed development to minimise the clearing of native vegetation and the management of building material during construction. The preferred management options are to avoid, reduce, reuse, recycle and recover waste management.

Source: Environmental Protection Authority (2004f)

4. EXISTING ENVIRONMENT

4.1 Climate

The Leeuwin Naturaliste coast experiences a Mediterranean climate with warm to hot, dry summers and mild, wet winters. The mean maximum temperature generally occurs in February and varies between 23°C at Cape Leeuwin and 25.6°C at Cape Naturaliste. Rainfall averages are 833mm at Cape Naturaliste and 994mm at Cape Leeuwin. Approximately 60% of the annual rainfall is received between May and August (Department of Conservation and Land Management 1987).

The seasonal weather patterns at Yallingup are largely controlled by the position of the Subtropical High Pressure Belt. This is a series of discrete anticyclones that encircle the earth at the mid-latitudes (latitudes of 20 degrees to 40 degrees). Throughout the year, these high pressure cells are continuously moving from west to east across the southern portion of the Australian continent. A notional line joining the centres of these cells is known as the High Pressure Ridge (MP Rogers and Associates 2000).

In winter this ridge lies across Australia typically between 25 to 30 degrees south and is to the north of Yallingup at 33 degrees 39 minutes south. Consequently, the migrating low pressure systems which exist to the south of the High Pressure Ridge, are located sufficiently northward to bring a westerly wind regime to the southwest of Western Australia and the adjacent waters. Cold fronts associated with these low pressure systems pass over the Yallingup region. These can bring storm force winds with directions from northwest, through west, to southwest (MP Rogers and Associates 2000).

During summer, the High Pressure Ridge moves south of Yallingup and lies between 35 and 40 degrees south. Under these circumstances, the Yallingup region comes under the influence of the high pressure cells of the High Pressure Ridge. These cells cause anti-cyclonic winds that rotate anti-clockwise in the Southern Hemisphere. At Yallingup, these winds arrive from the southeast to east as the high pressure cell approaches from the west. The winds then rotate through northeast to north as the high pressure cell passes to the Great Australian Bight (MP Rogers and Associates 2000).

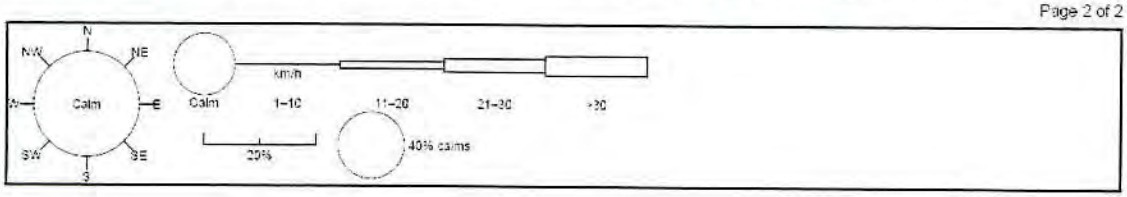
In addition to these synoptic scale effects which cause seasonal variations, the meso-scale phenomenon of a land / sea-breeze system is commonly experienced during summer at Yallingup and adjacent coastal regions. This causes variations on a daily time scale, and breezes come from the land in the morning and swing around to come from the sea in the afternoon (MP Rogers and Associates 2000).

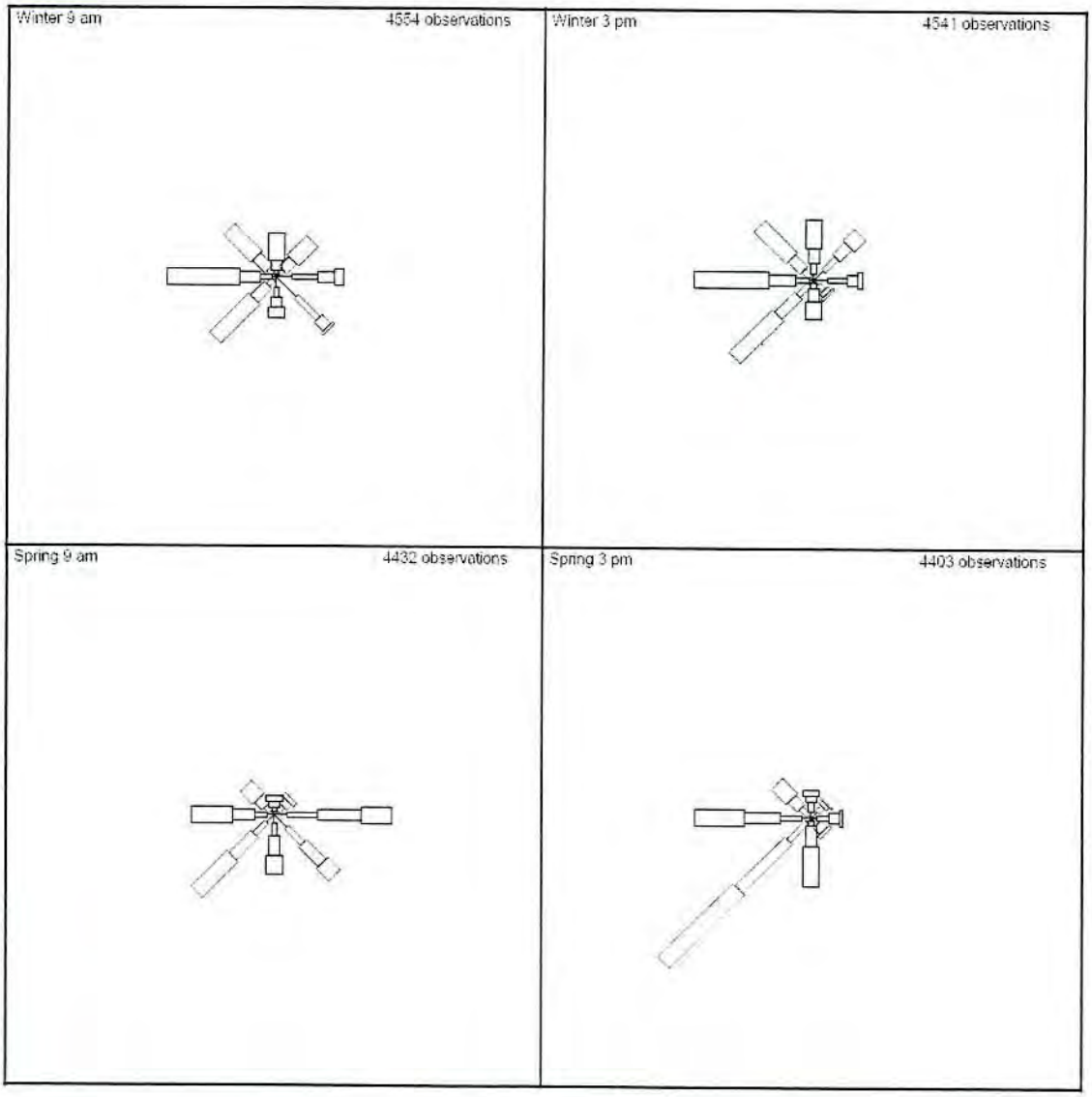
The Bureau of Meteorology has recorded wind data at the Cape Leeuwin for the period from 1907 to 2004. Wind roses obtained from the Bureau were prepared using for the morning (9:00 AM) and afternoon (3:00 PM) periods. The wind roses, presented on the following two pages, show that winds show considerable variation in direction in the mornings although in summer and autumn are predominantly from the east and southeast, but are generally from the southwest in the afternoons when wind speeds are typically between 20 and 30+km/h.

During winter storms, the wind speeds can exceed 50km/h. The wind regime influences coastal processes through the generation of ocean waves and currents, as well as feeding dune systems with wind blown beach sand (MP Rogers and Associates 2000).

Wind Roses using data between Jan 1957 and Sep 2006 for
Cape Naturaliste

Site Number 009519 • Locality: Busselton • Opened Jan 1903 • Still Open • Latitude 33°32'14"S • Longitude 115°01'08"E • Elevation 109m



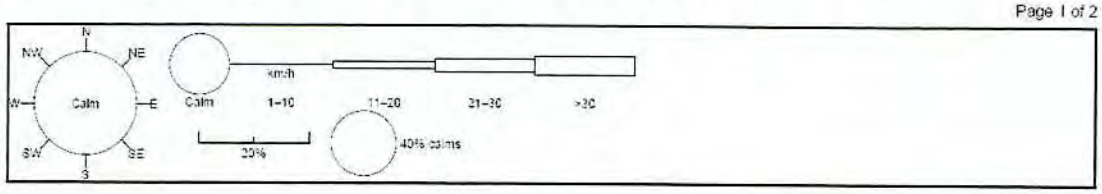


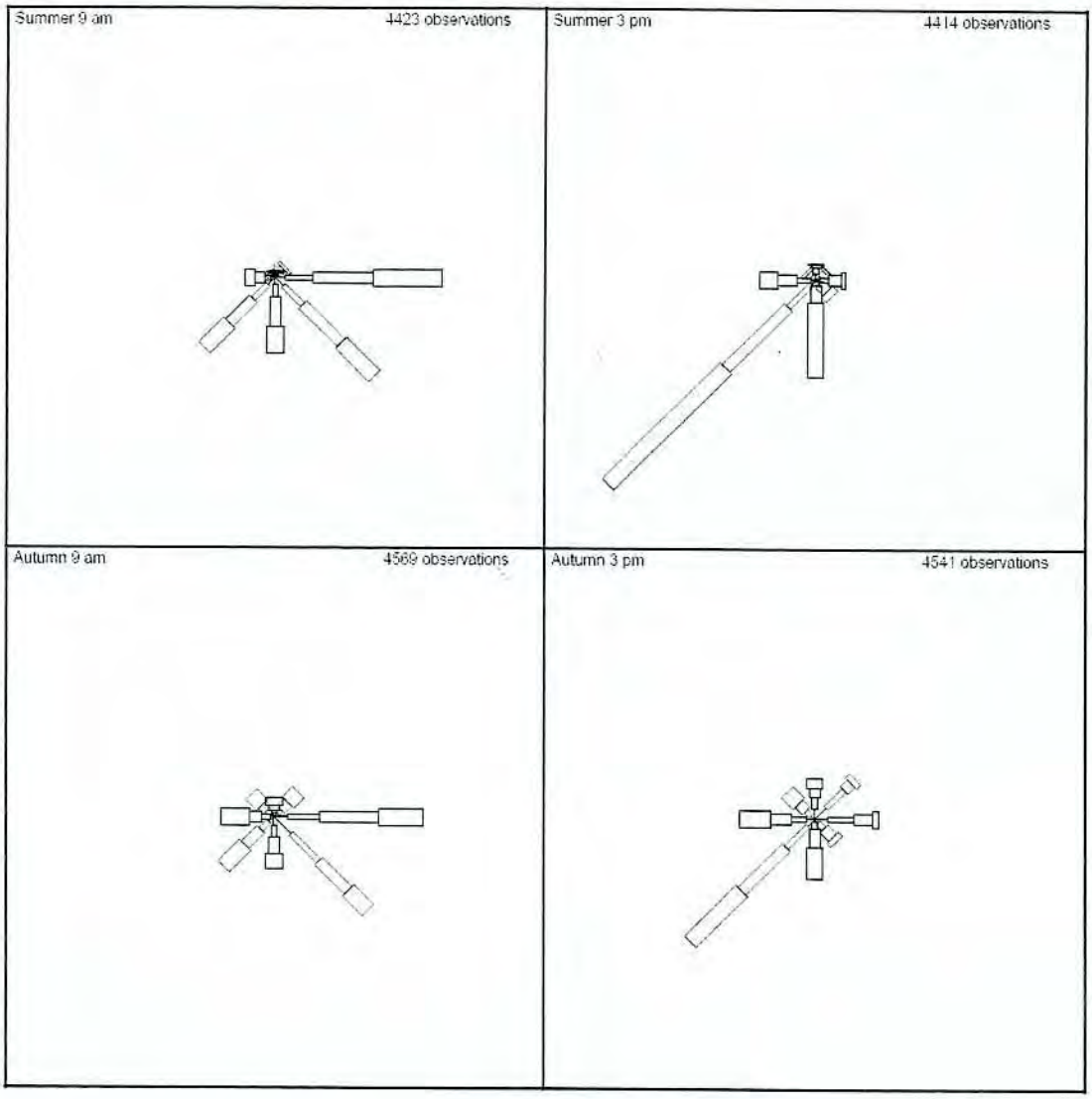
Australian Government
Bureau of Meteorology

Source: Bureau of Meteorology website: http://www.bom.gov.au

Wind Roses using data between Jan 1957 and Sep 2006 for
Cape Naturaliste

Site Number 009519 • Locality: Busselton • Opened Jan 1903 • Still Open • Latitude 33°32'14"S • Longitude 115°01'08"E • Elevation 109m





Australian Government
Bureau of Meteorology

Source: Bureau of Meteorology website: http://www.bom.gov.au

4.2 Landforms and Topography

Location 413 has two major landform components: a ridgeline in the western sector that extends seaward in a northwesterly direction, and a gently sloping eastern section that rises to the south away from the beach (Figure 6). The ridgeline forms a slightly raised headland with elevations up to 58m AHD.

The highest point of Location 413 is located midway along the southern boundary of the site having an elevation of 60mAHD. The eastern half of the site slopes downwards to the north towards the beach to a level of 4m AHD. The general slope is moderate, descending approximately one metre in every seven. At the base of this slope is a low-lying area. A dunal ridge, rising up to 18m AHD in places, separates this low-lying area from the beach. Further west the dunal ridge decreases in height to sea level.

Located to the south and upslope of the site is the Leeuwin-Naturaliste National Park which rises from 60m AHD to a maximum elevation of more than 125m AHD.

The Landscape Study (Appendix 13) contains a more detailed assessment of landform and topography.

4.3 Geology and Soils

The geology of the site is described in the Yallingup Sheet of the Environmental Geology Map Series produced by the Geological Survey of Western Australia (Leonard 1991). Generally, the geology consists of Quaternary sand overlying Archaean gneiss with minor outcrops of Tamala Limestone in places. The sand is white to pale and olive yellow, medium to coarse grained, sub-angular and moderately sorted and is comprised principally of quartz. Gneiss outcrops occur on the site especially in the western and northwestern sectors. These areas were shown to have a very thin veneer of soil in places.

The nature and depth of the soil over the site was initially determined by reviewing regional soil maps and by conducting a shallow drilling programme over the proposed development area in the late 1990s.

The initial investigation determined that the site soil comprised two broad types. The first is a gradational soil profile which is a weathering product of the granitic gneiss bedrock on which it lies. This soil consists of quartz sand with a minor amount of clay near the surface, with the proportion of clay increasing with depth. The permeability of the soil is high at the surface and decreased with depth.

The second soil type is a moderately sorted quartz sand derived from weathering of the Tamala Limestone. This soil type is moderately permeable with little or no clay content and overlies limestone especially in the southeastern parts of the site.

Much of the site was determined to have a depth to bedrock greater than 2.5m and a large portion of the site greater than 4.5m. An area to the east of the site adjacent to Smiths Beach Road was shown to contain a shallow bedrock (<2.5m) as does the northwest and western portions of the site. Limestone outcrops are present at the surface in the southwestern elevated portion of the site.

As the initial drilling programme was undertaken for purposes of collecting soil samples to determine the soil profile ability to accept effluent discharge waters, soil samples were collected from various depths of the profile for determining Phosphorus Retention Index (PRI). As such there was no requirement to log geological bore data, other than depth to bedrock. Subsequently,

discussions with the DEC in relation to the accuracy of existing data and the interpretation of these data to determine depth of soil profiles or presence of limestone outcrops in certain portions of the site resulted in the proponent agreeing to have further investigations undertaken.

ATA Environmental, in consultation with the DEC, developed an agreed methodology for re-surveying the site on those portions of Location 413 where shallow granitoid basement rock was anticipated. The methodology comprised soil depth testing to a maximum depth of 1.5m Below Ground Level (BGL) to:

- Determine the minimum depth of soil soft enough to be penetrated using hand held soil sampling equipment, within the nominated areas of the subject ground; and
- Compilation of a map detailing the location and depth of soil samples.

Figure 7 shows the location and depth of soil samples.

Phosphorus Retention Index (PRI)

The Phosphorus Retention Ability (PRI) of soil is important to determine where the potential exists for off-site pollution of a waterbody from added phosphorus. PRIs are usually more important in developments that propose to add phosphorus-based fertilisers or where septic tank effluent systems are to be used. For the tourist/residential development on Sussex Location 413 the only potential phosphorus to be added to the soil would be in the limited area of formal grassed open space, and in garden beds that require fertilising.

To determine the PRI of the soils on the lot, eight soil samples were collected during the drilling program of 2001 and were submitted to a laboratory to test their ability to retain phosphates. The four soil samples taken from the Tamala Limestone soils recorded PRI values of 9, 10, 21 and 52. These values indicate that this soil unit has a moderate ability to retain phosphorus. The duplex soil sequence has somewhat higher PRI values ranging from 30 for the sandier soils of this unit to a maximum of 180 for clay rich soils. The four soil samples returned PRI values of 30, 115, 131 and 180. A PRI value of 180 represents very high phosphorus retention properties

Servicing Issues

Following the production of the results from the soil depth investigations, Wood and Grieve Engineers were requested to comment on the implications regarding servicing issues for areas with rock close to the surface (A. McGrath pers. comm.).

Two areas of rock close to the surface were identified as part of ATA Environmental's soil depth investigations. The western area is predominantly where the proposed Beach Club is located. The eastern area is adjacent to Smiths Beach Road midway along the development area.

Typically the deepest service is gravity sewer because this runs at grade. In these specific locations the topography of the site assists the sewer flow due to its amphitheatre nature. Hence, trench depths in these areas would be approximately 1m or less down to approximately 750mm deep.

It is anticipated that buildings over the shallow rock areas would have a minimum sand pad depth of approximately 500mm. As such, excavation into the rock for service trenches would be to a maximum depth of approximately 500mm.

Excavation could be achieved within these areas by a variety of methods depending on the nature of the rocky material. These methods entail:

- Digging with a normal hydraulic excavator (typically a small bucket with 'tiger teeth' would be utilised);
- Hydraulic rock breaker. This may be used to crack the ground enough to enable diggings; or
- In the worst case, drilling and cracking the rock with expanding bentonite or low grade explosives could be utilised. However this is unlikely to be required due to the shallow depth of excavation required.

The sewer servicing dictates the depth of the service trench hence once this is determined the one trench would be used as a common trench for the other services such as power and water.

Wood and Grieve Engineers noted that provision of servicing through shallow rock areas is feasible due to the minimum depth service trenches required because of the topography. Suitable construction techniques could be employed to excavate the small number of trenches required.

Landscaping Issues

Results of the soil depth investigation were provided to the proponent's landscape architects to enable them to examine the effect of soil depth to plant establishment and effect on the landscape in general. After reviewing the data, EPCAD considered that the soil depths illustrated on Figure 7 did not pose a major constraint to plant establishment nor would the depths have any adverse effect on the landscape (H. Mitchell pers. comm.).

The establishment of a new landscape for the Smiths Beach development area will principally rely on the successful planting of indigenous vegetation. The establishment of vegetation will require techniques that respond to the particular growing location and soil depth. In locations of shallow or very shallow soils, plant establishment may require treatment of the existing site conditions. Such treatment may include:

- The importation of a growing medium, reusing soil from other areas of the development site;
- The creation of pockets of soil and moisture collection areas to localised areas where considered beneficial to the landscape;
- The use of agricultural polymers. Depending on the post-construction soil analysis and planting time of year, use of moisture retaining agricultural polymers for enhanced establishment will be considered; and
- Supplemental seeding to planting areas.

EPCAD advised that within the development area where construction works are undertaken, the nature of the existing soil will be altered through the development process. Even with careful reuse of the existing top layers of site soil, post-construction soil characteristics will differ from existing conditions. It is intended that post-construction soil placement will typically provide a growing medium depth of between 300mm and 500mm dependant on location. Soil treatment can include cultivation techniques including additions of various soil improvers and additives to adjust soil quality to meet growth requirements. For most native species to establish and thrive, a target soil of pH 9 needs to be achieved.

4.4 Surface Water

No wetlands are mapped as occurring on the property according to either the Wetland Atlas mapping of Hill *et al.* (1996) or the *Swan Coastal Plains Wetlands Geomorphic Dataset* GIS as depicted on the Western Australian Land Information System (WALIS) website.

An old farm dam built by the previous owners is present within the proposed development area, in the northern part of the property adjacent to the former caravan park. This dam is approximately 10m in diameter at its widest point and approximately 1m deep. Discussions with the previous owners have determined that the depression in which the dam is located is man-made, having been excavated in 1962 to provide water for livestock.

The dam is set in granitic bedrock and very little soil is present either within the dam or immediately adjacent. Dryland vegetation occurs around its fringes. It is probable that it receives water by the seepage of rainwater along the interface between soil and bedrock.

The Gulgunyup Brook is a seasonally flowing stream located approximately 200m to the northeast of the site at its closest point. The Brook flows in a northwesterly direction past the site before meandering to the northeast prior to discharging into Smiths Beach.

4.5 Groundwater

The occurrence of groundwater on the site and in adjacent areas is an important consideration for water supply and effluent disposal.

A drilling programme undertaken on site failed to detect any significant groundwater resource. Of the 35 holes drilled over the site for the determination of soil depth, groundwater was encountered at only two locations. This occurred in thin lenses of coarse quartz sands overlying bedrock usually at depths greater than 7m beneath the ground and do not represent a significant groundwater resource. This situation is not unusual for land located west of the Leeuwin-Naturaliste Ridge where groundwater availability is very patchy (Tille and Lanztke 1990).

4.6 Land Use Capability

The suitability of the soils on the property for various land uses, including agriculture, horticulture, vineyards, orchards and forestry has been assessed by the Department of Agriculture in the Busselton – Margaret River Land Capability Study (Tille and Lantzke 1990). While these land uses are not being proposed for Location 413, the results do give an indication of the qualities of the soil that might need to be considered in a tourist/residential development, eg. nutrient retention ability, ease of excavation, risk of waterlogging and flooding.

According to Tille and Lantzke (1990) four land units occur on the site:

- Wilyabrup Exposed Slopes (We3);
- Wilyabrup Slopes (W);
- Wilyabrup Granitic Headlands (WRE); and
- Gracetown Exposed Slopes (GE).

Much of the site belongs to the Wilyabrup Exposed Slopes land unit: relatively gently inclined slopes close to the coast. A small area of the Wilyabrup Slopes land unit occurs in the south-east corner of the site. The rocky headlands belong to the Wilyabrup Granitic Headlands while the

limestone soils on the highest section of the site along the southern boundary is part of the Gracetown Exposed Slopes which extends further south up to the top of the ridge.

The limitations that each of these land units poses to various forms of land development are shown in Table 8.

TABLE 8
LAND UNIT LIMITATIONS TO DEVELOPMENT

Land Unit	Limitation			
	Severe	**Major**	**Moderate**	**Minor**
Wilyabrup Exposed Slopes (We3)	None	None	E Sa	Wer Sl T
Wilyabrup Slopes (W)	None	None	Sa E	Wer Sl T
Wilyabrup Granitic Headlands (WRE)	E	Sl Sa	None	Wex Sse
Gracetown Exposed Slopes (GE)	Wi/er	None	Wer Sl Gpr	E Wex Sse

Limitations

E	Ease of excavation
Gpr	Groundwater pollution risk
Sa	Soil absorption
Sl	Slope instability
Sse	Salt spray exposure
T	Trafficability
Wer	Water erosion risk
Wex	Wind exposure
Wi/er	Wind erosion risk

While these physical limitations have been prepared to assess the suitability of the site for agriculture and horticultural pursuits, they also indicate important factors that will need to be considered in the tourist/residential development.

5. ENVIRONMENTAL ASSESSMENT

5.1 Sustainability

5.1.1 EPA Objective

To ensure, as far as practicable, that the proposal meets or is consistent with the sustainability principles in the EPA's Position Statement No. 6 Towards Sustainability (Environmental Protection Authority 2004e) and The Western Australian State Sustainability Strategy (Government of Western Australia 2003).

5.1.2 Applicable Legislation, Criterion or Guidance

- Government of Western Australia (2003) *Western Australian State Sustainability Strategy.*
- Western Australian Planning Commission (2003a) State Planning Policy No. 2: *Environment and Natural Resources Policy.*
- Environmental Protection Authority (2004e) EPA Position Statement No. 6: *Towards Sustainability.*

5.1.3 Existing Environment

Sustainability is defined as *"...meeting the needs of current and future generation through an integration of environmental protection, social advancement and economic prosperity"* (Government of Western Australia 2003).

Agenda 21 represents international consensus on actions necessary to move the world towards the goal of sustainable development. It recognises that local government and the wider communities they represent are increasingly becoming the lead agencies to achieve sustainable development through the integration of environmental, economic and social goals.

There is growing interest in creating a sustainable environment that is one in which there is a balance between social and community needs, economic prosperity and the long-term preservation of the environment. Concerns are not just restricted to sustaining the physical environment; the ability to sustain an economic, financial and social environment is also important.

The *State Sustainability Strategy* outlines a range of objectives associated with natural resource management, settlement, community and business (Government of Western Australia 2003). Released in 2002 it provides a background to the concept of sustainability and outlines actions for sustainability in Western Australia. The Strategy identifies six broad goals and 42 strategy areas intended to fulfil these goals and to guide Government action towards achieving the visions for a sustainable Western Australia (Canal Rocks Pty Ltd 2007).

The *State Sustainability Strategy* has informed the content of many of the statutory and strategic documents that guide the development of Location 413 including the LNRSPP and the State Coastal Strategy.

The State Planning Policy No. 2: *Environment and Natural Resources Policy* (WAPC 2003b) has as one of its objectives the sustainable use of natural resources including biodiversity, land, water and energy, and requires the promotion of energy efficient development and urban design.

The Department for Planning and Infrastructure (DPI) has developed its *Liveable Neighbourhoods Community Design Code* (WAPC 2004) to implement the objectives of the *State Planning Strategy* (WAPC 1997) that aims to guide the sustainable development of Western Australia to 2029. The objective of *Liveable Neighbourhoods* is to facilitate the development of sustainable

communities in Western Australia through the elements of community design, movement network, lot layout, public parkland, urban water management and utilities.

Neither the *State Sustainability Strategy*, Shire of Busselton's DTPS No. 20 or the WAPC's State Planning Policy No. 6.1: *Leeuwin Naturaliste Ridge Policy* provides specific action plans or objective criteria against which projects can be assessed for sustainability. It has however, been possible to identify several consistent themes and concepts that permeate these documents and which provide a context on which to form a view as to whether proposals move towards sustainable outcomes by way of simultaneous improvements and design of systems that go beyond current practice.

In 2005, the WAPC released a discussion document *A Sustainability Checklist* outlining the basis of a future sustainability scorecard against which future development be assessed (WAPC 2005). The sustainability checklist provides a useful guidance for approval agencies to gauge whether proposals for residential development will achieve contemporary expectations in relation to sustainability. The development of the Checklist is still at a preliminary subjective stage, with further research, trialling and verification required to establish specific criteria/benchmarks or targets against which compliance reviews could be undertaken.

While no measures or principles of sustainability currently exist that have been formally endorsed within the Western Australian planning or environmental approvals processes, the sustainability checklist contained within the WAPC discussion document has been appraised and applied to the Smiths Beach project to assist a sustainability assessment (refer to Table 9) (Michael Swift and Associates Town Planners 2005).

The proponent acknowledges that the WAPC's Checklist has been developed for permanent residential settlement and that the application of the Checklist against the proposed development is limited. The method that was adopted to rate the project against the 'current practice', 'best practice' and 'innovation' criteria within the WAPC Checklist, was to compare the project formulation, design and assessment components, together with the proponent's commitments regarding the built form/end product, to contemporary projects throughout Western Australia. A broad knowledge base of other projects exists within the project team and was also sourced from various documented award-winning developments across all categories. Regard was also had for the regional setting of the project in terms of what is being achieved in the region as compared to the Metropolitan area and the challenges that regional development presents.

TABLE 9
SMITHS BEACH SUSTAINABILITY CHECKLIST

	Current practice	Best Practice	Innovation
SUSTAINABILITY GOAL: SOCIAL ADVANCEMENT - Will the proposal ....?			
Increase the proportion of trips using public transport	✓		
Increase the proportion of cycling trips	✓		
Increase the proportion of walking trips		✓	
Reduce private vehicle kilometres travelled	✓		
Reduce sole-occupant car trips (passengers should not be sourced from cycling or walking)	✓		
Improve community safety and security		✓	
Establish a socially diverse community		✓	
Support indigenous communities	✓		
Provide education and training opportunities			✓

	Current practice	Best Practice	Innovation
Provide affordable housing	✓		
Provide a diversity of housing product			✓
Provide flexibility of housing product			✓
Increase home-based employment	✓		
Increase employment of Aboriginal people	✓		
Reduce urban sprawl			✓
Prevent co-location of incompatible land uses		✓	
Provide open space that complies with the principles of universal design		✓	
Provide recreational areas that comply with the principles of universal design	✓		
Provide community facilities that comply with the principles of universal design			✓
Improve community health outcomes		✓	
Integrate land use and transport		✓	
Identify, acknowledge, protect, enhance, manage and promote indigenous heritage	✓		
Identify, acknowledge, protect, enhance, manage and promote cultural heritage		✓	
Identify, acknowledge, protect, enhance, manage and promote natural heritage		✓	
Establish community networks		✓	
Form partnerships with the community		✓	
Invest in community decision making capacity building		✓	
Support community creativity and vitality		✓	
Facilitate visual amenity			✓
Facilitate amenity and a 'sense of place'		✓	
SUSTAINABILITY GOAL: ECONOMIC PROSPERITY - Will the proposal ....?			
Create jobs (short-term and long-term)		✓	
Establish new enterprises			✓
Retain new enterprises			✓
Increase revenue flow (direct and indirect) to Stage and local government		✓	
Balance capital expenditure between State and local government and the private sector		✓	
Limit operating costs			✓
Provide advanced communications technology and infrastructure		✓	
Provide employment to the unemployed		✓	
Deliver more benefits than costs (including environmental and social benefits and costs)		✓	
Avoid risk of damage from physical processes		✓	
Promote sustainability through the use of economic instruments			✓
SUSTAINABILITY GOAL: ENVIRONMENTAL PROTECTION - Will the proposal ....?			
Decrease potable water consumption		✓	
Reduce energy use from non-renewable sources	✓		
Reduce greenhouse gas emissions	✓		
Rehabilitate or remediate degraded land for appropriate future use		✓	

	Current practice	Best Practice	Innovation
Rehabilitate contaminated sites	N/A		
Reduce waste disposal to landfill	✓		
Reduce the negative impact of light spill	✓		
Protect or enhance the noise environment	✓		
Reduce emissions of air pollutants	✓		
Improve indoor air quality	N/A		
Conserve and enhance land that has high biodiversity and/or conservation value			✓
Conserve and enhance water resources with high biodiversity and/or conservation value	N/A		
Prevent export of pollutants to receiving waters		✓	
Promote natural flow regimes for water resources		✓	
Protect flora, fauna and fisheries		✓	
Provide co-generation opportunities	✓		
Avoid permanent negative changes to coastal processes		✓	
Safeguard high-value landscapes and seascapes		✓	
Improve efficiency of resource use	✓		
Maintain essential ecological functions		✓	
SUSTAINABILITY GOAL: GOOD GOVERNANCE - Will the proposal ....?			
Encourage the community to be engaged actively in decision-making			✓
Ensure genuine opportunities for consultation and feedback			✓
Recognise community concerns		✓	
Encourage increased levels of participation of historically disadvantaged communities	✓		
Ensure accountability		✓	
Employ decision-making processes which are open and transparent		✓	
Ensure financial resources are managed and properly audited		✓	
Ensure decisions are implemented		✓	
Ensure policy, legislation, regulation and practice meet sustainability goals		✓	

In addition to the checklist, a response to each of the several broad principles common to the strategic and policy framework within the Shire of Busselton and arising from the *State Sustainability Strategy* is provided below (Michael Swift and Associates Town Planners 2005).

Clustered Developments / Subdivision Design

The issues here are nodal development, subdivision design that fosters community development, measures to counteract urban sprawl and the best use of existing facilities.

The Smiths Beach project is manifestly nodal or clustered in form. It represents one component of a consolidation of settlement options to divert development pressures along the 140km of Cape to Cape region into just a few new or expanded settlements in prime living and holiday locations on the coast. The project design is based on the principle of higher density development and high-use areas being concentrated around existing cultural gathering points at the beachfront and new community spaces.

The development itself is an expansion of an existing minor settlement and is part of a strategy designed to avoid further sprawl on the perimeter of the urban area of Dunsborough, and to resist inappropriate spot settlements along the coast in areas unable to sustain new communities due to environmental sensitivity and the lack of basic services and facilities.

Utilisation of Existing Services

Whilst only the most basic of services (electricity and telecommunications) currently exist at Location 413, the project will introduce reticulated water and sewerage services to meet its own requirements and also to service the existing minor settlement and other development en-route from existing water and sewerage headworks situated in Dunsborough.

This will have the side effect of opening up opportunities for the servicing of other areas and specific developments between Dunsborough and Smiths Beach and in doing so will reduce pressure on local ground water supplies and the quality of watercourses in the general area.

The Caravan Park site on Location 346 is a major project without sustainable services that has been approved based on on-site effluent disposal within 100m of the ocean, and water continuing to be supplied from a bore in Vidler Road via an overland system of black polypipes. Both the Shire and the WAPC have required that Location 346 be retrofitted to the scheme services to be introduced for the Smiths Beach project. This will also be required for the Chandler development and existing public ablutions at the beachfront.

Conservation of Environmentally and Scenically Sensitive Lands

The Draft DGP for Smiths Beach arises from the application of four key methodologies in the study of the land, the primary objective of which is that development be in sympathy with environment, visual and landscape character. The Principal Ridge Protection Area (9.7ha), will be set aside from development in addition to another 5.7ha of privately managed conservation area. Various other areas within the development node are identified for bushland maintenance and regeneration with emphasis given to the retention and replanting of indigenous vegetation within the proposed development.

Detailed analysis of the visual impact and acceptability of development from 13 key viewing points (nominated by the methodologies) has guided the design of the project, including total preservation of views from Canal Rocks and the protection of the vegetated backdrop and unbroken ridgeline from viewing points on Smiths Beach, Cape to Cape Trail and the Torpedo Rocks carpark.

Embracing Water Sensitive Design

The development site is situated within a natural amphitheatre that allows for the "coincidence by design" of drainage routes, vegetated corridors and access ways to central community focus areas (Figure 6). The underlying principle of the management of stormwater and effluent is that the quality of water leaving the site post-development will be no less, and the quantity of water no greater than exists now in its pre-developed state. Emphasis is given to the infiltration of stormwater at source and energy dissipation and nutrient stripping through the breadth of the development prior to an area of final treatment before discharge into existing natural groundwater systems in the central-northern portion of the site. This is in keeping with the EPA's s16(j) advice to the WAPC relating to protection of water quality and the current stormwater management strategy adopted by the relevant regulators (Department of Environment 2005).

The retention of native vegetation and replanting will also assist in enhancing water quality.

Development in Locations of Interest and Amenity

Smiths Beach is one of only two north-facing sandy beaches on the 140km of surfing coast in the Cape to Cape region. The amphitheatre in which development will occur is protected from prevailing winds and affords an outstanding outlook and general views from proposed residential and tourist accommodation. The immediate environment provides recreational opportunities for surfing, fishing, boating, snorkelling and bushwalking. Basic recreational amenities such as tennis courts already exist within the settlement. A community hall, local shopping facilities and cultural amenities are all available at Yallingup, located 5km to the north. The advent of a small, new community will bring with it additional facilities and an upgrading of access and parking servicing current points of interest and activity.

Protection of Habitat

Detailed biological surveys of the site undertaken over several years have identified that a Priority 4 species of flora (*Dryandra sessilis* var. *cordata*) and that the Western Ringtail Possum (*Pseudocheirus occidentalis*), classified as Vulnerable, is present on site and that Baudin's Cockatoo (*Calyptorynchus baudinii*), classified as Vulnerable, also utilises the site for feeding purposes.

Incorporated in the Draft DGP are measures to protect existing vegetation wherever possible, and to create conservation reserves and areas of bushland regeneration (EPCAD and Lullfitz 2005). This is in keeping with the EPA's s16(j) advice to the WAPC that clearing will only be supported where the need has been established for safety (such as for reducing fire risk to lives and property in keeping with FESA requirements) or for specific building requirements and detailed in PS 2.3 of the LNRSPP.

The areas of primary concern in terms of habitat and flora are those to be protected within the designated ridge protection area, and already existing within the adjacent National Park.

Promoting Accessibility

The outlined subdivision design shown on the Draft DGP is based on providing permeability and accessibility to existing and proposed activity centres and facilities.

Access to Smiths Beach is currently constrained by informal and uncoordinated carparking and access points (Riley Consulting 2006). The proposal includes provision for rationalisation of vehicle and pedestrian access arrangements. This will result in greater efficiency in the provision and use of available space for carparking. The proposed access and parking facilities are included in the Foreshore Management Plan which is included as Appendix 2:*Sussex Location 413 Smiths Beach, draft Foreshore Management Plan* (ATA Environmental and EPCAD 2006, in the volume of technical appendices),.

The proposal also includes upgrading of the Cape to Cape walk trail within and adjacent to the western boundary of the site between Smiths Beach and Canal Rocks.

Preservation of Agricultural Potential and Natural Resources

The development site does not contain any prime agricultural land, nor any construction or elemental minerals, the viable exploitation of which would be denied by the development of the area for tourist or residential purposes.

The area west of the ridge in the western coastal portion of the site could be considered a natural resource by virtue of its conservation value. The Draft DGP responds to this by setting aside that

land as a private conservation reserve and proposing that it would be subject to positive covenants that require proactive management of the area so as to maintain and enhance its values.

Responsive Design

The Draft DGP presents a subdivision and development design which has been informed by, and which responds to, studies carried out in accordance with the methodologies endorsed by the State and Local Governments. The land and development options have been examined having regard to environmental, landscape, bushfire, geotechnical, habitat, visual, servicing, access, economic, social and regional planning criteria.

Triple Bottom Line

Sustainable outcomes are achieved by simultaneous improvements across the economic, social and environmental goals with an aspiration that there be no trade-off between the three.

The environmental impacts and sustainability of projects attract most attention and assessment due to community sensitivity to that issue and an (understandable) in-built bias of the development assessment system in that direction.

In this case, the Draft DGP is accompanied by a Social Impact Statement prepared by Cardno BSD and an analysis of economic impacts (Economic Consulting Services 2005). The proposal demonstrates significant economic benefits to the district and a suite of social dividends to the local community. Capital expenditure, employment, increased access to points of high interest, high amenity residential lifestyle opportunities, the multiplier effect of tourism expenditure and the provision of new and improved public facilities and public spaces are all factors in assessing whether a proposal represents a net public benefit under a triple bottom line assessment.

5.1.4 Potential Impacts

Development may proceed in an unsustainable manner resulting in poor quality urban development and adverse environmental, social and economic consequences.

5.1.5 Management Strategies

The Draft DGP has already been reviewed against the sustainability criteria at a macro level.

All development applications will be reviewed to ensure compliance with the relevant sections of the Sustainability Checklist.

5.2 Native Terrestrial Flora - Vegetation

5.2.1 EPA Objective

To maintain the abundance, diversity, geographic distribution and productivity of vegetation at species and ecosystems levels through the avoidance or management of adverse impacts and improvement in knowledge.

5.2.2 Applicable Legislation, Criterion or Guidance

- Environmental Protection Authority (2004b) Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*
- *Environment Protection and Biodiversity Conservation Act 1999*

- *Wildlife Conservation Act 1950*
- Commonwealth of Australia (2001) *National Targets and Objectives for Biodiversity Conservation 2001-2005*
- Commonwealth of Australia (1996) *National Strategy for the Conservation of Australia's Biological Diversity*
- Shire of Busselton District Town Planning Scheme No. 20
- Environmental Protection (Clearing of Native Vegetation) Regulations 2004
- *Environmental Protection Act 1986*
- Environmental Protection (Environmentally Sensitive Areas) Notice 2005
- *Rights in Water and Irrigation Act 1914*
- *Water and Rivers Commission Act 1995*

5.2.3 Existing Environment

Regional Vegetation

At the broad scale of vegetation mapping, the vegetation on Sussex Location 413 is situated within the Boranup System of the Drummond Sub-District within the Darling District of the South-West Botanical Province (Beard 1981). At the 1:1,000,000 scale of mapping used by Beard (1981), two vegetation units are mapped for the site: *Acacia* Shrubland (a31Sc) and Low Woodland: *Agonis flexuosa* (agLi).

The vegetation has also been mapped by Smith (1973) at the regional level as Low Heath with some *Melaleuca huegelii* Closed Scrub and *Agonis flexuosa* (Peppermint) Low Open Forest.

According to the Regional Forest Agreement (RFA) assessment three vegetation complexes have been mapped on the site (Mattiske and Havel 1998):

- Wilyabrup (We);
- Gracetown (GE); and
- Wilyabrup (W2).

Vegetation on Location 413

The vegetation of Location 413 has been described and mapped by Maunsell & Partners (1987) using the vegetation mapping units of Keating and Trudgen (1986) who surveyed an area along the coastal strip from Forrest Beach to Cape Naturaliste and Woodlands. This report is included as Appendix 3: *A Flora and Vegetation Survey of the Coastal Strip from Forrest Beach - Cape Naturaliste – Woodlands* (Keating, C. and Trudgen M. 1986).

A review of the Maunsell & Partners vegetation description and mapping by ATA Environmental (2006c, Appendix 5) identified that the vegetation on the site was more diverse than described in that report. Additionally, some of the vegetation types described by Maunsell & Partners (1987) did not appear to accurately reflect the vegetation on the site or to appear to have been accurately mapped. Clarification on some of the differences were sought from Bennett Environmental Consulting (2001), however that review also raised other uncertainties with regards to the Keating and Trudgen units that occurred on the site. Bennett's report is included as Appendix 4: *Vegetation Survey of Sussex Location 413 Yallingup* (Bennett Environmental Consulting 2001).

Therefore, given the problems apparent in using the vegetation units of Keating and Trudgen (1986) on the site, a separate vegetation description was undertaken by ATA Environmental (2006c) The ATA Environmental report is included as Appendix 5:. *Sussex Location 413 Smiths Beach, Yallingup, Flora and Vegetation Survey* (ATA Environmental 2006c). The following is an abridged version of the report.

The vegetation associations that occur on the site according to ATA Environmental (2006c) are as follows:

Vegetation Occurring on Outcropping Granite Soils

The granulite rock of the Leeuwin Block is exposed along the western coastal section of the site with a few small surface rocks also occurring on the eastern side next to Smiths Beach Road. The vegetation associated with the rocky soils in this area consists of a Low Heath up to 1.0m high dominated by *Kunzea ciliata* with other shrub species present or absent in varying density within the *Kunzea ciliata* vegetation. The recognisable vegetation associations in this area are:

KcHt *Kunzea ciliata/Hakea trifurcata* Low Closed Heath

This is the dominant vegetation type on the exposed granite soils in the western part of the location. *Kunzea ciliata* is by far the most dominant shrub species up to 1-1.2m high, with *Hakea trifurcata* also common but in lower densities. *Spyridium globulosum* is common but overall is less abundant than the other two species. In places *Eutaxia obovata* is also dominant. The main shrub species present in this association is *Dodonaea ceratocarpa* with other common species being *Pimelea ferruginea, Calothamnus sanguineus* and *Dryandra bipinnatifida.*

KcMl *Kunzea ciliata/Melaleuca lanceolata* Low Closed Heath

This vegetation association is similar to the KcHt unit but contains *Melaleuca lanceolata* as a common species up to 1.2m high. The association occurs on the western edge of the lot and extends into the adjoining foreshore reserve to the west.

DcPf *Dodonaea ceratocarpa/Pimelea ferruginea* Low Open Heath

This vegetation association occurs on the eastern side of the main KcHt association in the lower slopes of the site. There are some small granite boulders at the surface and generally the depth of soil is very shallow but more prevalent between the outcropping areas of granite than the KcHt vegetation. Common species in this association include *Darwinia citriodora, Hibbertia hypericoides,* occasionally *Xanthorhoea preissei, X. brunonis* and also scattered *Kunzea ciliata* shrubs.

Vegetation Occurring on Shallow Granite Soils (<1.5m)

To the east of the outcropping granite soils, the granite bedrock gradually decreases in the soil profile to be greater than 2.5m deep. The vegetation types change gradually with increasing soil depth over granite.

The vegetation in this area has also been affected by previous clearing and grazing. An area previously mapped as Cleared by ATA Environmental is regenerating with native species, although possibly not to the original natural vegetation type present prior to clearing.

An area of shallow granite soils also occurs in the eastern part of the site adjacent to Smiths Beach Road.

HhXp *Hibbertia hypericoides/ Xanthorrhoea preissii* Low Shrubland

This is a small area that has been degraded in the lower part of the site to the east of the main north-south firebreak that runs through the middle of the property. The vegetation is low, 0.2-0.3m high and contains other native shrubs such as *Muehlenbeckia adpressa, Dryandra lindleyana* and *Phyllanthus calycinus* and weed species *Erodium botrys*, Hypochaeris glabra** and *Poa*

*annua**. The area appears to be grazed heavily by kangaroos, maintaining the low and weedy nature of the area. The soil type is an orange brown sand over granite at around 1.5m depth.

AsHh *Acacia saligna/Hibbertia hypericoides* Open Heath

This vegetation association also occurs in the central lower slopes of the site where the soil is greater than 1.5m deep. The area is dominated by reasonably dense *Acacia saligna* shrubs up to 1-1.2m high which were probably planted to stabilise a degraded site. Some native shrub species occur in the understorey including *Hibbertia hypericoides, Phyllanthus calycinus, Dryandra lindleyana, Hakea prostrata, Xanthorrhoea preissii* and the fern *Cheilanthes austrotenuifolia.* Dominant weed species include *Erodium botrys**, *Hypochaeris glabra** and *Poa annua**. This vegetation type is probably the same as the HhXp association except with dense *Acacia saligna* planted and established on the site.

DcXpHh *Dodonaea ceratocarpa/Xanthorrhoea preissii/ Hibbertia hypericoides* Low Open Heath

This is a common vegetation association occurring on shallow granite soils on the central lower slopes where the granite is around 0.5-1.0m deep. Common species in this association are *Hibbertia hypericoides, Dryandra lindleyana, Cheilanthes austrotenuifolia* in places and *Hypocaheris glabra** the most common weed species.

KcLaFn *Kunzea ciliata* Low Shrubland over *Lepidosperma angustatum/Ficinia nodosa* Open Sedgeland

This is a small vegetation association occurring in the northwestern corner of the site adjacent to the bituminised cul-de-sac. The association is different from the other shallow granite associations in having sedge species (*Lepidosperma angustatum, Ficinia nodosa*) common together with more typical shallow granite species such as *Dodonaea ceratocarpa, Pimelea ferruginea* and *Dryandra lindleyana.* The *Kunzea ciliata* shrubs are sparse (<10% cover), reflecting the depth of sand over granite. The association contains other coastal species not present elsewhere on the site but common in the narrow foreshore reserve to the north, such as *Olearia axillaris, Pelargonium capitatum** and *Rhagodia baccata.*

XpXbHh *Xanthorrhoea preissii/Xanthorrhoea brunonis/Hibbertia hypericoides* Low Shrubland to Low Open Heath

This vegetation association extends from the lower slopes to the mid slopes of the site on the eastern side of the outcropping granite vegetation types. Investigations into depth of soil show that this vegetation occurs on soils that are 0.2-1.0m deep over granite. The vegetation shows a high degree of disturbance in the past with evidence of regeneration occurring presently. The dominant species is *Xanthorrhoea preissii* to 1m high with *Xanthorrhoea brunonis* also common throughout. *Acacia saligna* is also common in patches. *Hibbertia hypericoides* 0.2-0.3m high is the main shrub species regenerating in this area, together with *Phyllanthus calycinus, Dryandra lindleyana* and in places *Dodoanaea ceratocarpa.* Some *Kunzea ciliata* shrubs occur scattered in the area, however no outcropping granite is present. The areas of *Kunzea ciliata* probably represent isolated areas of shallower granite than the remainder of this mapped unit.

NfCcMl *Nuytsia florbunda/Corymbia calophylla/Melaleuca lanceolata* Low Open Woodland mixed with *Hibbertia hypericoides* Low Open Heath

This vegetation association occurs on the mid-slope to the east of the outcropping granite on the soils around 1-1.5m deep over bedrock. The vegetation structure is diverse with small stands of W.A. Christmas Tree (*Nuytsia florbunda*), stunted Marri (*Corymbia calophylla*) and Rottnest

Island Tea-tree (*Melaleuca lanceolata*) either mixed together or as individual species. The stands are about 1.5-2m high. Between the dense stands of stunted trees is a Low Open Heath dominated by *Hibbertia hypericoides* and *Phyllanthus calycinus* and an assortment of other shrub species that are common in patches but not dominant overall, including *Melaleuca systena, Kunzea ciliata, Xanthorrhoea preissii* and *X. brunonis.*

EmCcAf *Eucalytpus marginata/ Corymbia calophylla/ Agonis flexuosa* Low Open Woodland over *Dodonaea ceratocarpa/ Hibbertia hypericoides* Low Open Heath

The mid to upper slopes in the eastern section of the site contains a Jarrah/Marri/Peppermint (*Eucalyptus marginata/Corymbia calophylla/Agonis flexuosa*) Low Woodland to Low Open Forest on grey to brown sands. The distribution of Jarrah and Marri trees is uneven with dense stands in some areas, while in others there are few trees. The low shrub layer between the scattered trees consists more of a low heath dominated by *Calothamnus sanguineus, Dodonaea ceratocarpa, Darwinia citriodora* and other low shrubs.

Vegetation Occurring on Shallow Sand over Limestone Soils

A large area of shallow sand over limestone occurs on the upper western slopes inland and uphill from the outcropping granite soils. These soils are generally creamy-yellow to creamy-brown sands overlying Tamala Limestone which outcrops at the surface as small rocks rather than as a massive limestone sheet. These upper slopes support a Closed Scrub formation up to 2.5m tall with an almost complete, closed canopy cover. The dominant species are *Melaleuca huegelii, Spyridium globulosum* and *Acacia rostellifera* in varying degrees of dominance with *Melaleuca lanceolata* also common

ArMhSg *Acacia rostellifera/ Melaleuca huegelii/ Spyridium globulosum* Closed Heath to Closed Scrub

This is the main vegetation association occurring on the shallow limestone soils. The tree canopy is mostly dense, up to 2.5m high, resulting in an open and sparse understorey. *Hakea oleifolia* is also common up to 2m high particularly towards the southern boundary of this association. Typical understorey species include *Hibbertia racemosa, Leucopogon parviflorus, Melaleuca systena, Trachymene pilosa, Diplolaena dampieri, Conostylis aculeata* and *Galium murale**. This vegetation type is the main vegetation in the abutting National Park to the south.

SgMhDd *Spyridium globulosum/Melaleuca huegelii* High Shrubland over *Dodonaea ceratocarpa* Low Open Heath

This vegetation association occurs at the interface between the ArMhSg association and the granite heath vegetation. As a result, there are species common to both shallow granite and shallow limestone soils. The tree canopy of *Spyridium globulosum* and *Melaleuca huegelii* is more open than the ArMhSg unit and allows a Low Open Heath to grow between the low trees. The main species comprising the Low Open Heath are *Dodonaea ceratocarpa, Melaleuca systena, Diplolaena dampieri,Guichenotia ledifolia* and *Olearia axillaris.*

MhMl *Melaleuca huegelii/Melaleuca lanceolata* Closed Scrub over *Melaleuca systena* Low Open Shrubland

This is a transitional vegetation type between the ArMhSg unit and the Ml unit near the south-west corner of the property. The dense tree canopy is up to 2.5m high with only a sparse understorey of *Melaleuca systena* as well as *Diplolaena dampieri, Acacia rostellifera, Trachymene pilosa* and *Galium murale**.

Ml *Melaleuca lanceolata* Low Closed Forest

Stands of *Melaleuca lanceolata* Low Closed Forest occur on limestone soils on the lower slopes in the south-west corner of the site. Other species common in this vegetation type include *Spyridium globulosum, Hakea oleifolia, Dianella brevicaulis, Guichenotia ledifolia, Leucopogon parviflorus* and *Hibbertia cuneiformis*. This vegetation association extends into the National Park to the south along the coastline.

Vegetation Occurring on Deep Sandy Soils (>1.5m)

The eastern half of the property mostly contains deep sandy soils greater than 1.5m deep and often greater than 2.5m deep. A small area of sands greater than 1.5m deep also occurs in the western section, west of the central north-south aligned firebreak. The vegetation in the deeper sandy soils is more uniform in composition than the shallower soils on granite and limestone with three vegetation types occurring from west to east across the property. These vegetation associations are:

AhHh *Allocasuarina humilis/ Hibbertia hypericoides* Low Open Heath

The westernmost vegetation that occurs on sands greater than 1.5m deep occur to the east of the exposed granite soils on the mid to lower slopes. This area supports a Low Closed Heath vegetation type dominated by *Allocasuarina humilis* and *Hibbertia hypericoides* 0.6-1m high. Other common shrubs include. *Melaleuca systena* and *Olearia axillaris, Dryandra lindleyana, Hakea prostrata* and *Xanthorrhoea preissii*. The boundary of this vegetation unit corresponds reasonably closely with the prominent central firebreak that runs through the site from north to south.

BaAf *Banksia attenuata/ Agonis flexuosa* Low Woodland

The mid-slopes in the central portion of the site contain a *Banksia attenuata/Agonis flexuosa* (Peppermint) Low Woodland on deep grey-brown sands. The association contains an open tree canopy up to 4m tall over a low shrub layer. The understorey is moderately diverse and contains common shrubs *Melaleuca systena, Hibbertia hypericoides* and *Macrozamia fraseri*. The open tree canopy and shrub layer allows a greater number of ephemeral species to occur including several weeds such as *Quinettia urvillei, Anagallis arvensis*, Oxalis corniculata** and *Hypochaeris glabra**.

Af *Agonis flexuosa* Low Open Forest

The deep sandy soils in the eastern half of the site contains a dense stand of Native Peppermint trees (*Agonis flexuosa*) from the lower slopes to the upper slopes on the site. The Peppermint trees are 5-6m high and quite dense, resulting in a very open and sparse understorey. The understorey predominantly contains ephemeral species such as *Stylidium adnatum, Chamaescilla corymbosa, Cheilanthes austrotenuifolia, Anagallis arvensis** and *Lotus corniculatus** but also contains some common shrubs including *Hibbertia hypericoides* and *Phyllanthus calycinus*. Bridal Creeper (*Asparagus asparagoides**) is prevalent in the Peppermint trees particularly along the southern boundary of its extent. The Peppermint association extends into the National Park to the south as well as across Smiths Beach Road to the south-east.

Vegetation Condition

The vegetation on the site ranges in condition from Excellent to Degraded (refer to Figure 4 in Appendix 5). The areas of least disturbance are the granite heath and limestone scrub communities on the western side of the property. Moderate to heavy disturbance occurs in the

more open and accessible Peppermint Woodland and *Banksia*/Peppermint Woodland vegetation types with an abundance of introduced species including Arum lily (*Zantedeschia aethiopica*), *Hypochoeris glabra, Erodium botrys* and *Euphorbia peplus*. Bridal Creeper (*Asparagus asparagoides*) is rapidly invading large areas of the Peppermint woodland along the southeastern part of the site.

A section of the western ridge has been previously cleared and is regenerating with both native shrubs and introduced herbs. The lower northern parts of the site have also been heavily disturbed in the past and have regenerated with *Acacia saligna* as one of the dominant species.

No evidence of dieback disease (*Phytophthora cinnamomi*) has been observed on site. The *Banksia attenuata* woodland contains many species including the dominant *Banksia* trees that are susceptible to dieback. The shallow sand over granite areas also contain *Xanthorrhoea* species in abundance that are highly susceptible to dieback. The vegetation on shallow sand over limestone and the vegetation on outcropping granite have fewer species susceptible to dieback, therefore the presence of dieback in these areas is considered uninterpretable. However, these soils are calcareous and *Phytophthora cinnamomi* is not usually present in calcareous soils.

Conservation Significance of the Vegetation

The conservation significance of the vegetation on Sussex Location 413 was assessed in ATA Environmental (2006c) using the EPA's objectives with regards to native flora and vegetation, which are:

- To maintain the abundance, diversity, geographic distribution and productivity of flora at species andecosystem levels through avoidance or management of adverse impacts and improvement of knowledge;
- To meet *National Objectives and Targets for Biodiversity Conservation 2001 – 2005* (Commonwealth of Australia 2001) by retaining 30% or more of the pre-clearing extent of each ecological community to ensure protection of Australia's biodiversity; and
- To protect the environmental values of areas identified as having significant environmental attributes, such as Threatened Ecological Communities.

Of these, the main criterion used to determine conservation significance of vegetation is the target of retaining at least 30% of the pre-clearing extent of each ecological community.

A similar criterion was used in the Regional Forest Agreement (RFA) assessment of significant vegetation in the south-west of Western Australia. Instead of using a target of retention of at least 30% of the original extent of each ecological community, the RFA report was more specific in that it determined significance on the basis of reservation. The RFA considered vegetation complexes to be poorly reserved if there was less than 15% of the pre-European area protected in proposed and existing reserves. Vegtation complexes with more than 15% of the total area in reserves were considered to be "adequately reserved" (Table 1 in Havel and Mattiske 2002).

The ability to apply the percentage retention or percentage reservation criteria is dependent on the availability of regional vegetation mapping at that level of vegetation description.

The vegetation on Location 413 has been described in five different studies, Smith (1973), Beard (1981), Regional Forest Agreement (1998), Maunsell & Partners (1987) and ATA Environmental (2006c).

Only the Beard (1981) and RFA (1998) studies have mapped vegetation at the regional level. Application of the conservation significance criteria at these levels is discussed below.

Beard (1981)

The mapping of Beard identified two vegetation units on site: *Acacia* Shrubland (a31Sc) and Low Woodland: *Agonis flexuosa* (agLi). The amount of vegetation mapped as *Acacia* Shrubland on the site is approximately 27ha and the area of Low Woodland: *Agonis flexuosa* type is approximately 13ha.

According to Beeston *et al.* (2002) the amount of each of these vegetation types remaining is 81% (or 7,210ha) for the *Acacia* Shrubland vegetation type and 74% (or 3,210ha) for the Low Woodland: *Agonis flexuosa*. The *Acacia* Shrubland and Low Woodland: *Agonis flexuosa* vegetation on the site, therefore, represents about 0.4% of the area of each of these vegetation types.

Therefore, at this level of vegetation description the vegetation on Location 413 can be considered to meet the objective of retaining 30% or more of the pre-clearing extent of each ecological community.

Regional Forest Agreement

The Regional Forest Agreement (RFA) process was undertaken by the Department of Conservation and Land Management (now Department of Environment and Conservation) and Environment Australia (now Department of Environment and Heritage) to identify vegetation in the south-west forests of Western Australia that had high conservation values. The vegetation scale used in the RFA process was the vegetation complex (Mattiske and Havel 1998).

The RFA mapping covered Location 413 and almost the entire Cape to Cape area, including the Leeuwin-Naturaliste National Park. In addition, the calculations of pre-European extent and amount remaining and in proposed and existing reserves has been determined (Mattiske and Havel 1998).

The RFA mapping identified three vegetation complexes on the site:

- Wilyabrup (We);
- Gracetown (GE); and
- Wilyabrup (W2).

The data for each relevant RFA Vegetation Complex We are shown in Table 10.

TABLE 10
RFA VEGETATION TYPE REPRESENTATION

Vegetation Type	Pre-European Extent (ha)	Amount in existing reserves (ha)	% of original in reserves
Wilyabrup (We)	136	67	49
Gracetown (GE)	4820	3243	67
Wilyabrup (W2)	3518	65	1.8

Source:CALM Internal Data (Forest Management Branch)–Vegetation Reservation (3.7.03)

Wilyabrup (We) Vegetation Complex

The majority of the vegetation on the site is mapped as the Wilyabrup (We) vegetation complex. The Wilyabrup (We) vegetation complex is described in the RFA report as "Low woodland and

woodland of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata* with some *Banksia* species on exposed slopes in hyperhumid to humid zones". The area mapped as We on the site includes a diverse range of vegetation associations including vegetation on outcropping granite, shallow granite soils and deep sandy soils. The vegetation associations include the *Kunzea ciliata*-dominated heathlands, *Nuytsia florbunda/Corymbia calophylla/Melaleuca lanceolata* Low Open Woodland over low open heathlands, *Banksia*-Peppermint low open woodlands, Peppermint forest and Jarrah/Marri/Peppermint low open woodlands along the eastern boundary. This range of vegetation associations does not readily match the description of the We vegetation complex given in the RFA report. The vegetation associations more easily fit the description of the Wilyabrup (WE) vegetation complex which is a "Mosaic of coastal heath and low woodland to woodland of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata-Banksia* species on westward slopes in hyperhumid to humid zones".

The We vegetation complex occurs in small patches along the coast including the area abutting the south-west corner of Location 413 and extending around the coastline to Canal Rocks. Other locations are mapped south of Cape Clairault, near Torpedo Rocks (Yallingup), and near Sugarloaf Rock (south of Cape Naturaliste).

The We vegetation complex occurs at various coastal locations south of Quininup Beach, Woodlands, north of Gracetown and Cape Freycinet.

According to the DEC, the original extent of the We complex was approximately 136ha, of which approximately 67ha or 49% is in conservation reserves. The original extent of the WE complex was approximately 244ha, of which 196ha or 80% is in conservation reserves.

Gracetown (GE) Vegetation Complex

The Gracetown (GE) vegetation complex is mapped over the south-west portion of the lot and corresponds quite closely to the vegetation types described on shallow limestone soils. However, the description of the Gracetown (GE) vegetation complex in the RFA report as "Closed heath of *Olearia axillaris-Rhagodia baccata-Agonis flexuosa*" does not match the vegetation on the lot or in the National Park to the south. The vegetation on the south-west portion of the lot and in the abutting National Park does not easily match the description of any other vegetation complexes listed in the RFA.

The GE vegetation complex occurs along the coast from Cape Naturaliste down to Cape Leeuwin.

According to the DEC, the original extent of the GE complex was 4,820ha of which approximately 3,243ha or 67% is in conservation reserves.

Wilyabrup (W2) Vegetation Complex

The Wilyabrup (W2) vegetation complex is mapped over a very small part of the lot in the southeast corner. The RFA report describes the Wilyabrup (W2) vegetation complex as an "Open forest of *Corymbia calophylla-Allocasuarina decussata-Agonis flexuosa* on deeply incised valleys in the hyperhumid zone". The vegetation description is similar to the vegetation in the south-east corner which is a Jarrah (*Eucalyptus marginata*)/Marri (*Corymbia calophylla*) /Peppermint (*Agonis flexuosa*) low open woodland. *Allocasuarina decussata* is not present on the lot. The vegetation on the site is on a mid-slope rather than a deeply incised valley. The mapping of this vegetation complex on the lot is therefore questionable. The vegetation in the southeast corner more accurately fits the description of the Gracetown (G3) vegetation complex, which is described in part as "Mixture of low woodland of *Agonis flexuosa* and open forest of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata* in hyperhumid to humid zones". The Gracetown (G3) vegetation complex is mapped as occurring immediately south of the southeast corner of the lot.

The W2 vegetation complex extends inland from the coast along Gunyulgup Brook and Quininup Brook and its tributaries as well as one area in Quininup not apparently associated with creeklines.

The G3 vegetation complex occurs in fragmented, linear expanses slightly inland from the coast from Cape Naturaliste south to Cape Leeuwin.

According to the DEC, the original extent of the W2 complex was 3,518ha of which approximately 65ha or 1.8% is in conservation reserves. The original extent of the G3 complex was 4,337ha of which approximately 2,469ha or 57% is in conservation reserves.

Assessments of Conservation Significance Using Other Surveys and Criteria

Maunsell & Partners (1987)

Maunsell & Partners (1987) discussed the conservation value of the vegetation on Location 413. They assessed the conservation of the individual vegetation types and also assessed the conservation value of the land as a whole.

The conservation value according to Maunsell & Partners (1987) of the individual vegetation types that are considered in this report to occur on the site is as follows:

GH4 - Very High conservation value as the stand at Location 413 Smiths Beach is the largest known stand

SH9 - High conservation value as only two locations of this vegetation type are known, and both are small

LH1 - Not High, as the area within the location is quite small and the unit is one of the more abundant units along the coastline

LH6 - Not stated in the report. However, Keating and Trudgen (1986) state that this unit covers large areas in a strip parallel to the coast from about 1km south of Cape Naturaliste Lighthouse to Woodlands.

BaAg - Not stated in the report. However, comments made that this vegetation type is notone of the major units in the region and the units are mostly quite small.

AW2 - Not stated in the report. However, comments made that this unit is one of the more abundant vegetation types between Cape Naturalise and Woodlands and the stand in the study area is one of the smaller known.

An assessment of the conservation value of the vegetation on the site using the Keating and Trudgen (1986) vegetation types presents has two main difficulties. Firstly, the Keating and Trudgen (1986) survey was contained within the Forrest Beach-Cape Naturaliste-Woodlands area. Forrest Beach is located to the east of Busselton, close to Peppermint Grove Beach. The southern extent of the survey, Woodlands, is located between Gracetown and Yallingup. The survey therefore did not include a large portion of the Leeuwin-Naturaliste National Park south of Woodlands. According to the RFA mapping, vegetation along the coast from Cape Naturaliste in the north to Cape Leeuwin in the south contains similar vegetation complexes. Therefore, many of the vegetation types described by Keating and Trudgen (1986) for the northern portion of the National Park, ie. from Cape Naturaliste to Woodlands, are highly likely to be represented further south where soil types, topography and distance from the coast allow. The mapping of the whole National Park according to Keating and Trudgen (1986) vegetation types has not been undertaken. Therefore, the assessment of conservation significance using a restricted survey area may not be accurate.

Secondly, Keating and Trudgen (1986) described a large number of vegetation types in their study area, many of which appear to be variations of other each other. A computer analysis was not undertaken to determine the relationship of the different vegetation types to each other and

whether each of the vegetation types was a distinct unit or a variation of another unit. The computer analysis of the vegetation of the southern Swan Coastal Plain by Gibson *et al.* (1994) is the type of analysis required to accurately determine vegetation types and in turn assess conservation significance.
Maunsell & Partners (1987) also assessed the value of the vegetation on the site as a whole rather than just the individual vegetation types. The assessment concluded that the site has conservation value due to the relationsip of the different vegetation types together in a squence that is related to the topography, geology and prevailing winds and distance from the beach. However, they concluded that other areas with similar representation of vegetation types existed and on that basis the site's conservation value was not high. The report did not identify where the other similar areas were located.

The Maunsell & Partners (1987) asssessment stated that the location of the site connecting other blocks of land within the Leeuwin-Naturaliste National Park gave the site its major conservation value.

ATA Environmental (2006)

The vegetation mapping contained in the ATA Environmental (2006c) report has been described and mapped at the level of vegetation association. The vegetation association level of mapping has not been prepared for the Leeuwin-Naturaliste National Park. The lack of regional mapping means that the assessment of the conservation significance of the vegetation on Location 413 using vegetation associations cannot be done accurately.

In the absence of regional mapping, any assessment at the vegetation association level can only be done qualitatively with reference to other vegetation surveys or unpublished knowledge of professionals.

A submission on the Smiths Beach Environmental Scoping Document in 2005 by the Department of Environment and Conservation (formerly Department of Environment) considered that the vegetation type dominated by *Kunzea ciliata* that occurs on the outcropping granite was significant. The DEC stated that the occurrence of *Kunzea ciliata* at this location (ie. on Location 413) was significant because *Kunzea ciliata* is a poorly collected species and endemic to the Leeuwin Naturaliste National Park. The submission also stated that the species was significant as it was the dominant layer of a small-scale unit only found on this location in the immediate area.

A search of the DEC's flora database identified 16 records for *Kunzea ciliata* (Table 11).

TABLE 11
SUMMARY OF THE DEPARTMENT OF ENVIRONMENT AND CONSERVATION HERBARIUM RECORDS FOR *Kunzea ciliata*

Record	Location	General Description
1	Margaret River area	Marri woodland on gravel
2	Torpedo Rocks, Yallingup	Low Coastal Heath on brown sand
3	Near Margaret River town	Isolated shrubland on granite surrounded by Jarrah-Marri forest
4	Moses Rock	Low heath on granite outcrop
5	Cowaramup Bay Road	Thicket on winter inundated, brown sand over granite
6	Cowaramup Bay Road	Thicket on winter inundated, brown sand over granite
7	Cowaramup Bay Road	Scrub and Jarrah on sand over granite
8	North Point, Cowaramup Bay	Coastal heath on sand over granite
9	Near Margaret River town	Not stated.
10	Not stated	Jarrah-Marri woodland (soil type not stated)
11	Torpedo Rocks, Yallingup	Low heath on granite

12	Cape Naturaliste	Not stated
13	Cowaramup Bay	Vegetation not stated, soil - sand and gneiss.
14	Canal Rocks	Not stated
15	Between Augusta and Nannup	Not stated
16	Near Margaret River town	Not stated

The records include populations on the coast associated with heathlands on granite soils and populations further inland, mostly on granite soils in association with Jarrah and Marri woodlands. The coastal populations (2, 4, 8, 11, 13 and 14) were considered to most likely be similar to the *Kunzea ciliata* vegetation on Location 413. A site visit was conducted to populations 2, 4, 8, 11 and 14. The co-ordinates given for population 13 are in the ocean and there is no other details given about the location. This population therefore was not able to be located. In addition, the recorded population at Canal Rocks was not found. Almost all of the vegetation in the vicinity of the Canal Rocks car park is limestone based and does not contain *Kunzea ciliata*. The small amount of outcropping granite and shallow sand over granite soils did not contain any *Kunzea ciliata* plants. For the purposes of this exercise Population 2 and 11 (Torpedo Rocks) were considered to be the same general area. Descriptions of populations 2, 4, 8 and 11 are given below.

Torpedo Rocks (population 2 and 11) - *Kunzea ciliata* is abundant in the heath vegetation to the south of the Torpedo Rocks carpark as well as to the west and northwest. To the south, *Kunzea ciliata* is in a low heath association with *Spyridium globulosum, Diplolaena dampieri, Lepidosperma* sp., *Hakea trifurcata, Acacia cochlearis* and *Leucopogon australis*. The soils are shallow orange-brown loamy sand with some granite outcrop at the surface. To the west of the carpark, *Kunzea ciliata* is 0.5-1m high and is abundant in association with *Pimelea ferruginea, Acacia cochlearis* and *Dodonaea ceratocarpa*. *Spyridium globulosum* is more common with *Kunzea ciliata* on the lower slopes. The soil type is skeletal orange-brown loamy sand over laterite and granite with abundant outcropping granite. Further northwest of the carpark, *Kunzea ciliata* is very dense up to 1m and is mixed with *Melaleuca huegelii, Spyridium globulosum, Acacia littorea, Dodonaea ceratocarpa, Pimelea ferruginea* and *Acacia cochlearis*. There is less granite at the surface in this area and the other species present suggest that the sub-soil is a mix of shallow granite and limestone.

The population to the west of the carpark is most similar to the *Kunzea ciliata* – dominated heathlands on Location 413 with a similar mix of co-dominant shrubs.

Moses Rock (population 4) – This population is located in the southern part of the Moses Rock coastal area. *Kunzea ciliata* is abundant in a heath association 1-1.2m tall with other common species being *Xanthorrhoea preissii, Dodonaea ceratocarpa, Pimelea ferruginea, Lepidosperma angustatum, Olearia axillaris* and stunted Marri (*Corymbia calophylla*). The soil type is shallow sand over granite.

This population is similar to the *Kunzea ciliata* – dominated heathlands on Location 413 but has a slightly different mixture of co-dominant shrub species.

North Point, Cowaramup Bay (population 8) – This population extends from the North Point carpark for a few hundred metres further north and on the western side of the Cowaramup Beach Road. At the carpark, *Kunzea ciliata* is dense in association with *Spyridium globulosum, Pimelea ferruginea, Olearia axillaris* and *Gastrolobium bilobum. Hakea trifurcata* is common in places. Further north *Kunzea ciliata* is common with *Hakea trifurcata, Melaleuca lanceolata, Jacksonia stricta, Pimelea ferruginea, Calothamuns sanguineus, Dodonaea ceratocarpa, Spyridium globulosum, Gastrolobium bilobum, Diplolaena dampieri, Xanthorrhoea preissii* and *X. brunonis*. The soil in the northern part has extensive areas of shallow granite and outcropping granite boulders.

The northern extent of the Cowaramup Bay population is very similar to the *Kunzea ciliata* – dominated heathlands on Location 413. Both the *Kunzea ciliata/Hakea trifurcata* Low Closed Heath and the *Kunzea ciliata/Melaleuca lanceolata* Low Closed Heath which are common on Location 413 are considered represented at the Cowaramup Bay population. The total area of these vegetation types is estimated to be around 3ha. The small area of *Kunzea ciliata* Low Shrubland over *Lepidosperma angustatum/Ficinia nodosa* Open Sedgeland at Location 413 is also similar to some vegetation at Cowaramup Bay where *Lepidosperma angustatum* is quite common.

The area at Cowaramup Bay containing granite is mapped in the RFA mapping as the WE vegetation complex. The similarity between the vegetation at Cowaramup Bay with the granite heathlands at Location 413 gives further evidence that the vegetation complex on Location 413 better fits the description of the Wilyabrup (WE) vegetation complex rather than the Wilyabrup (We) complex.

Threatened Ecological Communities

One of the EPA's significance criteria (see Section 4.1) is to "protect the environmental values of areas identified as having significant environmental attributes, such as Threatened Ecological Communities". None of the vegetation types on the property is listed as a Threatened Ecological Community (English and Blyth 1997; CALM 2001).

Significant ecosystems are also identified in the *Biodiversity Audit of Western Australia's 53 Biogeographical Subregions* undertaken by CALM in 2002 (Department of Conservation and Land Management 2003). According to this report the site lies within the Jarrah Forest 2 (JF2 – Southern Jarrah Forest subregion) and close to the Warren sub-region which occurs just to the south of the site. The Biodiversity Audit identifies Threatened Ecological Communities as well as other ecosystems at risk in each sub-region. No vegetation types on the property are listed in the audit as Threatened Ecological Communities. Of the 19 ecosystems listed in the audit as "at risk" in the Jarrah Forest 2 sub-region, one occurs on Location 413. The "*Melaleuca lanceolata* forests on the Leeuwin Naturaliste Ridge" is listed as a Priority 2 ecosystem at risk. None of the other vegetation types on the site are listed as ecosystems at risk.

The Warren sub-region occurs along the coast to the south of the site. No TECs are listed in the Warren sub-region. The "*Melaleuca lanceolata* forests on the Leeuwin Naturaliste Ridge" is also listed in the Warren sub-region as an ecosystem at risk. None of the other vegetation types on the site are listed as ecosystems at risk.

5.2.4 Potential Impacts

The development of Location 413 according to the draft Design Guide Plan and draft Concept Plan would result in the following:

- retention of all vegetation types on outcropping granite (also known as the GH4 vegetation);
- retention of all the vegetation containing *Melaleuca lanceolata* both on shallow sand over limestone and outcropping granite areas;
- retention of approximately half of the other shallow sand over limestone vegetation types;
- retention of most of the shallow sand over granite vegetation types in the western half of the property that are in Very Good condition, including most of the stands of stunted Marri and Christmas Tree (*Nuytsia floribunda*) within a low density camping and chalet area;

- retention of Peppermint trees in public open space, road reserves, large blocks on the southern boundary and within smaller lots;
- retention of some *Banksia*/Peppermint trees in road reserves, public open space and private lots;
- retention of most of the *Allocasuarina humilis* vegetation on deep sand;
- clearing of most of the shallow sand over granite vegetation in the western half that is in Good condition or worse on the lower slopes;
- clearing of most of the *Banksia*/Peppermint vegetation including all the understorey for fire management purposes in private lots;
- clearing of most of the Peppermint trees and all the associated understorey;
- clearing of most of the shallow sand over granite vegetation along the eastern boundary of the property.

Approximately 15.4ha (38%) of the site will be retained in its natural condition. This area includes all the vegetation in the Principal Ridge Protection Area and a Privately Managed Conservation Area abutting the PRPA. The exact amount of vegetation that would be cleared is not able to be accurately calculated as this will depend on final detailed design of the development. Figure 13: *Vegetation Retention Plan* (EPCAD and ATA Environmental 2006) outlines the estimated percentage retention of native vegetation within precincts on the site. The vegetation retention within the developable footprint (21.3ha) will primarily consist of trees with an understorey maintained at low height and density for fire control purposes. The percentage retention of vegetation within the developable area ranges from 60% in the western camping and chalet area, 50% in the larger lots abutting the National Park, 25% for the residential lots on the mid to upper slopes, 20% in a POS strip and Retention of Selected Individual Trees and shrubs for the tourist units and backpackers accommodation on the lower slope.

Retained areas of vegetation adjacent to and within the developed areas could be subject to disturbance from the following factors:

- uncontrolled access into the conservation areas
- introduction and spread of dieback
- introduction and spread of weeds into conservation areas
- unlawful clearing of trees in private lots
- increased fire in conservation areas
- slashing and clearing of conservation areas for fire control

The significance of the vegetation on the site is discussed in Section 5.2.3 above. The acceptability of vegetation clearing on the site can be assessed according to the National Strategy for the Conservation of Australia's Biological Diversity and the EPA's Environmental Protection of Native Vegetation in Western Australia: Clearing of Native Vegetation with Particular Reference to the Agricultural Area (EPA Position Statement No. 2 2000a). The objectives of the National Strategy are embodied in the EPA's statement on clearing in the agricultural region. The EPA's Position Statement indicates that for clearing to be considered environmentally acceptable it has to meet a number of criteria as follows:

- The proposed land use addresses alternative mechanisms for protecting biodiversity. They would like to see an overall environmental benefit as a result of the project.

- The area proposed for clearing is relatively small, depending on the scale over which significant biodiversity changes occur in the particular area, including the extent of vegetation in the surrounding area.

- The project is consistent with the principles of the National Strategy for the Conservation of Australia's Biodiversity.

- It is demonstrated that all reasonable steps have been taken to avoid disturbing native vegetation.

- No known species of plant or animal or community or plants or animals will become extinct as a result of the project.

- The risks to threatened species do not exceed acceptable levels.

- No vegetation type will be taken below 30% of the pre-clearing extent of the vegetation type.

- There is a comprehensive, adequate and secure representation of scarce or endangered habitats within the project area and/or areas which are biologically comparable to the project area.

- If the project area is large, the project area itself will include a comprehensive and adequate network of conservation areas and linking corridors, and the integrity and biodiversity of these areas will be secure.

- Land degradation including aquatic environment and threatening processes on-site and off-site will not be exacerbated.

The proponent is aware that the EPA has previously taken into account the existing zoning for a particular development site (eg. Turquoise Coast, EPA Bulletin 1031, October 2001) and has stated that in cases where a site is already zoned for development, that the question is not whether clearing can occur, but to what extent the environmental values of the area can be protected. It is the proponent's view that this situation should apply to Sussex Location 413 which is zoned under the Leeuwin-Naturaliste Ridge SPP and the Shire of Busselton DTPS for tourist and residential development. The main points that should be considered, therefore, are:

- The two Beard vegetation types mapped for the site have 74% and 81% of the original extent remaining;

- The vegetation complexes that have been mapped over most of the site (We and GE) have 49% and 67% protected in reserves. The small amount of W2 that occurs in the south-east corner (1.8% reserved) is more likely to be the G3 complex (57% reserved);

- No threatened flora or fauna species will be affected by the development at the local or regional level;

- The area proposed for clearing is small;

- All possible attempts have been made to retain vegetation in the development, including retention of at least 30% of the site in its natural state and retention of trees within low-density development and within lots and road reserves; and

- Vegetation clearing restrictions will be applied through the implementation of a Construction Management Strategy.

5.2.5 Management Strategies

Conservation Areas

The Smiths Point Development Guide Plan will protect the most significant vegetation on the site, ie. the western granite heathlands and *Melaleuca lanceolata* vegetation, by retaining it all within the Principal Ridge Protection Area and in a privately managed conservation area.

With respect to the vegetation in the Principal Ridge Protection Area (PRPA), the landowner has five options, as follows:

1. Retain the PRPA as a rural dwelling lot;
2. Vest the PRPA as a Shire reserve;
3. Annexe the PRPA area to the Leeuwin-Naturaliste National Park;
4. Cede the PRPA to the National Trust as a conservation reserve; and
5. Retain the PRPA as a private conservation area attached to one or both resort sites.

The landowner is considering ceding the area to the National Trust with ultimate management of the area by the Department of Environment and Conservation. This option has been selected on the basis of overall public benefit as part of the entire plan. If development of the remainder of Location 413 were not to proceed in accordance with the draft DGP or an agreed amended plan then this option is likely to be reconsidered.

The proponent commits to preparing an Environmental Management Plan (EMP) for the Principal Ridge Protection Area as a condition of the DGP approval. The EMP will address issues including access, fencing, signage, management of the Cape to Cape track, fire management, weed control, rehabilitation and integration with surrounding areas.

The remaining areas of granite heathland outside of the Principal Ridge Protection Area will be retained in a privately managed conservation area as part of the Beachclub Resort. The environmental values of the vegetation in the privately managed conservation area will be protected by a conservation covenant placed on the title associated with the Beachclub lot. The proponent commits to preparing an Environmental Management Plan (EMP) for the privately managed conservation area as a condition of the DGP approval.

Private Lot Covenants and Accessways

Native vegetation will be retained on tourist and residential lots where possible. In particular, the row of lots proposed along the southern boundary contain a 30m building setback to provide a fire control buffer to the adjoining National Park.

To ensure that native vegetation will be protected within privately owned lots, covenants will be placed on titles. The majority of the internal road network will be designed as accessways within a strata-titled lot. As such they will not be roads maintained by the local authority. This arrangement will allow road widths to be kept to a minimum and can be winding to suit the topography. The lower category of road/accessway will enable more vegetation to be retained within the development than would normally be possible with a more conventional road system. Plate 1 shows the type of internal road system envisaged. This photo was taken from the nearby development at Caves House.

The proponent will initially be responsible for the building of the roads/basic infrastructure. These minor roads will provide for a reciprocal right of way and will be controlled by strata entities/body corporate.

Strata lots will have only minor curtillage with a set of by-laws preventing further removal of vegetation enforced through strata management/body corporate. Town Planning Scheme controls as described in *Clause 27 Landscape Value Area* (refer over page) of the Shire's DTPS No. 20 prohibits clearing unless it is Shire approved and fines will be imposed by the Shire in the event that illegal clearing is undertaken.

27. LANDSCAPE VALUE AREA
Amendment No. 52 GG 18.7.03
(Amendment No. 54 GG 12.4.05)

(1) No person shall on any land in a Landscape Value Area clear any land without the written consent of Council.

(2) The Council shall not grant consent to the clearing of land or any other development on land identified on the Scheme Maps as being within a Landscape Value Area, unless it has considered -

(a) whether the development will be compatible with the maintenance and enhancement, as far as is practicable, of the existing rural and scenic character of the locality.

(b) whether the development will materially affect any wildlife refuge, significant wetland, coastal environment or any identified site containing Aboriginal archaeological relics;

(c) disturbance to the natural environment, including –

(i) visual effects of clearing for development;
(ii) maintenance of rural character;
(iii) habitat disturbance;

(3) The Council shall not consent to the carrying out of development on land within the Landscape Value Area or on land on or near any ridgelines where, in the opinion of the Council, that development is likely to substantially detract from the visual amenity of the area, having regard to the cumulative visual effect of the development related to other development that may be anticipated in the locality and in the area generally.

(4) Before giving its consent to the erection of a building on land to which this Clause applies, the Council shall make an assessment as to whether it should impose conditions relating to -

(a) the use of prescribed materials on the external surfaces of the building;

(b) the number, type and location of existing trees and shrubs which are to be retained and the extent of landscaping to be carried out on the site; and

(c) the siting of the proposed building.

Both prior to and during the subdivision process, protecting the values of remnant vegetation contained on-site will be enabled through the following:

1. Soft design by eliminating public roadways and with the roads also performing the function of strategic firebreaks.
2. Strata Plans/Bylaws will be established prior to titling into super lots. These will give effect to and place the onus on strata owners of private property what is permissible on common land.
3. The Shire of Busselton will be a party to the bylaws. As previously mentioned under Clause 27 of DTPS No. 20, Shire consent will be required before modification to vegetation can occur.

4. Post-construction revegetation/rehabilitation will form part of subdivision approvals.

In addition, the proponent is committed to preparing and implementing the following plans:

- A Construction Management Strategy (to be prepared as a condition of the DGP and approved prior to any major works commencing on site)
- A Dieback Management Plan (to be prepared as a condition of the DGP and approved prior to any major works commencing on site)
- An Environmental Management Plan for the Principal Ridge Protection Area
- An Environmental Management Plan for the Privately Managed Conservation Area

5.3 Native Terrestrial Flora – Significant Flora/Threatened Ecological Communities

5.3.1 EPA Objective

To protect Declared Rare and Priority Flora consistent with the provisions of the Wildlife Conservation Act 1950 and the Environment Protection and Biodiversity Act, 1999. Protect other flora of conservation significance.

5.3.2 Applicable Legislation, Criterion or Guidance

- EPA (2004b) Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Wildlife Conservation Act 1950*
- Commonwealth of Australia (2001) *National Targets and Objectives for Biodiversity Conservation 2001-2005*
- Commonwealth of Australia (1996) *National Strategy for the Conservation of Australia's Biological Diversity*
- Shire of Busselton District Town Planning Scheme No. 20

5.3.3 Existing Environment

The flora of Sussex Location 413 has been surveyed by Maunsell and Partners (1987) and ATA Environmental (formerly Alan Tingay and Associates) in 1994, 2001 (October), 2003, 2005 and 2006 (September). A total of 179 plant species has been recorded from these surveys, of which 146 are native species and 33 are introduced species. The species list comprises two fern species, one cycad, 47 Monocotyledons and 119 Dicotyledons. The most common families include the Papilionaceae (Pea family - 18 species, including three introduced), Asteraceae (Daisy family – 16 species including seven introduced), Proteaceae (Banksia family - 10 species), Myrtaceae (Myrtle family – 9 species), Orchidaceae (orchid family – 9 species) and the Poaceae (Grass family – 8 species including 6 introduced).

A search of the DEC's Declared Rare and Priority Flora database indicated that two Declared Rare Flora and five Priority plant species have been recorded within proximity of Sussex Location 413 but not on the site itself (Table 12). *Caladenia thinicola* was previously listed as a Priority species in the region however it was removed from the Declared Rare and Priority list in August 2001.

TABLE 12
SPECIES ON THE DEC DATABASE RECORDED IN THE VICINITY OF SUSSEX LOCATION 413

Species	Priority Code	Preferred Habitat*
Acacia inops	P3	swamps and creeks
Acacia semitrullata	P3	tea-tree swamps and open jarrah forest on sand
Anthotium junciforme	P4	winter wet swamps or seepage areas
Caladenia excelsa	R	mixed marri, jarrah, peppermint, *Banksia* woodlands in deep sandy soils
Caladenia huegelii	R	Jarrah/Banksia woodland
Dryandra sessilis var. *cordata*	P4	sand over limestone in coastal heath
Hydrocotyle hamelinensis ms.	P2	soil pockets among limestone rocks

*Wheeler *et al.* (2002)

The surveys of October 2001 and September 2003 and 2005 were undertaken during the flowering time of the two rare orchid species.
No Declared Rare Flora species were recorded on the site.

No plant species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* occur on the site.

The Priority 4 listed species, *Dryandra sessilis* var. *cordata* (Parrot Bush) was recorded on the site in low numbers, predominantly in the Peppermint/Banksia woodland and a few plants also in the vegetation on shallow sand over limestone (Figure 8). A total of 84 plants have been recorded on the site.

Priority 4 plant species are those that are species that are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors (CALM 2006).

Dryandra sessilis var. *cordata* is known to occur on coastal limestone soils from Cape Naturaliste to Walpole. In the vicinity of the study area, *Dryandra sessilis* var. *cordata* is known to occur at the following locations within the Leeuwin-Naturaliste Ridge National Park:

- In very large numbers on the upper ridges to the south of the Location 413 and south of Canal Rocks Road;
- Abundant along the roadside near the Torpedo Rocks lookout near Yallingup;
- Abundant in the coastal areas around Injidup Beach; and
- Scattered north of the North Point carpark at Gracetown.

Threatened Ecological Communities

One of the EPA's significance criteria (see Section 4.1) is to "protect the environmental values of areas identified as having significant environmental attributes, such as Threatened Ecological Communities". None of the vegetation types on the property is listed as a Threatened Ecological Community (English and Blyth 1997; CALM 2001).

Significant ecosystems are also identified in the *Biodiversity Audit of Western Australia's 53 Biogeographcial Subregions* undertaken by CALM in 2002 (Department of Conservation and Land Management 2003). According to this report the site lies within the Jarrah Forest 2 (JF2 – Southern Jarrah Forest subregion) and close to the Warren sub-region which occurs just to the south of the site. The Biodiversity Audit identifies Threatened Ecological Communities as well as other ecosystems at risk in each sub-region. No vegetation types on the property are listed in the

audit as Threatened Ecological Communities. Of the 19 ecosystems listed in the audit as "at risk" in the Jarrah Forest 2 sub-region, one occurs on Location 413. The "*Melaleuca lanceolata* forests on the Leeuwin Naturaliste Ridge" is listed as a Priority 2 ecosystem at risk. None of the other vegetation types on the site are listed as ecosystems at risk.

The Warren sub-region occurs along the coast to the south of the site. No TECs are listed in the Warren sub-region. The "*Melaleuca lanceolata* forests on the Leeuwin Naturaliste Ridge" is also listed in the Warren sub-region as an ecosystem at risk. None of the other vegetation types on the site are listed as ecosystems at risk.

5.3.4 Potential Impacts

Development of Location 413 has the potential to impact on approximately 84 plants of the Priority 4 species *Dryandra sessilis* var. *cordata* by clearing during construction of infrastructure and dwellings, or by becoming infected with disease such as Dieback (*Phytophthora cinnamomi*).

According to the draft Concept Plan for the site, the three plants that occur within Location 413 along the southern boundary are located close to the Cape Spur lodge but within vegetation that will not be cleared for development. These plants will be protected in their natural environment within the development.

The main body of the *Dryandra sessilis* var. *cordata* plants is located in the lower to mid slopes in the centre of the property. This area is mostly proposed for higher density development with some medium density mid-slope and public open space corridors that traverse down the slope. This main body of plants lies within development areas where less than 25% of the vegetation is expected to be retained (Figure 16). As a result, many of the plants in the higher density part of the development will not be able to be protected. However, some of the plants in the medium density and public open space will be able to be retained. The exact number of plants able to be protected cannot be determined until detailed site plans are drawn up.

The loss of a many of the *Dryandra sessilis* var. *cordata* plants will not affect the conservation status of the species either regionally or locally for the following reasons:

- There are only approximately 84 plants on Location 413;
- *Dryandra sessilis* var. *cordata* is already considered well reserved and is not currently threatened by any identifiable factors;
- *Dryandra sessilis* var. *cordata* is present in large numbers to the south of the site south of Canal Rocks Road; and
- *Dryandra sessilis* var. *cordata* is present to the north of the site near the Torpedo Rocks lookout at Yallingup.

Furthermore, the management strategies identified below will result in the propagation of *Dryandra sessilis* var. *cordata* plants for revegetation within the development with the most likely outcome that there will be more plants present on site after the development than currently exist.

5.3.5 Management Strategies

The development will attempt to retain as many *Dryandra sessilis* var. *cordata* plants as possible within lots, road reserves and public open space. *Dryandra sessilis* var. *cordata* is able to be retained within developments as evidenced by the nearby development at Caves House where many tall *Dryandra sessilis* var. *cordata* plants up to 2.5m tall have been retained on the edge of low-key roads and within lots (Plate 2).

In addition, *Dryandra sessilis* var. *cordata* is readily propagated from seed. The proponent commits to collecting seed from the plants on site prior to clearing and propagating for use in revegetation and landscaping on site.

5.4 Fauna

5.4.1 EPA Objective

To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

5.4.2 Applicable Legislation, Criterion or Guidance

- *Wildlife Conservation Act 1950*
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- Environmental Protection Authority (2004c) Guidance No. 56 - *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia*
- Shire of Busselton District Town Planning Scheme No. 20

5.4.3 Existing Environment

Western Australia supports 53 biogeographical subregions. The Smiths Beach development site is within the Warren IBRA sub-region that extends from Yallingup through to almost Albany and encompasses all of the south coast region (Hearn *et al.* 2002). No systematic fauna surveys (vertebrate or invertebrate) have been conducted across the bioregion although some areas have preliminary survey data for a range of taxa.

A previous vertebrate fauna survey of Location 413 was undertaken by *ecologia* Environmental Consultants in April 2001. The survey results were limited by the survey's timing (*ecologia* Environmental Consultants 2001). Within south-western Western Australia, animal activity tends to be greatest during the late spring / summer period. The *ecologia* Environmental Consultants survey was conducted during autumn when vertebrate groups are less active.

ATA Environmental was subsequently commissioned by Canal Rocks Pty Ltd to undertake a Level 2 vertebrate fauna assessment and to make recommendations on fauna related issues that should be addressed during the development of the site.

The Level 2 fauna assessment was designed to supplement work completed in autumn 2001 by *ecologia* Environmental Consultants and to provide information about temporal variations in faunal assemblages in the region. The fauna survey was undertaken in accordance with the Environmental Protection Authority (EPA) *Position Statement No. 3 Terrestrial Biological Surveys as an Element of Biodiversity Protection* (Environmental Protection Authority 2002) and *Guidance for Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia, No. 56* (Environmental Protection Authority 2004).

The vertebrate fauna report that was peer reviewed by Dr Graham Thompson (Terrestrial Ecosystems) and Gary Connell (*ecologia* Environmental Consultants) prior to its submission to the DEC's Terrestrial Ecosystems branch for their comment. The full report, amended to include the DEC review comments, is included as Appendix 6: *Vertebrate Fauna Assessment, Smiths Beach, Yallingup* in the volume of technical appendices (ATA Environmental 2006b).

The report includes:

- A review of the Western Australian Museum on-line database (*FaunaBase*) (search co-ordinates 33.43°S/114.9°E – 33.98°S/115.32°E) to identify potential vertebrate fauna in the area;
- A search of the DEC's Threatened and Priority Species database (search co-ordinates 33.58333°S/114.9167°E – 33.75°S/115.0833°E) to identify potential scheduled and threatened species in the region;
- A search of the Commonwealth's on-line database (search co-ordinates 33.50°S/114.85°E - 33.80°S/115.1°E) to identify fauna species of national environmental significance that are protected under the *Environment Protection and Biodiversity Conservation Act* 1999 potentially occurring in the area;
- A review of the published and unpublished literature that ATA Environmental could access to provide a list of fauna that have potential to occur in the region;
- An analysis of data gathered during fieldwork undertaken on-site;
- Discussion on the potential impacts of the proposed development on the fauna and fauna habitat; and
- Management recommendations to minimise the potential impacts on the fauna.

Fauna Habitat

The five habitat types present on site are:

- Site 1- *Banksia attenuata* Woodland;
- Site 2 - Open Coastal Heath;
- Site 3 - Peppermint/ Eucalypt Woodland;
- Site 4 - Closed Coastal Scrub; and
- Site 5 - Closed Coastal Heath.

The location of each habitat type is shown on Figure 10.

Survey Methodology

A ten-day fauna trapping programme undertaken between 29 November and 9 December 2005 was conducted in the five habitat types that *ecologia* Environmental Consultants previously determined to be present on site (*ecologia* Environmental Consultants 2001b). All fauna surveys were conducted under a licence issued by the DEC (# SF 5181).

A series of trapping arrays were set up within the different habitat types across the project area. The allocation of trapping effort reflected the relative abundance of each habitat type on the overall site. Each trapping array consisted of one 150mm diameter stormwater pipe pit-trap (500mm deep), one 20L bucket pit-trap and two-pairs of funnel traps (4) located along a 10m drift fence (300mm high) and 2 Elliott traps. The Elliott traps were placed within 5m of the drift fence. Sites 1, 2, 4 and 5 consisted of 15 arrays and site 3 consisted of 20 arrays. In addition, 12 cage traps were located at each site. All trapping arrays were spread approximately 20m apart.

Table 13 shows the trapping effort conducted for each site. Sites 1 and 2 were open for 10 nights, and sites 3, 4, and 5 were open for nine nights. A total of 6564 trap-nights were conducted between 29 November and 9 December 2005.

TABLE 13
NUMBER OF TRAP NIGHTS PER TRAPPING SITE CONDUCTED AT SMITHS BEACH

	Trap type			
Site	Pit-trap nights	Funnel-trap nights	Elliott trap nights	Cage trap nights
1	300	600	300	120
2	300	600	300	120
3	360	720	360	108
4	270	540	270	108
5	270	540	270	108
TOTAL	**1500**	**3000**	**1500**	**564**

Avifauna Surveys

Avifauna surveys were conducted from sunrise between 2 and 8 December 2005 for a minimum of four person hours each day (28 person hours total) and opportunistically throughout the whole survey period between 29 November and 9 December. The order of avifauna survey was rotated among sites to minimize activity period bias. All birds were identified by their call or direct observation. Additional avifauna surveys were conducted on dusk on four evenings for approximately 4 person hours each evening (16 person hours total). These were designed to target bird species that may be more active in the early evenings than during the day or sun rise.

Spot-Lighting Survey

Spotlighting was conducted on four evenings (2, 3, 5 and 6 December). Spotlighting was conducted from a slow moving vehicle (~ 5 km/hr) using a high powered hand-held spot-light with diffuse red light cover. In addition, areas that could not be surveyed from the vehicle were surveyed using head torches. Each survey lasted approximately 3-4hrs and included various sections of the study area and surrounding habitat. All trapping sites were investigated over the four-night survey period. Given the size of the study area, it was not possible to cover the entire site, and surrounding Cape Naturaliste National Park bushland each evening.

Bat Surveys and Non-Systematic Searches

Night surveys of bat species active in the study area were undertaken using an Anabat II recorder during the spotlighting surveys. The Anabat II recorder was set up in fly ways within each habitat type and left for approximately 45 minutes. Each habitat was surveyed and a total of 225 minutes of recordings made.

Hand searching using rakes, digging out holes and opportunistic sightings of reptiles, mammals and amphibians in the project areas were recorded. Nine person hours of searching effort (in addition to spotlighting and avifauna surveys) was conducted in each habitat type.

Additional opportunistic searching of the study area and broader region was conducted between 16 and 22 January 2006. The amount of search effort varied in each habitat varied, however, at least 1.5 person hours was conducted in each habitat type.

Faunal Assemblage

Eighteen species and 519 individual terrestrial vertebrates were trapped over the ten-day period. An additional 86 individuals and nine trappable species were observed as part of opportunistic searches or spotlighting. A detailed list of species recorded is provided in Appendix 6 of the volume of technical appendices.

Avifauna

Species presented in the search of *FaunaBase* and other reports for the region resulted in a list of 165 species that could potentially be found in the general locality, however, not all of these species are expected to be observed, forage or nest in the general area. Of these 165 species, 30 species and 1038 individuals were observed in the vicinity of one of the five trapping sites.

Reptiles

Fourteen species of reptiles were caught during the field survey. Three hundred and three of the 496 individuals recorded from captures were caught in funnel traps, 92 in bucket pit-traps, 23 in pipe pit-traps, 60 in cage traps and 10 in Elliott traps (see Table 4 of Appendix 6).

Christinus marmoratus and *Echiopsis coronatus* were not trapped and one individual of each was observed opportunistically.

Mammals

Two species of mammals were caught during the November/December 2005 survey, House Mice (*Mus musculus*) and Honey Possums (*Tarsipes rostratus*). Numerous rabbits, two foxes and three cats were sighted in the night searches.

ATA Environmental recorded two echolocation calls from *Chalinolobus morio* (Chocolate Wattled Bat) in the study area. Western Grey Kangaroos were regularly seen during spotlighting and early in the mornings. Western Ringtail Possums and Brushtail Possums were also recorded each evening.

During additional spotlighting and opportunistic investigations in January 2006, a Brush-tailed Phascogale and Western Pygmy Possum were recorded on the site.

Amphibians

Two species of amphibians (*Heleiporus eyrei* and *Limnodynastes dorsalis*) were caught during the field survey. All frogs trapped were in pit-traps (buckets and pipes) or funnel traps.

Although, not trapped, *Litoria adelaidensis* and *Litoria moorei* were common around the old farm dam.

5.4.4 Potential Impacts

The implementation of the draft DGP will result in the retention of approximately 15.4 ha of native vegetation in its existing natural condition. This area comprises the granite heathland, *Melaleuca lanceolata/ Melaleuca huegelii* Closed Heath and some *Melaleuca huegelii* Closed Scrub vegetation on the western portion of the site.

The proposed development of the developable area of Location 413 (21.3ha) will result in the clearing of some Banksia, Peppermint and eucalypt woodland. The Vegetation Retention Plan shown in Figure 13 identifies the proportion of vegetation expected to be retained within the development. The vegetation retention within the developable footprint will primarily consist of trees with an understorey maintained at low height and density for fire control purposes. The percentage retention of vegetation within the developable area ranges from 60% in the western camping and chalet area, 50% in the larger lots abutting the National Park, 25% for the residential lots on the mid to upper slopes, 20% in a POS strip and Retention of Selected Individual Trees and shrubs for the tourist units and backpackers accommodation on the lower slope.

The proposed clearing of habitat is likely to result in a loss of some of the sedentary species however more mobile species are expected to move to bushland areas proposed to be retained within the development or to adjacent areas off-site that have habitat of similar or better quality.

The faunal assemblage that is present on Location 413 and which will be impacted on during the proposed clearing is unlikely to be different to that found in similar habitat located in the vicinity of the site and elsewhere in the region, particularly the adjoining Leeuwin-Naturaliste National Park.

5.4.5 Management Strategies

Protection of fauna and fauna habitat will be addressed in the Vegetation, Flora and Fauna sections of the Construction Management Strategy to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton.

The Plan will include but not be limited to:

- Fauna relocation programme;
- Weed eradication programme;
- Revegetating and restoring POS areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access;
- Soil and plant source material hygiene;
- Encouraging community involvement and awareness promoting control of pets (i.e. dogs);
- Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site;
- Water conservation principles;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;
- Responsibilities for implementation;
- Progress and compliance reporting; and
- Timing and implementation schedule.

5.5 Native Terrestrial Fauna – Specially Protected (Threatened) Fauna

5.5.1 EPA Objective

Protect Specially Protected (Threatened) Fauna and Priority Fauna species and their habitats, consistent with provisions of the Wildlife Conservation Act 1950 and the Commonwealth Biodiversity Act 1999 protect other fauna of conservation significance.

5.5.2 Applicable Legislation, Criterion or Guidance

- *Wildlife Conservation Act 1950*
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- Environmental Protection Authority (2004c) Guidance No. 56 - *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia*
- Shire of Busselton District Town Planning Scheme No. 20

5.5.3 Existing Environment

A desktop search of the Western Australian Museum database (*FaunaBase*) and Department of Environment and Heritage (DEH) *EPBC Act* database was used to develop a list of potential bird,

reptile, mammal and amphibians in the Yallingup area. Marine species (e.g. seals and whales) and predominantly marine and freshwater species (e.g. petrels, albatrosses, pelicans, cormorants, darters, sea turtles) presented in the search of *FaunaBase* along with obvious exotics have not been considered as the proposed development does not include a marine or freshwater habitat.

The conservation significant fauna species listed in Table 14 were listed in *FaunaBase*, the DEC Threatened fauna database and Department of Environment and Heritage (DEH) *EPBC Act* database as being potentially found in the Yallingup area.

Four Vulnerable species of fauna and two migratory species of birds listed under the *Environment Protection and Biodiversity Conservation Act (EPBC Act)* 1999 were identified as potentially occurring within the Yallingup area. Five Schedule 1, one Schedule 2 and two Schedule 4 species listed under the Western Australian *Wildlife Conservation Act 1950* and nine Priority fauna species under the DEC Priority Fauna List potentially occur within the Yallingup area.

TABLE 14
SIGNIFICANT VERTEBRATE FAUNA PREDICTED TO OCCUR IN THE YALLINGUP AREA

Species	Status under *Wildlife Conservation Act*	Status under Commonwealth *Environment Protection and Biodiversity Act*	Potential to be found in the study area
Pseudocheirus occidentalis (Western Ringtail Possum)	Schedule 1	Vulnerable	*Recorded* during this survey
Calyptorhynchus baudinii (Baudin's Black Cockatoo)	Schedule 1	Vulnerable	*Recorded* during this survey
Dasyurus geoffroii (Chuditch)	Schedule 1	Vulnerable	*Recorded* in region but not on the study area
Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo)	Schedule 1	Vulnerable	*Recorded* in region but not on the study area
Setonix brachyurus (Quokka)	Schedule 1		*Highly unlikely* to be on the study area
Dasyornis broadbenti litoralis (Rufous Bristlebird)	Schedule 2		*Presumed extinct*
Falco peregrinus (Peregrine Falcon)	Schedule 4		*Recorded* in region but not on the study area
Morelia spilota imbricata (Carpet Python)	Schedule 4		*Recorded* in region and on site previously, but not during this assessment
Austromerope poultoni	Priority 1		Unknown
Elapognathus minor (Short-nosed snake)	Priority 2		*Recorded* in region but not on the study area
Ninox connivens connivens (Barking Owl)	Priority 2		Could *occasionally* occur within the study area
Tyto navaehollandiae novaehollandiae (Masked Owl)	Priority 3		*Potentially* occurs within the study area
Phascogale tapoatafa tapoatafa (Southern Brush-tailed Phascogale)	Priority 3		*Recorded* within the study area

Species	Status under *Wildlife Conservation Act*	Status under Commonwealth *Environment Protection and Biodiversity Act*	Potential to be found in the study area
Macropus irma (Western Brush Wallaby)	Priority 4		*Recorded* in region but not on the study area
Ctenotus delli (Dell's Skink)	Priority 4		*Recorded* in region but not on the study area
Isoodon obesulus fusciventer (Southern Brown Bandicoot)	Priority 5		*Recorded* in region but not on the study area
Falsistrellus mackenziei (Western False Pipistrelle)	Priority 4		*Potentially* occurs within the study area
Haliaeetus leucogaster (White-bellied Sea Eagle)		Migratory	*Unlikely* to rely on the study area for survival although regionally present
Merops ornatus (Rainbow Bee-eater)		Migratory	*Unlikely* to rely on the study area for survival although regionally present

The following is ATA Environmental's assessment of the likelihood of these species being found on Location 413.

Western Ringtail Possum (*Pseudocheirus occidentalis*)

Western Ringtail Possums were record on-site during the 2005 assessment.

Baudin's Black-Cockatoo (*Calyptorhynchus baudinii*)

Baudin's Black-Cockatoos were recorded feeding on Marri and Banksia on Location 413 and within the surrounding National Park. There are no trees on-site that would provide tree hollows of suitable diameter or height for breeding purposes. No breeding Cockatoos were recorded during either assessment.

Chuditch or Western Quoll (*Dasyurus geoffroii*)

Although, not recorded on site by *ecologia* Environmental Consultants (2001) or ATA Environmental's (2005) assessments, the Chuditch potentially inhabits the woodlands both on-site and in adjacent areas as there are appropriate size and quality habitat available.

Forest Red-tailed Black-Cockatoo (*Calptorhynchus banksii naso*)

Although, not recorded in the DEC's Threatened fauna database search, or on-site during *ecologia* Environmental Consultants (2001) or ATA Environmental's (2005) assessments, the Forest Red-tailed Black-Cockatoo may utilise Location 413 for feeding purposes as suitable feeding habitat is present.

Quokka (*Setonix brachyurus*)

There have been no recorded sightings of the Quokka in the region since 1933 therefore it is highly unlikely to occur on Location 413.

Rufous Bristlebird (*Dasyornis broadbenti litorlis*)

The Rufous Bristlebird is presumed extinct and therefore is highly unlikely to occur on Location 413.

Peregrine Falcon (*Falco peregrinus*)

The Peregrine Falcon shows a habitat preference for areas near cliffs along coastlines, rivers and ranges and within woodlands along watercourses and around lakes and is possibly an infrequent visitor to Location 413.

Carpet Python (*Morelia spilota imbricata*)

The Carpet Python is known to inhabit Location 413 and is expected to utilise all existing habitat types on Location 413.

Austromerope poultoni

Given the lack of knowledge on this species, it is unknown whether this species occurs on Location 413.

Short-nosed snake (*Elapognathus minor*)

This species is unlikely to inhabit Location 413 due to its habitat preference (humid coastal plain) and distribution (deep South Coast through to Two Peoples Bay).

Barking Owl (southwest population; *Ninox connivens connivens*)

Barking Owls could occasionally occur on Location 413 as it was previously recorded at Cape Naturaliste (1995) and Dunsborough (1996).

Masked Owl (*Tyto novaehollandiae*)

Although there are no hollow trees or branches present that would be suitable for nesting, Masked Owls could occasionally occur on Location 413.

Southern Brush-tailed Phascogale (*Phascogale tapoatafa tapoatafa*)

One individual was recorded in the area during spotlighting in January 2006 in dense thicket on limestone soils along the mid-southern boundary of Location 413.

Western Brush Wallaby (*Macropus irma*)

Although no Western Brush Wallabies were observed during the assessments they are potentially found on Location 413, as the habitat is dense and large enough to sustain a population.

Dell's Skink (*Ctenotus delli*)

Given that similar habitat is found in the Yallingup region, Dell's Skinks could possibly occur on Location 413, however it is considered unlikely as the main distribution of this skink is within the Darlington/Mundaring Weir area to near Collie.

Quenda or Southern Brown Bandicoot (*Isoodon obesulus fusciventer*)

Although no scats and scratchings were observed on-site, the Quenda may be present in the more densely vegetated shrubby areas within Location 413.

Western False Pipistrelle (*Falsistrellus mackenziei*)

The Western False Pipistrelle is unlikely to occur within Location 413, as there are limited hollows present on-site.

White-bellied Sea Eagle (*Haliaeetus leucogaster*)

The White-bellied Sea Eagle may fly over Location 413 however, they are unlikely to rely on Location 413 for feeding or roosting.

Rainbow Bee-eater (*Merops ornatus*)

There is limited potential for the Rainbow Bee-eater to rely on Location 413, due to a lack of sandy substrate and therefore limited potential for nesting.

Western Ringtail Possum Survey

The WRP is closely associated with stands of Native Peppermint trees (*Agonis flexuosa*), with the leaves of Peppermint trees being the species primary food source although individuals in residential areas are known to feed on garden plants, fruit and vegetables in compost heaps.

Western Ringtail Possums are nocturnal and usually shelter by day in dreys (bird-like nests) or tree hollows. The dreys are typically located in the crown of Peppermint trees, but may be constructed in other tree species, including *Melaleuca, Banksia*, Marri and Jarrah trees. Where the vegetation is not suitable to make dreys or where hollows are common, tree hollows may also be utilised as rest sites by WRP. Western Ringtail Possums are territorial and have defined, overlapping home ranges of 0.5-1.5ha that extend to about 60m from the nearest drey tree. There may be a number of dreys within one home range.

Drey Locations

A total of 50 possum dreys were located on-site during the daylight searches conducted in November/December 2005. An additional 50 dreys were located in native vegetation in the surrounding habitats in the Leeuwin-Naturaliste National Park adjacent to Location 413. Drey locations are shown on Figure 3 of Appendix 6.

On Location 413, dreys were recorded in Peppermints (9), Melaleucas (2), Marri (6), Banksias (2), *Hakea oleifolia* (6), on the ground (1) and *Spyridium globulosum* (24). The dreys were generally located in the Peppermint/Eucalypt Woodland. In the habitat adjacent to Location 413, dreys were recorded in Peppermints (12), Banksias (14), *Hakea oleifolia* (6), and *Spyridium globulosum* (18).

Numbers of Western Ringtail Possums

Spot-lighting was conducted on four evenings (2, 3, 5 and 6 December), however, it was raining or drizzling and windy on each of these evenings. These conditions are not ideal for spotlighting WRP and the results are therefore possibly an underestimate of the number of possums actually occurring on-site. Eight WRP were observed during the spotlighting surveys in Location 413, two in the National Park south of Location 413 and two in habitat south east of Location 413. Locations of each WRP observed are shown on Figure 3 of Appendix 6.

5.5.4 Potential Impacts

The implementation of draft DGP will result in the retention of approximately 15.4 ha of native vegetation in its existing natural condition. This area comprises the granite heathland, *Melaleuca lanceolata/ Melaleuca huegelii* Closed Heath and some *Melaleuca huegelii* Closed Scrub vegetation on the western portion of the site.

The proposed development of the developable area of Location 413 (21.33ha) will result in the clearing of some Banksia, Peppermint and eucalypt woodland. The Vegetation Retention Plan shown in Figure 13 identifies the proportion of vegetation expected to be retained within the development. The vegetation retention within the developable footprint will primarily consist of trees with an understorey maintained at low height and density for fire control purposes. The percentage retention of vegetation within the developable area ranges from 60% in the western camping and chalet area, 50% in the larger lots abutting the National Park, 25% for the residential

lots on the mid to upper slopes, 20% in a POS strip and Retention of Selected Individual Trees and shrubs for the tourist units and backpackers accommodation on the lower slope.

The proposed clearing of habitat is likely to result in a loss of some of the sedentary species however more mobile species are expected to move to bushland areas proposed to be retained within the development or to adjacent areas off-site that have habitat of similar or better quality.

Three species of conservation interest listed under the *Wildlife Conservation Act* 1950 (Western Ringtail Possum, Baudin's Cockatoo and the Carpet Python) and the Priority listed species Southern Brush-tailed Phascogale have been recorded on-site and may be impacted by the proposed development.

The proposed clearing of vegetation is unlikely to have a significant affect on the Chuditch given that it has not been recorded on site and that there is significant alternative habitat located adjacent to the site that is protected as National Park.

Of the species listed for the area under the *EPBC Act* 1999 only Baudin's Black Cockatoo and the Western Ringtail Possum were recorded on-site. Baudin's Black Cockatoos were recorded feeding on site and nearby surrounding vegetation. No significant trees containing hollows suitable for Black Cockatoo breeding were recorded within the project area.

Western Ringtail Possums were recorded both on-site and in nearby vegetation during November/December 2005. The proposed clearing of some of the vegetation in Location 413 may result in a limited loss of habitat and foraging sites for this species.

5.5.5 Management Strategies

Protection of fauna and fauna habitat will be addressed in the Vegetation, Flora and Fauna sections of the Construction Management Strategy to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to:

- Fauna relocation programme;
- Weed eradication programme;
- Revegetating and restoring POS areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access;
- Soil and plant source material hygiene;
- Encouraging community involvement and awareness promoting control of pets (i.e. dogs);
- Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site;
- Water conservation principles;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;
- Responsibilities for implementation;
- Progress and compliance reporting; and
- Timing and implementation schedule.

A Western Ringtail Possum Management Plan will be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to:

- Identification of WRP habitat and individual trees currently providing high possum values and that must be retained;
- Management prescriptions and ongoing maintenance requirements for a defined corridor habitat;

- Procedures to be followed in the event that land holders seek, or are required, to undertake modification to vegetation that may harm habitat and linkage values for possums;
- A programme of tree plantings to be undertaken on public or other lands to maximise linkage opportunities for possums between the habitat areas;
- Environmental offsets or off-site mitigation in the event that the WRP cannot be fully managed on-site and translocations are required to be undertaken;
- A monitoring programme to measure:
  - use of linkage habitat by possums and inter-mixing of populations at either end of linkage corridors;
  - vegetative health and requirements for replanting or other vegetation maintenance required within the possum corridor; and
- Education programmes including signage, pamphlets and other means, to engage property owners and the broader community about the function of the WRP and its habitat requirements.

5.6 Conservation Area – Leeuwin-Naturaliste National Park

5.6.1 EPA Objective

To protect and enhance the environmental values of areas identified as having significant environmental attributes.

5.6.2 Applicable Legislation, Criterion or Guidance

- Environmental Protection Authority (2004b) Guidance Statement No. 51 – *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*
- Environment Protection and Biodiversity Conservation Act 1999
- *Wildlife Conservation Act 1950*
- Western Australian Planning Commission (2003) State Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy.*
- Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy.*

5.6.3 Existing Environment

The Leeuwin Naturaliste National Park (National Park) abuts the Canal Rocks road reserve along the southern boundary of the development and is upgradient of the development and is in excellent condition. Apart from the firebreak along the road reserve, there are no tracks within the Park adjacent to Location 413. Accordingly, the Park in this area appears to have had very little usage by the public.

The DEC manages the Park which includes much of the land adjacent to the coast between Capes Leeuwin and Naturaliste. The Department has a policy, methodology and standards for managing the visual aesthetic values on its estate and adjacent areas. These commitments fit within its wider charter to manage for public enjoyment of the park where consistent with conservation objectives.

The National Park's attractions include a stretch of scenic coastline with diverse uses ranging from surfing and fishing, family-friendly beaches; caves; scenic forest and heath-lands. This diversity of uses ensures that the Park has the highest visitation of any of Western Australia's national parks (currently 1.4 million per annum) (CALM 2005).

The EPA in its s16(j) advice to the WAPC supported the consolidation of the National Park with priority given to additions to those areas of the National Park that were narrow in section or not continuous. Areas identified were in the vicinity of Smiths Beach, Cape Clairault, Gracetown, Cape Mentelle, Prevelly and Cosy Corner (EPA 1998 p.7).

5.6.4 Potential Impacts

Park-Development Interface Management Issues

The increased number of permanent residents and tourists in the general area as a result of the proposed development will increase the potential usage of the Park and adverse, direct and/or indirect impacts such as trampling of native vegetation and the introduction of weeds and plant diseases may occur.

Dense vegetation between the road reserve and the National Park will naturally discourage pedestrian access to the National Park.
Bushfires are regularly started every summer, either deliberately by arsonists and vandals, or accidentally by campers. Accidental fires also occur as a result of escapes from prescribed burning by the DEC.

The proposed development at Smiths Beach will lead to an increase in the population living and visiting the area. Given the proximity of the development to the National Park, there is a potential for the incidence of fires in the Park to increase. Conversely, the residents on Location 413 would be at risk of fire escaping from the National Park or from within the development itself without an appropriate Fire Management Plan.

Weeds and Plant Diseases

Potential indirect impacts include the introduction of further weeds and *Phytophthora cinnamomi* (Dieback) and other plant diseases during construction activities and an increased use of the area by both residents and visitors potentially resulting in trampling of native vegetation and disturbance of fauna.

Bushfire

There is a potential for the incidence of fires in the National Park to increase due to the increased numbers of tourists/residents in the vicinity of the Park. The residents of Location 413 would be at risk of fire escaping from the National Park or from within the development itself.

5.6.5 Management Strategies

A Fire Management Plan has been prepared to manage the potential impacts of a bush fire on the proposed development site in accordance with the provisions of the LNRSPP and the Shire of Busselton DTPS No. 20 (Appendix 7). The Plan has been prepared in consultation with the Fire and Emergency Services Authority (FESA), Shire and the DEC (FirePlan WA 2006). The draft Fire Management Plan is included as Appendix 7: *Fire Management Plan Location 413 Smiths Beach* in the volume of technical appendices (FirePlan WA 2006).

The aim of the draft Fire Management Plan is to reduce the threat to residents and fire fighters in the event of a fire within or near the development by providing for a series of strategic fire breaks through the development and bush fire hazard separation zone between remnant bushland and the proposed development. This provides for a safe degree of separation from the natural bushland within the proposed development as well as an appropriate level of access for emergency vehicles and egress for public escape (Canal Rocks Pty Ltd 2007).

The Plan has been developed to incorporate fire management methods such as:

- Strategic firebreak system;
- Dwelling construction and setbacks;
- Building protection zone;
- Hazard separation zone;
- Hazard reduction;
- Introduction of scheme water; and
- Driveways.

The Plan promotes the philosophy that there must be a physical separation between bush fire hazards and development. To this end, proposed buildings will be required to be setback 50m from the southern boundary, 20m from the eastern boundary and 20m from the adjoining Resort. The setbacks are required to create building protection and hazard separation zones to assist in reducing fire intensity should a bush fire impact on buildings within the proposed development. The 50m setback on the southern boundary (adjacent to the National Park) will comprise a 20m road reserve (to be maintained as a low fuel zone), a 10m hazard separation zone (to be maintained by the landowner) and a 20m building protection zone (to be maintained by the landowner). The maintenance/funding of the road reserve as a low fuel zone will be subject to an agreement between the proponent and the Shire.

The 20m setback on the eastern boundary is to be managed as a building protection zone and the 20m road reserve is to be managed as a low fuel area. The maintenance/funding of the road reserve as a low fuel zone will be subject to an agreement between the proponent and the Shire.

Along the western boundary a 20m building protection zone is to be installed around all buildings and chalet areas. A 50m hazard separation zone (including the building protection zone) will be required.

A 20m building protection zone will be installed around the boundaries of the adjoining Resort complex with a walkway or road located within this zone.

The Plan also recommends bush fire fuel loadings for each hazard separation zone and methods of achieving these loadings.

Management of direct and indirect impacts (eg weeds, *Phytophthora* and other plant diseases and trampling) to the conservation managed areas within the proposed development and to ensure no direct and indirect impacts upon the National Park occur will be addressed in the Vegetation, Flora and Fauna Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton.

The Plan will include but not be limited to:

- Fauna relocation programme;
- Weed eradication programme;
- Revegetating and restoring POS areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access through fencing and formalising accessways;
- Soil and plant source material hygiene;
- Encouraging community involvement and awareness promoting control of pets (i.e. dogs);
- Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site;
- Water conservation principles;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;

- Responsibilities for implementation;
- Progress and compliance reporting; and
- Timing and implementation schedule.

A Dieback (*Phytophthora cinnamomi*) Management Plan will be prepared as a condition of the DGP and approved prior to any major works commencing on-site.

5.7 Landscape and Landforms

5.7.1 EPA Objective

To maintain the integrity of landscape and landforms by maintaining their integrity, ecological functions and environmental values.

5.7.2 Applicable Legislation, Criterion or Guidance

- Western Australian Planning Commission (2003) State Planning Policy No. 2 *Environment and Natural Resources Policy.*
- *Town Planning and Development Act 1928*
- Western Australian Planning Commission (2003) State Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy.*
- Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy.*
- Shire of Busselton District Town Planning Scheme No. 20

5.7.3 Existing Environment

Principal Ridge Protection Area

The Principal Ridge Protection Area (PRPA) as identified in the LNRSPP forms the western most portion of the proposed development (Figure 4a). The boundaries of this area reflect the boundaries of the LNRSPP Principal Ridge Protection Area and the Recreation Reserve as depicted under the Shire of Busselton DTPS No. 20 (Canal Rocks Pty Ltd 2007).

The LNRSPP (LUS 3.2 - 3.4) states that the PRPA can be in public ownership or retained in private ownership and provides incentives for retention of the land in private ownership with conservation covenants attached.

As part of the subdivision process for the proposed development, a number of super lots will initially be created. With respect to the PRPA it is anticipated that this portion of Location 413 will become part of a super lot. As previously mentioned in Section 5.2.5, with respect to the PRPA, the landowner has five options, as follows:

1. Retain the PRPA as a private rural dwelling lot;
2. Vest the PRPA as a Shire reserve;
3. Annexe the PRPA area to the Leeuwin-Naturaliste National Park;
4. Cede the PRPA to the National Trust as a conservation reserve; and
5. Retain the PRPA as a private conservation area attached to one or both resort sites.

The landowner proposes to donate the whole of the PRPA as a 'community conservation reserve' via the National Trust, possibly with ultimate management of the area by the Department of Environment and Conservation. This option has been selected on the basis of overall public benefit as part of the overall plan. If the development of the remainder of Location 413 were not

to proceed in accordance with the draft DGP or an agreed amended plan then this option is likely to be reconsidered

It is anticipated that a 'positive' covenant will be established over the privately owned 'transition area' between the resorts and the PRPA prior to the title being created. A positive covenant differs from a standard covenant in that standard covenants generally say what cannot happen either on or to the covenanted land (eg clearing shall not take place). Positive covenants, while still listing what cannot occur, go further by stating what shall happen (eg implement rehabilitation in keeping with an approved management plan and maintain thereafter). Similar types of positive covenants are currently in place in Injidup, Gnarabup and with the first of the National Trust positive covenants being implemented at Cowaramup.

It is anticipated that the Shire of Busselton will be a benefiting party for the conservation covenants. A suite of conditions will be attached to the development of the Resort precinct that will be required to be implemented to the satisfaction of the Shire. The covenant will be legally enforceable by conditions of subdivision approval that will be to the Shire or the DEC or both. Initial discussions with the Shire indicate that the for the Area to form part of the grounds of the Resort that the Shire will require controlled public access through the lot, and this will be enforced through an easement *en gross*. To enable the Shire to fund the responsibility for ensuring conditions are met, Specified Area Rates will be imposed across the whole of the proposed development.

Investigations undertaken as part of the visual amenity study included describing and quantifying the landscape character and values, identifying and defining significant landscape features and their boundaries.

Coastline

Location 413 is bounded on its seaward side by a generally rocky coastline. The coastline consists of two distinct sections: a rocky granite headland to the west and in the western half of the northern boundary, and a sandy beach in the eastern half of the northern boundary. The existing foreshore reserve varies in width from 15m–120m as measured from the line of permanent vegetation. The coastal foreshore area in proximity to Location 413 is contained within Crown Allotment 5043 located adjacent to the north/northwest of Location 413 and Crown Allotment 5044 lying due north of Location 364 that contains the Canal Rocks Beach Resort (Figure 2). The reserve is narrowest near the north-west corner of Location 364 (Figure 1). In this location the reserve consists of a 6m wide sealed road, approximately 9m of sparsely vegetated dunes and a sandy beach.

Coastal Stability Studies

The following is an abridged version of the coastal stability studies undertaken and reported by MP Rogers and Associates - Coastal and Port Engineers for Location 413. The complete report is included as Appendix 8: *Smiths Beach Location 413 Coastal Stability Study* (MP Rogers and Associates 2005) in the volume of technical appendices.

Geotechnical Investigations

In August 2000, MP Rogers and Associates – Coastal and Port Engineers (MRA) completed a coastal stability study for the project area (MP Rogers and Associates 2000). As part of the investigation rock exploration drilling was carried out to assess the level of rock near the coastal road, and the recommended setback distance to development was calculated to provide protection from coastal erosion in the coming 100 years. At that time it was noted that the coastal road was vulnerable to coastal erosion.

Since 2000 the State Government has released State Planning Policy No. 2.6 – *State Coastal Planning Policy* (SCPP) which provided recommended criteria to assess the appropriate setback to development along the Western Australian coastline (Western Australian Planning Commission 2003). Consequently the initial setbacks recommended by MRA were required to be re-assessed in keeping with the SCPP.

More recent investigations undertaken in the area by MRA suggest that there may be adequate rock seaward of the existing road to protect it from coastal erosion (BBG 2003; MP Rogers and Associates 2003). Four hand augering holes were undertaken confirming the presence of bedrock under the beach, dunes and coastal road to the northeast of the site.

The 2005 modelling and reporting for the Coastal Stability Study is included as Appendix 8.

Severe Storm Sequence (S1)

Severe storm events have the potential to cause increased erosion to a shoreline, through the combination of higher, steeper waves generated by sustained strong winds and increased water levels (MP Rogers and Associates 2005). MRA used the SBEACH model to estimate severe storm erosion by modelling three repeats of a storm experienced in Fremantle in July 1996 that have been agreed by the WAPC and DPI. Due to the location and relative exposure of the site, MRA believes that storm conditions offshore from Smiths Beach are more extreme than those at Fremantle and consequently the July 1996 storm was factored up to meet the estimated 100 year ARI storm at the site (MP Rogers and Associates 2005).

The figures produced from the modelling indicate that the rock underlying the sandy beach would provide adequate protection for the existing coastal road from coastal erosion following the severe storm sequence.

Historical Shoreline Movement Trend (S2)

To estimate the long-term shoreline movement trend near the project area, controlled photogrammetry was undertaken to plot the position of the coastal vegetation line from aerial photography. An analysis of aerial photographs available for the area was undertaken by MRA and these indicated that there has been no significant erosion or accretion trend over the 48 years from 1955-2003 (MP Rogers and Associates 2005). Based on the shoreline analysis undertaken, MRA concluded that the beach to the northeast of Location 413 is believed to be stable and does not exhibit a long-term erosion trend. The presence of rock underlying the beach in this area is also believed to provide additional protection to the shoreline.

Sea Level Rise (S3)

The Intergovernmental Panel on Climate Change has presented various scenarios of possible climate change and the resultant sea level rise in the coming century. The SCPP recommends estimating sea level rise based on the mean of the median model of these predictions resulting in a predicted sea level rise of approximately 0.38m.

In order to model the effect of sea level rise on the coastal road, the SBEACH profiles were run to simulate an eroded beach (following sea level rise), with the rocky shoreline exposed. The results of the SBEACH runs show no further erosion of the coastal dune. The model indicates that the underlying rock found during geotechnical investigations at Smiths Beach would be sufficient to protect the existing coastal road in the event of the projected rise in sea level (MP Rogers and Associates 2005).

The existing coastal road has been proposed to be dedicated as a public road reserve. SBEACH modelling suggests that in the area of least distance between the coastal vegetation line and the existing road, there is approximately 3m buffer remaining following the severe storm sequence. The modelling therefore suggests that in this area the proposed coastal reserve should not be located any further seaward than the edge of the existing bitumen (MP Rogers and Associates 2005).

Wave Overtopping

MRA also used the estimated peak nearshore water levels and wave heights, and the slope of the remaining dune taken from SBEACH modelling, in order to calculate wave overtopping onto the existing coastal road during the severe storm sequence. The average overtopping rate was calculated to be 0.9 L/s/m. This measurement indicates that during the severe storm sequence, wave overtopping makes the coastal road in this area unsafe for vehicles.
The wave overtopping rate onto the road was also tested for the estimated 30 year ARI event that was approximated at Cape Naturaliste and the current day 30 year ARI water level taken from Bunbury. The July 1996 storm was factored to meet these conditions, and run with the eroded Profile 2 to estimate the nearshore water levels and wave heights. The average overtopping rate during the 30-year event was estimated to be approximately 0.8 L/s/m indicating that the coastal road near SBEACH Profile 2 would be a safety hazard for vehicles during a severe storm event. MRA recommended that alternate access to all areas of Location 413 be provided to ensure safe access to the Lot during severe storm events and that all services to development on Location 413 be located along the alternate road access (MP Rogers and Associates 2005).

The Draft DGP for Location 413 indicates that the northeastern corner of the Lot will be used for POS. There is no private development proposed within 30m of the HSD in this area (Canal Rocks Pty Ltd 2007).

Rocky Coastline to North-east and West

The majority of the seaward boundary of Location 413 is surrounded by rocky coastline comprised of durable rock that would not be expected to suffer erosion following the severe storm sequence (MP Rogers and Associates 2005).

On the western boundary of the project area there is approximately 50m buffer to the Lot from the rocky shoreline. The setback in this area is believed to meet the requirements of the SCPP and no further assessment was undertaken. The Draft DGP indicates a large conservation covenant on the western side of the project area with development setback over 100m from the rocky shoreline. MRA recommended that should buildings be situated in this conservation area in the future that an assessment of wave overtopping may be required (MP Rogers and Associates 2005).

Development Setback Assessment (August 2005)

The State Government released the State Coastal Planning Policy (State Planning Policy No. 2.6) in 2003. The Policy objectives are to:

- protect, conserve and enhance coastal values, particularly in areas of landscape, nature conservation, indigenous and cultural significance;
- provide for public foreshore areas and access to these on the coast;
- ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities; and

- ensure that the location of coastal facilities and development takes into account coastal processes including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria.

With respect to coastal setbacks the Policy provides guidelines to assist in determining the physical setback requirement to protect facilities on the coast from the impact of coastal processes over a 100-year time frame. The formula for determining the setback depends on the type of coastline (eg sandy or rocky), and the short and long-term coastal processes that are happening or may happen in the future (i.e. sea level rise due to the greenhouse effect).

Based on site-specific investigations carried out on the coastline of Location 413, MP Rogers and Associates (2005) recommended a minimum setback distance to development based on coastal stability, impact of severe storms, allowance for climate change and a factor of safety.

These set-back distances would provide a low risk of private development being threatened by future coastal erosion. Facilities that can have an acceptably higher risk of damage from erosion such as carparks, toilets, paths, and lawn areas could be developed within the set-back distance but not closer than 7-11m from the HSD.

Based on site-specific investigations carried out on the coastline of Location 413, MP Rogers and Associates (2005) recommended a minimum setback distance to development based on coastal stability, impact of severe storms, allowance for climate change and a factor of safety. Table 15 indicates the recommended setbacks for the areas of coastline adjacent to Location 413.

TABLE 15
RECOMMENDED MINIMUM SETBACKS

Region	Recommended Setback
Beach in north-east corner of Lot	30
Rocky shoreline to the north-east	30
Rocky shoreline to the west	50

The setback distances should be measured from the +3m AHD contour line or the limit of coastal vegetation whichever is higher. The report noted that the draft DGP showed a small area of the proposed development that did not meet the recommended setback requirements.

The recommended setback was subsequently approved by the DPI in March 2006.

Development Setback Re-assessment (May 2006)

The Shire of Busselton has subsequently requested that a section of the setback be re-assessed using a different interpretation of the State Coastal Planning Policy (SCPP). In particular, the Shire requested that the S3 (sea level rise) component for the beach to the northeast of Location 413 be re-assessed. MRA personnel met with the Shire's consulting engineers (GHD) to discuss the re-assessment. GHD requested that the assessment be completed using a different interpretation of the SCPP.

MRA decided that the S3 allowance could not be specifically revised without completing additional SBEACH modelling and revising the S1 allowance. The full report of this re-assessment in included as Appendix 9: *Location 413 Smiths Beach – Re-assessment of Coastal Setback* in the volume of technical appendices and the following is an abridged version of the main findings of that report (MP Rogers and Associates 2006).

Severe Storm Sequence (S1)
SBEACH profiles were revised and re-run with three runs of a severe storm experienced in Fremantle in July 1996 as previously discussed. GHD requested that only the previous 'Profile 1' be re-run with a reduced rock profile to more accurately reflect the entire stretch of beach. The reduced rock profile removed the rock in the nearshore zone. The profile was then run to estimate the recession due to a severe storm sequence. MRA was requested to measure the S1 allowance as the total recession of the MSL contour and this was calculated as 18m. It is important to note that the total recession of the MSL (0mAHD) contour at the end of the storm sequence is not necessarily the same as the maximum recession included in the modelling report.

Sea Level Rise (S2)

The entire storm sequence modelled was increased by 0.38m to estimate the recession due to the severe storm sequence at the end of the planning period (100 years) assuming global sea level does rise 0.38m. To assess further erosion, the final eroded profile from the model run in S1 was input as the initial profile and the model run with the elevated storm sequence. The run indicates further erosion of the dunes due to increased water levels.

GHD advised that the recession due to a possible sea level rise should be measured at the MSL contour and on this basis the modelling run indicates a total of 9m recession of the MSL due to possible sea level rise. The maximum recession during the run was calculated as 13m and MRA were instructed to use this maximum recession as S3.

Calculated Setback

Using the criteria and methods as outlined in Appendix 9, the calculated setback is 51m as presented in Table 16. This setback should be measured from the HSD. At Smiths Beach this should be taken as the coastal vegetation line or the 3mAHD contour, whichever is the higher.

TABLE 16
MEAN SHORELINE MOVEMENT AND TOTAL ACCRETION/EROSION VOLUMES (1976-2003)

Factor	Profile 1 reduced rock profile
S1	18m
S2	20m
S3	13m
Calculated Setback	**51m**

The setback calculated using this interpretation of the SCPP is greater than the recommended setback previously calculated by MRA and approved by the DPI (2006). While the proponent disagrees with the increased setback and the rationale for its calculation put forward by the Shire, it notes that the proposed DGP has adopted a design layout which accommodates the larger setback.

Foreshore Reserve

As part of the investigations and management plans prepared for the Draft DGP, the Shire of Busselton requested that the proponent prepare a Foreshore Management Plan (FMP) for the proposed development of Location 413, to ensure integration of the project with the existing coastal heath characteristics of the site, appropriate beach access and the protection of the foreshore environment.

The draft FMP prepared by EPCAD and ATA Environmental was based upon investigations undertaken and reports prepared by ATA Environmental with contributions by EPCAD Pty Ltd (2006), Mackay Urban Design and MP Rogers and Associates (2005a; 2005b). The draft FMP is included as Appendix 2: *Sussex Location 413 Smiths Beach, draft Foreshore Management Plan*(ATA Environmental and EPCAD 2006) in the volume of technical appendices. The draft FMP can only be approved concurrent with or subsequent to approval of the DGP.

One of the purposes of the draft FMP is to examine the foreshore reserve/development interface through an examination of characteristics such as landform and vegetation, existing land uses, proposed land uses, potential recreational demands, infrastructure requirements and anticipated environmental and planning proposals that will affect the terrestrial and marine environment. In addition, the draft FMP has been prepared to provide clear guidelines for the future management of the reserve adjoining Location 413 and to ensure sustainable use of the coastal environment following the development of Location 413. It is anticipated that the management measures proposed in the draft FMP may require refinement in terms of detailed planning and specifications as the development of the adjoining landholding also proceeds.

The primary objective of the draft FMP is to collate the existing and future biophysical and recreational values of the Foreshore Reserve and to determine appropriate strategies for the management of the beach environment. In order to achieve this, the following key objectives have been addressed in the draft FMP:

- To describe the predevelopment state of the foreshore environment in the immediate vicinity of the proposed development including degraded areas;
- To create an enlarged coastal reserve in which a surf club/multi-purpose community facility can be located;
- To identify appropriate areas for controlled beach access, a coastal walk trail together with fencing and rehabilitation measures;
- To define rehabilitation and management strategies;
- To provide for the ongoing maintenance and management of the foreshore area;
- To protect, wherever practical existing significant vegetation; and
- To prioritise recommendations for the future use and management of the foreshore area.

The draft FMP details the scope of work that the proponent commits to fund and implement within that portion of Crown Allotment 5043 located to and abutting the north of Location 413 and identifies indicative work that has been committed to in the approved FMP prepared on behalf of the landowner of adjoining Location 364 (RPS Bishaw Bowman Gorham 2004). The FMP will therefore coordinate/integrate with the FMP for Location 364 resulting in a significant upgrading of the full extent of the northern foreshore.

As part of the detailed planning for the foreshore area, four foreshore planning scenarios of the development/beach interface area were prepared by Mackay Urban Design on behalf of the proponent and presented to the DPI for their review and comment. This consultation process was undertaken to ensure that the identification and use of the Foreshore Reserve took into account consideration of ecological values, landscape, seascape, visual amenity, public access, public recreation and safety to lives and property were in keeping with the SCPP 2.6 section 5.1 (viii).

The outcome of this consultation process resulted in 'Scenario 4' becoming the accepted foreshore planning scenario that would guide the foreshore redevelopment and rehabilitation (refer Figure 11).

The DPI provided comment to the proponent that some of the aspects of Scenario 4, which complement the intent of SPP2.6, included:

- Public access to Smiths Beach and the proposed foreshore reserve is well accommodated - 5.1(iii), 5.1(vii);

- Public recreation space is provided for with the increased foreshore area and its location within easy access to the beach which will provide for significant public recreational benefit (at subdivision stage, planning for this area should be further refined and designed through an appropriate foreshore management plan) - 5.1(vii), 5.1(x);

- The relocation of the existing road/parking area landward ensures that this foreshore infrastructure is positioned to avoid risk of damage from coastal processes thus decreasing the likelihood for physical structures to protect the road from potential damage caused by coastal physical processes in the future - 5.1 (xx), 5.1(xxii);

- Clear demarcation of the foreshore area through the realignment and downgrading of the existing non-gazetted access road to the southern boundary of the new foreshore parkland clearly delineates proposed public and private land - 5.1(ix);

- The realignment of the road and the provision of 172 parking bays on the landward boundary of the proposed coastal foreshore reserve will improve and formalise public access to both the new foreshore parkland and the beach - 5.1(vii);

- The proposed new *cul de sac* road for beach access and parking terminates at the end of the intensive development component of the proposal and so will assist and complement the conservation status of the land to the west which includes access to the Cape to Cape walking track;

- The car parking area adjacent to the western boundary of Lot 1 (formerly Location 364) attempts to resolve the difficult interface between the existing non-compliant development and this proposal;

- The safety of beach and foreshore users is improved through the co-location of the new foreshore parkland on the same side of the road as the beach - 5.1(iii); and,

- An opportunity is provided for future coastally dependent infrastructure such as a surf and sea rescue or a surf life saving facility within the new foreshore parkland area without the impediment of a road between the facility and the beach thus addressing public recreation needs and safety to lives - 5.1(vii), Schedule 1 (G).

It should be noted that the location of the surf lifesaving facility as shown on Figure 11 is indicative only as the location has received *in principle* support from DPI but has not been agreed upon by the Shire.

5.7.4 Potential Impacts

The increased number of residents and tourists in the area as a result of the proposed development will increase the potential usage of Smiths Beach and surrounding coastline and may result in deleterious impacts on the associated coastal landforms and vegetation.

5.7.5 Management Strategies

A draft FMP has been prepared by the proponent in consultation with the DPI, the DEC and the Shire of Busselton (refer to Appendix 2). If approved, the commitments made by the proponent within the FMP as being their responsibility will be implemented, as a condition of subdivision approval.

The draft FMP for the Smiths Beach foreshore reserve includes the following elements:

- Comprehensive weed eradication programme;
- Revegetating and restoring foreshore POS adjoining conservation areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access;
- Provision of public facilities;
- Fire management including provision of fire hydrants;
- Encouraging community involvement and awareness promoting control of pets (i.e dogs);
- Water conservation principles;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;
- Progress and compliance reporting; and
- Timing and implementation schedule.

Refinement of management measures and facilities during the subdivision or development application process will be undertaken in consultation with the Shire of Busselton with advice from the DPI and the DEC.

A Vegetation Rehabilitation and Management Plan will be prepared for the Principal Ridge Protection Area by the proponent, prior to the land being excised into a super lot.

The Plan will include, but not be limited to:

- Weed eradication programme;
- Revegetating and restoring with appropriate indigenous flora;
- Controlling vehicle and pedestrian access;
- Soil and plant source material hygiene;
- Fire management;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;
- Progress and compliance reporting; and
- Timing and implementation schedule.

5.8 Karst

5.8.1 EPA Objective

To maintain the integrity, ecological functions and environmental values of karst.

5.8.2 Applicable Legislation, Criterion or Guidance

- Environemental Protection Authority (1999) *Environmental protection of Cape Range Province* Position Statement No. 1.

- Environmental Protection Authority (2003) *Consideration of Subterranean Fauna in Groundwater and Caves during Environmental Impact Assessment in Western Australia* Guidance Statement No. 54.
- Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy.*

5.8.3 Existing Environment

The term "karst" has a range of definitions that vary depending on the author and their scientific background. Often the term is used to describe landscapes that are commonly characterised by closed depression (sinkholes), subterranean drainage and both horizontal and vertical caves. However, numerous authors use the term to describe any surficial or subterranean features that are formed by dissolution of limestone or other soluble rocks. The scale of these features can vary from millimetres to hundreds of metres or more and can include small underground voids or cavities, caves, dolines, collapsed caves and sculpting of limestone surfaces.

Karst features such as solution sculpting are common on the surfaces of the coastal limestone along parts of the Western Australian coastline including the Leeuwin Block. Solution sculpting is produced by dissolution at the surface of the limestone either from direct rainfall or by water percolating through the soil profile to a point where it intersects the limestone. Carbon dioxide in the atmosphere and from pore spaces in the soil profile (and to a lesser extent organic acids from within the soil profile) acidify the meteoric waters (rainfall and water percolating down through the soil profile), thus aiding dissolution of the limestone.

Larger karst features such as caves, collapsed caves, and subsurface cavities are less common in the coastal limestone, although there are a number of well-known caves in the limestone located between Cape Naturaliste and Cape Leeuwin. These larger features can be formed in a variety of ways and may be the product of either phreatic (at or below the water table) karst processes or vadose (above the water table) karst processes.

The size of potential phreatic or vadose karst features and thus their significance in terms of constraints to development varies according to a variety of factors, but is ultimately governed by the thickness of the limestone formation in which they are formed.

A study of Location 413 at Smiths Beach was undertaken by Logiden Pty Ltd (Dr Brian Logan) to determine what geological investigations may be required to provide an assessment of risks and problems related to any potential karst features on the site. The study included an analysis of aerial-photographs and geological maps, and a site visit involving a traverse of the property on 17 November 2005.

According to Dr Logan "the survey revealed that in the Lot, most of the land surface is granitic gneiss and/or decimeter-to meter-thick colluvial soil irregularly over this basement. There is a small area in the south-central area where a layer of sandy, calcareous eolianite (limestone) overlies the basement rock. The thickness of the eolianite layer here is in the order of a few decimeters to a meter and it contains a few decimeter-scale sinkholes".
Dr Logan found that "it is probable that the observed eolianite layer is the feather–edge of a large calcareous eolianite (limestone) dune that rises to a crest at 120m AHD about 1km south of the property (Leonard 1991; Yallingup, 1:50000 Environmental Geology Series). The dune crestal area to the south contains an 80m-thick karstic limestone section over granite gneiss".

The survey undertaken by Dr Logan found no significant karst features and no indicators of concealed karst features. The limestone that was observed on the property was too thin to support any significant karst features and as a result, Dr Logan concluded that "in the boundaries of the property, karst risks are negligible".

5.8.4 Potential Impacts

No impacts are envisaged as there have been no significant karst features identified and nor are any suspected, since the limestone outcrop found on the property appears too thin to support such features.

5.8.5 Management Strategies

There are no management strategies proposed as no significant karst features have been identified nor are suspected.

5.9 Surface Water Quantity and Quality

5.9.1 EPA Objective

To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.

5.9.2 Applicable Legislation, Criterion or Guidance

- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000a) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality,* National Water Quality Management Strategy, October 2000.
- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000b) *Australian Guidelines for Water Quality Monitoring and Reporting,* National Water Quality Management Strategy, October 2000.
- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000c) *Australian Guidelines for Urban Stormwater Management,* National Water Quality Management Strategy, 2000.
- Department of Environment (2004) *Stormwater Management Manual for Western Australia*, February 2004.
- Department of Environment (2005) *Decision Process for Stormwater Management in W.A.*
- Shire of Busselton District Town Planning Scheme No. 20

5.9.3 Existing Environment

No wetlands are mapped as occurring on the property according to either the Wetland Atlas mapping of Hill *et al.* (1996) or the *Swan Coastal Plains Wetlands Geomorphic dataset* GIS as depicted on the Western Australian Land Information System (WALIS) website.

An old farm dam built by the previous owners is present within the proposed development area, in the northern part of the property adjacent to the former caravan park. This dam is approximately 10m in diameter at its widest point and approximately 1m deep. Discussions with the previous owners have determined that the depression in which the dam is located is man-made, having been excavated in 1962 to provide water for livestock.

The dam is set in granitic bedrock and very little soil is present either within the dam or immediately adjacent. Dryland vegetation occurs around its fringes. It is probable that it receives water by the seepage of rainwater along the interface between soil and bedrock.

The Gulgunyup Brook is a seasonally flowing stream located approximately 200m to the northeast of the site at its closest point. The Brook flows in a northwesterly direction past the site before meandering to the northeast prior to discharging into Smiths Beach.

Stormwater Management

Stormwater management is proposed to be undertaken consistent with water sensitive urban design (WSUD) practices and meet the key objectives and criteria as detailed in the *Stormwater Manual for Western Australia* (Department of Environment 2004).

A Stormwater Management Plan, prepared for the site by Wood and Grieve Engineers (2006) that reflects the use of WSUD was submitted to the DoW (then Department of Environment) for their review. The Department has considered the draft plan and provided officer level advice to the proponent. More detailed work will be required as part of the planning approval process. The stormwater management plan is included as Appendix 10: *Proposed Development on Loc 413 Smiths Beach Report on Stormwater Management* (Wood and Grieve Engineers 2006) in the volume of technical appendices.

Local stormwater management is proposed to be undertaken consistent with water sensitive design practices. The stormwater drainage system will be designed using a major/minor approach. The minor drainage system is defined as the system of underground pipes, swales, kerbs, gutters etc. designed to carry runoff generated by low frequency ARI storms, typically less than five year ARI. The major drainage system is defined as the arrangement of roads, drainage reserves, compensation/infiltration basins and open space planned to provide safe passage of stormwater runoff from extreme events which exceeds the capacity of the minor system.

Dependent on local conditions, stormwater runoff generated by the impervious areas of the road reserve will be collected in gully or side entry pits and then flow into a local piped (or swale) drainage system. Compensation of flow will be achieved through the provision of detention storage areas.

Consistent with principles and objectives of the *Decision Process in Stormwater Management in WA*, stormwater will be required to maintain 1 in 1 year ARI event post development discharge volumes and peak flow rates at predevelopment conditions all parts of the catchment. Roof drainage and road drainage will therefore be connected to soakwells to promote at-source infiltration, except where local site conditions do not allow this to occur. The use of bottomless manholes for infiltration of road drainage will be encouraged consistent with DoE/WRC stormwater management principles.

The proposed water quality management approach for the Location 413 includes both non-structural controls and structural controls as described in the *Stormwater Management Manual* (Department of Environment 2004) such as:

- Non Structural Controls:
  - Planning practices (POS locations and configuration, WSUD promotion)
  - Construction practices (construction sites, soil amendment)
  - Maintenance practices (street sweeping, stormwater system, POS areas)
  - Educational and participatory practices (capacity building programmes, community education)

- Structural Controls:

  - Retention and infiltration of frequent events where possible (soakwells, swales, bottomless manholes)

- Conversion of existing trapezoidal drains to living streams (WC and local authority drains)
- Creation of ephemeral retention/detention areas within community park/wetland buffers/POS areas
- Use of Park Avenues for overland conveyance, infiltration, and water quality treatment (bioretention)
- Application of GPT's for outlets to sensitive environments

5.9.4 Potential Impacts

Gunyulgup Brook is located approximately 200m to the north east of the proposed development discharging directly into Smiths Beach. There is potential for this discharge to impact on human health.

5.9.5 Management Strategies

In relation to water supply impacts to the existing Dunsborough Town Water Supply, the Water Corporation advises that these impacts have previously been considered in the licensing of the facility and are therefore not relevant to the proposed development.

A Stormwater Management Strategy (Appendix 10) has been prepared for the project area consistent with the *Stormwater Manual for Western Australia* and includes:

- Best Management Practice for stormwater management;
- At-source pollutant/nutrient input minimisation;
- Water conservation strategy to minimise ex-house potable water use; and
- Monitoring programmes to compliance reporting mechanisms.

Prior to commencement of site works, an Integrated Water Management Plan incorporating the principles and best management practices described in the stormwater strategy and the *Stormwater manual for Western Australia* will be prepared to the satisfaction of the DoW and Shire of Busselton. The Plan will be implemented during and post-construction.

5.10 Groundwater Quality

5.10.1 EPA Objective

To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting Statutory requirements and acceptable standards.

5.10.2 Applicable Legislation, Criterion or Guidance

- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000a) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, National Water Quality Management Strategy, October 2000.
- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000b) *Australian Guidelines for Water Quality Monitoring and Reporting*, National Water Quality Management Strategy, October 2000.
- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000c) *Australian*

Guidelines for Urban Stormwater Management, National Water Quality Management Strategy, 2000.

- Department of Environment (2004) *Stormwater Management Manual for Western Australia*, February 2004.
- Department of Environment and Swan River Trust (2005) *Decision Process for Stormwater Management in W.A.*
- Australian Drinking Water Guidelines 2004.
- *Rights in Water and Irrigation Act 1914.*
- *Metropolitan Water Supply, Sewerage and Drainage Act, 1909, or Country Towns Sewerage Act, 1914.*
- Western Australian Planning Commission (2003) *State Planning Policy 2.7 – Public Drinking Water Source Protection.*
- Shire of Busselton District Town Planning Scheme No. 20

5.10.3 Existing Environment

The occurrence of groundwater on the site and in adjacent areas is an important consideration for water supply and effluent disposal. A drilling programme undertaken on site failed to detect any significant groundwater resource. Of the 35 holes drilled over the site for the determination of soil depth, groundwater was encountered at only two locations. This occurred in thin lenses of coarse quartz sands overlying bedrock usually at depths greater than 7m beneath the ground and do not represent a significant groundwater resource. This situation is not unusual for land located west of the Leeuwin-Naturaliste Ridge where groundwater availability is very patchy (Tille and Lanztke 1990).

As part of the initial investigations for the Draft DGP, previous work has been carried out to investigate various options relating to effluent management. These options included:

- Connection to the existing Dunsborough Wastewater Treatment Plant which employs effluent reuse by woodlot irrigation;
- Dedicated disposal facility for Smiths Beach with effluent used for irrigation;
- On-site effluent disposal;
- Disposal by infiltration basins;
- Ocean disposal; and
- Disposal to surface streams.

To select the most appropriate effluent collection, treatment and disposal system, a number of engineering and environmental studies were completed which compared options in light of sustainability issues. In 1998 Bowman Bishaw Gorham in conjunction with Wood and Grieve Engineers undertook a study to evaluate logical solutions for effluent disposal for the project area. The study looked at a variety of solutions in terms of environmental parameters, suitability, performance, cost and energy consumption.

The finding of a detailed investigation on a triple bottom line basis was that connection to the existing state of the art wastewater treatment plant at Dunsborough was the most effective method of effluent treatment and disposal. This disposal method involves water reuse on a large scale, which is consistent with the aims of the State Water Strategy (Wood and Grieve Engineers 2005b). A copy of the report was forwarded to the Water Corporation for their review and ratification.

The Water Corporation has subsequently undertaken their own study and reached a similar conclusion. Parameters looked at by the Water Corporation included environmental, flora and fauna issues, Aboriginal heritage and engineering and cost issues. The conclusion of the investigation has been to discharge effluent directly to the WWTP at Anniebrook. This solution avoids the odour issues that can arise in discharging to a gravity sewer, and also has the potential to

enable sharing of resources and infrastructure with other potential developments in the area. Figures 12a and 12b show the proposed route for the sewer alignment from the project area to the Water Corporation's WWTP at Anniebrook. The proposed alignment does not form part of the SEA formal assessment process and will be subject to a separate referral under s.38 of the Environmental Protection Act 1986 if the route is likely to have a significant impact on the environment.

An Effluent Disposal Management Strategy has subsequently been prepared for Location 413 and is included as Appendix 11: *Loc 413 Smiths Beach Development Wastewater Collection and Effluent Disposal Report* in the volume of technical appendices (Wood and Grieve Engineers 2005b). The Strategy includes:

- Provision of reticulated sewerage for the entire development; and
- Provision for the connection of services to the Water Corporation's Dunsborough WWTP.

The system would consist of the normal elements/components namely:

- Pipework reticulation;
- Pumping station and rising main;
- Treatment system; and
- Disposal of treated effluent.

Each of these components would be designed in accordance with the Office of Water Regulation requirements and approved prior to implementation. The Water Corporation have been granted the license to supply water and sewerage infrastructure for the area.

The implementation of reticulated sewer and disposal of treated effluent to an approved Water Corporation WWTP is part of the proponent's commitment to implementing Best Management Practices in environmental management for the project area.

Currently the adjoining redeveloped caravan park on Location 364 has installed on-site effluent disposal as part of the redevelopment of that site. Both the Shire of Busselton and the WAPC have required that in the event that the proposed development of the Location 413 proceeds, then Location 364 will be required to be retrofitted/connected to reticulated sewer by the owners of that property. The requirement to connect to deep sewer will therefore reduce the potential for groundwater pollution in the general area.

The DoW has advised the proponent that where there is inconsistency between the Shire of Busselton's Drainage Standards, and Australian Guidelines and Department of Water Policy/Guidelines, then the latter shall take precedence.

The Effluent Disposal Management Strategy is included as Appendix 11 in the volume of technical appendices (Wood and Grieve Engineers 2005b).

5.10.4 Potential Impacts

Increased levels of nutrients, pesticides, pathogens, irrigation and stormwater run-off may impact upon groundwater and marine water quality of the surrounding area.

5.10.5 Management Strategies

A Stormwater Management Plan (Wood and Grieve Engineers 2006) has been prepared for the project area consistent with the *Stormwater Manual for Western Australia* and includes:

- Best Management Practice for stormwater management;
- At-source pollutant/nutrient input minimisation;
- Water conservation strategy to minimise ex-house potable water use; and
- Monitoring programmes to compliance reporting mechanisms.

The Plan will be implemented during the construction phase of the proposed development.

Prior to commencement of site works, an Integrated Water Management Plan incorporating the principles and best management practices described in the stormwater strategy and the *Stormwater manual for Western Australia* will be prepared to the satisfaction of the DoW and Shire of Busselton.

An Effluent Disposal Management Strategy has been prepared (Wood and Grieve Engineers 2005b) and includes:

- Provision of reticulated sewerage for the entire development; and
- Provision for the connection of services to the Water Corporation's Dunsborough WWTP.

The Plan will be implemented during the construction phase of the proposed development.

Prior to the commencement of any dewatering, construction contractors will be required to apply for and obtain from the DoW a 'Licence to Take Water'. All dewatering will be carried out in accordance with the conditions of this licence.

5.11 Air Quality – Dust and Particulates

5.11.1 EPA Objective

To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting accepted guidelines, standards and criteria.

5.11.2 Applicable Legislation, Criterion or Guidance

- Western Australian Planning Commission: State Planning Policy No. 4 - State Industrial Buffer Policy (1997) and Draft State Industrial Buffer Policy (2004).
- Environmental Protection Authority (2000b) *Prevention of Air Quality Impacts from Land Development Sites.* Guidance Statement No. 18, Environmental Protection Authority, Perth.
- Environmental Protection Authority (2004a) *Separation Distances between Industrial – Residential Buffer Areas.* Draft Guidance for the Assessment of Environmental Factors, No. 3, June 2004.
- *Environmental Protection Act 1986*
- National Environment Protection (Ambient Air Quality) Measure.
- National Environment Protection (Air Toxics) Measure (2004).

5.11.3 Existing Environment

The sources of dust present in the atmosphere are numerous and range from point sources such as industrial activities, to rural activities or diffuse natural sources. In the Perth Metropolitan Region, major sources of atmospheric dust include vehicle emissions and solid fuel heaters (DEP 2000).

Dust is considered to be fine solid particles in the size range from 0.1 to 100 microns (μ)

(1 micron = 0.001mm). Deposited matter and larger fraction dust (>50μ) are commonly identified as a neighbourhood nuisance. These may result from natural processes, or anthropogenic (man generated) activities such as may occur during land development. Dust particles less than 10μm are of concern as they have a greater capability to penetrate the lungs and are often generated by mechanical grinding activities in industry and emissions from internal combustion engines.

Fine particulate matter generated in large quantities in urban centres is increasingly being identified as posing a significant health risk to humans. The increasing awareness of the effect of airborne particles on health has seen a general move away from concern and measurement of TSP (Total Suspended Particulate) to PM_{10} (sub-10μ particles). Several standards for even smaller particles, for example $PM_{2.5}$ (sub-2.5μ particles) have been set or are currently being considered.

In recognition of the fact that land development sites can generate wind-borne dust which may adversely impact on nearby and downwind land uses, the EPA has released guidelines for the prevention of dust (and smoke) from such sites (EPA Guidance Statement No. 18: Prevention of Air Quality Impacts from Land Development Sites 2000). This guidance statement sets best-practice standards for land clearing in relation to air quality impacts.

The main objectives of the guidance statement are:

- To clearly define the role and responsibilities of developers, engineers, contractors, local government and the DEC in the control of dust and smoke from land developments.
- To provide a procedure whereby the potential of a development site to cause pollution is assessed before site works start.
- To put in place measures and contingency arrangements to minimise dust leaving the site during and after development of the site.

The guidelines identify factors that should be considered and describes appropriate measures to stabilise disturbed areas during development in order to minimise the generation of dust and potential for adverse impact on surrounding land users.

All new land development proposals that have the potential to create dust will be assessed by the EPA on their commitment to adequately address management strategies in an attempt to restrict the creation of dust. Assessment will be undertaken in accordance with the information contained within the guidance statement.

Potential air quality impacts will also include the generation of dust and increased carbon monoxide (CO) and/or other emissions levels during construction activities, and increased greenhouse gas emissions levels as a result of additional traffic generation following full construction of the road extension.

5.11.4 Potential Impacts

The proposal may generate dust from earthworks, clearing of vegetation and vehicle emissions during construction. Impacts may potentially extend beyond the project area boundaries.

TSP is typically associated with adverse aesthetic effects rather than health effects. These particles tend to settle out on surfaces causing soiling and discolouration. Being larger particles, TSP settle from the atmosphere quickly, falling within a short distance of the source with a distribution dependant on ambient conditions (wind speed / direction) to determine impacted area.

Inhalable particles are associated with increases in respiratory illnesses such as asthma, bronchitis and emphysema, with an increase in risk related to their size, chemical composition and concentration. Particles in the PM10 size fraction have been strongly associated with increases in

the daily prevalence of respiratory symptoms, hospital admissions and mortality (NEPC 1998). Being fine aerosols, PM10 particles remain in suspension over extended periods, being removed largely by wet deposition.

5.11.5 Management Strategies

Dust management within the project area will need to comply with the requirements of Environmental Protection (Air Quality) Regulations, specifically EPA Guidance Statement No. 18 *Prevention of Air Quality Impacts from Land Development Sites* (EPA 2000b).

Vehicle emissions within the project area during the construction phase will need to comply with the Environment Protection and Heritage Council (EPHC) National Environment Protection Measures (NEPMs), Ambient Air Quality Measures, 1998 and National Environmental Protection (NEP) Air Toxics- Air Quality Measures, 2004 and other applicable guidance.

To ensure compliance with these regulations, issues relating to dust and particulates will be addressed in the Construction Management Strategy (Appendix 14) to be approved and implemented to the satisfaction of the DEC, and as a condition of subdivision approval.

The dust management element of the CMS will take into account seasonal influences and distance to sensitive premises and incorporating any or all of the following measures:

- where possible retaining vegetation;
- limiting the area of exposed soil;
- hydro-mulching or alternative effective stabilisation immediately following completion of bulk works;
- water to increase moisture in soil in sensitive or high traffic areas;
- minimising "fetch" distance;
- wind fencing;
- timing of earthworks (daily and seasonally);
- consideration of wind direction and strengths (eg sea breezes) when planning bulk earthwork 'cells';
- consideration of distance to and direction of sensitive locations (eg may construct closer to residents during time of year when dust not expected to be as much of a problem etc);
- appropriate shape/layout of earthworks area (boundary perpendicular to problem wind direction);
- staging of subdivision (need to consider dust in the early stages of planning, not just at time of construction); and
- site perimeter monitoring including sensory alarms or dial out capability.

By adopting a range of these measures on a site-specific basis, potential dust impacts arising from the development of the project area will be minimised.

5.12 Greenhouse Gases

5.12.1 EPA Objective

To minimise emissions to levels as low as practicable on an on-going basis and consider offsets to further reduce cumulative emissions.

5.12.2 Applicable Legislation, Criterion or Guidance

- Environmental Protection Authority (2002c) *Guidance Statement for Minimising Greenhouse Gas Emissions* Final Guidance Statement No. 12 October 2002.

- Western Australian Greenhouse Task Force (2004) *Western Australian Greenhouse Strategy.*
- Environmental Protection Authority (2004e) *Towards Sustainability.* Position Statement No. 6. Perth. August 2004.

5.12.3 Existing Environment

Since the pre-industrial era, human activities are known to have significantly increased the atmospheric concentrations of greenhouse gases with average temperatures today being about 0.7 degrees higher than 100 years ago. There have been significant changes in rainfall patterns, such as the decline in the south-west of Western Australia (EPA 2004).

The Third Assessment Report of the Inter-governmental Panel on Climate Change (IPCC) concluded that 'most of the warming observed over the last 50 years is attributable to human activity' (IPCC 2001). The modelling in the Third Assessment Report shows that the best case scenario of predicted increase in temperature, based on the most optimistic estimates of fossil fuel use reduction and cautious interpretation of the science, is a further 1.5 degrees by the end of this century. The model predicts associated changes in rainfall and sea level, as well as in the frequency and severity of extreme events. Even under this optimistic scenario, there is clear potential for serious impacts on human life particularly in agriculture and the pattern of settlement, and on natural systems such as forests and bushland.

The 1997 Kyoto conference saw recognition by leaders of the world community that climate change demands concerted political action. Under the Kyoto Protocol the developed world as a whole, which has been responsible for about 80 per cent of the human production of greenhouse gases from fossil fuels, is obliged to reduce emissions to 95 per cent of the 1990 level by the 2008-2012 period. Greenhouse gases covered by the Kyoto Protocol to the United Nations Framework Convention on Climate Change are carbon dioxide, methane, nitrous oxide, ozone, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. The major direct and indirect greenhouse gas emission relevant to the project area is carbon dioxide.

Australia has ratified the Framework Convention but not the Kyoto Protocol. During the recent United Nations Climate Change Conference in Montreal, more than 150 nations endorsed the need to extend the effective timeframe of the protocol. Whilst Australia did not support the motion, Australia's 1997 commitment to limit its emissions (up to 2012) to 108 per cent of the 1990 figure stands.

The National Greenhouse Strategy (Commonwealth of Australia 1998) provided some information as to the implementation of Australia's commitment within the Kyoto Protocol framework. Whilst the strategy currently does not define the apportionment of Australia's carbon 'budget' between States or between different activities, it is prudent for WA to contribute to the national effort to meet Australia's overall target.

The EPA's position with respect to greenhouse gas issues is detailed in the EPA's Guidance Statement No. 12: Minimising Greenhouse Gases (EPA 2002c). The Guidance reflects the intent of sustainability principles raised in the EPA's *Towards Sustainability'* Position Statement No. 6 (EPA, 2004e) where initiatives should take into account the relative importance and opportunities for reduction in various areas such as agriculture, manufacturing, commercial energy use, domestic energy use and transport. They should also adopt the simple principles that have guided the National Strategy, namely:

- the need to have a Greenhouse response which is tailored to Australia's national interests;
- the need to integrate Greenhouse considerations with other government commitments;

- the pursuit of Greenhouse action consistent with equity and cost effectiveness and with multiple benefits;
- recognition of the importance of partnerships between governments, industry and the community in delivering an effective Greenhouse response; and
- the need for action to be informed by research.

The use of efficient technology should be encouraged at all levels, from domestic appliances to major industrial production facilities. More efficient technology brings economic benefits as well as reducing emissions.

The pattern of development in urban areas has led to rapid growth in transport use. The EPA's Position Statement 'Towards Sustainability' establishes that a sustainable community should be organised around the principle of making the services people want readily accessible. Mobility is a second-order priority, needed to cope with accessibility problems. The pattern of development also influences demand for various other services, ranging from supply of water and electricity to the management of waste.

5.12.4 Potential Impacts

During the proposed development of the site, greenhouse gases will be released to the atmosphere as a result of:

- decomposition of cleared vegetation and release of carbon from the soil as part of site development;
- combustion of fuel utilised in mobile equipment during earthworks and sub-division development;
- life cycle emissions related to the production, handling and use of raw materials for development of the project, and subsequent dwellings; and
- direct emissions related to the generation, management and disposal of construction industry and domestic wastes.

Once the site is developed, the associated 'operational' greenhouse budget will be dictated by:

- the design of individual buildings and how these minimise energy demands, particularly in relation to seasonal heating and cooling;
- indirect emissions associated with the consumption of power from the electricity grid for domestic use including heating and cooling;
- direct emissions from the combustion of fuels associated with transport activities within and around the project area; and
- direct emissions related to the generation, management and disposal of domestic wastes.

5.12.5 Management Strategies

The EPA's Guidance Statement No. 12 *Minimising Greenhouse Gas Emissions* requires proponents of new projects to develop a greenhouse gas emissions inventory using approved methodologies to estimate the gross emissions of greenhouse gases that are likely to be emitted from the proposed project for each year of its operation in absolute and in carbon dioxide equivalent figures. The Statement also prescribes the need for proponents to assess the project lifecycle greenhouse gas emissions and the greenhouse gas efficiency of the proposed project (per unit of product) and to compare these with similar projects.

As an input to the development strategies identified for implementation of the proposed development, measures to minimise greenhouse emissions through practical measures such as reducing the need for car use within the site will be considered.

5.13 Noise

5.13.1 EPA Objective

To protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring the noise levels meet statutory requirements and acceptable standards.

5.13.2 Applicable Legislation, Criterion or Guidance

- Environmental Protection Authority (1997b) *Environmental Protection (Noise) Regulations 1997*: Regulation 13 "Construction sites".
- Department of Environmental Protection (2000a) *Road and Rail Transport Noise* Draft Guidance No. 14 (Version 3).
- Western Australian Planning Commission (2005a) State Planning Policy *Road and Rail Transport Noise (Draft)*.
- Western Australian Planning Commission (2005b) State Planning Policy *Metropolitan Freight Network (Draft)*.
- Australian Standard *AS2670/1990 Evaluation of human exposure to whole body vibration.*

5.13.3 Existing Environment

Noise and vibration can impact on the health, welfare and amenity of both current and future residents. As the ear responds logarithmically rather than linearly to stimuli, it is more practical to express acoustic parameters as a logarithmic ratio of the measured value to a reference value. This logarithmic ratio is called a decibel or dB.

In terms of sound pressure levels, audible sound ranges from the threshold of hearing at 0dB to the threshold of pain at 130dB and over. Although an increase of 6dB represents a doubling of the sound pressure, an increase of about 8dB to 10dB is required before the sound subjectively appears to be significantly louder. Similarly, the smallest perceptible change is about 1dB.

Environmental noise can consist of:

- point sources (for example, use of nail pneumatic nail gun. The sound energy spreads out spherically, so that the sound pressure level is the same for all points at the same distance from the source, and decreases by 6 dB per doubling of distance); and
- a line source where the source is narrow in one direction and long in the other compared to the distance to the observer (such as a a stream of vehicles on a busy road).

Regulation of environmental noise (excluding transport) occurs through the *Environmental Protection (Noise) Regulations 1997*. These regulations provide a mechanism through which design and planning features need to be considered in new construction or refurbishment of existing facilities, and operational noise. The Regulations specify assigned noise levels for the premises receiving noise, according to the type of premises receiving the noise, the time of day and presence of commercial and industrial land use zonings, and major roads within a 450m radius of the receiver.

5.13.4 Potential Impacts

Noise associated with construction activities may affect the amenity at nearby sensitive premises.

5.13.5 Management Strategies

Traffic noise and vibration impacts on future residents will need to comply with the *Environmental Protection (Noise) Regulations*, specifically Draft EPA Guidance No. 14 (Version 3) *Road and Rail Transport Noise* (DEP May 2000e), Western Australian Planning Commission (2005) *Draft State Planning Policy Road and Rail Transport Noise* and with Australian Standard *AS2670/1990 Evaluation of human exposure to whole body vibration.*

Construction noise received at nearby sensitive premises will need to comply with the requirements of the *Environmental Protection (Noise) Regulations* 1997.

To ensure compliance with these regulations, the management of traffic noise and vibration impacts will be described in the CMS. Noise management strategies within the CMS will be prepared to the satisfaction of the CEO of the Shire of Busselton in accordance with regulation 13 relating to construction noise, and implemented by the proponent as a condition of subdivision approval.

5.14 Aboriginal Heritage

5.14.1 EPA Objective

To ensure changes to the biophysical environments resulting from the proposal do not affect historical and cultural associations within the area and comply with the requirements of relevant Aboriginal and heritage legislation.

5.14.2 Applicable Legislation, Criterion or Guidance

- *Aboriginal Heritage Act 1972*
- *Native Title Act 1993*
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- Environmental Protection Authority (2004h) *Assessment of Aboriginal Heritage* Final Guidance No. 41

5.14.3 Existing Environment

All Aboriginal sites in Western Australia are protected by the *Aboriginal Heritage Act 1972.* Under the Act it is an offence for any person to disturb or destroy any Aboriginal site in this state unless permission has been granted by the Minister for Indigenous Affairs.

An Aboriginal site is defined under the Act as:

- Any place of importance and significance where persons of Aboriginal descent have, or appear to have, left any object, natural or artificial, used for, or made or adapted for use for, any purpose connected with the traditional cultural life of the Aboriginal people, past or present;
- Any sacred, ritual or ceremonial site, which is of importance and special significance to persons of Aboriginal descent;
- Any place which, in the opinion of the Committee, is or was associated with the Aboriginal people and which is of historical, anthropological, archaeological or ethnographical interest and should be preserved because of its importance and significance to the cultural heritage of the State; and
- Any place where objects to which this Act applies are traditionally stored, or to which, under the provisions of this Act, such objects have been taken or removed.

Desktop Research

A desktop review of Aboriginal heritage databases and other relevant material was completed to identify known and potential heritage issues that might impact on the proposed development. This involved an assessment of the degree of past survey coverage, data gaps and identification of issues requiring further research.

The Department of Indigenous Affairs (DIA) online Aboriginal Heritage Management System and available 'grey literature' was interrogated as part of the desktop research. This resulted in the identification of two Aboriginal sites that are located within, or immediately adjacent to, the project area.

Further details regarding the desktop research and site information is contained in Appendix 12: *A Report of an Aboriginal Heritage Survey Smiths Beach Development Busselton, Western Australia* (Edwards *et al.* 1993) in the volume of technical appendices.

Field Research

As well as reviewing documentary resources, an archaeological reconnaissance survey was undertaken across accessible portions of the project area. The archaeological reconnaissance survey was conducted to ensure that important archaeological and ethnographic sites are not disturbed as a consequence of the development (Edwards *et al.* 1993). This work involved a survey of the property, and consultations with local Aboriginal people to determine whether any ethnographic sites were present.

The archaeological survey detected two artefact scatters and several isolated artefacts. The artefacts consist of quartz debris that is a by-product of the manufacture of tools. Of the two scatters one is within the development area but it has been heavily disturbed (Field Site #1).

Field Site #1: Grid Reference: SI 50-5 Edition 1 Metric 315 762E 62 73 336N

A 'continuous' scatter of artefacts, recorded over a linear distance of approximately 1km located in a firebreak exposure running along the western property boundary.

All artefacts observed were recorded in detail and were found to consist entirely of quartz pieces, ranging between 20mm to 5mm in maximum dimension. The area of highest artefact density was located behind the then existing caravan park facilities.

Edwards *et al.* (1993) considered that this site has been adequately recorded and has little further research potential. The developer therefore, submitted an application to the Aboriginal Cultural Materials Committee under Section 18 of *the Aboriginal Heritage Act 1972-1980* for Ministerial consent to disturb the site. This approval has been granted subject to the condition that further archaeological monitoring take place following the clearing of bushland areas but before development, to ensure that no significant sites may be hidden by vegetation are destroyed.

The other scatter is within the area of proposed public open space to the south and consequently it will not be disturbed by the development.

The ethnographic survey involved a review of archival material, consultation with local Aboriginal organisations and visits to the site by Aboriginal representatives. No ethnographic sites were identified within the bounds of the project area and consequently it was concluded that there were no ethnographic impediments to the proposed development.

5.14.4 Potential Impacts

The clearing and earthworking activities to be undertaken to construct the proposed development may impact on Aboriginal sites that may be present on-site.

5.14.5 Management Strategies

An application to the Aboriginal Cultural Materials Committee under Section 18 of *the Aboriginal Heritage Act 1972-1980* for Ministerial consent to disturb a site has been submitted and approved. This approval has been granted subject to the condition that further archaeological monitoring take place following the clearing of bushland areas but before development, to ensure that no significant sites that may be hidden by vegetation are destroyed. Monitoring of surface earthworks undertaken throughout the project area will be conducted by an archaeologist.

Another site (a scatter) is located within the area of proposed public open space to the south and consequently it will not be disturbed by the proposed development.

5.15 Visual Amenity

5.15.1 EPA Objective

To ensure that visual amenity is considered and measures are adopted to reduce adverse visual impacts on the surrounding environment as low as reasonably practicable.

5.15.2 Applicable Legislation, Criterion or Guidance

- *Environmental Protection Act 1986*
- Western Australian Planning Commission (2003) State Planning Policy No. 2 *Environment and Natural Resources Policy*
- *Town Planning and Development Act 1928*
- Western Australian Planning Commission (2003) State Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy*
- Western Australian Planning Commission (2003) State Planning Policy 2.6 *State Coastal Planning Policy*
- Shire of Busselton District Town Planning Scheme No. 20
- Shire of Busselton (2001) Draft Development Guide Plan (Withdrawn) – Location 413 Smiths Beach

5.15.3 Existing Environment

The following is an abridged version of the Visual Amenity report prepared by EPCAD for Location 413. The full report is included as Appendix 13: *Smiths Beach Location 413 Landscape Study. The Methodologies Applied* (EPCAD 2007) of the volume of technical appendices. A separate CD showing the potential views of the proposed development from several key vantage points is included in the hard copy versions of Appendix 13 and is available as a separate CD together with the Technical Appendices CD for digital versions of Volume 2 of the SEA.

The WAPC endorsed "Methodologies" in regard to the landscape and visual assessments and analysis of the project area. To ensure compliance with the "methodologies" this report sets out the contributions made to the process and crossreferences to other supporting reports.

The purpose of the methodology is to define a study process to be undertaken to:

- assess the aesthetic values of Location 413 Smiths Beach and its setting;
- define management objectives, standards, for future management of these values; and
- provide guidelines that will help provide a framework for the development design and that will contribute to the identification of a developable area for the site.

Study Process

The study process is described in steps and these are explained briefly, however aspects of the steps were not always undertaken consecutively, but had overlaps and some aspects were protracted due to the iterative design process embarked upon.

PART ONE — Assessment of Values

STEP A – Establish a Knowledge Base (inventory)

A literature review has been undertaken to compare methodologies, establish assessment criteria and to provide data relevant to the assessment. The consultant team also was able to have comment, review and input from leading practitioners). It is evident from the literature review that the various methodologies and techniques pursue the task of eliminating or defining subjective issues and values in the study. All aim to understand those elements that combine to create an aesthetic that is valued, identifying the key geographical features that make up the landscape. Techniques of evaluation rely on an understanding of where changes within the landscape may be seen from so the identification of important views and the definition of the "zone of visual impact" or "seen area" forms a primary tool.

As discussed in Section 2, key stakeholders, including the Shire of Busselton and community groups were consulted to identify key issues, to gather information relevant to the assessment, and inform them of the process (refer Section 4, Section 5.3 Section 6.1). Issues and perceptions of the site were identified and expressed at facilitated workshops and meetings managed by consultants and Creating Communities.

No clear community consensus has been obtained on the visual impact issue. The consultation process allowed many detailed aspects of the development that are landscape and visual issues to be addressed, modifying and amending preliminary design responses throughout the consultation process.

Extracting key information from the consultation process suggested the following important landscape qualities needed to be considered:

- The pristine beach
- The ridge landscape
- The natural environment
- Views from all directions
- The view from Torpedo Rocks (especially highly valued)
- The built form and scale to blend with the natural environment

Base mapping information was prepared with thematic layers. Computer modelling was used to enable a comprehensive analysis of features including:

- Landform;
- Vegetation, remnant, structure, species;
- Water features;
- Roads and tracks network and class;

- Settlement areas and buildings; and
- General tenure.

In addition records of mapped information were made.

Data relevant to the assessment was collected from the Department of Land Information (DLI), new terrain and feature survey information was produced by consultant surveyors McMullen Nolan, reports of related work reviewed, and comprehensive field survey was undertaken by members of the consultant planning and design team. In addition supplementary field surveys were undertaken on numerous occasions to validate aspects of the visual appraisal and landscape analysis.
Computer modelling is based upon topographic data provided by surveyors, McMullen Nolan. The immediate area of location 413, Smiths Beach has 2m interval contours elsewhere the contextual topography has 5m intervals. Datum used is AMG zone 50/AHD.

This data was used to construct a three-dimensional computer terrain model. This model was used to evaluate the visual effects of the proposed development within the broader landscape. The model prepared for the proposed Smith's Beach developments is based on a 3D Interactive suite of visualisation software called SKYLINE. The SKYLINE interactive environment is created by fusing (overlaying) aerial imagery and terrain elevation data and other 3D / 2D information sources including GIS layers.

The aerial imagery for the actual site and immediate surrounds was based on new, purpose flown aerial photography at 1:4000 scale taken in April 2004 and the imagery for the remainder of the model external to the site was based on the 1:25000 scale series of aerial photographs taken in 2002 and sourced from the DLI.

The terrain model (DEM) used for the model covering the actual site and immediate surrounds was based on new mapping to 0.5m contour standard using the 2004 1:4000 scale photography with full ground control. In the location 413 the height accuracy of survey is to plus/minus half the contour interval (0.25m).

The DEM for the balance of the model external to the site was based on the 5m contour series mapping available from DLI and again accurate to plus/minus half the contour interval (2.5m).

In addition a terrain model was constructed with AutoCAD and Autodesk Map 5 to supplement and check aspects of study.

Creating Communities, McMullen Nolan surveyors, Malcolm Mckay consultant designer, Roberts Day Group consultant planners, ATA Environmental consultants, John Cleary Planning, Michael Swift and Associates Town Planners and EPCAD consultant landscape architects, assembled the "Knowledge Base".

STEP B – Classify the Area into Landscape Character Units

The data were used with extensive site survey to identify broad characteristics, classifying them into character units and sub-units. This produced a set of character units based on landform, vegetation, and water characteristics, land tenure, remnant vegetation and land use activities.

In assessing local site conditions a detailed appraisal of landscape character zones was undertaken by site inspection and cross-reference to aerial photography. The detailed appraisal addressed the areas in the immediate vicinity of the project area. The following sub-units were identified:

1 Sweeping Bay: defined rocky bay enclosed by a shallow convex landform with little evidence of

human activity.
2 Craggy Rocky Coast, steep sided: Rugged steep granite rock cliffs and rock groups exposed to the prevailing south westerly winds. Low vegetation where present.
3 Exposed Rocky Headland: Very exposed and rugged point with the sea crashing into low rock groups.
4 Broad Shallow Sloping Rocky Coast: Foreshore of rock debris, and rock pools with some granite heath vegetation established on the higher ground. The area is less exposed than the coast on the west side of the headland and has a sense of enclosure.
5 Sweeping Semi-Natural Beach: Long sandy broad beach. Human recreation activity and signs of activity.
6 Dunal Coast: Steeply rising high sand dunes with one primary dune being the dominant topographic feature. Significant signs of human activity including car parking, fencing, electrical poles, dune access ways, signage and structures.
7 Settlement: Intensive cluster of two storey buildings, caravan park and camp site. Development prominent in the local environment.
8 Narrow Valley: Narrow valley with meandering stream cutting through dunes. Not very visible from publicly accessible areas.
9/10 Broad convex hill, natural and semi natural: Large topographic feature with lower steep slopes grading to higher rounded landform, heavily vegetated with little signs of human activity.
11 Settlement influence: Broad open hill side largely cleared of vegetation with very prominent chalet development.
12 Settlement influenced: Concave land form, rising steeply from existing development and clothed in vegetation.

Having analysed the characteristics of the location, a fine grain assessment of site characteristics was undertaken, subdividing the subject land further into local character areas.

STEP C – Identify Significant Features

The characteristics and features of the project area that were considered important to the experience and enjoyment of people were identified. The criteria used to categorise features as significant relate to the landscape character units' natural, rural-use environments and settlement characteristics were reviewed for relevance to the location and in accordance with the provisions of the methodologies, to cover the types of places identified as high value by the community.

The criteria are:

Natural Characteristics

Vegetation
- Areas with distinctive variation or contrast in communities, structure or species; and
- Plants of impressive size, colour or form.

Landform
- High points and prominent ridge crests;
- Steep slopes;
- Pronounced gullies; and
- Features such as very flat plains or plateaux, rock outcrops, cliffs, caves and sand formations.

Water
- Major permanent or rocky, semi-permanent water features, rivers, estuaries, waterfalls.

Coast
- Indented shoreline, coves, short beaches with rock ends; and
- Gently curved shoreline with steep natural slopes as a backdrop, beach or tidal zone.

Rural-Use Characteristics

Texture
- Areas with strongly textured patterns for at least half the year.

Spatial Definition
- Areas where native vegetation creates a sense of spatial enclosure; and
- Edges of blocks of remnant vegetation adjacent to spatial definition areas.

Vegetation
- Features – plants of impressive size, colour or form; and
- Remnant or introduced planting of large trees in rows with consistent density and, where adjacent to roads, dominant trunks and canopies to road edges on both sides of the road.

Remnant Vegetation
- Substantial area of paddock tree cover; and
- Continuous streamside vegetation strips with trees.

Water
- Large dams with natural vegetation, including trees, on their edges.

Settlement Characteristics

Vegetation
- Indigenous vegetation of a similar height or scale to the built form which is visually extensive; and
- Features – plants of impressive size, colour or form.

Built Elements
- Structures

Local Experience
- Settlements that provide a variation in view types; and
- Settlements that have good levels of dedicated pedestrian access.

The elements identified by the consultant team, were interpreted and incorporated within the computer mode15

Natural Characteristics

Vegetation
- Areas with distinctive variation or contrast in communities, structure or species;
- Plants of impressive size, colour or form.

The granite heath to the ridge flanks contrast in texture and seasonal colour to the general vegetation cover. The main colour of the heath land being a mid grey green created by the dominant vegetation associations of *Kunzea ciliata* and *Hakea trifurcata, Kunzea ciliata* and *Melaleuca lanceolata, Dodonaea ceratocarpa* and *Pimelea ferruginea.* Seasonal flowering of Pimelea provides pink tinge in spring. The vegetation in this area is low, generally between 0.5m and 1.5m in height.

Localised groups of larger trees within the general low woodland vegetation cover can be distinguished. The dominant vegetation across the eastern half of the site is *Agonis flexuosa* forming a mid green, even canopy over the site. *Banksia attenuata* associates with the *Agonis* in the centre of the site but is not visually distinctive unless viewed at close distance. The larger groups of trees contain these species but also a group of *Nuytsia floribunda* that creates a vivid yellow punctuation in early summer. The vegetation in this area is low woodland, generally about 3m in height. Localised stands grow in excess of 5.5m in height.

Landform

- High points and prominent ridge crests;
- Steep slopes;
- Pronounced gullies;
- Features such as very flat plains or plateau, rock outcrops, cliffs, caves and sand formations.

Prominent ridges are located to the east and west of the site. The ridges contain a generally concave sloping landform. The eastern ridge is not visually prominent when viewed from a distant as vegetation obscures it. The western ridge flanks are broad and not as steep as much of the adjacent areas. The lower slopes, especially on the eastern side flank contain reddish granite exposed at the surface. The foreshore land surrounding the subject land on the headland consists craggy granite and has many prominent eroded pillars and stacks of reddish and grey Major permanent or rocky, semi-permanent water features, rivers, estuaries, waterfalls.

No water features are present on the site. Contextually, the ocean is the dominant feature in the area. North east of the site a stream winds through the dunes to the beach.

Coast

- Indented shoreline, coves, short beaches with rock ends; and
- Gently curved shoreline with steep natural slopes as a backdrop, beach or tidal zone.

The coast that surrounds the site contains a number of significant features including, steep prominent dunes, craggy cliffs, sloping rock shelf (boulder field) and beach. Beach and dunes are made from white sand with some minor outcropping of light cream coloured limestone at the base of the primary dune. This contrasts with the reds and greys of the rock boulder field and rock formations around the headland to the north and west.

Rural-Use Characteristics

Texture

- Areas with strongly textured patterns for at least half the year;

No areas exhibiting this on the site.

Spatial Definition

- Areas where native vegetation creates a sense of spatial enclosure;
- Edges of blocks of remnant vegetation adjacent to spatial definition areas;

Native vegetation does not create a sense of spatial enclosure on the site.

Vegetation

- Features – plants of impressive size, colour or form.
- Remnant or introduced planting of large trees in rows with consistent density and, where adjacent to roads, dominant trunks and canopies to road edges on both sides of the road.

Localised stands of trees more prominent than the general vegetation cover were identified. No large trees in rows are dominant features of this site.

Remnant Vegetation
- Substantial area of paddock tree cover;
- Continuous streamside vegetation strips with trees.

None on or adjacent to the site.

Water
- Large dams with natural vegetation, including trees, on their edges.

None on or adjacent to the site.

Settlement Characteristics

Vegetation
- Indigenous vegetation of a similar height or scale to the built form which is visually extensive;
- Features – plants of impressive size, colour or form.

No vegetation matching these criteria on or adjacent to the site.

Built Elements
- Structures

Redevelopment of existing settlement buildings underway. Structures presently are dominant in the landscape. Adjacent older development of three long, horizontal buildings are dominant in the landscape.

Local Experience
- Settlements that provide a variation in view types;
- Settlements that have good levels of dedicated pedestrian access.

Settlement in this location does not demonstrate these characteristics.

On the basis of the above criteria the visually significant features present on the site were identified and are described here.

The ridge lines
- The western ridge line is a prominent feature viewed from many locations.
- The eastern ridge is an enclosing landform but in itself not prominent.

Granite heath
- The granite heath has a distinct texture, displays seasonal colour and forms the flanks to the western ridge.

Significant vegetation stands
- Localised groups of larger trees within the general vegetation cover can be distinguished due to seasonal colour, size and resultant textural difference.

The elements identified by the consultant team, were interpreted and incorporated within the computer model. The mapping of key elements therefore became an effective tool for option

review. Complying with the methodologies, mapping of this information into illustrative form was also completed.

The mapping of key elements therefore became an effective tool for option review. Complying with the methodologies, mapping of this information into illustrative form was also completed (refer to Figure 4 in Appendix 13).

STEP D – Identify Community Use

An assessment of community use based on consultation reports and observation of users when visiting the location was used to identify the type and degree of use of the area. This assessment was not empirical in its basis. Specific local use areas and access routes, types of recreational use and route characteristics were appraised. The assessment included the classification of use areas (sensitivity levels) and distance zones from these areas, and combined to form sensitivity zones complying with the methodologies set down in the Sussex location 413 Landscape Methodology Figure 2 (refer Appendix 13).

Distance zones assigned to use areas were as follows:

- foreground (fg) (O-500m);
- middleground (mg) (500m-3km);
- background (bg) (3-9km).

The site itself has little or no activity but constitutes a key element of the landscape experience of users of the surrounding areas. The site has in the past been cleared and used for grazing but now has no prevailing community use or access. Parts of the site are used for informal, unmanaged carparking and on occasion bus parking. Intrusions into the sensitive coastal heath by vehicles has degraded areas along the northern boundary. Car parking is low key although during the peak holiday season vehicle usage increases but no recorded figures are available.

The primary use of the locality is for public recreation. Of this use, the beach and surf are a focus. The beach is recognised by the surfing community as being a good teaching beach. The beach itself is used for family recreation.

The Cape to Cape walking trail is a major recreational trail bordering the site, running inside its boundaries on the western part. Users encounter the site in a number of ways, in close proximity along its northern boundary, within the site on the western side of the western ridgeline and as a component of the broader landscape when viewed from a distance on sections of the track between Torpedo Rocks and Canal Rocks.

The existing track within the road reserve that forms the southern boundary of the site provides seasonal access to the Cape to Cape trail and a small cove. Small numbers of people are known to utilise this track for recreational purposes such as walking, fishing and possible swimming in the secluded cove at its western end.

Extensive field survey has been undertaken by the consultant team to identify key views and visual issues. In addition the construction of a computer model "virtual environment" of the area enabled rapid verification and assessment checks of design and planing options or other detailed considerations. Visual qualities of the area have been extensively investigated, including peer group auditing of work and refinement and detailed analysis of particular areas. Key views of were identified.

View locations that are relevant to the assessment (including those identified by the community) include:

- Torpedo Rocks carpark;

- Canal Rocks area;
- Smiths Beach – including specific locations;
- Cape to Cape walking track;
- Smiths Beach Road – opposite Chandlers;
- Rotary lookout;
- Smiths Beach headland carpark;
- Lookouts on Canal Rocks Road;
- Mount Duckworth;
- Sugarloaf Rock;
- Three Bears; and
- Surf breaks (including Smiths Beach and Yallingup).

A "seen area" study identified the theoretical seen area from the project area based only on topographic features (refer to Figure 6 in Appendix 13).

Extensive supplementary studies have been undertaken utilising the computer models and sectional analysis.

Detailed computer modelling from key view locations and routes using projected building heights enabled a comprehensive Zone of Visual Influence (ZVI).

STEP E – Assess the Wilderness Quality of the Area

Wilderness quality was assessed in terms of 'remoteness' and bio-physical naturalness. 'Remoteness' is determined based on distance from access routes, settlement and disturbed areas and bio-physical naturalness determined on remnant vegetation/cleared land mapping. This assessment may reflect people's sense of remoteness, however, is a very subjective exercise. The landscape is a cultural construct and individuals have a very different perception of wilderness like values. Awareness of human activity is a major contributing factor so visibility of areas of human influence has to be taken into consideration. Assessment was based on personal site appraisal tempered with determination of quality assessed on actual distances to human activity to ensure compliance with the methodologies and to inform the composite landscape map, the task has been completed.

This exercise identified a number of "wilderness like" experiences although in all circumstances there is evidence of human activity including roads, tracks, views to settlements (including Smiths Beach and Yallingup),Individual dwellings, ancillary elements such as buoys, electricity or lighting poles.

Wilderness like experience Zone 1:

Wilderness like zone 1 consists of an area within which the landscape experience is predominantly natural with little evidence of human made structures and influences on the landscape.

Wilderness like experience Zone 2:

Wilderness like zone 2 consists of predominantly natural, homogeneous areas with some evidence of human made structures and influences on the landscape. Distant and middle distance views of settlement, properties and roads are a component of the landscape when these areas are viewed.

Wilderness like experience Zone 3:

Areas that although within a natural setting have or are in close proximity to human activity or human made structures.

Wilderness like experience Zone 4:

Human made features and or activities are present at scales that dominate the local area.

STEP F – Prepare a Composite Landscape Class Map

The primary outcomes are combined into a Landscape Class Map to facilitate assessment and planning. To allow easy interpretation for the planning and design team, aspects of the mapping were included within the comprehensive computer model. The composite map also includes areas of high value vegetation that is visually importantidentified by ATA

The composite illustration identifies areas that are less suitable for development than others. It does not however determine the precise developable area, as differing design and planning responses to constraints and opportunities change the area of development consideration. Such responses as building type, height, and the created landscapes are all elements that can affect the appropriateness of development to any given location.

The landscape composite therefore illustrates an area that can be described as an area of development opportunity. Within this area there are differing constraints that any development has to address. In landscape and visual terms the primary constraints of vegetation type, topographic features and effects on adjacent landscape character areas, suggest an area that is considered to be an appropriate area for development. Such an area will still be subject to mitigation measures to ensure a design response that is compatible with the local environment.

PART TWO – Management Objectives and Development

STEP G – Define Management Objectives for Visual Aesthetic Values

Objectives for the integration of the proposed development within the broader landscape were defined and used by the planning and design team formulating guiding principles for the development response. The objectives were defined to address five key aspects:

Landscape Character

- Minimise adverse affects on existing valued landscape character
- Protect from visual change, identified significant landscape features / views that are critical in the landscape character of the area.
- Create a development with a distinctive local character that contributes to a new valued landscape.

Significant features

- Retain the integrity of the Leeuwin Naturaliste ridgeline.
- Protect the rocky headland, secondary western ridge and flanks, when viewed from the east and north east middle distance and long distance viewing locations.
- Have regard to the value of Ridge backdrops when viewed from the coastline and Travel Route Corridors.
- Retain significant vegetation and topographic features

Access

- Provide enhanced public access to the location whilst minimising the potential for adverse affects on the environment they are seeking.
- Create managed access to the beach and coastline.

Views

- Produce opportunities for enhanced public views to areas of high scenic interest
- Ensure that development is integrated within the landscape and is not detrimental to identified key views.

Wilderness Quality

- Protect those areas with high wilderness quality
- Locate and plan development to minimize visibility on wilderness like experience, Zone 1.

These broad structuring objectives were used to develop guiding principles for any development to be integrated within the surrounding landscape.

1. Development will not create strong lines, horizontally or vertically across the landscape. Roads to meander and minimize long views except where required to allow access to a view (as from near "Chandlers' on Smiths Beach Road across site). Avoid aligning roads and firebreaks with key sightlines.
   Development density or texture to feather out to the west and south

2. Building heights and locations will not breach the ridges from middle distance and distant key view locations. Torpedo Rocks carpark, Canal Rocks, Smiths Beach east of transition point, Cape to Cape walking track (excluding identified location west of ridge) ; Rotary lookout, Mount Duckworth, Sugarloaf Rock, Three Bears;

3. Development materials shall use local colours and materials

4. Substantial vegetation corridors through the site shall be created / retained Corridors shall visually link the site, existing development, and adjacent use areas with the natural area to the south. Corridors to be identifiable from more distant view locations.

5. Dominant built elements to be focused close to existing built elements.

6. Minimise the intrusion of vehicles in the landscape

These broad structuring objectives were refined with input from community consultation feedback to create the adopted guiding principles detailed in the DGP and outlined as follows:

- Create an urban form that enhances the hillside and a road network sensitive to the prominent location of the site
- Create an urban form that enables buildings to be aligned with the contours
- Provide a range of densities feathering development to the west and south
- Use local features to enhance the sense of place
- Position a village centre at the foot of the hill near the beach
- Create green corridors to break up the development when viewed from the north.

STEP H —Apply the Objectives to the Site

This step has been undertaken by developing a comprehensive interactive computer model of the site enabling a series of options of notional development to be tested and assessed against the objectives. The objectives were applied to the site and a design framework developed for notional development options that were thoroughly tested against the objectives. In addition, options were presented and discussed within the community consultation process.

Typical elements of proposed development such as the units, tents and beach club were "constructed" within the computer model. The site landform, slope and vegetation cover, were represented accurately within the model enabling development elements to be placed, moved and tested.

The resultant physical changes of the development elements were and can be seen in an interactive virtual environment that fully illustrates and demonstrates how objectives are met.

The area visually affected by development on the site was assessed and further refined where thought necessary. In addition to the interactive computer a supplementary exercise was undertaken to verify model outcomes on a computer terrain model and this determined the theoretical Zone of Visual Influence (ZVI).

The likely appearance of notional development from visually affected areas was comprehensively assessed. The "state of the art" technology used replaced the normal photographs and renderings used in an assessment with accurate and realistic representations.

The implications of the objectives on any development of the site have been described in the DGP. This description defines design attributes necessary to meet the relevant objectives and standards. Development boundaries have been defined based on the values, objectives, and the implications of the objectives as defined in the above steps. Cross-sections and 3D modelling and rendering has been extensively used to establish appropriate boundaries, zones, densities and development types and illustrate any layout options.

The DGP addresses the visual aesthetic values by responding to the objectives as follows:

Landscape Character;

- Minimise adverse effects on existing valued landscape character
- Protect from visual change, identified significant landscape features / views that are critical in the landscape character of the area.
- Create a development with a distinctive local character that contributes to a new valued landscape.

The DGP proposes development that has a mass, scale, distribution and location arranged to minimise adverse affects on key views and significant landscape elements.

The DGP proposes a development form that is compatible with the topography and sensitive to the prominent location of the site enabling buildings and road network to be aligned with the contours.

The DGP uses local features to enhance the sense of place by assembling built form and landscape elements to create a development that creates a new landscape element that is accommodated within the receiving environment in a sympathetic manner.

Significant features;

- *Retain the integrity of the Leeuwin Naturaliste ridgeline.*
- *Protect the rocky headland, secondary western ridge and flanks, when viewed from the east and north east middle distance and long distance viewing locations.*
- *Have regard to the value of Ridge backdrops when viewed from the coastline and Travel Route Corridors.*
- *Retain significant vegetation and topographic features*

The proposed area of development as depicted in the DGP, ensures that development does not breach the Leeuwin Naturaliste ridgeline.

The DGP has been developed with detailed appraisal of where development can be viewed from and has arranged the elements of the development to be complimentary to the landform including secondary ridges to the east and west of the core development area. The potential for inter-visibility from the coastal track, beach and key locations, has been thoroughly investigated and the DGP modified to take into account contextual topography.

The DGP through the layout and proposed levels, retains where practical identified significant vegetation. That is vegetation that is visually and ecologically valuable.

Access;

- Provide enhanced public access to the location whilst minimising the potential for adverse affects on the environment they are seeking.
- Create managed access to the beach and coastline.

The DGP proposes to reduce traffic on the foreshore road by providing alternative access arrangements and by converting a large proportion of the road into a pedestrian track. This minimizes the visual impact of vehicles in an area of visual sensitivity.

The DGP incorporates pedestrian networks that reflects natural desire lines.

The DGP incorporates an extensive network of pedestrian routes across the location including an enhanced coastal track, the management of visitors through informative, directional and interpretive signage, strategic fencing and formalised car parking.

Views;

- Ensure that development is integrated within the landscape and is not detrimental to identified key views.
- Produce opportunities for enhanced public views to areas of high scenic interest.

The DGP utilized extensive analysis of the topography to ensure that when viewed from identified key locations, it was integrated within the broader landscape. The DGP provides for a range of development densities and feathers development to prevent conspicuous development edges being prominent features from key locations. This document presents view management objectives for each key view identified in the methodology. Appendix 6 illustrates how these objectives can be met.

The DGP incorporates view corridors within the layout framing views. Areas of public open space, enhanced foreshore reserve and publicly accessible paths and roads all enable enhanced viewing locations within the site.

Wilderness Quality.

- Protect those areas with high wilderness quality

The areas that users can experience a level of wilderness quality, have been protected from intervisibility with the proposed development by extensive topographic analysis and subsequent placing of development elements. Through the detailed intervisibility analysis a short section of the Cape to Cape coastal trail was identified as having views into the site from an area of high wilderness like quality. In this location any development of the site would be seen (existing buildings are observed and the whole site can be seen) and mitigation measures are required to reduce the changes in the landscape that a user of the trail will experience.

Proposed planting and retention of existing vegetation further aid integration, screening and separation where required to protect the experience.

The DGP sets out the context for undertaking further detailed design based on the work outlined above and constraints and opportunities stemming from the work outlined above. As part of the process, peer review of the concepts and draft DGP was undertaken. Comments received were considered and addressed. The draft DGP and the concept plan were modified to reflect comment, moving buildings, lowering levels, realigning roads and removing structures.

STEP I – Prepare Design Guidelines

Layout suggestions were produced for the project area in the form of options, amendments and revisions. Guidelines focus on:

- Developable area (or areas);
- The layout (including density) of development within that area(s); and
- The design of various development elements to minimise the impact on landscape values.

The Development Guide Plan, (DGP) sets out an approach to integrating the development within the receiving environment outlining the built form, distribution, style, materials, layout and new landscape that is considered an appropriate response to the constraints imposed on development in this location. It should also be acknowledged that the development can in itself contribute to the new landscape and the resultant aesthetic can be valued by those who experience it.

It is important that any development in this locality is of a high design quality and sites within the development area are not necessarily unacceptable just because they are visible. The DGP sets out the spatial framework for built form and landscape to compliment the landscape of the district. The "composite landscape class map" is intended to aid the definition of boundaries for a development area. No analysis can define specific boundaries as any area for development will be dependant on design and planning responses (for example height of buildings, colour layout variations all change the effects of development on the contextual landscape). The methodologies state that "Development boundaries will be defined based on the values, objectives, and the implications of the objectives as defined in the above steps. Cross-sections and 3D modelling and rendering will be used to establish appropriate boundaries and illustrate any layout options".

The area for development that is considered has differing design responses to the potential effects of development including height restrictions on the buildings, a feathering of development density and proposed landscape integration measures. The visual appraisal was based primarily on existing topographic features and did not take into account the ameliorating effects of new planting and the detailed design of buildings. The DGP takes such elements into account.

5.15.4Potential Impacts

Potential for construction activities and future development to impact on the visual amenity both within and adjacent to the project area.

5.15.5Management Strategies

A Landscape and Visual Assessment prepared for the project area will establish a framework for the landscape and urban design of the site, which responds to both the site and surrounding landscape characteristics. All development applications will be reviewed to ensure compliance with this Assessment.

Design Guidelines are being prepared for the detailed architectural response to the site. The guidelines will be adopted by the Shire as a policy to guide design and the planning approval process for individual buildings and developments. The Design Guidelines are architectural guidelines that will supplement the DGP submission. They deal with detail and will be implemented by a Town Architect or Committee.

6. SUMMARY OF PROPONENT COMMITMENTS

This SEA document provides information relating to the proposal by Canal Rocks Pty Ltd to progress the development of Location 413. The document includes a description of the project area, the characteristics of the proposal and identifies significant environmental issues.

Section 5 of this SEA document identified the key environmental factors of significance that may be impacted both during the construction and the operational phase of the proposed development. In addition, the SEA document also identifies how these impacts may be managed and specifies further studies or monitoring that will enable performance to be measured.

In accordance with the generic EPA guidelines for preparing a formal environmental review for the proposal, Table 17 presents a summary of the relevant environmental factors identified for this SEA document including identification of potential impacts, proposed management strategies and predicted outcomes.

6.1 Proponent Commitments

The following commitments are made by the proponent to ensure that potential impacts on the biological, physical and social surroundings of Location 413 are mitigated during the process of development and that the development occurs in a sustainable manner.

Sustainability

All development applications pertinent to Location 413 will be reviewed to ensure compliance with the relevant sections of the Sustainability Checklist.

Vegetation Protection

A Dieback (*Phytophthora cinnamomi*) Management Plan to be prepared as a condition of the DGP and approved prior to any major works commencing on site.

A Vegetation, Flora and Fauna Management Plan will be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton and will include but not be limited to:

- Fauna relocation programme;
- Weed eradication programme;
- Revegetating and restoring POS areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access;
- Soil and plant source material hygiene;
- Encouraging community involvement and awareness promoting control of pets (i.e. dogs);
- Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site;
- Water conservation principles;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;
- Responsibilities for implementation;
- Progress and compliance reporting; and
- Timing and implementation schedule.

Environmental Management Plans (EMP) for the Principal Ridge Protection Area and for the Privately Managed Conservation Area will be prepared as a condition of the DGP approval. The

EMPs will address issues including access, fencing, signage, management of the Cape to Cape track, fire management, weed control, rehabilitation and integration with surrounding areas.

The development will attempt to retain as many *Dryandra sessilis* var. *cordata* plants as possible within lots, road reserves and public open space. In addition, *Dryandra sessilis* var. *cordata* is readily propagated from seed and a seed collection exercise will be undertaken to obtain the seed from the plants on-site prior to clearing and propagating for use in revegetation and landscaping on-site.

Native Vertebrate Fauna Protection

Protection of fauna and fauna habitat will be addressed in the Vegetation, Flora and Fauna Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton.

The Plan will include but not be limited to:

- Fauna relocation programme;
- Weed eradication programme;
- Revegetating and restoring POS areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access;
- Soil and plant source material hygiene;
- Encouraging community involvement and awareness promoting control of pets (i.e. dogs);
- Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site;
- Water conservation principles;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;
- Responsibilities for implementation;
- Progress and compliance reporting; and
- Timing and implementation schedule.

Specially Protected (Threatened) Fauna

A Western Ringtail Possum Management Plan will be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to:

- Identification of WRP habitat and individual trees currently providing high possum values and that must be retained;
- Management prescriptions and ongoing maintenance requirements for a defined corridor habitat;
- Procedures to be followed in the event that land holders seek, or are required, to undertake modification to vegetation that may harm habitat and linkage values for possums;
- A programme of tree plantings to be undertaken on public or other lands to maximise linkage opportunities for possums between the habitat areas.
- Environmental offsets or off-site mitigation in the event that the WRP cannot be fully managed on-site and translocations are required to be undertaken;
- A monitoring programme to measure:
  - use of linkage habitat by possums and inter-mixing of populations at either end of linkage corridors;
  - vegetative health and requirements for replanting or other vegetation maintenance required within the possum corridor; and

- Education programmes including signage, pamphlets and other means, to engage property owners and the broader community about the function of the WRP and its habitat requirements.

Leeuwin-Naturaliste National Park

The Vegetation, Flora and Fauna Management Plan will address the management of direct and indirect impacts (eg weeds, *Phytophthora* and other plant diseases and trampling) to the conservation managed areas within the proposed development and to ensure no direct and indirect impacts upon the National Park occur. The plan will be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to:

- Fauna relocation programme;
- Weed eradication programme;
- Revegetating and restoring POS areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access through fencing and formalising accessways;
- Soil and plant source material hygiene;
- Water conservation principles;
- Encouraging community involvement and awareness promoting control of pets (i.e. dogs);
- Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site;
- Monitoring criteria to determine the success of the revegetation and weed eradication programme;
- Responsibilities for implementation;
- Progress and compliance reporting; and
- Timing and implementation schedule.

A Fire Management Plan has been prepared by the proponent and responsibilities for implementation are specified within the Plan (refer to Appendix 7). The Plan has been developed to incorporate fire management methods such as:

- Internal firebreaks system;
- Dwelling construction and setbacks;
- Building protection zone;
- Hazard separation zone;
- Hazard reduction; and
- Driveways.

Coastal Foreshore

A draft Foreshore Management Plan has been prepared for the Smiths Beach foreshore reserve (refer to Appendix 2). The Plan includes the following elements:

- Comprehensive weed eradication programme;
- Revegetating and restoring foreshore POS adjoining conservation areas with appropriate indigenous flora;
- Controlling vehicle and pedestrian access;
- Provision of public facilities;
- Fire management including provision of fire hydrants;
- Encouraging community involvement and awareness promoting control of pets (i.e. dogs);
- Water conservation principles;
- Monitoring criteria to determine the success of the revegetation and weed eradication program;

- Progress and compliance reporting; and
- Timing and implementation schedule.

Dust and Particulates

A key element of the draft Construction Management Strategy consistent with best management practices will include a dust management plan taking into account seasonal influences and distance to sensitive premises and incorporating any or all of the following measures:

- Where possible retaining vegetation;
- Limiting areas of exposed soil;
- Hydro-mulching or alternative effective stabilisation immediately following completion of bulk works;
- Applying water to increase moisture in soil in sensitive or high traffic areas;
- Minimising "fetch" distance;
- Wind fencing;
- Timing of earthworks (daily and seasonally);
- Consideration of wind direction and strengths (eg sea breezes) when planning bulk earthwork 'cells';
- Consideration of distance to and direction of sensitive locations (eg may construct closer to residents during time of year when dust not expected to be as much of a problem etc);
- Appropriate shape/layout of earthworks area (boundary perpendicular to problem wind direction);
- Staging of subdivision (need to consider dust in the early stages of planning, not just at time of construction); and
- Site perimeter monitoring including sensory alarms or dial out capability.

Surface Water Quantity and Quality

A Stormwater Management Strategy (Wood and Grieve Engineers 2006) has been prepared for the project area consistent with the *Stormwater Manual for Western Australia* and includes:

- Best Management Practice for stormwater management;
- At-source pollutant/nutrient input minimisation;
- Water conservation strategy to minimise ex-house potable water use; and
- Monitoring programmes to compliance reporting mechanisms.

Prior to commencement of site works, an Integrated Water Management Plan incorporating the principles and best management practices described in the stormwater strategy and the *Stormwater manual for Western Australia* will be prepared to the satisfaction of the DoW and Shire of Busselton. The Plan will be implemented during and post-construction.

Groundwater Quality

A Stormwater Management Plan has been prepared consistent with the *Stormwater Manual for Western Australia* and includes:

- Best Management Practice for stormwater management;
- At-source pollutant/nutrient input minimisation;
- Water conservation strategy to minimise ex-house potable water use; and
- Monitoring programmes to compliance reporting mechanisms.

An Effluent Disposal Management Strategy has been prepared (refer to Appendix 11) and includes:

- Provision of reticulated sewerage for the entire development; and
- Provision for the connection of services to the Water Corporation's Dunsborough WWTP.

Greenhouse Gases

As an input to the development strategies identified for implementation of the proposed development, measures to minimise greenhouse emissions through practical measures such as reducing the need for car use within the site will be considered.

Noise

Construction noise received at nearby sensitive premises will need to comply with the requirements of the *Environmental Protection (Noise) Regulations* 1997.

To ensure compliance with these regulations, their management will be described in the CMS that will be prepared to the satisfaction of the DEC and implemented by the proponent as a condition of subdivision approval.

Visual Amenity

The Landscape and Visual Assessment prepared for the project area will establish a framework for the landscape and urban design of the site, which responds to both the site and surrounding landscape characteristics. All development applications will be reviewed to ensure compliance with this Assessment.

Design Guidelines are being prepared for the detailed architectural response to the site. The guidelines will be adopted by the Shire as a policy to guide design and the planning approval process for individual buildings and developments. The Design Guidelines are architectural guidelines that will supplement the DGP submission. They deal with detail and will be implemented by a Town Architect or Committee.

TABLE 18
SUMMARY TABLE OF RELEVANT ENVIRONMENTAL FACTORS, EXISTING ENVIRONMENT, POTENTIAL IMPACT AND MANAGEMENT STRATEGIES FOR SUSSEX LOCATION 413

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
Sustainability	To ensure, as far as practicable, that the proposal meets or is consistent with the sustainability principles in the EPA's *Position Statement No. 6 Towards Sustainability* (EPA 2004e) and *State Sustainability Strategy* (Government of Western Australia 2003).	Location 413 is predominantly vegetated although it has been historically used for grazing purposes.	Development may proceed in an unsustainable manner resulting in poor quality urban development and adverse environmental, social and economic consequences.	The Draft DGP has been reviewed against the sustainability criteria at a macro level. All development applications will be reviewed to ensure compliance with the relevant sections of the Sustainability Checklist.
Native Terrestrial Vegetation	To maintain the abundance, diversity, geographic distribution and productivity of vegetation at species and ecosystems levels through the avoidance or management of adverse impacts and improvement in knowledge.	At the broad scale of vegetation mapping, the site is situated within the Boranup System of the Drummond Sub-District within the Darling District of the South-West Botanical Province. At the 1:1,000,000 scale of mapping (Beard 1981) two vegetation units are mapped: *Acacia* Shrubland (a31Sc) (27ha) and Low Woodland: *Agonis flexuosa* (agLi) (13ha). The regional vegetation as mapped by Smith (1973) shows Low Heath with some *Melaleuca huegelii* Closed Scrub and *Agonis flexuosa* (Peppermint) Low Open Forest. The Regional Forest Agreement vegetation units identify three vegetation complexes on the site (Mattiske and Havel 1998): • Wilyabrup (We) • Gracetown (GE) • Wilyabrup (W2) Seventeen vegetation associations have been identified on the site including those on outcropping granite; shallow sand over granite; shallow sand over limestone; and deep sand soils. Vegetation condition ranges from Excellent to Degraded.	The development of Location 413 according to the Design Guide Plan and draft Concept Plan would result in the following: • retention of all vegetation types on outcropping granite (also known as the GH4 vegetation); • retention of all the vegetation containing *Melaleuca lanceolata* both on shallow sand over limestone and outcropping granite areas; • retention of approximately half of the other shallow sand over limestone vegetation types; • retention of most of the shallow sand over granite vegetation types in the western half of the property that are in Very Good condition, including most of the stands of stunted Marri and Christmas Tree (*Nuytsia floribunda*) within a low density camping and chalet area; • retention of Peppermint trees in public open space, road reserves, large blocks on the southern boundary and within smaller lots; • retention of some *Banksia*/Peppermint trees in road reserves, public open space and private lots; • retention of most of the *Allocasuarina humilis* vegetation on deep sand; • clearing of most of the shallow sand over granite vegetation in the western half that is in Good condition or worse on the lower slopes; • clearing of most of the *Banksia*/Peppermint vegetation including all the understorey for fire management purposes in private lots; • clearing of most of the Peppermint trees and all the associated understorey; • clearing of most of the shallow sand over granite vegetation along the eastern boundary of the property. The exact amount of vegetation that would be cleared is not able to be accurately calculated as this will depend on detailed designs and on-site ground-truthing of road alignments and building envelopes. Retained areas of vegetation adjacent to and within the developed areas could be subject to disturbance from the following factors: - uncontrolled access into the conservation areas - introduction and spread of dieback - introduction and spread of weeds into conservation areas - unlawful clearing of trees in private lots - increased fire in conservation areas	***Conservation Areas*** The Smiths Point Development Guide Plan will protect the most significant vegetation on the site, ie. the western granite heathlands and *Melaleuca lanceolata* vegetation, by retaining it all within the Principal Ridge Protection Area and in a privately managed conservation area. The total area of protection of native vegetation in its natural state is approximately 15.4ha. With respect to the vegetation in the Principal Ridge Protection Area (PRPA), the landowner has five options, as follows: 1. retain the PRPA as a rural dwelling lot; 2. vest the PRPA as a Shire reserve; 3. annexe the PRPA area to the Leeuwin-Naturaliste National Park; 4. cede the PRPA to the National Trust as a conservation reserve; and 5. retain the PRPA as a private conservation area attached to one or both resort sites. The landowner is considering ceding the area to the National Trust with ultimate management of the area by the Department of Environment and Conservation. This option has been selected on the basis of overall public benefit as part of the overall plan. If development of the remainder of Location 413 were not to proceed in accordance with the draft DGP or an agreed amended plan then this option is likely to be reconsidered. The proponent commits to preparing an Environmental Management Plan (EMP) for the Principal Ridge Protection Area as a condition of the DGP approval. The EMP will address issues including access, fencing, signage, management of the Cape to Cape track, fire management, weed control, rehabilitation and integration with surrounding areas. The remaining areas of granite heathland outside of the Principal Ridge Protection Area will be retained in a privately managed conservation area as part of the Beach Club Resort. The environmental values of the vegetation in the privately managed conservation area will be protected by a conservation covenant placed on the title associated with the Beach Club lot. The proponent commits to preparing an Environmental Management Plan (EMP) for the privately managed conservation area as a condition of the DGP approval. The EMP will address issues including access, fencing, signage, fire management, weed control, rehabilitation and integration with surrounding areas.

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
			- slashing and clearing of conservation areas for fire control The significance of the vegetation on the site is discussed in Section 5.2.3 above. The acceptability of vegetation clearing on the site can be assessed according to the National Strategy for the Conservation of Australia's Biological Diversity and the EPA's Environmental Protection of Native Vegetation in Western Australia: Clearing of Native Vegetation with Particular Reference to the Agricultural Area (EPA Position Statement No. 2, 2000a). The objectives of the National Strategy are embodied in the EPA's statement on clearing in the agricultural region. The EPA's Position Statement indicates that for clearing to be considered environmentally acceptable it has to meet a number of criteria as follows: • The proposed land use addresses alternative mechanisms for protecting biodiversity. They would like to see an overall environmental benefit as a result of the project. • The area proposed for clearing is relatively small, depending on the scale over which significant biodiversity changes occur in the particular area, including the extent of vegetation in the surrounding area. • The project is consistent with the principles of the National Strategy for the Conservation of Australia's Biodiversity. • It is demonstrated that all reasonable steps have been taken to avoid disturbing native vegetation. • No known species of plant or animal or community or plants or animals will become extinct as a result of the project. • The risks to threatened species do not exceed acceptable levels. • No vegetation type will be taken below 30% of the pre-clearing extent of the vegetation type. • There is a comprehensive, adequate and secure representation of scarce or endangered habitats within the project area and/or areas which are biologically comparable to the project area. If the project area is large, the project area itself will include a comprehensive and adequate network of conservation areas and linking corridors, and the integrity and biodiversity of these areas will be secure. • Land degradation including aquatic environment and threatening processes on-site and off-site will not be exacerbated. The EPA has considered in the past the existing zoning for particular development sites (eg. Turquoise Coast, EPA Bulletin 1031, October 2001) and has stated that in cases where a site is already zoned for development, that the question is not whether clearing can occur, but to what extent the environmental values of the area can be protected. This situation should apply to Sussex Location 413 which is zoned under the Leeuwin-Naturaliste Ridge SPP and the Shire of Busselton DTPS for tourist and residential development. The main points that should be considered, therefore, are: • The two Beard vegetation types mapped for the site have 74% 81% of the original extent remaining; • The vegetation complexes that have been mapped over most of the site (We and GE) have 49% and 67% protected in reserves. The small amount of W2 that occurs in the south-east corner (1.8% reserved) is more likely to be the G3 complex (57% reserved); • No threatened flora or fauna species will be affected by development at the local or regional level;	***Private Lot Covenants and Accessways*** Native vegetation will be retained on tourist and residential lots where possible. In particular, the row of lots proposed along the southern boundary contain a 30m building setback to provide a fire control buffer to the adjoining National Park. To ensure that native vegetation will be protected within privately owned lots, covenants will be placed on titles. Importantly, no fencing will be allowed. The majority of the internal road network will be designed as accessways within a strata-titled lot. As such they will not be roads maintained by the local authority. This arrangement will allow road widths to be kept to a minimum and can be winding to suit the topography. The lower category of road/accessway will enable more vegetation to be retained within the development than would normally be possible with a more conventional road system. Plate 1 shows the type of internal road system envisaged. This photo was taken from the nearby development at Caves House. The proponent will initially be responsible for the building of the roads/basic infrastructure. These minor roads will provide for a reciprocal right of way and will be controlled by strata entities/body corporate. Strata lots will have only minor curtellage with a set of by-laws preventing further removal of vegetation enforced through strata management/body corporate. Town Planning Scheme controls as described in *Clause 27 Landscape Value Area* (refer over page) of the Shire's DTPS No. 20 prohibits clearing unless it is Shire approved and fines will be imposed by the Shire in the event that illegal clearing is undertaken. Both prior to and during the subdivision process, protecting the values of remnant vegetation contained on-site will be enabled through the following: 1. Soft design by eliminating public roadways and with the roads also performing the function of strategic firebreaks. 2. Strata Plans/Bylaws will be established prior to titling into super lots. These will give effect to and place the onus on strata owners of private property what is permissible on common land. 3. The Shire of Busselton will be a party to the bylaws. As previously mentioned under Clause 27 of DTPS No. 20 Shire consent will be required before modification to vegetation can occur. 4. Post-construction revegetation/rehabilitation will form part of subdivision approvals. In addition, the proponent is committed to preparing and implementing the following plans: - A Construction Management Strategy (to be prepared as a condition of the DGP and approved prior to any major works commencing on site) - A Dieback Management Plan (to be prepared as a condition of the DGP and approved prior to any major works commencing on site) - An Environmental Management Plan for the Principal Ridge Protection Area - An Environmental Management Plan for the Privately

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
			• The area proposed for clearing is relatively small; • All possible attempts have been made to retain vegetation in the development, including retention of at least 30% of the site in its natural state and retention of trees within low-density development and within lots and road reserves; and • Vegetation clearing restrictions will be applied through the implementation of a Construction Management Strategy.	Managed Conservation Area
Native Terrestrial Flora – Declared Rare and Priority Flora; Flora of conservation significance (including Threatened Ecological Communities)	Protect Declared Rare and Priority Flora consistent with the provisions of the *Wildlife Conservation Act, 1950*, and the *Environment Protection and Biodiversity Act, 1999*. Protect other flora of conservation significance.	There are no Declared Rare Flora species recorded on-site. One Priority Four Flora species (*Dryandra sessilis* var. *cordata*) has been recorded on-site (approximately 84 plants).	Development of Location 413 has the potential to impact on the 84 plants of the Priority 4 species *Dryandra sessilis* var. *cordata* by clearing during construction of infrastructure and dwellings, or by becoming infected with disease such as Dieback (*Phytophthora cinnamomi*). According to the draft DGP for the site, the three plants that occur along the southern boundary are located close to the Cape Spur lodge but within vegetation that will not be cleared for development. These plants will be protected in their natural environment within the development. The main body of the *Dryandra sessilis* var. *cordata* plants is located in the lower to mid slopes in the centre of the property where less than 25% of the vegetation is expected to be retained. This area is mostly proposed for higher density development with some medium density mid-slope and public open space corridors that traverse down the slope. Many of the plants in the higher density part of the development will not be able to be protected. However, some of the plants in the medium density and public open space will be able to be retained. The exact number of plants able to be protected cannot be determined until detailed site plans are drawn up. The potential loss of many of the *Dryandra sessilis* var. *cordata* plants on site will not affect the conservation status of the species either regionally or locally for the following reasons: - There are only approximately 84 plants on Location 413; - *Dryandra sessilis* var. *cordata* is already considered well reserved and is not currently threatened by any identifiable factors; - *Dryandra sessilis* var. *cordata* is present in large numbers in the National Park to the south of the site south of Canal Rocks Road; and - *Dryandra sessilis* var. *cordata* is present in reserves to the north of the site near the Torpedo Rocks lookout at Yallingup. Furthermore, the management strategies identified below will result in the propagation of *Dryandra sessilis* var. *cordata* plants for revegetation within the development with the most likely outcome that there will be more plants present on site after the development than currently exist.	The development will attempt to retain as many *Dryandra sessilis* var. *cordata* plants as possible within lots, road reserves and public open space. *Dryandra sessilis* var. *cordata* is able to be retained within developments as evidenced by the nearby development at Caves House where many tall *Dryandra sessilis* var. *cordata* plants up to 2.5m tall have been retained on the edge of low-key roads and within lots (Plate 2). In addition, *Dryandra sessilis* var. *cordata* is readily propagated from seed. The proponent commits to collecting seed from the plants on site prior to clearing and propagating for use in revegetation and landscaping on site.
Native Terrestrial Fauna	To maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	Five habitat types present on site: • Site 1- *Banksia attenuata* Woodland; • Site 2 - Open Coastal Heath; • Site 3 - Peppermint/ Eucalypt Woodland; • Site 4 - Closed Coastal ScruB; and • Site 5 - Closed Coastal Heath. Eighteen species and 519 individual terrestrial vertebrates were trapped	The implementation of the draft DGP will result in the retention of approximately 15.4ha of native vegetation in its existing natural condition. This area comprises the granite heathland, *Melaleuca lanceolata/ Melaleuca huegelii* Closed Heath and some *Melaleuca huegelii* Closed Scrub vegetation on the western portion of the site. The proposed clearing of some habitat is likely to result in a loss of some of the sedentary species however more mobile species are expected to	Protection of fauna and fauna habitat will be addressed in the Vegetation, Flora and Fauna Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not limited to: • Fauna relocation programme; • Weed eradication programme;

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
		over the ten-day period. An additional 86 individuals and nine trappable species were observed as part of opportunistic searches or spotlighting.	move to bushland areas proposed to be retained within the development or to adjacent areas off-site that have habitat of similar or better quality. The faunal assemblage present is unlikely to be different to that found in similar habitat located in the vicinity of the site and elsewhere in the region, particularly the Leeuwin-Naturaliste National Park which abuts the site to the south and south east.	• Revegetating and restoring POS areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access; • Soil and plant source material hygiene; • Encouraging community involvement and awareness promoting control of pets (i.e. dogs); • Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site; • Water conservation principles; • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Responsibilities for implementation; • Progress and compliance reporting; and • Timing and implementation schedule.
Native Terrestrial Fauna – Specially Protected (Threatened) Fauna	Protect Specially Protected (Threatened) Fauna, consistent with the provisions of the *Wildlife Conservation Act, 1950,* and the Commonwealth *Environment Protection and Biodiversity Act, 1999.* Protect other fauna of conservation significance.	Four Vulnerable species of fauna and two migratory species of birds listed under the *Environment Protection and Biodiversity Conservation Act (EPBC Act)* 1999 were identified as 'potentially' occurring within the Yallingup area. Five Schedule 1, one Schedule 2 and two Schedule 4 species listed under the Western Australian *Wildlife Conservation Act 1950* and nine Priority fauna species under the DEC Priority Fauna List potentially occur within the Yallingup area. Of the list of potentially occurring species the following species were recorded on-site: • Western Ringtail Possum (*Pseudocheirus occidentalis*) • Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) • Carpet Python (*Morelia spilota imbricata*) • Southern Brush-tailed Phascogale (*Phascogale tapoatafa tapoatafa*)	The implementation of draft DGP will result in the retention of approximately 15.4ha of native vegetation in its existing natural condition. This area comprises the granite heathland, *Melaleuca lanceolata/ Melaleuca huegelii* Closed Heath and some *Melaleuca huegelii* Closed Scrub vegetation on the western portion of the site. The proposed clearing of some habitat is likely to result in a loss of some of the sedentary species however more mobile species are expected to move to bushland areas proposed to be retained within the development or to adjacent areas off-site that have habitat of similar or better quality. Three species of conservation interest listed under the *Wildlife Conservation Act* 1950 (Western Ringtail Possum, Baudin's Cockatoo and the Carpet Python) and the Priority listed species Southern Brush-tailed Phascogale have been recorded on-site and may be impacted by the proposed development. The proposed clearing of vegetation is unlikely to have a significant affect on the Chuditch given that it has not been recorded on site and that there is significant alternative habitat located adjacent to the site that is protected as National Park. Of the species listed for the area under the *EPBC Act 1999* only Baudin's Black Cockatoo and the Western Ringtail Possum were recorded on-site. Baudin's Black Cockatoos were recorded feeding on site and nearby surrounding vegetation. No significant trees containing hollows suitable for Black Cockatoo breeding were recorded within the project area. Western Ringtail Possums were recorded both on-site and in nearby vegetation during November/December 2005. The proposed clearing of some of the vegetation in Location 413 may result in a limited loss of habitat and foraging sites for this species.	Protection of fauna and fauna habitat will be addressed in the Vegetation, Flora and Fauna Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to: • Fauna relocation programme; • Weed eradication programme; • Revegetating and restoring POS areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access; • Soil and plant source material hygiene; • Encouraging community involvement and awareness promoting control of pets (i.e. dogs); • Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site; • Water conservation principles; • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Responsibilities for implementation; • Progress and compliance reporting; and • Timing and implementation schedule. A Western Ringtail Possum Management Plan will be prepared and implemented by the proponent in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to: • Identification of WRP habitat and individual trees currently providing high possum values and that must be retained; • Management prescriptions and ongoing maintenance requirements for a defined corridor habitat; • Procedures to be followed in the event that land holders seek, or are required, to undertake modification to vegetation that may harm habitat and linkage values for possums; • A programme of tree plantings to be undertaken on public or other lands to maximise linkage opportunities for possums between the habitat areas. • Environmental offsets or off-site mitigation in the event that the WRP cannot be fully managed on-site and translocations are required to be undertaken; • A monitoring programme to measure: - use of linkage habitat by possums and inter-mixing of populations at either end of linkage corridors; - vegetative health and requirements for replanting or other vegetation maintenance required within the possum

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
				corridor; and • Education programmes including signage, pamphlets and other means, to engage property owners and the broader community about the function of the WRP and its habitat requirements.
Conservation Areas	To protect and enhance the environmental values of areas identified as having significant environmental attributes.	The Leeuwin Naturaliste Ridge National Park (National Park) abuts the Canal Rocks Road reserve along the southern boundary of the development and is upgradient of the development and is in excellent condition. Apart from the firebreak along the road reserve, there are no tracks within the Park adjacent to Location 413. The National Park's attractions include a stretch of scenic coastline with diverse uses ranging from surfing and fishing, family-friendly beaches; caves; scenic forest and heath-lands. This diversity of uses ensures that the Park has the highest visitation of any of Western Australia's national parks (currently 1.4 million per annum) (CALM 2005).	***Park-Development Interface Management Issues*** The increased number of permanent residents and tourists in the general area as a result of the proposed development will increase the potential usage of the Park and adverse, direct and/or indirect impacts such as trampling of native vegetation and the introduction of weeds and plant diseases may occur. Dense vegetation between the road reserve and the National Park will naturally discourage pedestrian access to the National Park. Bushfires are regularly started every summer, either deliberately by arsonists and vandals, or accidentally by campers. Accidental fires also occur as a result of escapes from prescribed burning by the DEC. The proposed development at Smiths Beach will lead to an increase in the population living and visiting the area. Given the proximity of the development to the National Park, there is a potential for the incidence of fires in the Park to increase. Conversely, the residents on Location 413 would be at risk of fire escaping from the National Park or from within the development itself without an appropriate Fire Management Plan. ***Weeds and Plant Diseases*** Potential indirect impacts include the introduction of further weeds and *Phytophthora cinnamomi* (Dieback) and other plant diseases during construction activities and an increased use of the area by both residents and visitors potentially resulting in trampling of native vegetation and disturbance of fauna. ***Bushfire*** There is a potential for the incidence of fires in the National Park to increase due to the increased numbers of tourists/residents in the vicinity of the Park. The residents of Location 413 would be at risk of fire escaping from the National Park or from within the development itself.	A Fire Management Plan has been prepared to manage the potential impacts of a bush fire on the proposed development site in accordance with the provisions of the LNRSPP and the Shire of Busselton DTPS No. 20. The Plan has been prepared in consultation with the Fire and Emergency Services Authority (FESA), Shire and the DEC (FirePlan WA 2006). The draft Fire Management Plan is included as Appendix 7 in the volume of technical appendices. The aim of the draft Fire Management Plan is to reduce the threat to residents and fire fighters in the event of a fire within or near the development by providing for a series of strategic fire breaks through the development and bush fire hazard separation zone between remnant bushland and the proposed development. This provides for a safe degree of separation from the natural bushland within the proposed development as well as an appropriate level of access for emergency vehicles and egress for public escape (Canal Rocks Pty Ltd 2007). The Plan has been developed to incorporate fire management methods such as: • Strategic firebreak system; • Dwelling construction and setbacks; • Building protection zone; • Hazard separation zone; • Hazard reduction; • Introduction of scheme water; and • Driveways. The Plan promotes the philosophy that there must be a physical separation between bush fire hazards and development. To this end, proposed buildings will be required to be setback 50m from the southern boundary, 20m from the eastern boundary and 20m from the adjoining Resort. The setbacks are required to create building protection and hazard separation zones to assist in reducing fire intensity should a bush fire impact on buildings within the proposed development. The 50m setback on the southern boundary (adjacent to the National Park) will comprise a 20m road reserve (to be maintained as a low fuel zone), a 10m hazard separation zone (to be maintained by the landowner) and a 20m building protection zone (to be maintained by the landowner). The maintenance/funding of the road reserve as a low fuel zone will be subject to an agreement between the proponent and the Shire. The 20m setback on the eastern boundary is to be managed as a building protection zone and the 20m road reserve is to be managed as a low fuel area. The maintenance/funding of the road reserve as a low fuel zone will be subject to an agreement between the proponent and the Shire. Along the western boundary a 20m building protection zone is to be installed around all buildings and chalet areas. A 50m hazard separation zone (including the building protection zone) will be required. A 20m building protection zone will be installed around the boundaries of the adjoining Resort complex with a walkway or road located within this zone.

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
				The Plan also recommends bush fire fuel loadings for each hazard separation zone and methods of achieving these loadings. Management of direct and indirect impacts (eg weeds, *Phytophthora* and other plant diseases and trampling) to the conservation managed areas within the proposed development and to ensure no direct and indirect impacts upon the National Park occur will be addressed in the Vegetation, Flora and Fauna Management Plan to be prepared and implemented by the proponent as a condition of subdivision approval in consultation with the DEC and the Shire of Busselton. The Plan will include but not be limited to: • Fauna relocation programme; • Weed eradication programme; • Revegetating and restoring POS areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access through fencing and formalising accessways; • Soil and plant source material hygiene; • Encouraging community involvement and awareness promoting control of pets (i.e. dogs); • Working with the Shire to prohibit domestic cats via expansion of the Shire's Cat Local Law to include the site; • Water conservation principles; • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Responsibilities for implementation; • Progress and compliance reporting; and • Timing and implementation schedule.
Landscape and Landforms	To maintain the integrity of landscape and landforms by maintaining their integrity, ecological functions and environmental values.	The Principal Ridge Protection Area as identified in the LNRSPP forms the western most portion of the proposed development. The boundaries of this area reflect the boundaries of the LNRSPP Principal Ridge Protection Area and the Recreation Reserve as depicted under the Shire of Busselton DTPS No. 20. Location 413 is bounded on its seaward side by a generally rocky coastline. The coastline consists of two distinct sections: a rocky granite headland to the west and in the western half of the northern boundary, and a sandy beach in the eastern half of the northern boundary. The existing foreshore reserve varies in width from 15m–120m as measured from the line of permanent vegetation. The coastal foreshore area in proximity to Location 413 is contained within Crown Allotment 5043 located adjacent to the north/northwest of Location 413 and Crown Allotment 5044 lying due north of Location 364 that contains the Canal Rocks Beach Resort. The reserve is narrowest near the north-west corner of Location 364 consisting of a 6m wide sealed road, approximately 9m of sparsely vegetated dunes and a sandy beach.	The increased number of residents and tourists in the area as a result of the proposed development will increase the potential usage of Smiths Beach and surrounding coastline and may result in deleterious impacts on the associated coastal landforms and vegetation.	A draft Foreshore Management Plan has been prepared by the proponent in consultation with the DPI, DEC and the Shire of Busselton (refer to Appendix 2) and will be implemented by the proponent as a condition of subdivision approval. The draft FMP includes the following elements: • Comprehensive weed eradication programme; • Revegetating and restoring foreshore POS adjoining conservation areas with appropriate indigenous flora; • Controlling vehicle and pedestrian access; • Provision of public facilities; • Fire management including provision of fire hydrants; • Encouraging community involvement and awareness promoting control of pets (i.e. dogs); • Water conservation principles; • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Progress and compliance reporting; and • Timing and implementation schedule. Refinement of management measures and facilities during the subdivision or development application process will be undertaken in consultation with the Shire of Busselton with advice from the DPI and the DEC. A Vegetation Rehabilitation and Management Plan will be prepared for the Principal Ridge Protection Area by the proponent, prior to the land

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
				being excised into a super lot. The Plan will include, but not be limited to: • Weed eradication programme; • Revegetating and restoring with appropriate indigenous flora; • Controlling vehicle and pedestrian access; • Soil and plant source material hygiene; • Fire management: • Monitoring criteria to determine the success of the revegetation and weed eradication programme; • Progress and compliance reporting; and • Timing and implementation schedule.
Karst	To maintain the integrity, ecological functions and environmental values of karst.	An investigation of the project area was undertaken by Logiden Pty Ltd (Dr Brian Logan) to determine what geological investigations may be required to provide an assessment of risks and problems related to any potential karst features on the site. The study included an analysis of air-photographs and geological maps, and a site visit involving a traverse of the property on 17 November 2005. The survey undertaken by Dr Logan found no significant karst features and no indicators of concealed karst features. The limestone that was observed on the property was too thin to support any significant karst features and as a result, Dr Logan concluded that "in the boundaries of the property, karst risks are negligible".	No impacts are envisaged as there have been no significant karst features identified and nor are any suspected, since the limestone outcrop found on the property appears too thin to support such features.	There are no management strategies proposed as no significant karst features have been identified nor are suspected to occur on-site.
Surface Water Quantity and Quality	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.	No wetlands are mapped in regulatory documents as occurring on-site. An old farm dam built by the previous owners is present within the proposed development area, in the northern part of the property adjacent to the former caravan park. The dam is set in granitic bedrock and it is probable that it receives water by the seepage of rainwater along the interface between soil and bedrock. The Gulgunyup Brook a seasonally flowing stream located approximately 200m to the northeast of the site at its closest point.	Gunyulgup Brook is located approximately 200m to the north east of the proposed development discharging directly into Smiths Beach. There is potential for this discharge to impact on human health.	In relation to water supply impacts to the existing Dunsborough Town Water Supply, the Water Corporation advises that these impacts have previously been considered in the licensing of the facility and are therefore not relevant to the proposed development. A Stormwater Management Strategy (Appendix 10) has been prepared for the project area consistent with the *Stormwater Manual for Western Australia* and includes: • Best Management Practice for stormwater management; • At-source pollutant/nutrient input minimisation; • Water conservation strategy to minimise ex-house potable water use; and • Monitoring programmes to compliance reporting mechanisms. Prior to commencement of site works, an Integrated Water Management Plan incorporating the principles and best management practices described in the stormwater strategy and the *Stormwater manual for Western Australia* will be prepared to the satisfaction of the DoW and Shire of Busselton. The Plan will be implemented during and post-construction.
Groundwater Quality	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.	A drilling programme undertaken on site failed to detect any significant groundwater resource. Of the 35 holes drilled over the site for the determination of soil depth, groundwater was encountered at only two locations. This occurred in thin lenses of coarse quartz sands overlying bedrock usually at depths greater than 7m beneath the ground and do not represent a significant groundwater resource.	Increased levels of nutrients, pesticides, pathogens, irrigation and stormwater run-off may impact upon groundwater and marine water quality of the surrounding area.	A Stormwater Management Plan (Wood and Grieve Engineers 2006) has been prepared consistent with the *Stormwater Manual for Western Australia* and includes: • Best Management Practice for stormwater management; • At-source pollutant/nutrient input minimisation; • Water conservation strategy to minimise ex-house potable water use; and • Monitoring programmes to compliance reporting mechanisms. The Plan will be implemented during the construction phase of the proposed development.

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
				Prior to commencement of site works, an Integrated Water Management Plan incorporating the principles and best management practices described in the stormwater strategy and the *Stormwater manual for Western Australia* will be prepared to the satisfaction of the DoW and Shire of Busselton. An Effluent Disposal Management Strategy has been prepared (Wood and Grieve Engineers 2005b) and includes: • Provision of reticulated sewerage for the entire development; and • Provision for the connection of services to the Water Corporation's Dunsborough WWTP. The Plan will be implemented during the construction phase of the proposed development. Prior to the commencement of any dewatering, construction contractors will be required to apply for and obtain from the DoW a 'Licence to Take Water'. All dewatering will be carried out in accordance with the conditions of this licence.
Air Quality – Dust and Particulates	To ensure that emissions do not adversely affect environment values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.	The project area is predominantly a 'Greenfields' site that is predominantly vegetated and bounded by coastline to the west and northwest. District roads form the eastern and southern boundaries of the site.	The proposal may generate dust from earthworks, clearing of vegetation and vehicle emissions during construction. Impacts may potentially extend beyond the project area boundaries. TSP is typically associated with adverse aesthetic effects rather than health effects. These particles tend to settle out on surfaces causing soiling and discolouration. Being larger particles, TSP settle from the atmosphere quickly, falling within a short distance of the source with a distribution dependant on ambient conditions (wind speed / direction) to determine impacted area. Inhalable particles are associated with increases in respiratory illnesses such as asthma, bronchitis and emphysema, with an increase in risk related to their size, chemical composition and concentration. Particles in the PM10 size fraction have been strongly associated with increases in the daily prevalence of respiratory symptoms, hospital admissions and mortality (NEPC 1998).	Dust management within the project area will need to comply with the requirements of Environmental Protection (Air Quality) Regulations, specifically EPA Guidance Statement No. 18 *Prevention of Air Quality Impacts from Land Development Sites* (EPA, 2000b). Vehicle emissions within the project area during the construction phase will need to comply with the Environment Protection and Heritage Council (EPHC) National Environment Protection Measures (NEPMs), Ambient Air Quality Measures, 1998 and National Environmental Protection (NEP) Air Toxics- Air Quality Measures, 2004 and other applicable guidance. Issues relating to dust and particulates will be addressed in the draft Construction Management Strategy to be prepared to the satisfaction of the DEC and implemented by the proponent as a condition of subdivision approval (refer to Appendix 14). A key element of the draft CMS will include dust management plans taking into account seasonal influences and distance to sensitive premises and incorporating any or all of the following measures: • where possible retain vegetation; • limit area of exposed soil; • hydro-mulching or alternative effective stabilisation immediately following completion of bulk works; • water to increase moisture in soil in sensitive or high traffic areas; • minimising "fetch" distance; • wind fencing; • timing of earthworks (daily and seasonally); • consideration of wind direction and strengths (eg sea breezes) when planning bulk earthwork 'cells'; • consideration of distance to and direction of sensitive locations (eg may construct closer to residents during time of year when dust not expected to be as much of a problem etc); • appropriate shape/layout of earthworks area (boundary perpendicular to problem wind direction); • staging of subdivision (need to consider dust in the early stages of planning, not just at time of construction);

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
				• site perimeter monitoring including sensory alarms or dial out capability.
Air Quality - Greenhouse Gases	To minimise emissions to levels as low as practicable on an on-going basis and consider offsets to further reduce cumulative emissions.	The project area is predominantly a 'Greenfields' site that is predominantly vegetated and bounded by coastline to the west and northwest. District roads form the eastern and southern boundaries of the site.	During the proposed development of the site, greenhouse gases will be released to the atmosphere as a result of: • decomposition of cleared vegetation and release of carbon from the soil as part of site development; • combustion of fuel utilised in mobile equipment during earthworks and sub-division development; • life cycle emissions related to the production, handling and use of raw materials for development of the project, and subsequent dwellings; and • direct emissions related to the generation, management and disposal of construction industry and domestic wastes. Once the site is developed, the associated 'operational' greenhouse budget will be dictated by: • the design of individual buildings and how these minimise energy demands, particularly in relation to seasonal heating and cooling; • indirect emissions associated with the consumption of power from the electricity grid for domestic use including heating and cooling; • direct emissions from the combustion of fuels associated with transport activities within and around the project area; and • direct emissions related to the generation, management and disposal of domestic wastes.	The proposed development of Location 413 will be considered in the context of the EPA's Guidance Statement No. 12 *Minimising Greenhouse Gas Emissions* (EPA 2002c), Position Statement No. 6 *Towards Sustainability* (EPA 2004) and the DPI's *Liveable Neighbourhoods Community Design Code* (WAPC 2000). As an input to the development strategies identified for implementation of the proposed development, measures to minimise greenhouse emissions through practical measures such as reducing the need for car use within the site will be considered.
Noise	To protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring the noise levels meet statutory requirements and acceptable standards.	The project area is predominantly a 'Greenfields' site that is predominantly vegetated and bounded by coastline to the west and northwest. District roads form the eastern and southern boundaries of the site.	The proposed development of the project area will likely bring about additional noise due to increased residential densities and transport. In a planning context, while noise-sensitive developments should ideally be separated from major sources of noise such as roads, this is often impractical or undesirable to separate transport corridors from residential and other land uses which they serve. Noise associated with construction activities may affect the amenity at nearby sensitive premises and impact on recreational 'wilderness' users in the area such as those hiking the Cape to Cape Trail.	Traffic noise and vibration impacts on future residents will need to comply with the *Environmental Protection (Noise) Regulations*, specifically Draft EPA Guidance No. 14 (Version 3) *Road and Rail Transport Noise* (DEP May 2000e), Western Australian Planning Commission (2005) Draft State Planning Policy *Road and Rail Transport Noise* and with Australian Standard *AS2670/1990 Evaluation of human exposure to whole body vibration.* Construction noise received at nearby sensitive premises and transient visitors will need to comply with the requirements of the *Environmental Protection (Noise) Regulations* 1997. To ensure compliance with these regulations, their management will be described in the CMS that will be prepared to the satisfaction of the DEC and implemented by the proponent as a condition of subdivision approval.
Aboriginal Heritage	To ensure that changes to the biophysical environment do not adversely affect Aboriginal heritage sites and/or cultural associations within the area and comply with the requirements of relevant Aboriginal and heritage legislation.	The archaeological survey detected two artefact scatters and several isolated artefacts. The artefacts consist of quartz debris that is a by-product of the manufacture of tools. Of the two scatters one is within the development area but it has been heavily disturbed. Field Site #1 is a 'continuous' scatter of artefacts, recorded over a linear distance of approximately 1km located in a firebreak exposure running along the western property boundary. The other scatter is within the area of proposed public open space to the south and consequently it will not be disturbed by the development. The ethnographic survey involved a review of archival material, consultation with local Aboriginal organisations and visits to the site by Aboriginal representatives. No ethnographic sites were identified within the bounds of the project area.	The clearing and earthworking activities to be undertaken to construct the proposed development may impact on Aboriginal sites that may be present on-site.	An application to the Aboriginal Cultural Materials Committee under Section 18 of *the Aboriginal Heritage Act 1972-1980* for Ministerial consent to disturb a site has been submitted and approved. This approval has been granted subject to the condition that further archaeological monitoring take place following the clearing of bushland areas but before development, to ensure that no significant sites that may be hidden by vegetation are destroyed. Monitoring of surface earthworks throughout the project area will be conducted by an archaeologist. Another site (a scatter) is located within the area of proposed public open space to the south and consequently it will not be disturbed by the proposed development.

Environmental Factor	Environmental Objective	Existing Environment	Potential Impacts	Management Strategies
Visual Amenity	To ensure that visual amenity is considered and measures are adopted to reduce adverse visual impacts on the surrounding environment as low as reasonably practicable.	The methodologies set out to provide a process of: • Assessing the aesthetic values of Location 413 Smiths Beach and its setting; • Defining management objectives, standards, for future management of these values; • Providing guidelines that will help provide a framework for the development design that will contribute to the identification of a developable area for the site. The individual tasks have been undertaken and the iterative design process has benefited from a detailed study of development options that respond to the various criteria. In addition the process has utilised technology and in depth site assessment to further refine development responses to opportunities, constraints and stakeholder comment. The work undertaken to date has identified an appropriate design and planning response that is capable of further refinement during the detailed design of development on the site. The detailed design will be guided by the Design Guidelines.	Potential for construction activities and future development to impact on the visual amenity both within and adjacent to the project area.	A Landscape and Visual Assessment prepared for the project area will establish a framework for the landscape and urban design of the site, which responds to both the site and surrounding landscape characteristics. All development applications will be reviewed to ensure compliance with this Assessment. Design Guidelines are being prepared for the detailed architectural response to the site. The guidelines will be adopted by the Shire as a policy to guide design and the planning approval process for individual buildings and developments. The Design Guidelines are architectural guidelines that will supplement the DGP submission. They deal with detail and will be implemented by a Town Architect or Committee.

List of Abbreviations:
DEC = Department of Environment and Conservation
DIA = Department of Indigenous Affairs
DoW = Department of Water
DPI = Department for Planning and Infrastructure
HDWA = Health Department of Western Australia

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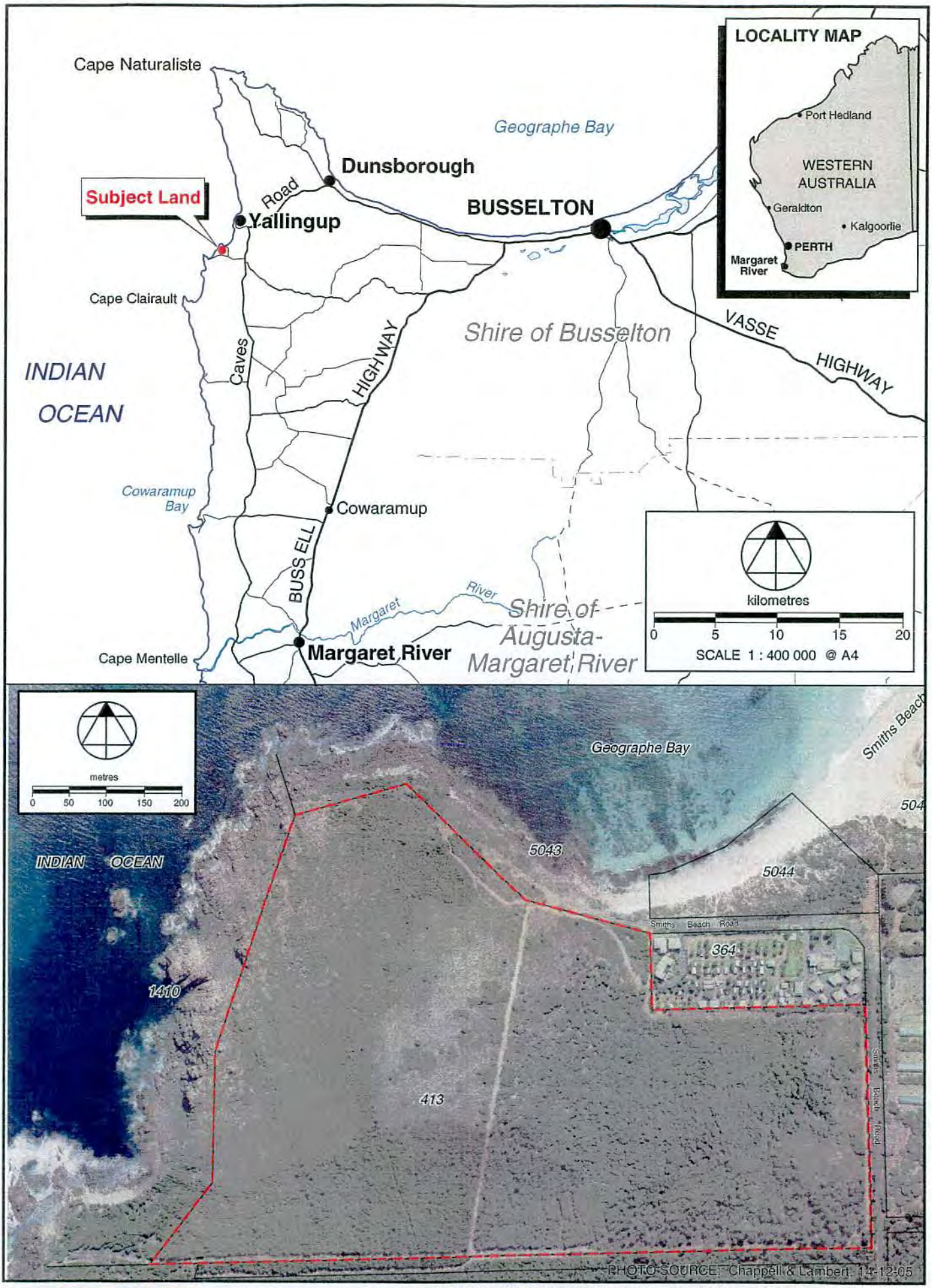
FIGURES



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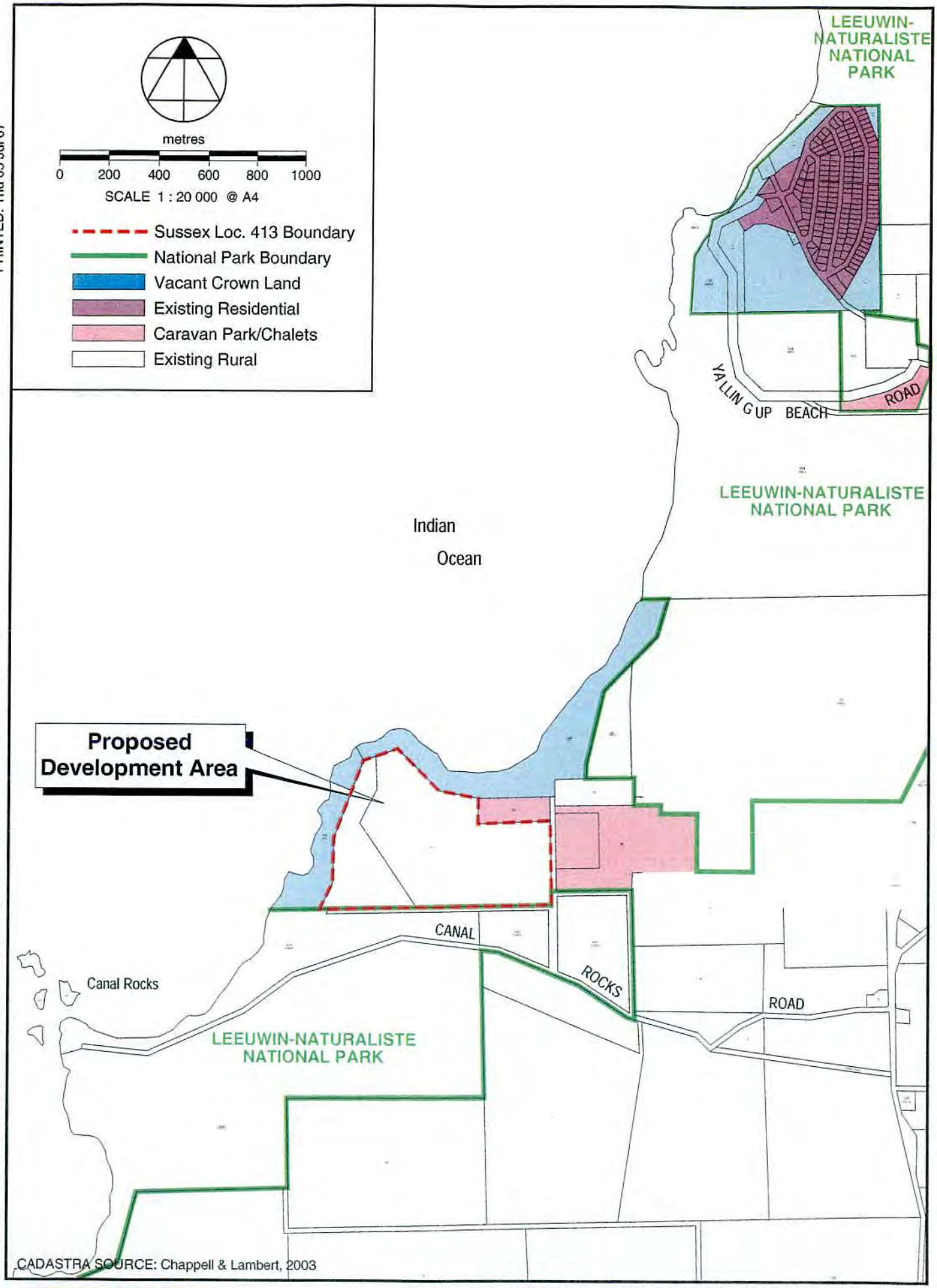
SUSSEX LOCATION 413 YALLINGUP, SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No.1597)
LOCATION
FIGURE 1



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SUSSEX LOCATION 413 YALLINGUP, SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No.1597)

ADJACENT LAND USE

FIGURE 2

CAPE TO CAPE TRAIL
(INDICATIVE ONLY)

VILLAGE CENTRE

TOURIST
1.4ha
RESORT HOTEL

TOURIST
0.5ha
HOLIDAY APARTMENTS

P.O.S
1.7ha

RESIDENTIAL

CARPARKING

UPGRADE CARPARK FACILITIES

FORESHORE

DUAL USE PATH

EXISTING TOURIST

TOURIST
2ha
BUNGALOWS & GROUPED UNITS

TOURIST
BACKPACKER ACCOMMODATION
0.8ha

CAPE TO CAPE TRAIL
(INDICATIVE ONLY)

PROPOSED ADDITION TO LEEUWIN NATURALISTE NATIONAL PARK
80ha

SUPERCEDED

EXISTING 20M ROAD RESERVE

EXISTING NATIONAL PARK

SOURCE: Chappell & Lambert, RevB 11-08-05

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SUSSEX LOCATION 413 YALLINGUP - SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

INITIAL DEVELOPMENT GUIDE PLAN (DECEMBER 2000)

FIGURE 3

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CHECKED BY: PvdM 04-07-07
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CRP6-2/REPT/26_175F3.dgn

PRINTED: Fri 17 Aug 07

CHECKED: PvdM 16-8-07

DRAWN: GLM 16-8-07

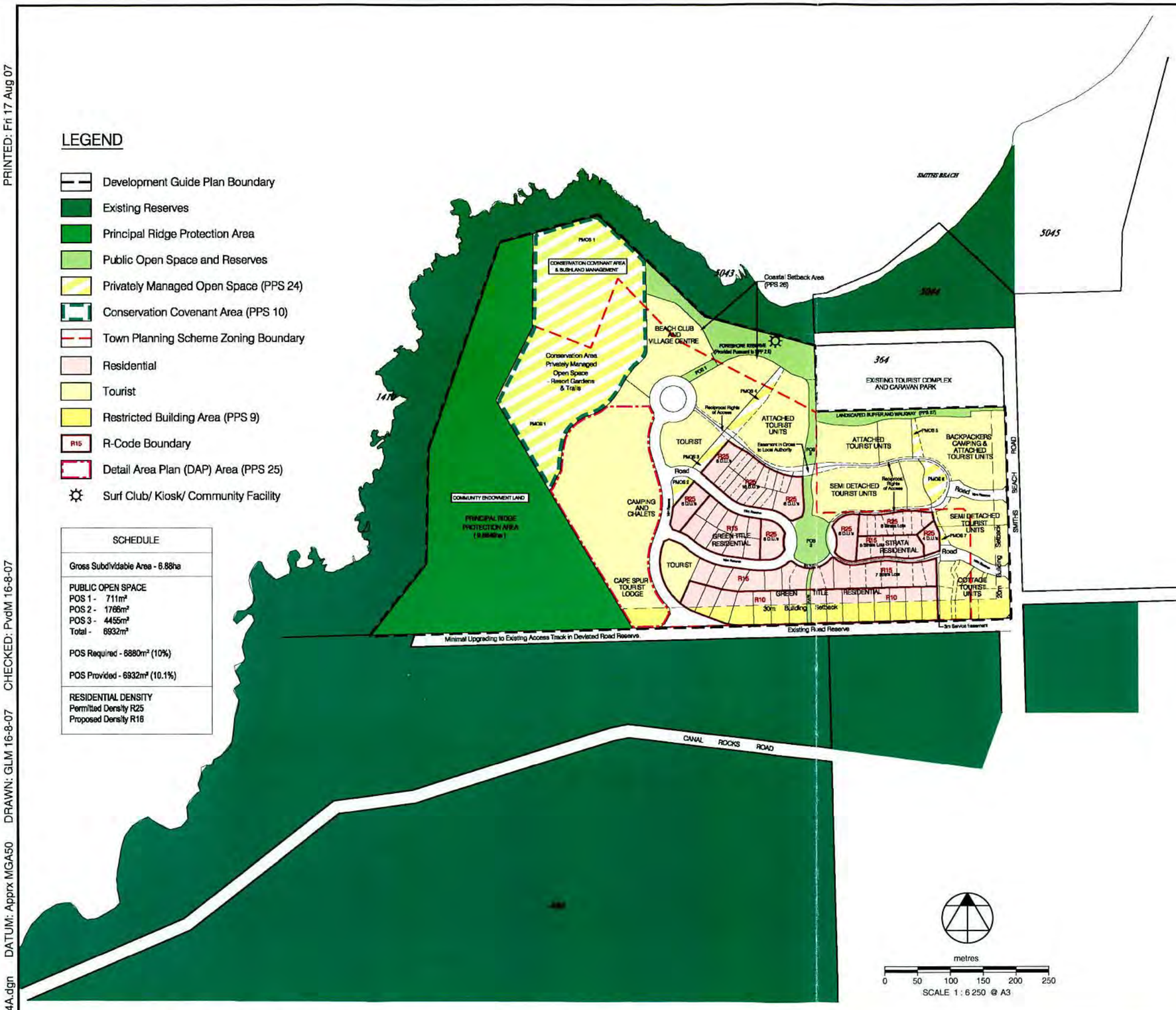
DATUM: Apprx MGA50

CRP6-2/REPT/25_175F4A.dgn

LEGEND

- Development Guide Plan Boundary
- Existing Reserves
- Principal Ridge Protection Area
- Public Open Space and Reserves
- Privately Managed Open Space (PPS 24)
- Conservation Covenant Area (PPS 10)
- Town Planning Scheme Zoning Boundary
- Residential
- Tourist
- Restricted Building Area (PPS 9)
- R15 R-Code Boundary
- Detail Area Plan (DAP) Area (PPS 25)
- Surf Club/ Kiosk/ Community Facility

SCHEDULE
Gross Subdividable Area - 6.88ha
PUBLIC OPEN SPACE POS 1 - 711m² POS 2 - 1766m² POS 3 - 4455m² Total - 6932m² POS Required - 6880m² (10%) POS Provided - 6932m² (10.1%)
RESIDENTIAL DENSITY Permitted Density R25 Proposed Density R16



PLANNING POLICY STATEMENTS

1. (a) This Development Guide Plan provides a framework for future subdivision and development of the land. Actual subdivision, which may vary from the Development Guide Plan, requires approval from the W.A. Planning Commission.

(b) This DGP is to be read in conjunction with the Planning Policy Statements of the Statement of Planning Policy 8.1 - Leeuwin Naturaliste Ridge and other relevant policies identified in Schedule 10 of the Shire of Busselton District Town Planning Scheme No.20 (DTPS 20). Where there are anomalies between this DGP and those matters, the provisions of the DGP prevail.

2. This Plan forms a framework for more detailed planning to occur at the subdivision and development stage.

3. This Plan is to be read in conjunction with the Smiths Beach Development Guidelines as adopted by the Shire of Busselton, and which operate in conjunction with this plan to guide and control the built form in the development area.

4. Buildings will be limited in height as specified on the "Special Height Control Area Plan" as endorsed by the Shire of Busselton pursuant to Clause 47(3) of DTPS 20 and which forms part of this Development Guide Plan.

5. Notations are to be created under Section 70A of the Transfer of Land Amendment Act 1996, and be placed on the Survey Strata Superlot titles to ensure that prospective purchasers are informed of the existence of the Development Guide Plan and Development Guidelines applying to the particular survey strata scheme, and of the necessity for the obtaining of Planning Consent for the development of the Survey Strata lot prior to the approval of the creation of further lots as vacant survey strata lots from within the original Superlot.

6. The development is to include 200m² of constructed floor space for community purposes to the satisfaction of the Shire of Busselton. The community purposes floorspace is to be established prior to the clearance of titles representing development beyond 60% of all proposed lots.

7. Prior to determination of a subdivision application, the subdivider will lodge with FESAWA and the Shire a detailed Fire Management Plan (FMP), which includes:
(i) a fire risk assessment in accordance with the requirements of 'Planning for Bush Fire Protection' and Commission Policy DC 3.7; and
(ii) detailed proposals and measures to achieve an appropriate level of fire safety throughout the development.

8. All vehicle access ways within survey strata Superlots will be constructed in full prior to subdivision of the respective Superlots and will be subject of "Easements in Gross" to allow public access along the road system.

9. No Buildings will be permitted in the Restricted Building Area.

10. The area to be subject to a Conservation Covenant will require owners to protect and enhance native vegetation and with a positive covenant placed on Lot titles as a protective mechanism to ensure that these works are maintained.

11. The Principal Ridge Protection Area will be donated to the community of Western Australia by the landowners of Location 413 as a component of the implementation of the overall Development Guide Plan. The staging and exact means by which the land will be bestowed will be determined by agreement with the Shire of Busselton prior to the clearance of titles and/or approval of development.

12. The subdivision is to be serviced by underground power.

13. A Foreshore Management Plan in accordance with requirements of the Shire of Busselton and DPI Coastal Assets Branch is to be submitted and approved for the area of direct coastal frontage of Location 413 prior to clearance of titles. This plan to provide for a system of connecting trails/pathways (to control access to the beach), rehabilitation/revegetation o any degraded areas, coastal management structures and allocation of carparking and vehicle movement areas.

14. The staged construction of the Foreshore Management Plan and Public Open Space by the Proponent is to be determined at the Subdivision stage or through a Development Deed between the proponent and the Shire in a manner that reflects progressive development of the project and progressive demand for additional facilities.

15. Covenants to be placed on all lots to prohibit boundary fencing except those boundaries common with a Public Access Way and/or Public Open Space. (Fencing of courtyards and private open space etc within the curtilage of dwellings is permitted).

16. No further subdivision of the lots created pursuant to this plan will be permitted. This provision does not apply to the further subdivision of Survey Strata Superlots or those lots proposed for Built Strata.

17. Conditions of any subdivision or development approvals on the land will require preparation of a Dust Management Plan to Council's satisfaction prior to commencement of any works on site, and implementation of that plan at each and every stage of the development of the site, including subdivision works.

18. New retail/commercial floor space in the DGP area is not to exceed a maximum of 1700m², and is to be located generally in the northern tourist beachside precincts, preferably in association with the Beachclub Resort.

19. All residential lots are to contain on-site carparking arrangements/provision in accordance with the R-Codes.

20. Prior to the clearance of subdivision conditions for any lots or occupation of development of any kind, the Subdivider is required to undertake a 'traffic management plan/study' for the development area and immediate surrounds for the purpose of identifying road works required as a consequence of the new development and that the Subdivider will carry out to the reasonable requirements of the Shire of Busselton.

21. Prior to the clearance of subdivision conditions for any lots or approval of development of any kind, the Subdivider shall submit to the Shire of Busselton, a 'Developer Contributions Plan' that identifies the community contributions (cash or in-kind) that the Subdivider will make to ensure that the overall development is provided with new or upgraded community facilities required as a consequence of the development to the reasonable requirements of the Shire of Busselton.

22. Prior to the clearance of subdivision conditions for any lots or approval of development of any kind, the Subdivider shall submit a 'subdivision staging plan' that clearly indicates the likely staging of lots, public open space, pedestrian links, rehabilitation and foreshore works, and other relevant works all to the satisfaction of the Shire of Busselton.

23. Appropriate Management Statements/Agreements shall be required as a condition of subdivision approval for any survey strata or strata subdivision of tourist developments. Tourism WA will be consulted in the preparation and approval of those documents.

24. All areas identified on the Development Guide Plan as Privately Managed Open Space (PMOS) will be subject of Management Plans specifying and attaching responsibility for development and maintenance (in perpetuity) of the space to a specified lot(s). All PMOS will be subject of Easements-in-Gross to allow public (pedestrian) access throughout the Development Guide Plan area.

25. Proposals for development in the DAP area are to be low-rise (generally single storey or split level construction) and are to be supported by comprehensive assessment of visual and landscape impacts that demonstrates to the satisfaction of the Shire of Busselton that the development will not be a visual intrusion in the context of existing and approved development at that time, and that the landscape integrity of the area will not be unduly compromised. The Detailed Area Plan submitted in support of any proposal will be subject of consultation with the public and relevant Government agencies prior to endorsement by the Shire of Busselton and/or the issue of Planning Consent.

26. Tourist/Residential development in the northern sector of the site, adjacent to the new Foreshore Reserve and extension of Smiths Beach Road, is to be setback 51 metres from the coastal Horizontal Setback Datum as delineated in the report by MP Rogers and Associates.

27. Public Open Spaces that fulfils Buffers, Foreshore Reserves pursuant to S.P.P. 2.6 and similar roles are not formal POS for the purposes of WAPC Policy DC 2.3.

ATA Environmental
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SMITH'S BEACH - DEVELOPMENT GUIDE PLAN

LOCATION 413 SMITHS BEACH ROAD, YALLINGUP

SHIRE OF BUSSELTON

SOURCE: BSD, Plan No. DAP-1 Rev 7, 26-07-2007

SUSSEX LOCATION 413, YALLINGUP
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

DRAFT DEVELOPMENT GUIDE PLAN

FIGURE 4a

PRINTED: Thu 05 Jul 07

CHECKED: PvdM 04-07-07

DRAWN: 04-07-07

DATUM: MGA

CRP6-2/REPT/26_175F4b.dgn

Legend

IDENTIFIED DEVELOPABLE LAND AREA	21.33ha
Tourist	14.94ha (70.04%)
Residential	6.39ha (29.96%)
Public Open Space, Foreshore Reserves & Public Spaces	
Community Endowment Land	9.68ha

metres

0 50 100 150 200

SCALE 1 : 3000 @ A3

PMOS 1

CONSERVATION COVENANT AREA & BUSHLAND MANAGEMENT

Coastal Setback Area (PPS 26)

5043

5044

Conservation Area Privately Managed Open Space - Resort Gardens & Trails

BEACHCLUB RESORT

FORESHORE RESERVE (Provided Pursuant to SPP 2.6)

POS

364

EXISTING CARAVAN PARK / TOURIST COMPLEX

PMOS 4

Reciprocal Rights of Access

LANDSCAPED BUFFER & WALKWAY (PPS 27)

ATTACHED TOURIST UNITS

PMOS 5

ATTACHED TOURIST UNITS

BACKPACKERS CAMPING & ATTACHED TOURIST UNITS

ROAD

TOURIST

Easement in Gross to Local Authority

POS

PMOS 3

6 D.U.'s

CAMPING AND CHALETS

Road

PMOS 2

16 D.U.'s

SEMI DETACHED TOURIST UNITS

Reciprocal Rights of Access

PMOS 6

Road 16m Reserve

413

6 D.U.'s

6 D.U.'s

16m Reserve

15m Reserve

COMMUNITY ENDOWMENT LAND

PRINCIPAL RIDGE PROTECTION AREA (9.6849ha)

GREEN TITLE RESIDENTIAL

6 D.U.'s

POS

11 Strata Lots

6 D.U.'s

4 D.U.'s

5 Strata Lots

STRATA RESIDENTIAL

PMOS 7

SEMI DETACHED TOURIST UNITS

Setback

Road 16m Reserve

7 Strata Lots

TOURIST

CAPE SPUR TOURIST LODGE

GREEN TITLE RESIDENTIAL

COTTAGE TOURIST UNITS

20m Building

30m Building Setback

SMITHS BEACH

Existing Road Reserve

3m Service Easement

Minimal Upgrading to Existing Access Track in Deviated Road Reserve

SOURCE: BSD, PLAN No. DAP-3 REV-5, 10-04-07

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SUSSEX LOCATION 413, YALLINGUP
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No.1597)

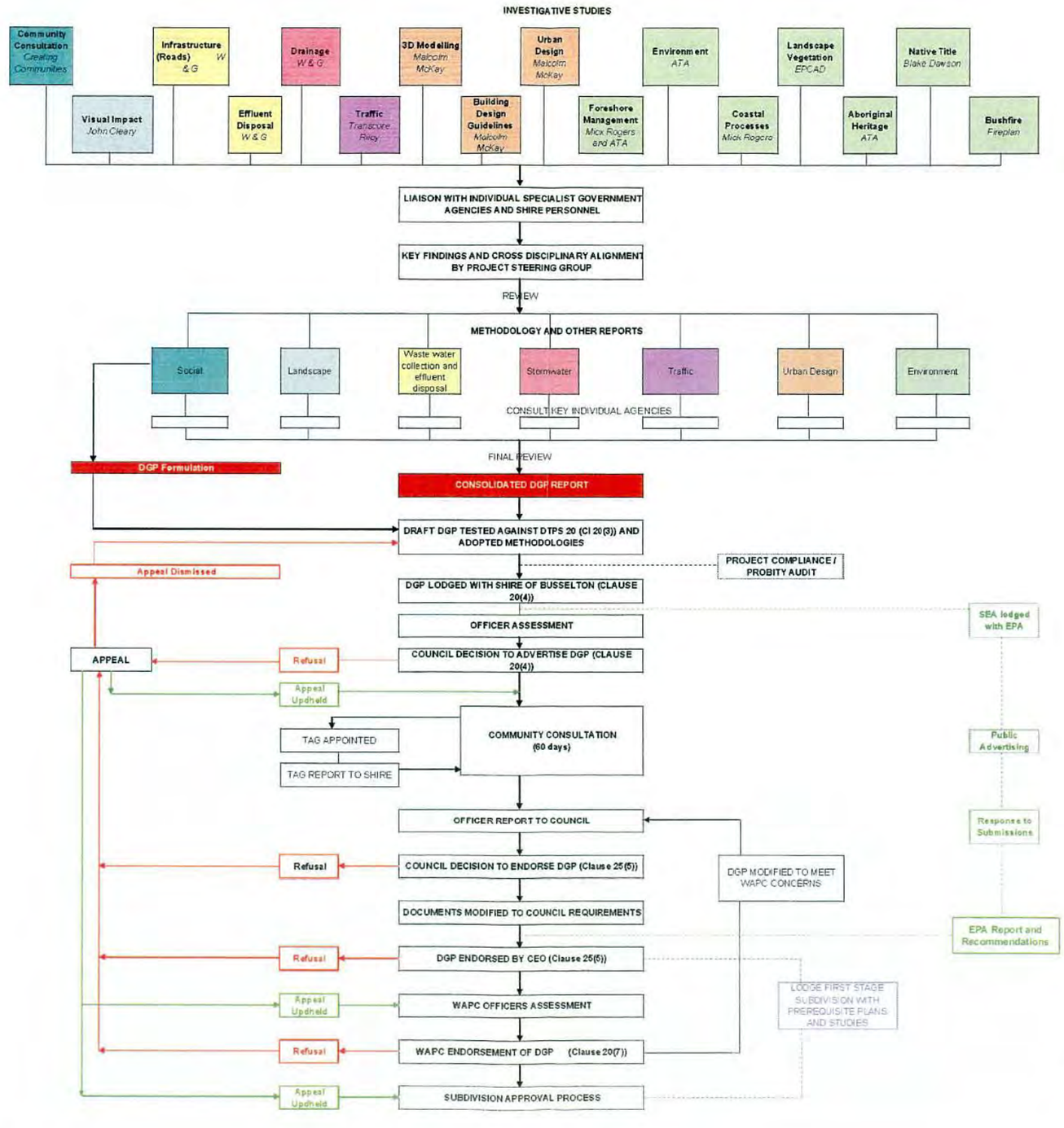
DRAFT DEVELOPMENT GUIDE PLAN WITH AIR PHOTO

FIGURE 4b

SMITHS BEACH DEVELOPMENT GUIDE PLAN
PROCESS CHART

(as endorsed by Smiths Beach Co-ordination Meeting 17 March, 2005)

SHIRE OF BUSSELTON DISTRICT TOWN PLANNING SCHEME No. 20 Clause 23 (Schedule 4, No. 36) & Clause 25
SMITHS BEACH METHODOLOGIES



SOURCE: Michael Swift and Associates Town Planners, August 2006

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SUSSEX LOCATION 412 YALLINGUP
SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

DPG FORMULATION, CONSULTATION AND APPROVAL STEPS

FIGURE 5

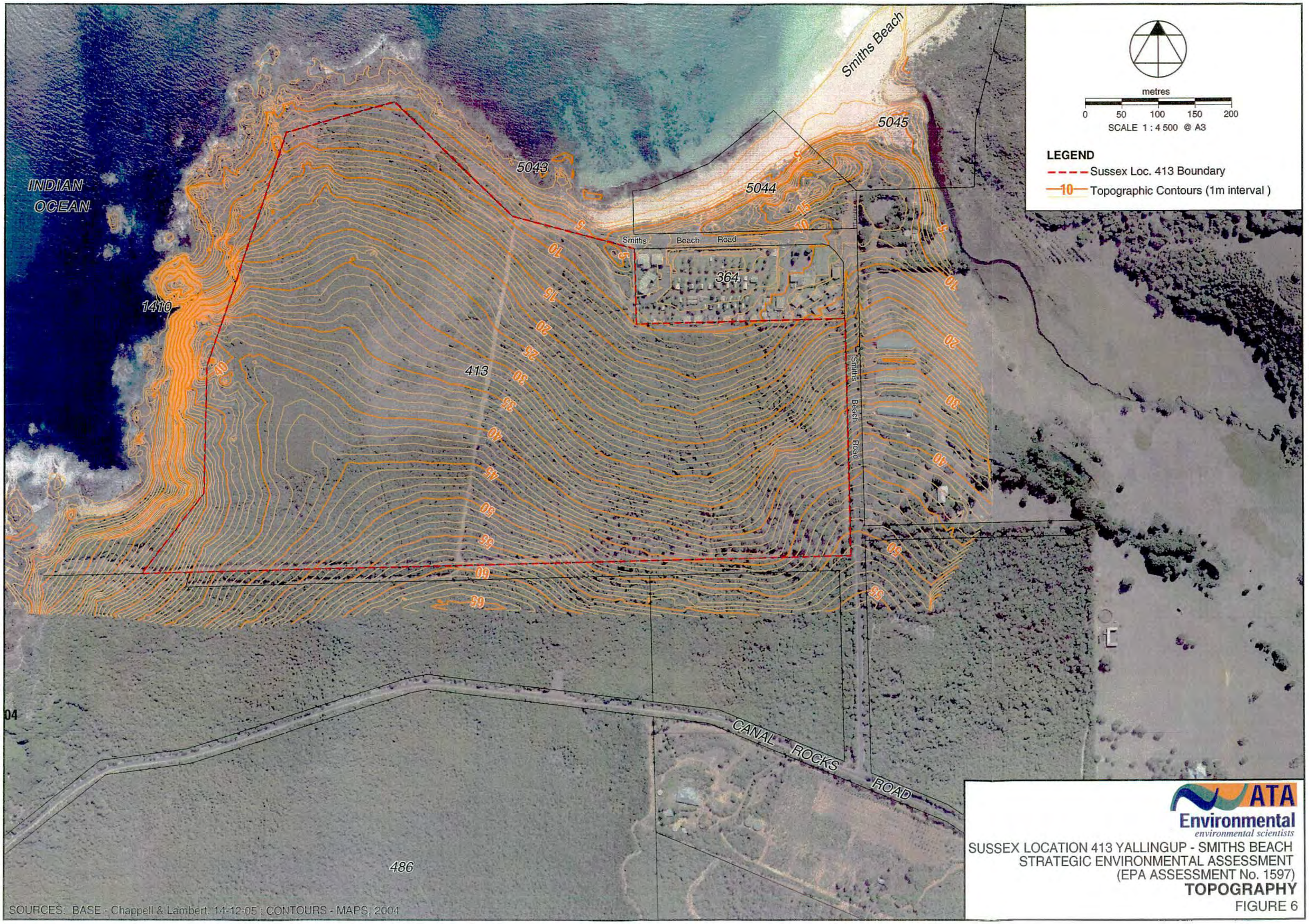
PRINTED: Thu 05 Jul 07

CHECKED BY: BvdW 12-09-06

DRAWN: TE/GLM 12-09-06

DATUM: MGA

CRP6-2/REPT/26_175f6.dgn



SOURCES: BASE - Chappell & Lambert, 14-12-05 ; CONTOURS - MAPS, 2004

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SUSSEX LOCATION 413 YALLINGUP - SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

TOPOGRAPHY

FIGURE 6

PRINTED: Thu 05 Jul 07

CRP6-2/REPT/26_1757.dgn DATUM: Local Grid DRAWN BY: TE 24-08-06 CHECKED BY: MS/BvdW 24-08-06

INDIAN OCEAN

Smiths Beach Road

Smiths Beach Road

metres

0 20 40 60 80 100

SCALE 1 : 3 000 @ A3

LEGEND

- Sussex Loc. 413 Boundary
- 12.5 Topographic Contour (2.5m interval AHD)
- SB1 >1.5 Test Pit Location and Soil Depth
- Inferred Soil Depth Boundary
- ≤ 0.5m
- 0.5 - 1m
- 1 - 1.5m
- > 1.5m

413
40.4686ha

BASE SOURCE: CHAPPELL & LAMBERT, 2001

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SUSSEX LOCATION 413 YALLINGUP - SMITH'S BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No.1597)

SOIL DEPTH INVESTIGATION

FIGURE 7

metres
0 50 100 150 200
SCALE 1 : 4 000 @ A3

LEGEND

- Subject Land Boundary
- Cadastral Boundary
- Vegetation Association Boundary
- Vegetation Condition Boundary
- Location of *Dryandra sessillis* var. *cordata* (P4) Plants and Number of Plants at Location

VEGETATION ASSOCIATIONS

Vegetation Occurring on Outcropping Granite Soils

KcHt	*Kunzea ciliata/Hakea trifurcata* Low Closed Heath
KcMl	*Kunzea ciliata/Melaleuca lanceolata* Low Closed Heath
DcPf	*Dodonaea ceratocarpa/Pimelea ferruginea* Low Open Heath

Vegetation Occurring on Shallow Granite Soils (<1.5m)

HhXp	*Hibbertia hypericoides/ Xanthorrhoea preissii* Low Shrubland
AsHh	*Acacia saligna/Hibbertia hypericoides* Open Heath
DcXpHh	*Dodonaea ceratocarpa/Xanthorrhoea preissii/ Hibbertia hypericoides* Low Open Heath
KcLaFn	*Kunzea ciliata* Low Shrubland over *Lepidosperma angustatum/Ficinia nodosa* Open Sedgeland
XpXbHh	*Xanthorrhoea preissii/Xanthorrhoea brunonis/Hibbertia hypericoides* Low Shrubland to Low Open Heath
NfCcMl	*Nuytsia florbunda/Corymbia calophylla/Melaleuca lanceolata* Low Open Woodland mixed with *Hibbertia hypericoides* Low Open Heath
EmCcAf	*Eucalytpus marginata/ Corymbia calophylla/ Agonis flexuosa* Low Open Woodland over *Dodonaea ceratocarpa/ Hibbertia hypericoides* Low Open Heath

Vegetation Occurring on Shallow Sand over Limestone Soils

ArMhSg	*Acacia rostellifera/ Melaleuca huegelii/ Spyridium globulosum* Closed Heath to Closed Scrub
SgMhDd	*Spyridium globulosum/Melaleuca huegelii* High Shrubland over *Dodonaea ceratocarpa* Low Open Heath
MhMl	*Melaleuca huegelii/Melaleuca lanceolata* Closed Scrub over *Melaleuca systena* Low Open Shrubland
Ml	*Melaleuca lanceolata* Low Closed Forest

Vegetation Occurring on Deep Sandy Soils (>1.5m)

AhHh	*Allocasuarina humilis/Hibbertia hypericoides* Low Open Heath
BaAf	*Banksia attenuata/ Agonis flexuosa* Low Woodland
Af	*Agonis flexuosa* Low Open Forest

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SUSSEX LOCATION 413, YALLINGUP, SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No.1597)

VEGETATION ASSOCIATIONS AND LOCATION OF PRIORITY 4 SPECIES *Dryandra sessilis* var. *cordata*

FIGURE 8

PRINTED: Thu 05 Jul 07
CHECKED: PvdM/BvdW 16-03-07
DRAWN: GLM/TE 16-03-07
DATUM: MGA50
CRP6-2/REPT/26_175f8.dgn 03-07

PRINTED: Thu 05 Jul 07

CRP6-2/REPT/26_175f9.dgn DATUM: MGA50 DRAWN: GLM/TE 11-9-06 CHECKED: PvdM/BvdW 11-9-06

RFA VEGETATION LEGEND

C2 **Cowaramup (C2)**
Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia grandis* on lateritic uplands in perhumid zone.

Cd **Cowaramup (Cd)**
Woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia ilicifolia* on dunes and low woodland of *Melaleuca preissiana* on lower slopes n hyperhumid zone.

Cw2 **Cowaramup (Cw2)**
Woodland of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes and low woodland of *Melaleuca preissiana-Banksia littoralis* on depressions in hyperhumid zone.

G3 **Gracetown (G3)**
Mixture of low woodland of *Agonis flexuosa*, forest of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata* and tall open forest of *Eucalyptus diversicolor* with some *Corymbia calophylla* and *Eucalyptus cornuta* on eastward facing slopes in hyperhumid zone.

Ge **Gracetown (Ge)**
Low woodland of *Agonis flexuosa* with some *Corymbia calophylla* on crests of calcareous dunes in humid zone.

GE **Gracetown (GE)**
Closed heath of *Olearia axillaris-Rhagodia baccata-Agonis flexuosa* on seaward slopes in hyperhumid zone.

KE **Kilcarnup (KE)**
Tall shrubland to closed heath of *Agonis flexuosa-Spyridium globulosum* on exposed slopes of calcareous dunes in hyperhumid zone.

Kr **Kilcarnup (Kr)**
Tall shrubland of *Agonis flexuosa-Acacia saligna* on leeside of calcareous dunes in perhumid zone.

W2 **Wilyabrup (W2)**
Open forest of *Corymbia calophylla-Allocasuarina decussata-Agonis flexuosa* on deeply incised valleys in perhumid zone.

We **Wilyabrup (We)**
Low woodland and woodland of *Corymbia calophylla-Eucalyptus marginata* subsp. *marginata* with some *Banksia* spp. on exposed slopes in hyperhumid to humid zones.

Ww2 **Wilyabrup (Ww2)**
Tall open forest of *Corymbia calophylla-Agonis flexuosa* on flats and valleys in perhumid zone.

metres
0 100 200 300 400 500
SCALE 1 : 10 000 at A3

INDIAN OCEAN

Sussex Location 413

Smiths Beach Road

Rocks Road

Canal

Caves Road

VEGETATION SOURCE: RFA Mapping, Busselton 1:250 000 sheet, CALM, February 1998. (Mapped @ 1:50 000 and therefore indicative at 1 :10 000).

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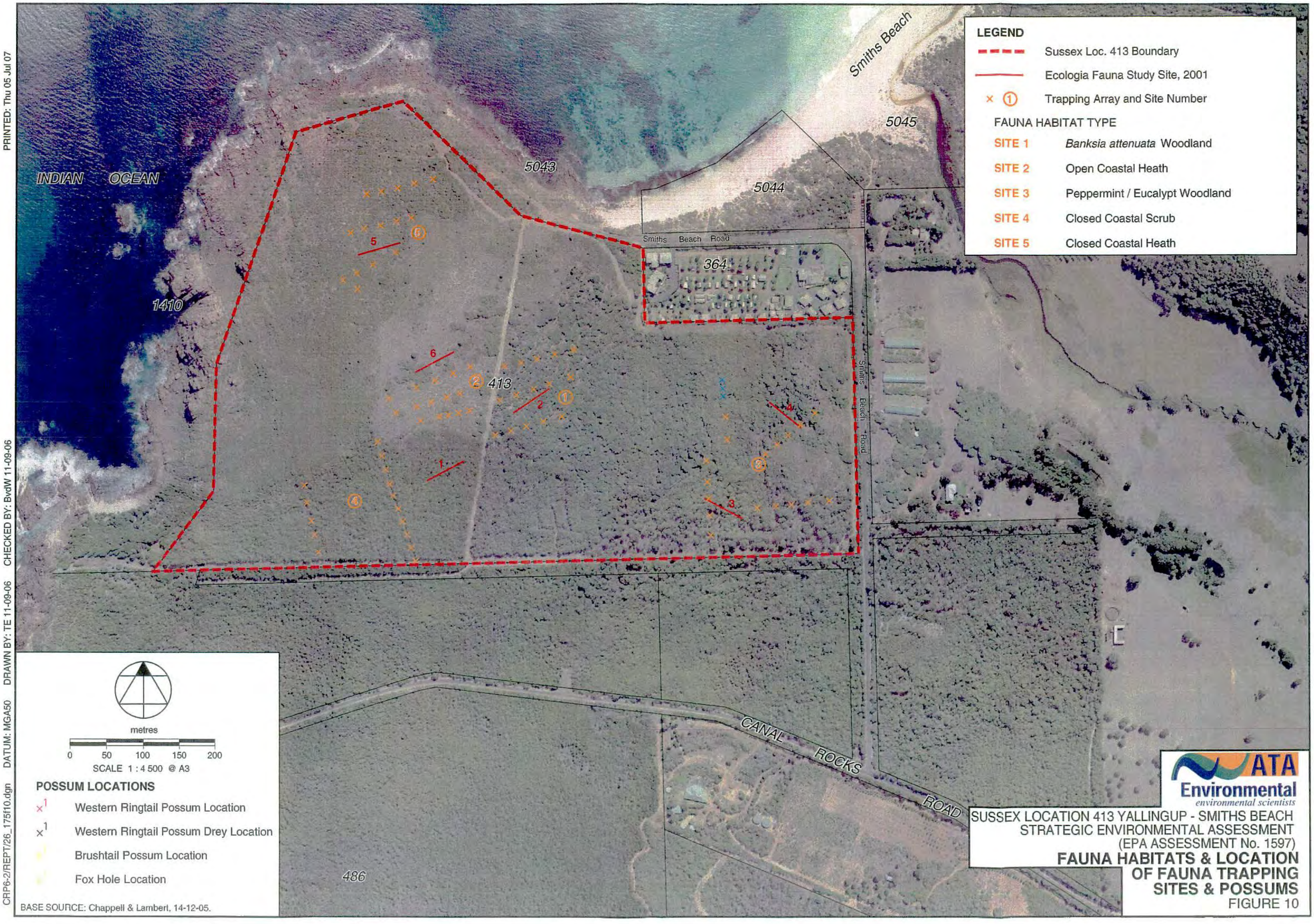
environmental scientists

SUSSEX LOCATION 413 YALLINGUP -SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

REGIONAL FOREST AGREEMENT

FIGURE 9



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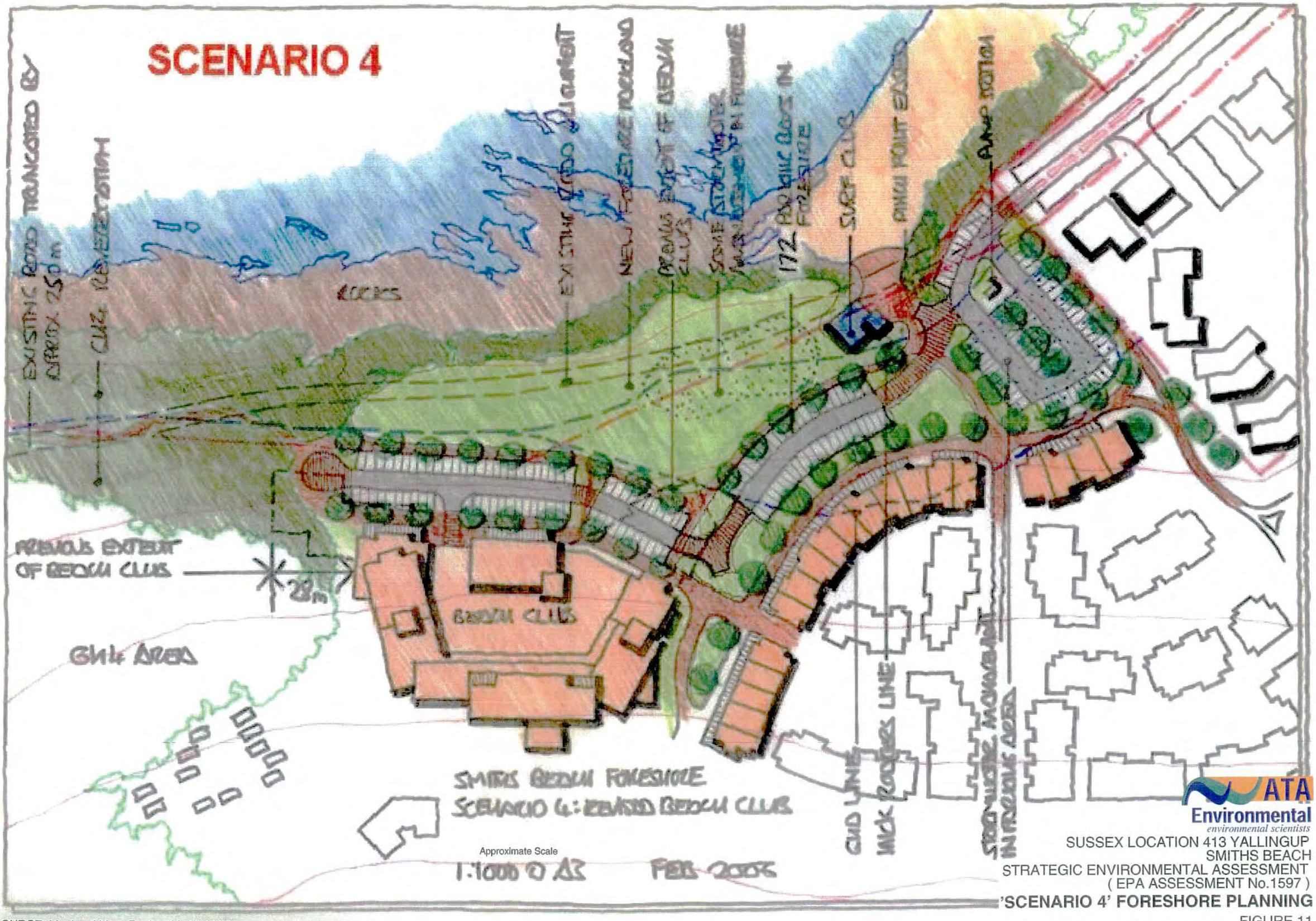
SUSSEX LOCATION 413 YALLINGUP - SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

FAUNA HABITATS & LOCATION OF FAUNA TRAPPING SITES & POSSUMS

FIGURE 10

PRINTED: Thu 05 Jul 07
CHECKED BY: BvdW 11-09-06
DRAWN BY: TE 11-09-06
DATUM: MGA50
CRP6-2/REPT/26_175f10.dgn

SCENARIO 4



SOURCE: Mackay Urban Design, March 2006

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SUSSEX LOCATION 413 YALLINGUP
SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No.1597)

'SCENARIO 4' FORESHORE PLANNING

FIGURE 11

PRINTED: Thu 05 Jul 07

CRP6-2/REPT/26_175f12a.dgn DATUM: Not Spatially Correct DRAWN BY: TE 6-12-06 CHECKED BY: BvdW 6-12-06

SMITHS BEACH

0 00 IL=9

UNRESTRICTED

UNRESTRICTED

SMITHS BEACH ROAD

UNCONSTRUCTED ROAD RESERVE

1039 4 IL=34

729 7 IL=50

UNCONSTRUCTED ROAD RESERVE

CANAL ROCKS ROAD

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE

1574 8 IL=72

CANAL ROCKS ROAD

CAVES ROAD

CAVES ROAD

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE

GUNYULGUP VALLEY DRIVE

2837 7 IL=9

CREEK CROSSING

3624 7 IL=50

KANGAROO PARADE

3947 1 IL=43 5

MARRINUP DRIVE

4928 6 IL=61

5248 2 IL=43

5754 65 IL=79

5961 7 IL=67

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE

MARRINUP DRIVE

7891 7 IL=127

VERGE

MATCHLINE A-A

REFER DRG 11161C-RM2

metres

0 200 400 600 800

Approximate SCALE 1 : 18 000 @ A3

SOURCE: Wood & Grieve Engineers, 11161C-RM1 Rev A

NOTE: This is an indicative route and does NOT form part of the SEA formal assessment process, and will be subject to a separate referral under s.38 of the Environmental Protection Act 1986 if the route is likely to have a significant impact on the environment.

LEGEND

PRESSURE MAIN

ATA Environmental
environmental scientists

SUSSEX LOCATION 413 YALLINGUP
SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

SEWER RISING MAIN ROUTE - SHEET 1

FIGURE 12a

MATCHLINE A-A

REFER DRG 11161C-RM1

CREEK CROSSING

VERGE

VERGE

8536 6 IL=117

9262 2 IL=130

VERGE

VERGE

9713 2 IL=130

MARRINUP DRIVE

COMMONAGE ROAD

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE OR DISTURBANCE TO EXISTING INFRASTRUCTURE

HAYES RD

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE OR DISTURBANCE TO EXISTING INFRASTRUCTURE

HAYES RD

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE OR DISTURBANCE TO EXISTING INFRASTRUCTURE

CREEK CROSSING

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE OR DISTURBANCE TO EXISTING INFRASTRUCTURE

HAYES RD

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE

SELECTED ALIGNMENT TO AVOID VEGETATION DAMAGE

VASSE - YALLINGUP RD

ANNIEBROOK WASTEWATER TREATMENT PLANT

metres

0 200 400 600 800

Approximate SCALE 1 : 18 000 @ A3

SOURCE: Wood & Grieve Engineers, 11161C-RM1 Rev A

NOTE: This is an indicative route and does NOT form part of the SEA formal assessment process, and will be subject to a separate referral under s.38 of the Environmental Protection Act 1986 if the route is likely to have a significant impact on the environment.

LEGEND

PRESSURE MAIN

GRAVITY SEWER OR PRESSURE MAIN DEPENDING ON OTHER DEVELOPMENT

ATA Environmental
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SUSSEX LOCATION 413 YALLINGUP
SMITHS BEACH
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No. 1597)

SEWER RISING MAIN ROUTE - SHEET 2

FIGURE 12b

PRINTED: Thu 05 Jul 07

CHECKED BY: BvdW 6-12-06

DRAWN BY: TE 6-12-06

DATUM: Not Spatially Correct

CRP6-2/REPT/26_175f12b.dgn

PRINTED: Thu 05 Jul 07

LEGEND

- Property Boundary

100% Estimated Retained Vegetation

60% Estimated Retained Vegetation

50% Estimated Retained Vegetation - *retention of canopy vegetation selective removal for fire management and supplemental planting of alternate species*

25% Estimated Retained Vegetation- *building, pad, roads and survey clearance*

20% Estimated Retained Vegetation

Estimated Retention of Selected Individual Specimens and trees groups

Estimates of vegetation retention are subject to detailed planning.
Estimated areas are calculated on clearance of understorey and shrub layer, and not specific to canopy trees.

Note : All areas subject to clearing will have new planting as part of overall landscape proposals.

SOURCE: BSD, PLAN No. DAP-3 REV-5, 10-04-07

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environmental scientists

SUSSEX LOCATION 413, YALLINGUP
STRATEGIC ENVIRONMENTAL ASSESSMENT
(EPA ASSESSMENT No.1597)

VEGETATION RETENTION PLAN

FIGURE 13

CRP6-2/REPT/26_175F13.dgn DATUM: MGA DRAWN: 04-07-07 CHECKED: PvdM 04-07-07

PLATES

Plate 1. Type of internal road system envisaged at Smiths Beach with significant tree retention (photo taken near Caves House)

Plate 2. *Dryandra sessilis* var. *cordata* tree retained in development near Caves House