CANAL ROCKS PTY LTD

SUSSEX LOCATION 413 YALLINGUP SMITHS BEACH

STRATEGIC ENVIRONMENTAL ASSESSMENT (EPA ASSESSMENT No. 1597)

ENVIRONMENTAL SCOPING DOCUMENT

VERSION 6

AUGUST 2006

REPORT NO: 2005/125

ATA Environmental
environmental scientists

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1. PURPOSE OF DOCUMENT

Canal Rocks Pty Ltd (CRP) 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), a SEA is a formal level of assessment that allows for conditions to be set on development by the Minister for the Environment. The EPA determined that the proposal is a strategic proposal under the provisions of the EP Act and should be assessed as a SEA (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 a SEA for the proposed development is the preparation of an Environmental Scoping Document. The purpose of the Scoping Document is to assist the EPA in identifying the work required to ensure that all significant issues are properly considered as part of the EPA's environmental process of the proposal. The Scoping Document outlines the studies that have been undertaken to date and describes the further investigations that are required to be completed to fulfil the reporting requirements of the SEA.

This Scoping Document has been prepared in accordance with the *Guide to preparing an Environmental Scoping Document* (EPA 2004).

2. IDENTIFICATION OF PROPONENT AND CONSULTANT

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3. PROJECT PLANNING BACKGROUND AND SUMMARY DESCRIPTION

Planning Background

Canal Rocks Pty Ltd is planning to develop part of Sussex Location 413 in the Shire of Busselton for tourist and residential purposes. The proposed subdivision is located adjacent to Smiths Beach (Figure 1).

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

The State Planning Strategy 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 and as a result of a collaborative approach between the WAPC and the Shires of Busselton and Augusta-Margaret River, resulted the development of a strategic planning tool in the form of the draft Leeuwin-Naturaliste Ridge Statement of Planning Policy (LNRSPP) released by the WAPC in May 1997.

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 environment impacts.

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

In 1998, the WAPC released the LNRSPP and 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 Tourist Node.

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 amendment allowed for residential development to occur on Sussex Location 413 allowing 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 TPS 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.

Project Summary Description

A Draft Development Guide Plan (DGP) has been prepared for the proposed development of Sussex Location 413. This document is currently in the process of review with the Shire of Busselton to resolve a range of issues. The Draft DGP will be advertised for public comment following successful resolution of these issues.

The Draft DGP consists of the following components as shown in Figures 2a and 2b:

- A resort-style tourist development located in the lower northern part of the site;
- A second resort-style tourist development in the upper mid-southern part of the site;
- Tourist accommodation in the form of chalets;
- Low-density cabin-style tourist accommodation on the western part of the development is 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. A small portion (xxm2) of the tent or cabin-style accommodation is on the native vegetation of the granite headland;
- 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 north-western part of the site;
- (Dependent upon Tribunal status/decision.) A private dwelling/residence within the Principle Ridge Protection area. The SEA will include the following details:
  - location of the proposed dwelling;
  - any associated development envelope;
  - fire management implications; and
  - its relevance to the Leeuwin-Naturaliste Ridge Statement of Planning Policy.
- Retention of native vegetation on the western headland and ridge area; and
- Retention of a buffer strip of native vegetation between the development and the National Park, to be managed for fire protection.

Sussex Location 413 is approximately 40ha in size. Of this, it is proposed that approximately 28ha 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 almost one-third of the native vegetation on the site 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. 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 a coastal reserve vested in the Shire of Busselton.

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 2005).

Roads

The alignment of roads will, wherever possible, reflect the natural contours of the land and minimise earthworks and clearing. In addition, the road surface profile will be consistent with the proposed method of stormwater management. The proposed layout of roads as currently shown on the draft DGP is shown in Figure 2a.

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.

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 which 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). The SEA report will provide confirmation of the Water Corporation's license and intention to supply the proposed development with potable scheme water and will include a table illustrating indicative annual scheme water requirements for the various types of accommodation provided for in the Draft DGP.

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.

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 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).

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 that it is pre-development.

Service corridors for water supply and sewerage infrastructure are not part of the current proposal and will be subject to referral to the EPA if there are potentially significant impacts on the environment.

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.

4. ALTERNATIVE OPTIONS CONSIDERED

The establishment of the Smiths Beach Reference Group in July 2003, which has subsequently convened on six occasions, has provided critical input into the development of the Draft Development Guide Plan (Draft DGP) and project planning in general (Figures 2a and 2b). In addition the proponent has undertaken 190 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 lots has been reduced;
- There has been a significant reduction in the extent of development to the west;
- 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; and
- The plan contains new community facilities and places for community interaction and focus.

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. 2005).

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 8.1: Sustainability.

5. BASIS FOR JUSTIFYING PROPOSAL AND SELECTING PREFERRED OPTION

The LNRSPP was formulated to provide the strategic planning framework for development of land and near shore waters between Cape Leeuwin and Cape Naturaliste and west of Bussell Highway. As previously mentioned the LNRSPP proposes nodal development in a small number of settlement areas to focus development pressures in the region into just a few new or expanded settlements in a prime living and holiday location on the coastline (WAPC 2003a). Sussex Location 413 is identified in the LNRSPP as one of the settlement nodes and the SEA report will provide justification that the proposed development is in accordance with the LNRSPP and will include further planning details relating to proposed zonings and reservations for the site and immediate adjacent areas.

The draft DGP prepared for Smiths Beach 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 2a and 2b). 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 SEA report will detail the extent and size of the proposed development including:

- Densities;
- Built-form;
- Tourist development;
- Village Centre; and
- Anticipated permanent and transitory populations.

as shown on the Draft DGP at the time of the SEA report's publication.

As part of the justification for the proposed option, alternative development options for the proposed development that were previously examined including National Park, foreshore reserve and the proposed private conservation reserves will be discussed in the SEA report.

6. REGIONAL SETTING

Sussex Location 413 is located at Smiths Beach between Yallingup and Canal Rocks on the south-west coast of Western Australia (Figure 1). The site is situated within the Shire of Busselton and is currently zoned Tourist and Additional Use - Residential under the Shire's TPS No. 20. It is proposed that the western portion of the site be placed within a private conservation reserve in keeping with LUS 3.4 of the LNRSPP (WAPC 2003a).

Immediately adjacent on the north-eastern side of the site is the former Smiths Beach caravan park site which is currently being redeveloped for chalet accommodation. 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. Additional rural land backs the National Park further to the south (Figure 3).

6.1 Climate

The Leeuwin Naturaliste coast experiences a Mediterranean climate with warm to hot, dry summers and mild, wet winters. High-pressure cells dominate climatic patterns during summer and the passage of cold fronts and associated low-pressure cells dominate during winter. Strong sea breezes dominate during late November to early March. 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). Much of the site can be exposed to strong winds during winter storms.

6.2 Topography

Sussex 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 4). The ridgeline forms a slightly raised headland with elevations up to 58mAHD.

The highest point of Sussex 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 4mAHD. 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 18mAHD 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 Sussex Location 413 the Leeuwin-Naturaliste National Park rises from 60mAHD to a maximum elevation of more than 125mAHD.

6.3 Geology and Soils

The geology of Sussex Location 413 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 north-western sectors. These areas have a very thin veneer of soil in places.

The nature and depth of the soil over the site has been determined by reviewing regional soil maps and by a shallow drilling program over the proposed development area (Figure 4). ATA Environmental in consultation with the DEC developed a methodology for re-surveying the site for the presence/depth of outcropping and associated soil depths. Further site investigations were undertaken in late June 2006 and will be reported in the SEA.

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 decreasing 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 south-eastern parts of the site. .

Much of the site has a depth to bedrock greater than 2.5m and a large portion greater than 4.5m. An area to the east of the site adjacent to Smiths Beach Road has shallow bedrock (<2.5m) as does the north-west and western portions of the site. Limestone outcrops are present at the surface in the south-western elevated portion of the site.

As previously mentioned, further investigations into the depth to outcropping rock has been undertaken in consultation with the DEC. The SEA report will assess the adequacy of the previous shallow drilling programme and outcrop mapping with respect to implications on building heights and revegetation requirements.

The SEA will include details of how the proposed chalet area is to be developed and managed, for example will there be:

i) a need for excavation and/or fill;
ii) is there a need to introduce grass species to the camp areas; and
iii) the methods of separation of the chalet area from the adjoining conservation area.

6.4 Surface and Groundwater

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. The EPA in its s16(j) advice to the WAPC recommended that waterways and their environmental buffers be included in a watercourse protection category. Given the location of Gulgunyup Brook to the site, it is considered that this aspect is not relevant to the proposed development (EPA 1998).

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

The drilling program 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).

6.5 Coastline

Sussex Location 413 abuts the Indian Ocean on its western and northern sides. The northern coastline is the southern end of Smiths Beach. An existing foreshore reserve separates most of the site from the high water mark. The land that contained the former caravan park and chalets located to the north-east of the site separates most of the proposed development from Smiths Beach.

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 granite outcrops in the west provide long-term protection from coastal erosion.

The foreshore reserve varies in width from 15m – 120m as measured from the line of permanent vegetation with the reserve being at its narrowest near the north-western corner of the former caravan park site. In this location the reserve consists of a 6m wide sealed road, 9m of sparsely vegetated dunes and a sandy beach.

The SEA report will include further discussion on physical coastal processes and foreshore reserve requirements.

6.6 Native Terrestrial 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 1:100 000 scale of mapping used by Beard (1981) only two vegetation units were mapped for the site: *Acacia* Shrubland (a31Sc) and Low Woodland: *Agonis flexuosa* (agLi). The area of vegetation mapped as *Acacia* Shrubland is approximately 27ha whilst the area of Low Woodland: *Agonis flexuosa* is approximately 13ha.

The regional vegetation has also been mapped by Smith (1973). According to this study the vegetation on Sussex Location 413 is mapped as Low Heath with some *Melaleuca huegelii* Closed Scrub and *Agonis flexuosa* (Peppermint) Low Open Forest.

From a regional perspective, in the Warren IBRA sub-region, 87.8% (or 5,678.8ha) of the *Acacia* Shrubland vegetation type and 46.9% (or 1,452.8ha) of the Low Woodland: *Agonis*

flexuosa is reserved on land managed by the Department of Environment and Conservation (DEC) (Hopkins, 1996). The *Acacia* Shrubland and Low Woodland: *Agonis flexuosa* vegetation on the site, therefore, represents approximately 0.5% and 0.9% of the area of these vegetation types respectively that are within DEC reserves.

The Regional Forest Agreement (RFA) vegetation units identify three vegetation complexes on the site (Mattiske and Havel 1998):

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

6.7 Native Terrestrial Fauna

A preliminary fauna assessment survey of Sussex Location 413 was undertaken by *ecologia* Environmental Consultants in April 2001 (*ecologia* 2001). The principal aim of surveying was to characterise the fauna and fauna habitats and to provide an inventory of vertebrate species found on-site.

The main fauna habitats on the site are considered to be:

- Heath
  - Closed Coastal Heath containing *Pimelea ferruginea, Scaevola crassifolia, Acacia divergens* and *Spyridium globulosum*
  - Open Coastal Heath containing *Allocasuarina humilis, Melaleuca systena* and *Olearia axillaris*
- Closed Scrub
  - Closed Coastal Scrub containing *Acacia divergen* and *Melaleuca huegelii*
- Banksia Woodland
  - Containing *Banksia attenuata* Woodland with occasional Marri (*Corymbia calophylla*)
- Agonis/Eucalypt Woodland
  - Peppermint (*Agonis flexuosa*)/Eucalypt (*Corymbia calophylla* and occasional *Eucalyptus marginata*) Woodland

The survey undertaken by *ecologia* recorded 51 species of vertebrate fauna including six native mammals, four introduced mammals, 30 species of avifauna and 11 herpetofauna (*ecologia*, 2001).

Scheduled species that are known to occur in the region in habitats similar to those present on Sussex Location 413 include:

- Schedule 1 (rare or likely to become extinct):
  - Chuditch (*Dasyurus geoffroii*) classified as Vulnerable;
  - Western Ringtail Possum (*Pseudocheirus occidentalis*) classified as Vulnerable;
  - Carnaby's Cockatoo (*Calyptorynchus latirostris*) classified as Endangered;
  - Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*); and
  - Baudin's Cockatoo (*Calyptorynchus baudinii*) classified as Vulnerable.

- Schedule 3 (subject to international agreement):
  - Fork-tailed Swift (*Apus pacificus*).

- Schedule 4 (in need of special protection):
  - Peregrine Falcon (*Falco peregrinus*); and
  - Carpet Python (*Morelia spilota imbricata*).

An additional late spring fauna survey was conducted by ATA Environmental in 2005. The results of this survey are currently being assessed and will be reported in the SEA report.

6.8 Aboriginal Heritage

An Aboriginal heritage survey of Sussex Location 413 has been carried out 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 review of records describing known sites, a survey of the site, 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 proposed development area but it has been heavily disturbed.

No ethnographic sites were identified within the boundary of the proposed development area and it was concluded that there are no ethnographic impediments to the proposed development.

7. SUMMARY OF POTENTIAL IMPACTS, THEIR SIGNIFICANCE AND POTENTIAL MANAGEMENT RESPONSES

7.1 Introduction

Based on previous work undertaken in the site, consultation with industry professionals and the EPA, the potential environmental factors identified as relating to the site are considered to be:

Integration

- Sustainability.

Biophysical

- Native Terrestrial Vegetation and Flora;
- Native Terrestrial Fauna;
- Conservation Area – National Nark;
- Landscape and Landforms; and
- Karst.

Pollution Management

- Surface Water Quality;
- Groundwater Quality;
- Dust and Particulates;
- Greenhouse Gases; and
- Noise.

Social Surroundings

- Visual Amenity; and
- Aboriginal Heritage.

7.2 Summary of Issues

The EPA's environmental objective for each of these environmental factors, a brief overview of the existing environment, potential impacts, proposed additional investigations and proposed management are presented in Table 2. Table 3 identifies the relationships between the proposed scope of works and the EPA's Environmental Impact Assessment Principles and identifies those areas requiring further consideration.

TABLE 1
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: Environment and Natural Resources Policy • (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 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 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 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 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 Town Planning Scheme No. 20	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
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) Statement of Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy* • Western Australian Planning Commission (2003) Statement of 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) Statement of Planning Policy No. 2 *Environment and Natural Resources Policy* • *Town Planning and Development Act 1928* • Western Australian Planning Commission (2003) Statement of Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy* • Western Australian Planning Commission (2003) Statement of Planning Policy 2.6 *State Coastal Planning Policy* • Shire of Busselton 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 Subterranean Fauna in*	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 presence of troglobitic fauna and, if present, how

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
			Groundwater and Caves during Environmental Impact Assessment in Western Australia EPA Guidance Statement No. 54 • Western Australian Planning Commission (2003) Statement of Planning Policy 2.6 *State Coastal Planning Policy*			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)	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
			Stormwater Management Manual for Western Australia, February 2004 • 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	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 programs 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
			for Western Australia, February 2004 • Department of Environment (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*			
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) *Statement of Planning Policy No. 4 - State Industrial Buffer Policy* • Western Australian Planning Commission (2004) *Draft Statement of Planning Policy No. 4.1 - 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	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, 2003 (Draft) 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
			• *Environmental Protection Act 1986* • National Environment Protection (Ambient Air Quality) Measure. • National Environment Protection (Air Toxics) Measure.			
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) *Statement of 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 Statement of Planning Policy Road and Rail Transport Noise* • Western Australian Planning Commission (2005) *Draft Statement of Planning Policy Metropolitan Freight Network*	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.

Environmental Factor	Relevant Area	Environmental Objective	Applicable Standards	Potential Impacts	Additional Investigations	Potential Management
			• Australian Standard *AS2670/1990 Evaluation of human exposure to whole body vibration*			
Social Surroundings						
Aboriginal Heritage	Project area (~28ha).	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.	• *Aboriginal Heritage Act 1972* • *Native Title Act 1993* • *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* • Environmental Protection Authority (2004h) *Assessment of Aboriginal Herita*ge No. 41	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 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). Statement of Planning Policy No. 2 *Environment and Natural Resources Policy* • *Town Planning and Development Act 1928* • Western Australian Planning Commission (2003). Statement of Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy* • Western Australian Planning Commission (2003) Statement of Planning Policy 2.6 *State Coastal Planning Policy* • Shire of Busselton 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 2
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 Environmental Management Plan (CEMP) 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)

8. PROPOSED STUDIES AND INVESTIGATIONS

8.1 Sustainability

Objective

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

Applicable Legislation, Criterion or Guidance

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

Background

The first comprehensive policy relating to ecologically sustainable development (ESD) in Australia was the *National Strategy for Ecologically Sustainable Development* (NSESD) (Environment Australia 1992). All States and Territories in Australia adopted the NSESD in 1992.

Sustainability in Western Australia is defined as "meeting the needs of current and future generations through an integration of environmental protection, social advancement and economic prosperity" (State Sustainability Strategy, September 2003).

Although neither the State Sustainability Strategy, Shire of Busselton District Town Planning Scheme No. 20, Statement of Planning Policy No. 6.1 – Leeuwin Naturaliste Ridge Policy nor the local town planning policy framework provide specific action plans or objective criteria against which projects can be assessed for sustainability, it has 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.

The discussion document "A Sustainability Checklist" published by the WAPC in (WAPC 2005) 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 with 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 as shown in Table 3 below (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.

TABLE 3
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			
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 or 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 (incl 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			
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, 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) and the SEA will justify the basis on which the various ratings were chosen.

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 Smiths Beach, 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 headworks.

The service strategy involves utilisation by way of extension of 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.

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. Large tracts of land are identified for Principal Ridge Protection, and are basically set aside from development. Various areas within the development node are identified for bushland maintenance and regeneration. Strong emphasis is given to the retention and replanting of indigenous vegetation, even within the developed areas. In general, regeneration/rehabilitation will be in the foreshore area, and the area proposed for chalet use. Specifics will be incorporated in the detailed management plans.

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 Track, particularly along the foreshore reserve to the west and the Torpedo Rocks carpark.

Embracing Water Sensitive Design

The development site is situated within a natural amphitheatre which allows for the "coincidence by design" of drainage routes, vegetated corridors and access ways to central community focus areas. 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.

The emphasis on 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 140 kilometres 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, five kilometres 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.

It is manifest that the site represents a superb holiday and day-to-day living, general lifestyle and recreational environment. These are the attributes that lead to it being chosen as a new coastal development node within the regional development strategy adopted by the State and local governments.

Protection of Habitat

Detailed biological surveys of the site undertaken over several years have identified that a Priority 4 species of flora (*Dryandra sessilis ssp cordata*) and that the Western Ringtail Possum (*Pseudocheirus occidentalis*) classified as Vulnerable are present on site and that Baudin's Cockatoo (*Calyptorynchus baudinii*) classified as Vulnerable may also utilise 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 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 abutting 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 2005). The proposal includes provision for rationalisation, via a Coastal Management Plan, of vehicle and pedestrian access arrangements. This will result in greater efficiency in the provision and use of available space for carparking.

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 and beyond the scope of 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.

The proposed settlement layout responds to the natural amphitheatre formation in which it will sit, with natural drainage and vegetation systems being respected and accommodated in this design.

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 also accompanied by a Social Impact Statement and 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. This project clearly achieves that outcome.

Additional Investigations

The proponent acknowledges that the WAPCs Sustainability Checklist has been developed for permanent residential settlement whereas the proposed development at Smiths Beach will be predominantly tourist related (WAPC 2005). 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 three year interval reporting timeframe in relation to the measures.

8.2 Native Terrestrial Vegetation and Flora

EPA's Objective

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

Applicable Legislation, Criterion or Guidance

- EPA (2004b) Guidance Statement No. 51: *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessments 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 Diversit; and*
- Shire of Busselton Town Planning Scheme No. 20.

Background

Vegetation Types

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) only two vegetation units were mapped for the site: *Acacia* Shrubland (a31Sc) and Low Woodland: *Agonis flexuosa* (agLi).

Detailed vegetation surveys of the site have been undertaken on several occasions. The first detailed survey was conducted by Keating and Trudgen (1986, as reported in Maunsell and Partners 1987). Between 1995 and 2005, numerous site visits were undertaken by Dr Paul van der Moezel (ATA Environmental) to record vegetation and flora on the site. A third botanical survey conducted by Eleanor Bennett was undertaken in 2001 to provide additional advice on one particular vegetation type on the site (Bennett Environmental Consulting 2001). Reporting relating to these field surveys including the season and intensity of surveys will be incorporated into the SEA report as technical appendices.

The underlying geology and soil types are thought to control the distribution and composition of the vegetation while exposure to strong ocean winds has modified the height structure of the vegetation.

The vegetation units used in the description and mapping of the vegetation is consistent with that used by Keating and Trudgen (1986) in their vegetation survey of the coastal strip from Forrest Beach-Cape Naturaliste-Woodlands. Vegetation type and condition mapping will be presented in the SEA report. The distribution of vegetation units occurring on site is shown in Figure 5.

The granulite rock of the Leeuwin Block is exposed in places along the western coastal section of the location. The vegetation associated with the rocky and shallow soils in this area consists of a Low Heath (GH4 vegetation unit) up to 0.5m high dominated by *Kunzea recurva, Hakea trifurcata, Eutaxia obovata, Dodonaea ceratocarpa* and *Spyridium globulosum.* Other species that seem to be confined primarily to this vegetation type on the lot include *Pimelea ferruginea* and *Dryandra bipinnatifida*.

Small stands of *Melaleuca lanceolata* Closed Scrub (LH1 vegetation unit) occur on limestone soils adjacent to the beach and 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*.

Inland from the exposed granite soils, the shallow sands in the western part of the site on the mid to lower slopes support a Low Closed Heath vegetation type (SH9 vegetation unit) dominated by *Allocasuarina humilis, Melaleuca systena* and *Olearia axillaris*. Other common species in this unit include *Hibbertia hypericoides, Dryandra lindleyana, Hakea prostrata* and *Xanthorrhoea preissii*. Patches of stunted Marri (*Corymbia calophylla*) occur scattered throughout this vegetation type. Stunted Christmas Tree (*Nuytsia floribunda*) is also common in patches. The boundary of SH9 vegetation unit corresponds reasonably closely with the prominent eastern firebreak that cuts through the site from north to south. Bennett believed that the SH9 area was probably a regenerating *Banksia* woodland and mapped this area accordingly. The SH9 area, however, does not have any *Banksia* trees or seedlings. In addition, plot data recorded in September 2003 by ATA Environmental shows that the flora of the SH9 and *Banksia* woodland areas is quite different. Therefore, for this report we have mapped the area of low closed heath as a separate unit, the SH9 vegetation unit.

An area mapped previously by Alan Tingay and Associates as Cleared between the GH4 and SH9 vegetation is regenerating with native species and introduced herbaceous species. The regenerating species include *Xanthorrhoea brunonis, Dodonaea ceratocarpa, Hibbertia hypericoides, Phyllanthus calycinus* and *Kunzea recurva*.

On the upper slopes east of the granulite, creamy yellow to creamy-brown sands overlie Tamala Limestone which outcrops at the surface as small rocks rather than as a massive limestone sheet. These upper slopes support a Closed Scrub (LH6 vegetation unit) formation up to 2.5m tall with a complete, closed canopy cover. The dominant species are *Melaleuca huegelii, Spyridium globulosum* and *Acacia rostellifera.* Due to the dense tall scrub canopy, the understorey is very sparse and species poor.

The LH6 vegetation unit described above has been mapped previously as the LH3 unit (Maunsell and Partners 1987). The LH3 unit contains as a dominant species *Dryandra sessilis*. This species is virtually absent from the limestone outcrop vegetation resulting in a closer fit to the LH6 vegetation unit. Bennett confirmed that this vegetation type more closely represented the LH6 unit (Bennett Environmental Consulting 2001).

Further east, the deeper grey-brown sands of the mid-slopes contain a *Banksia attenuata/Agonis flexuosa* (Peppermint) Low Woodland (BaAgJM vegetation unit) containing an open tree canopy up to 4m tall over a low shrub layer. The understorey is diverse and

contains *Allocasuarina humilis, Melaleuca systena, Calothamnus sanguineus* and *Acacia cochlearis* as common species.

The remainder of the eastern section of the site contains a Jarrah/Marri/Peppermint (*Eucalyptus marginata/Corymbia calophylla/Agonis flexuosa*) Low Woodland to Low Open Forest (AW2 vegetation unit) on grey to brown sands on the mid to upper slopes. The Peppermint trees dominate and are fairly evenly distributed in this area. The distribution of Jarrah and Marri trees is uneven with dense stands in some areas, particularly near the eastern boundary of the site while in others there are few trees. In some places on the upper slopes trees are absent or scarce and the vegetation consists more of a Low Heath dominated by *Calothamnus sanguineus, Dodonaea ceratocarpa, Darwinia citriodora* and other low shrubs.

The condition of the vegetation was assessed using the scale published in Bush Forever (Government of Western Australia 2000). 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 Open Forest 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.

Conservation Significance

The conservation significance of the vegetation types on Sussex Location 413 can be determined using the vegetation mapping units of Beard (1981) and the assessment of how much of each vegetation type still remains as undertaken by Hopkins (1996).

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

From a regional perspective, in the Warren IBRA sub-region, 87.8% (or 5,678.8ha) of the *Acacia* Shrubland vegetation type and 46.9% (or 1,452.8ha) of the Low Woodland: *Agonis flexuosa* is reserved on land managed by the Department of Conservation and Land Management (Hopkins 1996). The *Acacia* Shrubland and Low Woodland: *Agonis flexuosa* vegetation on the site, therefore, represents about 0.5% and 0.9% of the area of these vegetation types respectively that are within DEC reserves.

The regional vegetation has also been mapped by Smith (1973). According to this study the vegetation on Sussex Location 413 is mapped as Low Heath with some *Melaleuca huegelii* Closed Scrub and *Agonis flexuosa* (Peppermint) Low Open Forest. No data on the amount of these vegetation units remaining or protected on DEC reserves are available.

The Regional Forest Agreement (RFA) vegetation units identify three vegetation complexes on the site (Mattiske and Havel 1998):

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

The amounts of RFA Vegetation Type representation for We, GE and W2 are shown in Table 4.

TABLE 4
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 as at 3 July 2003.

The majority of the vegetation is mapped as the Wilyabrup (We) vegetation complex. 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 target protection level for vegetation complexes in the RFA is 15%.

The more detailed description of vegetation occurring on the site using the units of Keating and Trudgen (1986) has not been undertaken for the whole region. Therefore no quantitative data are available on the original extent of each vegetation type or the amount remaining. Nevertheless, Keating and Trudgen (1986) did make some comments on the distribution of the vegetation types in the Cape Naturaliste area as shown in Table 5.

Table 5 and the descriptions of each vegetation type in Keating and Trudgen (1986) do not offer substantive evidence of the conservation status of each of the vegetation types outside of Sussex Location 413. What can be ascertained, however, is that none of the units is restricted to the site. It appears from Keating and Trudgen (1986) and also from observations made by the author on the Leeuwin-Naturaliste Ridge that the woodland vegetation types (AW2, BaAgJM) and the *Melaleuca huegelii* Closed Scrub unit (LH6) is common within the Leeuwin-Naturaliste Ridge National Park.

The granite headland heathlands (GH4) and the *Melaleuca lanceolata* (LH1) vegetation occur outside Sussex Location 413 but on small isolated patches which together probably do not add up to a large areal extent. The status of the Low Closed Heath (SH9) unit is more difficult to determine. If it is a regenerating *Banksia* woodland as Bennett (2001) suggests, then it will regenerate to a vegetation type that is common in the region. If, however, it is a unit in its own right and not a regenerating *Banksia* woodland then it has only been recorded from one other site south of the Cape Naturaliste Lighthouse. The conservation significance of the SH9 unit will be discussed in the SEA report.

In summary, the following units are of highest conservation significance:

- Low Heath on granite headland (GH4); and
- *Melaleuca lanceolata* Closed Scrub (LH1).

The conservation significance of the vegetation associations found on site will be discussed in further detail in the SEA report.

None of the vegetation types on the property is listed as a Threatened Ecological Community (English and Blyth 1997; CALM 2001).

TABLE 5
DISTRIBUTION OF VEGETATION ASSOCIATIONS IN THE CAPE NATURALISTE AREA

Vegetation Unit	Description	Distribution (Keating & Trudgen, 1996)
GH4	*Pimelea ferruginea, Scaevola crassifolia, Acacia divergens, Spyridium globulosum* Low Heath	Occurs on granitic headlands at Smiths Beach, Canal Rocks, Yallingup and north of Cape Clairault.
LH1	*Melaleuca lanceolata, M. huegelii* Closed Heath	Occurs in patches on lower windward slopes of the Naturaliste Ridge between Sugar Loaf Rock and Woodlands. Probably extends further south as well.
LH6	*Melaleuca huegelii* Closed Scrub 1	Covers large areas in a strip parallel to the coast from the point about one km south of Cape Naturaliste, to the south of Cape Naturaliste Lighthouse.
AW2	*Agnois flexuosa, Eucalyptus calophylla, E. marginata* Low Woodland to Low Open Forest	Occurs in patches near the crest of the Naturaliste Ridge to the north of Yallingup and south of Cape Clairault.
SH9	*Allocasuarina humilis, Melaleuca systena, Olearia axillaris* Low Closed Heath	Known to occur within the National Park south of the Cape Naturaliste Lighthouse.
BaAgJM	*Banksia attenuata, Agonis flexuosa* Low Woodland	Occurs at a number of locations south-east of the Cape Naturaliste Lighthouse.

Flora

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 and 2005 (September). A total of 155 native plant species has been recorded from these surveys, of which 129 are native species. The species list comprises one fern species, one cycad, 43 Monocotyledons and 110 Dicotyledons. The most common families include the Papilionaceae (11 species), Proteaceae (10 species), Myrtaceae (nine species), and Mimosaceae, Orchidaceae, Poaceae, Anthericaceae (seven species each).

A search of the DEC's Declared Rare and Priority Flora database indicated that two Declared Rare Flora and six Priority plant species have been recorded within proximity of Sussex Location 413 but not on the site itself (Table 6).

The last three surveys of October 2001 and September 2003 and 2005 were undertaken during the flowering time of the two rare orchid species. The Priority 4 listed species, *Dryandra sessilis* var. *cordata* was recorded on the site scattered in the Peppermint/Banksia woodland.

Seven 10m x 10m plots were sampled during the September 2003 survey within each of the main vegetation types mapped on the site. Two plots were included in the AW2 vegetation type in response to the different structural nature of this vegetation and apparent difference in species composition. An additional three 10m x 10m plots were sampled in September 2005.

The results indicate that the granite heathlands and *Melaleuca lanceolata* vegetation types recorded a low species richness of 12 and 15 species respectively. The woodland vegetation types on sandy soils and the *Melaleuca huegelii* Scrub on limestone soils had similar species richness ranging from 21-23 species. The transitional heath area contained the most species, 27 in the 10m x 10m plot.

TABLE 6
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
Caladenia thinicola	P3	low coastal heath or peppermint, jarrah, marri woodland in deep sand
Dryandra sessilis var. cordata	P2	sand over limestone in coastal heath
Hydrocotyle hamelinensis	P2	soil pockets among limestone rocks

*Wheeler *et al*. (2002)

The results indicate that the granite heathlands and the Marri/Peppermint form of the AW2 vegetation have similarities in species composition with common species such as *Dodonaea ceratocarpa, Darwinia citriodora, Acacia pulchella* and *Calothamnus sanguineus* which were not recorded in other plots. This reflects the shallow bedrock soils that occur along a portion of the eastern part of Sussex Location 413. The SH9 and BaAgJM plots were quite different in composition supporting the premise that the SH9 vegetation is not a regenerating *Banksia* woodland as suggested by Bennett (2001).

Additional Investigations

The location of *Dryandra sessilis* var. *cordata* plants on the site will be recorded and shown on the vegetation type figure in the SEA report.

Further floristic works will be undertaken as part of the SEA to establish the identification and conservation significance of the dominant *Kunzea* species within the GH4 vegetation unit and whether the regenerating SH9 vegetation community containing *K. recurva* may actually be a regenerating occurrence of the GH4 vegetation unit.

In addition to the information provided in this Scoping Document and the Environmental Assessment report of ATA Environmental, the SEA report will include an overlay figure of the small-scale vegetation units on a dated aerial photograph to illustrate the proposal's impact upon the vegetation units within the development.

The SEA report will also provide information as follows.

RFA Vegetation Complex Mapping

- In relation to the Mattiske Consulting RFA Vegetation Complex Mapping include a qualitative assessment (for example, in table format) of the extent of each vegetation complex and the extent of vegetation clearing within those complexes resulting from the proposed development; and

- The small scale vegetation units within the RFA vegetation complexes will be placed into a regional context by the following:
    1. Provision of further detail in relation to the comparability of vegetation units as mapped within the Keating and Trudgen report, as outlined below; and

2. If the vegetation units prove to be incomparable to those as mapped within the Keating and Trudgen report, further assessments will be undertaken to determine the extent of comparable vegetation units outside the development location.

Keating and Trudgen Report

To further define the comparability of vegetation units within the development location with those described in the Keating and Trudgen Report:

- Provide species lists, vegetation structural description of comparable vegetation quadrats;

- Provide analysis of species lists and vegetation structure description as generated by comparable flora quadrats within both Location 413 and as prepared by Keating and Trudgeon (1986); and

- Include a copy of the Keating and Trudgeon (1986) report and all floristic work undertaken within Location 413.

The SEA report will identify options for the management of areas of native bushland to be retained on the site.

8.3 Native Terrestrial Fauna

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.

Applicable Legislation, Criterion or Guidance

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

Background

A preliminary fauna assessment survey of Sussex Location 413 was undertaken by *ecologia* Environmental Consultants in April 2001 (*ecologia,* 2001). The principal aim of surveying was to characterise the fauna and fauna habitats and to provide an inventory of vertebrate species found on the site.

Fauna Habitats

The main fauna habitats on Sussex Location 413 are considered to be:

- Heath
  - Closed Coastal Heath containing *Pimelea ferruginea, Scaevola crassifolia, Acacia divergens* and *Spyridium globulosum* (*50H 315248 / 6273370)

- Open Coastal Heath containing *Allocasuarina humilis, Melaleuca systena* and *Olearia axillaris* (*50H 315278 / 6273190)

- Closed Scrub
  - Closed Coastal Scrub containing *Acacia divergens, Melaleuca huegeli* and *Dryandra sessilis* (*50H 315293 / 6273084)

- Banksia Woodland
  - Containing *Banksia attenuata* Woodland with occasional Marri (*Corymbia calophylla*) (*50H 315418 / 6273197)

- Agonis/Eucalypt Woodland
  - Peppermint (*Agonis flexuosa*)/Eucalypt (*Corymbia calophylla* and occasional *Eucalyptus. marginata*) Woodland (*50H 315679 / 6273098 and *50H 315774 / 6273197)

    [Note: * indicates the six survey grid AMG coordinates for faunal sampling.]

Faunal communities of different species composition were expected to exist within the different habitats defined by changes in vegetation associations and landforms.

Survey Methodology

The assessment of the vertebrate fauna undertaken by *ecologia* Environmental Consultants in April 2001 was carried out using a variety of trapping, search and observation techniques. During the field work all fauna and secondary evidence of fauna (eg. tracks, digging and scats) were recorded.

(a) Survey Sites

A total of six survey grids were used to survey each of the four major habitats. Habitat locations with associated survey grids are shown in Figure 5.

(b) Systematic Sampling

Mammal and Reptile Fauna
Methods used to census these fauna were based on a systematic trapping grid similar to that used by the DEC in their research.

The trap layout utilises a number of trap types:

(i) Pit-trap drift fence – open for a duration of 4 – 5 consecutive nights;
(ii) Elliott box traps – in operation for 4 – 5 nights; and
(iii) Cage traps – baited with a mixture of universal bait and apple.

Bird Fauna
A systematic "Set-time Period" census was employed to collect quantitative data on total species richness and species abundance being recorded. Sites were traversed by foot for a minimum of three person hours (1 hour periods x morning: 0600-1000 hrs, midday: 1000-1400 hours and afternoon: 1400-1730 hours).

Microhabitat Searching

All survey grids were search for cryptic species and involved raking leaf litter, over-turning logs and stones, searching beneath bark and investigating burrows for a minimum of three person hours per site.

Nocturnal Species
Each survey grid was searched for nocturnal species by foot traverse using hand-held spotlights for a minimum of 0.5 person hours.

Bat Census
An ANABAT detector and call recording device were used in each of the four habitats (0.5 hours per habitat) between 1700 and 1900 hours with recordings being analysed by personnel from the then CALM Wildlife Research Centre at Woodvale.

A total of two hours were spent mist-netting for bats within the Heath habitat.

(c) Inventory Sampling

In addition to systematic sampling, the presence of species in all vertebrate groups was also assessed using:

(i) Secondary evidence eg. tracks, diggings, scats, burrow and nests; and
(ii) Opportunistic sightings – eg. recording species during travelling and trap establishment.

Faunal Assemblage

Surveys undertaken by *ecologia* (*ecologia*, 2001) recorded 51 species of vertebrate fauna including six native mammals, four introduced mammals, 30 species of avifauna and 11 herpetofauna. Table 7 shows the total number of species found at each of the six survey sites.

TABLE 7
TOTAL NUMBER OF SPECIES RECORDED PER SITE

	SITE					
	1	**2**	**3**	**4**	**5**	**6**
	Number of Species/site					
Native Mammals	2	2	2	3	2	5
Introduced Mammals	2	1	2	1	2	1
Avifauna	16	15	12	13	8	10
Reptiles	2	6	0	2	5	6
Amphibians	1	0	0	0	0	0
TOTAL	**23**	**24**	**16**	**19**	**17**	**22**

Source: *ecologia* 2001

Mammals

Ten mammal species were recorded including one of each of the following native mammals: kangaroo, possum, native rodent and one of each of the following introduced mammals: dog, cat, murid rodent and rabbit. Except for the dog (identified by scats) all other mammals were recorded from actual sightings.

Four bat species were recorded: Gould's Wattled Bat (*Chalinolobus gouldii*), Southern Forest Bat (*Vespadelus regulus*), Western Freetail Bat (*Mormopterus planiceps*) and the White-striped Mastiff-bat (*Tadarida australis*).

Avifauna

Thirty bird species were record comprising 17 families with the most abundant sightings being Maluridae (wrens), Pardalotidae (leaf-gleaners), Artamidae (magpie and butcherbirds) and the Psittacidae (parrots).

Herpetofauna

In total, 11 species of herpetofauna were recorded including 10 species of reptiles and one amphibian species being the Moaning Frog (*Heleioporus eyrei*).

The reptiles included: *Pogona minor*, *Christinus marmoratus*, *Cryptoblepharus plagiocephalus*, *Ctenotus impar*, *Hemiergis peronii*, *Menetia greyii*, *Morethia lineoocellata* and *Tiliqua rugosus*, *Varanus rosenbergi* and *Ramphotyphlops australis*.

Species Protected by International Agreements

The conservation status of fauna species is assessed under both Federal and State Acts such as the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Western Australian *Wildlife Conservation Act 1950*. Both these Acts use levels of significance recommended by the International Union for the Conservation of Nature and Natural Resources (IUCN).

The State Act also includes a category of "Other Specially Protected Fauna" that has no equivalent IUCN level, while the EPBC Act has separate listings for both migratory and marine species. Migratory species are largely those listed under the Bonn Convention, the Japan Australia Migratory Bird Agreement and the China Australia Migratory Bird Agreement. The Marine Species list (EPBC Act) includes all bird species recorded in the marine waters of the Commonwealth of Australia.

Species can be considered to be of National Conservation Significance if they occur in any of the above lists.

Of the species of avifauna specifically listed under the Bonn Convention, JAMBA and CAMBA, four are known to occur in the region in habitats similar to those present on the site, including:

- Osprey (*Pandion haliaetus*);
- White-bellied Sea-eagle (*Haliaeetus leucogaster*);
- Fork-tailed Swift (*Apus pacificus*); and
- Rainbow Bee-eater (*Merops ornatus*).

Species Protected by the EPBC Act

Schedule 1 of the Commonwealth Government's *EPBC Act 1999* contains a list of species that are considered Endangered, Vulnerable or are Presumed Extinct.

There are four vertebrate species contained within Schedule 1 that are known to occur in the region in habitats similar to those present on the site, including:

- Chuditch (*Dasyurus geoffroii*) classified as Vulnerable;

- Western Ringtail Possum (*Pseudocheirus occidentalis*) classified as Vulnerable;
- Carnaby's Cockatoo (*Calyptorynchus latirostris*) classified as Endangered; and
- Baudin's Cockatoo (*Calyptorynchus baudinii*) classified as Vulnerable.

The Chuditch was previously widespread occupying a diverse array of habitats. It is now considered Rare and Endangered being found in scattered populations around the South-West of Western Australia. The species generally occurs in low densities and may occur in the types of habitats recorded throughout the site (*ecologia* 2001).

Western Ringtail Possums are closely associated with Peppermint trees (*Agonis flexuosa*) that occur as the dominant overstorey species in woodland and also as a co-dominant in mixed woodland of Tuart (*Eucalyptus gomphocephala*), Jarrah (*E. marginata*), Marri (*Corymbia calophylla*) and *Banksia* spp. between Australind/Eaton to Waychinicup National Park. This species may occur in the Agonis/Eucalypt woodland habitat type within the site.

Carnaby's Cockatoo is a slightly migratory species that may use suitable habitat found within the region as a feeding area during the summer (*ecologia* 2001).

Baudin's Cockatoo is endemic to the forest region of the South-West feeding predominantly on the flowers and seeds of Marri and Jarrah. The species was sighted during the survey.

Species Protected by the WA Wildlife Conservation Act

Classification of rare and endangered fauna under the WA Wildlife Conservation (Specially Protected Fauna) Notice 2005 recognises four Schedules for protection of assigned species.

Scheduled species that are known to occur in the region in habitats similar to those present on-site include:

- Schedule 1 (rare or likely to become extinct):
  - Western Ringtail Possum (*Pseudocheirus occidentalis*);
  - Chuditch (*Dasyurus geoffroii*);
  - Baudin's Cockatoo (*Calyptorynchus baudinii*);
  - Carnaby's Cockatoo (*Calyptorynchus latirostris*); and
  - Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*).

- Schedule 4 (in need of special protection):
  - Peregrine Falcon (*Falco peregrinus*); and
  - Carpet Python (*Morelia spilota imbricata*).

As previously stated only Baudin's Cockatoo (*Calyptorunchus baudinii*) was sighted during surveying.

DEC Priority Fauna

Species on the Priority Fauna list include those removed from the scheduled fauna list and other species known from only a few populations or in need of monitoring (ecologia, 2001). Five Priority codes are recognised:

- Priority 1: taxa with few, poorly known populations on threatened lands;
- Priority 2: taxa with few, poorly known populations on conservation lands;
- Priority 3: taxa with several, poorly known populations, some on conservation lands; and
- Priority 4 and 5: taxa in need of monitoring.

Table 8 presents a list of the priority fauna present in the region. The species listed utilise habitats similar to those habitats found on-site (*ecologia* 2001).

TABLE 8
DEC PRIORITY SPECIES OCCURRING IN THE SOUTHERN FORESTS REGION AND THEIR CURRENT STATUS

SPECIES	Priority List
MAMMALS	
▪ Brush-tailed Phascogale (*Phascogale tapoatafa*)	3
▪ Western BrushWallaby (*Macropus irma*)	4
▪ Western False Pipistrelle (*Falsistrellus mackenziei*)	4
▪ Quenda (*Isoodon obesulus fusciventer*)	5
BIRDS	
▪ Barking Owl (*Ninox connivens connivens*)	2
▪ Masked Owl (*Tyto novaehollandiae*)	3
▪ Crested Shrike-tit (*Falcunculus frontatus leucogaster*)	4
▪ Bush-stone Curlew (*Burhinus grallarius*)	4

Source: *ecologia* 2001

Additional Investigations

The *ecologia* Environmental Consultants survey was limited by the undertaking of the survey in April. Also, the methodology to identify the presence of some key species such as the Western Ringtail Possum could be considered preliminary only. Therefore, a more detailed fauna survey of the site was undertaken in late Spring 2005 in order to more fully address the requirements of the EPA Guidance Statement 56 (EPA 2004).

The Level 2 fauna survey report will detail the methodology, survey results in both the local and regional context and will be included as a technical appendix in the SEA report.

8.4 Conservation Areas – Leeuwin Naturaliste Ridge National Park

Objective

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

Applicable Legislation, Criterion or Guidance

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

Background

The DEC manages the Leeuwin Naturaliste Ridge National Park (National 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 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). The SEA report will discuss alternative development options including incorporating part of the study area into the National Park. The SEA will also include further discussion on the most appropriate form of protection (covenants) for areas of bushland to be retained both in the conservation area/POS and on private lots.

The National Park abuts the 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 Sussex Location 413. Accordingly, the Park in this area appears to have had very little usage by the public.

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 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 management practices will need to be implemented to avoid any adverse, direct and/or indirect impacts such as trampling of native vegetation and the introduction of weeds and plant diseases, including *Phytophthora*. The SEA report will address management issues resulting from the Park-development interface. Management issues to be addressed in the Construction Environment Management Plan will include, but not be limited to:

- The allocation of responsibilities including cost-sharing arrangements for both short-term and long-term management maintenance requirements;
- Responsibilities for implementation;
- Timing and prioritisation of these responsibilities;
- Details relating to management actions and frequencies; and
- Reporting frameworks and frequencies.

Dense vegetation between the road reserve and the National Park will naturally discourage pedestrian access to the National Park. However, if the existing vegetation structure alone is not considered adequate to control access then a low fence will be installed along the boundary. The fence will be designed to deter human access and allow fauna movement between the National Park and the development but limit trampling of native vegetation. The developer will liaise with the DEC on the requirement for a fence and its design if needed.

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. The clearing restriction objectives of the development increase this risk.

The proponent acknowledges these risks and in accordance with the provisions of the LNRSPP and the Shire of Busselton TPS No. 20, a draft Fire Management Plan has been prepared to manage the potential impacts of a bush fire on the proposed development site. This plan has been prepared in consultation with the Fire and Emergency Services Authority (FESA) (FirePlan WA 2005).

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 2005).

The draft Fire Management Plan will be included as a technical appendix in the SEA report. It will include, but not be limited to, the following:

(i) Adequately address the appropriate dwelling hazard and building separation zones as outlined within the Planning for Bushfire Protection document (DPI, FESA, 2001);
(ii) Avoidance of management implications on the adjoining National Park and the conservation managed areas within the development location; and
(iii) Information on how it is intended to implement strategic firebreaks and hazard separation zones without impacting on the adjoining conservation areas.

Additional Investigations

No further investigations required.

8.5 Landscape and Landforms

Objective

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

Applicable Legislation, Criterion or Guidance

- Western Australian Planning Commission (2003b) Statement of Planning Policy No. 2 *Environment and Natural Resources Policy*;
- *Town Planning and Development Act 1928*;
- Western Australian Planning Commission (2003a) Statement of Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy*;
- Western Australian Planning Commission (2003c) Statement of Planning Policy 2.6 *State Coastal Planning Policy*; and

- Shire of Busselton Town Planning Scheme No. 20.

Background

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 TPS No. 20 (Canal Rocks Pty Ltd 2005).

The LNRSPP (LUS 3.2 - 3.4) states that the Principal Ridge Protection Area can be in public ownership or retained in private ownership. Alternative mechanisms enabling access to the Principal Ridge Protection Area by the wider community (eg inclusion in National Park, foreshore reserve or private conservation reserve) or including part of the study area in the National Park or foreshore reserve will be considered in the SEA report.

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. This work will be used to identify how the proposed development satisfies the landscape objectives of the LNRSPP.

Sussex Location 413 abuts the Indian Ocean on its western and northern sides. The northern coastline is the southern end of Smiths Beach. An existing foreshore reserve separates most of the lot from the high water mark. The former caravan park and chalets to the north-east of the site separates most of the site from Smiths Beach.

The redevelopment of the former Smiths Beach Caravan Park site resulted in a Development Guide Plan (DGP) being prepared for that site by the site's owners. Provision 2 of the DGP required the preparation of a foreshore management plan (FMP) for the area of the coastline directly in front of what is now the Canal Rocks Beach Resort (RPS Bowman Bishaw Gorham 2004). The Draft FMP was prepared and was approved for public consultation by Council and has subsequently been assessed and approved at an officer level (Oldfield, W. pers. comm.).

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 foreshore reserve varies in width from 15m–120m as measured from the line of permanent vegetation. The reserve is narrowest near the north-west corner of the caravan park. In this location the reserve consists of a 6m wide sealed road, 9m of sparsely vegetated dunes and a sandy beach.

An analysis of aerial photographs available for the area undertaken by Coastal Engineers MP Rogers and Associates (2004) indicated that there has been no significant erosion or accretion trend over the 48 years from 1955-2003.

The granite outcrops in the west provide long-term protection from coastal erosion. However, the eastern extent of sandy beach can endure significant wave attack during extreme winter storm events. As a result of such storms, a wave cut platform can extend into the secondary dunes.

Large areas of bare sand caused by numerous informal paths throughout the dunes have the potential to cause erosion of sand from the foreshore reserve.

Development Set-Back and Foreshore Reserve

As a result of their coastal engineering investigation for the proposed development, MP Rogers and Associates (2004) has recommended a minimum set-back distance to development based on coastal stability, impact of severe storms, allowance for climate change and a factor of safety. Based on these criteria, the recommended minimum set-back distances were determined as 30m from the Horizontal Setback Datum (HSD) for both the rocky and sandy coastlines. The HSD for Location 413 was established as the 3m AHD contour line or the limit of coastal vegetation, whichever is higher.

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.

MP Rogers and Associates conducted a drilling exploration for the purpose of determining the presence of rock under the sandy beach and dunes in front of Sussex Location 413 and Lot 364. The exploratory drilling did not encounter rock at suitable elevations to provide protection to the existing coastal road or buildings behind the sandy coast south of Smiths Beach.

The State Government released the State Coastal Planning Policy (Statement of 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).

The setback for rocky coastlines, as mostly occurs adjacent to Sussex Location 413, is 50m from the horizontal setback datum (HSD). For rocky shorelines the HSD is often difficult to determine as the rocky shoreline is irregular. The HSD is set on a case-by-case basis and will be the normalised alignment of the landward limit of sea action.

The setback for sandy shores, as for the small area of Sussex Location 413 that abuts the southern end of Smiths Beach, depends on the extent of erosion/accretion plus an allowance for acute erosion (40m) and sea level rise (38m). For sandy shorelines that do not have an historic erosion or accretion trend the guideline setback is 98m from the line of permanent vegetation.

Variations occur within the State Coastal Planning Policy to vary the setback from the general formula. At this stage, the proponent is not requesting that the DPI consider a reduction in

coastal setbacks to the proposed development. The SEA report will discuss the implications of a reduction in coastal setback and management of the foreshore reserve including detailed consideration of the following aspects relating to section 5.1 (viii) of the State Coastal Planning Policy, namely:

- ecological values;
- landscape;
- seascape;
- visual amenity;
- indigenous and cultural heritage;
- public access; and
- public recreational needs.

The foreshore reserve and setbacks will reflect discussion and any outcomes resulting from liaison with the Department for Planning and Infrastructure.

A draft Foreshore Management Plan has been prepared for the proposed development of the site. The plan focuses on the northern sandy Smiths Beach area. The plan will be revised to take into consideration the existing FMP prepared for the Canal Rocks Beach Resort development. The draft Foreshore Management Plan will include additional information on the western coastal area and the integration of the development with the Cape to Cape walking trail. The possible inclusion of the foreshore reserve in the Leeuwin-Naturaliste National Park will also be discussed. The draft Foreshore Management Plan will be included as a technical appendix in the SEA report.

Additional Investigations

No further investigations required.

8.6 Karst

EPA's Objective

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

Applicable Legislation, Criterion or Guidance

- EPA (1999) *Environmental protection of Cape Range Province* EPA Position Statement No. 1;
- EPA (2003) *Consideration of Subterranean Fauna in Groundwater and Caves during Environmental Impact Assessment in Western Australia* EPA Guidance Statement No. 54; and
- Western Australian Planning Commission (2003c) Statement of Planning Policy 2.6 *State Coastal Planning Policy*.

Background

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 and are generally restricted to a linear zone in the northern part of the Perth region. The karst features are formed by groundwater dissolving the limestone as it migrates towards the coast. The groundwater initially passes through quartz sands (and thus is undersaturated with respect to carbonate) before intersecting the limestone along a linear front where it begins the dissolution process. The width of the zone of potential karst phenomenon varies depending on a range of factors including water quality, transmissivity and the degree to which the limestone is cemented. Where voids have formed at the water table, they may expand by the collapse of overlying limestone. Once the migrating groundwater has become saturated with dissolved carbonate, further dissolution of limestone at the watertable is limited.

The size of potential karst features within the zone and thus their significance in terms of constraints to development varies according to a variety of factors including water chemistry, the degree to which the limestone is cemented, and depth to groundwater from the surface.

The risks of karst phenomena affecting development are reduced where the depth to groundwater is greater than 10m and can be reduced further by undertaking studies to identify any significant karst features in a particular area, and by designing storm water controls and building footings assuming that karst features will be present, even if no direct evidence for this is available.

The EPA's s16(j) advice to the WAPC recommended that areas of karst identified in the LNRSPP policy area will require protection including the provision of appropriate buffers and management considerations (EPA 1998).

Additional Investigations

Undertake a desktop analysis of the geology of the site and a site reconnaissance survey to identify potential karst landforms. No drilling is proposed at this stage of the investigations.

Further investigations involving physical testing will be undertaken following advice from the DEC should the site reconnaissance survey identify areas of potential concern.

If karst landforms are identified, then advice will be sought from the DEC as to the need for further investigations to address the possibility of the presence of troglobitic fauna and, if present, how these will be managed.

8.7 Surface Water Quality

EPA's Objective

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.

Applicable Legislation, Criterion or Guidance

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; and
- Department of Environment (2005) Decision Process for Stormwater Management in W.A. (Draft).

Background

As discussed in section 6.4, 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 through numerous agricultural properties and at its closest proximity to the proposed development flows in a northwesterly

direction past the site before meandering to the northeast prior to discharging on a seasonal (winter/spring) basis into Smiths Beach embayment. During the summer season the mouth to the creek linking the creekline to the ocean is generally closed resulting in surface flows 'backing up' along the creekline. There is the potential for the waters contained within this waterbody to impact upon human health through the incidence of pathogens, pesticides and nutrients and this will be addressed in the SEA report.

Additional Investigations

No further investigations required.

8.8 Groundwater Quality

EPA's Objective

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.

Applicable Legislation, Criterion or Guidance

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. (Draft);
- Shire of Busselton Drainage Standards;
- 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*; and
- WAPC (2003) State Planning Policy 2.7 – Public Drinking Water Source Protection.

8.8.1 Stormwater Management

Background

A draft Stormwater Management Plan has been prepared for the proposed development (Wood and Grieve Engineers 2005b). The Plan incorporates an analysis of pre and post-development stormwater regimes for the catchment of the Smiths Beach area and

recommends appropriate stormwater management systems with particular regard to water sensitive urban design and environmental issues.

The system that will be adopted for managing stormwater is highly dependent on the Development Guide Plan that is ratified. The intent is for development at Smiths Beach to be sympathetic to the existing topography and vegetation. Wherever possible, roads are designed to be low key, unsealed, with flush or no kerbs. These factors encourage runoff generated in the development to infiltrate at source.

Currently, run-off from the site in large storm events flows into the area that contained the former caravan park and across the beach front road towards the ocean.

Post-development stormwater flow has been analysed on the basis of the road layout shown on the Draft DGP. Further design development in the future is likely to alter the road layout and therefore significantly influence the drainage characteristics. Further planning for the development will call for revision and refinement of the stormwater management plan.

The drainage design report assesses pre-development and post-development flows, leading to the determination of appropriate stormwater management strategies, particularly stormwater detention areas.

It is widely accepted that a large portion of all pollutants carried by stormwater runoff are contained within rainfall events of one year or lower return period. These rainfall events produce relatively small volumes of runoff. In larger storms, which produce the largest volume of stormwater, the transport of pollutants is minimal. The stormwater management philosophy for Smiths Beach is to provide sufficient storage for the 100 year return period storm event, while putting in place measures to enhance soakage, enabling any pollutants carried by small rainfall events to settle.

Three detention areas are included in the design with a total capacity of 700m^3 of water. This volume is the estimated quantity of runoff from a 1 in 10-year storm event. The proposed stormwater management strategy provides for storage of the 100 year return period storm on site. As this event is much larger these storage areas are also sufficient to contain the one-year return period event, which carries the vast majority of pollutants that can present problems for downstream water bodies.

A key recommendation is the adoption of Water Sensitive Urban Design principles. Central to this philosophy at Smiths Beach is the retention of as much vegetation across the site as is possible, along with the use of low-key roads where possible, overland flow routes, and sediment and pollutant traps. These features all serve to enhance soakage and reduce transport of pollutants.

Where there is inconsistency between Shire of Busselton's Drainage Standards, and Australian Guidelines and DoW Policy/Guidelines, then the proponent acknowledges that the latter shall take precedence.

The draft Stormwater Management Plan for the proposed development has been forwarded to the DoW for review and will be included as a technical appendix within the SEA report.

Additional Investigations

No further investigations required.

8.8.2 Wastewater Management

Background

Disposal of wastewater and treated effluent away from the coastline is seen as of paramount importance in the proposed development. It is understood that a Department of Health (WA) requirement of subdivisional development would be to connect to a reticulated water and sewerage system operated by service providers licensed by the Office of Water Regulation. The license for this area is held by the Water Corporation.

It is proposed that each lot be provided with a sewerage connection. Collection will be by reticulated sewerage constructed to meet Water Corporation standards.

The sewerage system will gravity feed to a pumping station at the lowest point in the development which is along the central northern boundary. This will then be pumped in a 150mm rising main to connect into the Water Corporation system at Dunsborough.

Water supply will come via a connection from the existing Water Corporation reticulation supply on Caves Road at the Yallingup turn-off. Wastewater will be via a reticulated deep sewer within the subdivision down to a pump station at the low point of the development. The wastewater will then be pumped via a pressure main to the Water Corporation's Wastewater Treatment Plant in Dunsborough.

The route for the water and sewer pressure mains will be within road reserves, adjacent to the road pavement, to minimise loss and disturbance of vegetation.

The proposed route is also planned to allow for potential sharing of infrastructure with other developments occurring within the area. This fits well with the sustainability philosophy being applied to development at Smiths Beach.

Key initiatives of the 2003 State Water Strategy (SWS) adopted by Western Australia include reducing water consumption and increasing water reuse have been incorporated into the design of the wastewater system and these initiatives will be described in the SEA report.

An Effluent Disposal Management Plan has been prepared and summarises the investigations, studies and previous reports carried out regarding the provision of a wastewater collection and effluent disposal system for development on Sussex Location 413 Smith's Beach (Wood and Grieve Engineers 2005c). The Plan will be included as a technical appendix within the SEA report.

Additional Investigations

No further investigations required.

8.8.3 Drinking Water Source Protection

Background

As previously discussed in section 3 (refer subsection: Potable Water Supply) drinking water will be supplied to the proposed development by the Water Corporation under license from the Department of Water. The water will be provided to the site from the Dunsborough Town Water Supply. The drinking water is sourced from the Quindalup Wellfield which comprises seven equipped bores – six in Leederville and one in Sue Coal Measures and is located in the Busselton-Capel Groundwater area.

A Drinking Water Source Protection Plan (DWSPP) exists for the Dunsborough Town Water Supply. As the water source is a confined aquifer the DWSPP did not recommend the creation of a water reserve however the plan recommended that appropriate protection be taken for the key recharge areas in the Blackwood Plateau (Water and Rivers Commission 1999).

The proposed development will be serviced with a fully reticulated water supply with scheme water supplied from the Dunsborough Town Water Supply which 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).

The SEA report will provide confirmation of the Water Corporation's license and intention to supply the proposed development with potable scheme water and indicative annual volumes of water requirements for the proposed development.

Additional Investigations

No further investigations required.

8.9 Air Quality

8.9.1 Dust and Particulates

EPA's 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.

Applicable Legislation, Criterion or Guidance

- Western Australian Planning Commission: Statement of Planning Policy No. 4 - State Industrial Buffer Policy (1997) and Draft State Industrial Buffer Policy (2004);
- 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; and
- National Environment Protection (Air Toxics) Measure.

Background

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

Dust is considered to be fine solid particles in the size range from 0.1 to 100 microns (μ) (1 micron = 0.001 millimetres). 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 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, 2000b). 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; and
- 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 done in accordance with the information contained within the guidance statement.

Additional Investigations

No further investigations required.

8.9.2 Greenhouse Gases

Objective

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

Applicable Legislation, Criterion or Guidance

- Environmental Protection Authority (2002) *Guidance Statement for Minimising Greenhouse Gas Emissions*, Statement No. 12 October 2002; and
- Western Australian Greenhouse Task Force (2004) *Western Australian Greenhouse Strategy*.

Background

The objective of the UN Framework Convention on Climate Change (FCCC) is to achieve 'stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.'

The Convention is also founded on the principle of "common but differentiated responsibilities". Commonality refers to the need of all nations to assume responsibility for the protection of the global atmosphere, and the recognition that developing country greenhouse gas (GHG) emissions will exceed those from the industrialised nations within the coming generations.

The Greenhouse effect is a natural phenomenon that warms the earth and enables it to support life. The concentration of carbon dioxide in the atmosphere is estimated to have increased from about 275ppm in 1850 to 365ppm in 2000, and contributes towards global warming in part as a consequence of the "Greenhouse Effect". (http://www.dar.csiro.au/capegrim/ghgasgraphs.htm).

The National Greenhouse Strategy (Commonwealth of Australia, 1998) provided some information as to the implementation of the Kyoto Protocol strategy. There are no State or project specific requirements in the National Strategy, although the strategy does detail responsibility for measures for the Commonwealth, State and Ministerial Councils.

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).

New urban development has the potential to increase utilization of 'greenhouse friendly' goods and services that take maximum advantage of new opportunities in response to climate change including:

- application of best practice to maximise energy efficiency and minimise emissions;
- comprehensive analysis to identify and implement appropriate offsets; and
- proponents undertake an ongoing program to monitor and report emissions and periodically assess opportunities to further reduce greenhouse gas emissions over time.

Building and design guidelines that relate to the management of the environment to meet environmentally sustainable objectives (including the reduction greenhouse gas emissions) have been previously presented in Table 3.

Additional Investigations

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).

8.10 Noise

EPA's 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

Applicable Legislation, Criterion or Guidance

- 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 Statement of Planning Policy Road and Rail Transport Noise;
- Western Australian Planning Commission (2005). Draft Statement of Planning Policy Metropolitan Freight Network; and
- Australian Standard *AS2670/1990 Evaluation of human exposure to whole body vibration.*

Background

The proposed development has the potential to create noise and vibration impacts on both nearby sensitive premises. The *Environmental Protection (Noise) Regulations 1997* defines all premises other than commercial and industrial premises as noise-sensitive premises. Noise and vibration can impact on the health, welfare and amenity of residents of nearby sensitive premises as well as future residents of the proposed development.

These regulations provide a mechanism through which design and planning features need to be considered in new plant establishment or refurbishment of existing facilities. 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.

Noise and vibration can be generated at development sites by the operation of construction equipment including mobile earthmoving equipment. Construction noise may impact on the health, welfare and amenity of nearby existing residents.

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

The management of transport noise and vibration on proposed residences can be integrated in road design and construction materials as well as acoustic design. Through application of appropriate construction practices, both construction and transport noise can be managed to achieve statutory standards.

With regards to construction activity, noise and vibration can be generated at construction sites by the operation of construction equipment including mobile earthmoving equipment. Construction noise may impact on the health, welfare and amenity of nearby existing residents as well as the users of the Cape to Cape walk trail.

Construction noise received at nearby sensitive premises and transient visitors will therefore need to comply with the requirements of the *Environmental Protection (Noise) Regulations* 1997 and specifically Regulation 13 'Construction sites'.

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 to the satisfaction of the Shire of Busselton and the DEC in accordance with Regulation 13. The Cape to Cape Trail may not be covered by Regulation 13, so will be specifically addressed by means of a noise target or other management measure.

Additional Investigations

No further investigations required.

8.11 Aboriginal Heritage

EPA's Objective

To ensure changes to the biophysical environment resulting from the proposal does not adversely affect Aboriginal heritage sites and/or and cultural associations within the area and comply with the requirements of relevant Aboriginal and heritage legislation.

Applicable Legislation, Criterion or Guidance

- *Aboriginal Heritage Act 1972*;
- *Native Title Act 1993*; and
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984.*

Background

The *Aboriginal Heritage Act 1972* defines Aboriginal sites and provides for the preservation of places and objects customarily used by or traditionally important to Aborigines, and prohibits the concealment, destruction or alteration of any Aboriginal sites.

An Aboriginal heritage survey of the property has been carried out 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 review of records describing known sites, 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 proposed development area and it was concluded that there are no ethnographic impediments to the proposed development.

Additional Investigations

No further investigations required.

8.12 Visual Amenity

EPA's 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.

Applicable Legislation or Criteria

- Western Australian Planning Commission (2003b) Statement of Planning Policy No. 2 *Environment and Natural Resources Policy*;
- *Town Planning and Development Act 1928*;
- Western Australian Planning Commission (2003a) Statement of Planning Policy 6.1 *Leeuwin-Naturaliste Ridge Policy*;
- Western Australian Planning Commission (2003c) Statement of Planning Policy 2.6 *State Coastal Planning Policy*;
- The Shire of Busselton District Town Planning Scheme No. 20;
- The Leeuwin-Naturaliste Region Plan Stage 1 Final (1988);
- The Shire of Busselton Rural Strategy Outcomes Document (1993);
- The Department of Conservation and Land Management Policy Statement No 34, Visual Resource Management on Lands and Waters Managed by CALM (1989); and
- Shire of Busselton (2001) Draft Development Guide Plan (Withdrawn) – Location 413 Smiths Beach.

Background

The proposed vision for Sussex Location 413 is one of a green coastal hamlet that complements its surrounding coastal character and is a model of environmental sustainability. The planning and design approach adopted as part of the project derives from first principles and is aimed at enriching the essential qualities of the site, especially its wild and natural coastal energy (Land Design Partnership Pty Ltd 2005).

In order to achieve these objectives, it is necessary to reinforce the positive attributes and manage and overcome the negative attributes of the site. Furthermore, the proposed architectural and urban form will reflect, exemplify, enframe and excite the essence of the

proposed development in a contemporary and uncompromising way, as well as extend the biological and visual attributes of the site and its landscape setting.

A number of landscape assessments have been undertaken in the region and are relevant to the Visual/Landscape Assessment undertaken for the site. These include:

- landscape character type mapping of the region as part of a state-wide project (CALM 1994);
- broadscale 'visual resource' mapping of the South West region (CALM), the western half of the Shire of Augusta-Margaret River (James 1992), the Leeuwin-Naturaliste National Park (CALM 1989), and the Cape Naturaliste area (DPUD);
- landscape assessment of the region for the Leeuwin Naturaliste Ridge Planning Review (CALM 1997); and
- project level assessments for Bunker Bay, 'Ridgelands', Wyadup, Injidup, Gnarabup/Prevelly Park and Hamelin Bay.

These studies provide some insight into methodology as well as useful results. This current study employed similar key methodology components, such as assessment of landscape character, significant features, community use, and view characteristics. It differs from previous studies in its study area and level of detail and uses contemporary methodology refinements and techniques.

The following is an abridged version of the reporting that has been undertaken for the site (Land Design Partnership 2005). It includes a description of the key criteria/guiding principles that will assist in creating a settlement village which accords with the vision for the site. These are also the criteria which underpin the independent Visual/Landscape Assessment undertaken for Sussex Location 413.

Criteria and Guiding Principles

There are several key areas from which the site can be seen. These include:

- Torpedo Rocks carpark;
- Canal Rocks area;
- Smiths Beach - various 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).

The extensive visual modelling so far undertaken has enabled the critical measuring of the potential visual impact of development from these areas, allowing review of the success or otherwise of the site response, as well an exploration of ways in which any impacts can be limited.

Defining Management Objectives for Visual Aesthetic Values

Objectives will be defined for the management of values. These objectives will be compatible with, and encompass other relevant objectives, policies, or designations such as those promulgated by Council, DEC, EPA, and WAPC.

The objectives will cover the following categories of visual aesthetic value:

- Landscape Character;
- Significant features, including whether they are well or poorly represented (to be determined at an appropriate scale);
- Access;
- Views; and
- Wilderness Quality.

Study Process

The study process used for the Visual/Landscape Assessment can be described in terms of a number of steps and these are explained briefly as follows.

Step A - Establish a knowledge base (inventory)

There are five parts to this initial step:

i) A literature review will be undertaken and used to compare methodologies, establish assessment criteria or provide data relevant to the assessment.

ii) Key stakeholders will be interviewed to identify key issues, gather information relevant to the assessment, and inform them of the process.

iii) Data relevant to the assessment will be collected from common data sources (eg. Department of Land Administration), relevant reports, and field survey.

iv) Existing information related to people's perception and attitudes relevant to the study area will be identified. If this information is inadequate to establish criteria, then additional information will be sought.

v) Prepare a map base and thematic layers. Typical layers are:

- Landform;
- Vegetation, remnant, structure, species;
- Water features;
- Roads and tracks network and class;
- Settlement and industrial areas, including urban development and rural subdivisions; and
- General tenure.

Step B - Classify the area into Landscape Character Units

Relevant data will be used to identify broad patterns of environmental characteristics, classifying them into units or sub-units according to their relevance to human interaction and

experience. Typically, this classification process produces a set of natural character units usually based on landform, vegetation, and water characteristics, and a set of land use units based on tenure, remnant vegetation and land use activities, including existing and proposed built form.

Step C - Identify significant features

The characteristics or features of the study area (ie site and setting) that are most important to the experience and enjoyment of people will be identified using relevant criteria or lists. The criteria used will relate to the landscape character units and will cover natural, rural-use environments and settlement characteristics. They will include those used in the landscape study undertaken in the preparation of the Leeuwin-Naturaliste Ridge Statement of Planning Policy (WAPC 1998 as amended) together with more recent refinements.

These criteria are:

Natural Characteristics:

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

Landform
- High points and prominent ridge crests;
- Steep slopes;
- Pronounced gullies; and
- Features very flat plaints 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 or very beach or tidal zone.

Rural-Use Characteristics:

Texture
- Areas with strongly textures 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.

Avenue Vegetation
- 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 and/or settlement that have a:
  - high consistency in design vernacular between adjacent built forms or across settlement areas;
  - high level of responsiveness to the natural environmental setting; and
  - high level of visual interest, particularly at a detailed scale.

Local Experience
- Settlements that provide a variation in view types; and
- Settlements that have good levels of dedicated pedestrian access.

Landmark Structures
- Distinctive structures with high integrity design, unique in their setting and reflect aspects of their setting.

Step D - Identify Community Use

The assessment of community use will identify and map the location, type and degree of community use of the area. It will include spot (localised) use areas and access routes (air, ground, water), types of recreational and non-recreational (including tourism or residential) use, ground travel route physical characteristics (such as class, surface, markings and intended traffic type), and existing and expected volume of users. The assessment will also include the classification of use areas (sensitivity levels), distance zones from these areas, and will combine these to form sensitivity zones. These parts will be completed in the following steps:

i) Circulation patterns will be identified for established use areas (road and track network and localised use areas).

ii) Activities for these use areas will be determined, categorised as various recreation uses, industrial, sightseeing/tourist, or general access.

iii) The volume of use for the use areas will be determined.

iv) Use areas will be classified into sensitivity levels. The criteria for classification of sensitivity levels are summarised in Table 9.

v) Distance zones will be assigned to use areas. Typical zones are:

- foreground (fg) (0-500m);
- middleground (mg) (500m-3km); and

- background (bg) (3-9km).

vi) Sensory characteristics will be addressed primarily through the assessment of views (other sensory characteristics may be described but are unlikely to be assessed). General view experience will be established through field survey and will be described. Key views will be identified across the study area. Examples of these variables include:

- Location - location along the access route (lat/long);
- Direction of view - angle between the centreline of view and the centreline of the road (degrees);
- Angle of view - field of vision (degrees);
- Visibility of development (visible, non-visible);
- Subject of the view; and
- Type of view (eg panoramic, canopied, framed, focal etc.)

Criteria for key views include:

- the view is recognised through map notation or access and facilities; or
- is a distinctive view type (eg framed view, panoramic view from a crest or high point etc); or
- is at least 30 degree angle and includes a long sightline along a road tangent or includes a focal point, significant feature or landmark; or
- there are clear views to an area of proposed development; or
- the view has been highlighted by the community as important.

TABLE 9
SENSITIVITY LEVELS OF USE AREAS

Classification	**Type of Use – Existing or Formally Proposed**		
	Non-recreation use rural and forest roads	***Recreation and tourism***	***Settlement***
Level 1 **High** **Sensitivity**	National & State Highways. Links between cities & major towns.	Designated tourist roads. Major recreation sites recognised formally or informally at a national or state level, including walking tracks/trails and lookouts. Primary access to these recreation sites or multiple level 2 use areas. Travel routes or sites through or adjacent to scenic or historic areas with recognised or assess values of national or state importance.	Places with recognized or assessed scenic or historic values of national or state importance.
Level 2 **Moderate** **Sensitivity**	Main link roads between towns & highways	Important but undesignated tourist and recreation roads. Recreation sites of regional importance, including walking tracks and lookouts. Primary access to these recreation sites or multiple level 3 use areas. Travel routes or sites through or adjacent to scenic or historic areas with recognised or assessed values of regional importance.	Places developed to capitalise on view or attractions.

Level 3 **Low** **Sensitivity**	Minor link roads.	Local recreation use.	Residential areas other than Level 1 or 2.
Level 4 **Very Low Sensitivity**	Roads receiving local non-recreation use.	-	Industrial areas.

View locations that are relevant to the assessment (including those identified by the community to date) include:

- Torpedo Rocks carpark;
- Canal Rocks area;
- Smiths Beach - various 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).

Step E - Assess the wilderness quality of the area

Wilderness quality will be assessed in terms of 'remoteness' and bio-physical naturalness. 'Remoteness' will be determined based on distance from access routes, settlement and disturbed areas and bio-physical naturalness will be determined based on remnant vegetation/cleared land mapping. These will be combined to form a simple composite wilderness quality map. This assessment may reflect people's sense of remoteness or level of development, (landscape character is also a reflection of this) keeping in mind it is a measure of actual disturbance.

Step F - Prepare a Composite Landscape Class Map

The most influential (for management purposes) of the assessment themes (component outcomes as described above) will be combined into a landscape classes map (alternatively called 'key values map') to facilitate assessment and planning. These classes will avoid reductionism, ensuring that the different types of values are explicit and allow easy interpretation for management purposes. It may be difficult to show all key values on one map and reference should be made to the individual maps as necessary.
The SEA report will:

- Address the use of topography and design elements to minimise cut and fill across the site;

- Assess the visual impact of the chalet area;

- Fully describe and evaluate landscape character including mapping and description of landscape management zones and character units; and

- Include cross-sectional analysis to support any ‘seen area’ analysis.

The Visual Assessment report will be an appendix to the SEA and will contain details of the visual amenity assessment methodology, the results of the investigation and include illustrations.

Additional Investigations

No further investigations required.

9. APPLICABLE LEGISLATION

Legislation relevant to the proposed development of Sussex Location 413 includes:

- *Environmental Protection Act 1986*;
- *Wildlife Conservation Act 1950*;
- *Aboriginal Heritage Act 1972*;
- *Heritage of Western Australia Act 1990*;
- *Conservation and Land Management Act 1984*;
- *Environmental Protection (Noise) Regulations 1997*;
- *Health Act 1911-1979 and Regulations*;
- *Local Government Act 1995*;
- *Town Planning and Development Act 1928*;
- *Western Australian Planning Commission Act 1985*;
- *Native Title Act 1993*;
- *Fire and Emergency Services Authority of Western Australia Act 1998*;
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*;
- *Rights in Water and Irrigation Act 1914*;
- *Metropolitan Water Supply, Sewerage and Drainage Act 1909*; and
- *Country Towns Sewerage Act 1914.*

In addition, the following Commonwealth legislation may be relevant:

- *Environment Protection and Biodiversity Conservation Act 1999.*

Table 10 (over page) lists the authorities and agencies with responsibilities in the redevelopment of the site.

TABLE 10
AUTHORITIES AND AGENCIES WITH RESPONSIBILITIES IN THE PROPOSED DEVELOPMENT OF THE SITE

Department of Environment and Heritage (Commonwealth)	• Provides protection for matters of national environmental significance. • Joint assessment may be triggered if Commonwealth has jurisdiction. • Environment Australia and Commonwealth Environment Minister administer the Act.
Shire of Busselton	• Maintains public infrastructure including roads. • Carries out strategic and statutory planning. • Manages and maintains foreshore area. • Manages and maintains public open space.
Department of Environment and Conservation (Western Australia)	• Manage conservation reserves vested in the crown. This includes the: a) preparation of management plans; b) implementation of the management plan; c) co-ordination with other agencies; d) implementation of education and monitoring programs; e) wildlife research and management; f) management of nature-based tourism; and g) lead role in enforcement (non-fisheries issues). • Administer the *Wildlife Conservation Act 1950*
Department of Health	• Has responsibility for public health and safety issues including the provision of safe drinking water supplies and mosquitoes.
Department for Planning and Infrastructure (Western Australia)	• Manages the provision of major transport infrastructure within and around the site.
Fire and Emergency Services Authority of Western Australia	• Provides advice on the protection of life and property from wildfires.
Department of Environment	• Assists the Environmental Protection Authority in the process of assessing proposals that may significantly affect the environment, including planning schemes. • Administers pollution control legislation.
Environmental Protection Authority	• Assesses reports and makes recommendations on proposals that may significantly affect the environment, including planning scheme amendments.
Department of Indigenous Affairs	• Protects relics and significant areas of land from undue interference, whilst 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 *Aboriginal Heritage Act 1972*. • Administers the Act.

10. COMMUNITY AND OTHER STAKEHOLDER CONSULTATION

The Canal Rocks Development launched a community consultation strategy for the Smiths Beach Project in May 2003 which involved a broad cross-section of the community and has continued to July 2005. The aim of the consultation was to ensure that as many people as possible were informed and had opportunity to comment and provide guidance on the development plans and suggested built-form. This consultation process included the establishment of the Smiths Beach Reference Group (Creating Communities Australia Pty Ltd 2004).

Community input was determined to be paramount by the developer and the community consultation strategy was undertaken to ensure that local knowledge, views and perceptions were incorporated into all aspects of the planning process.

The communication 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.

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 documents the findings and recommendations received through the above methods (Creating Communities Australia Pty Ltd 2004).

The following sections are a 'snapshot' of the consultation process undertaken up to the publication of Creating Communities report (2004). Since then, further community consultation has been undertaken and full reporting will be presented in the SEA as a technical appendix.

10.1 Community Consultation Process

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

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; and
- Develop community ownership in the final plans.

Table 11 (over page) provides a summary of the activities conducted during the consultative process.

TABLE 11
COMMUNITY CONSULTATION ACTIVITIES

Consultation Activity	Community and Stakeholders Involved
One-on-one interviews	109 one-on-one interviews were conducted 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 and is representative of stakeholders in the local community. Six meetings have been held with the Reference Group members and the development team.
Brochures	An information booklet detailing the history of the Smiths Beach proposal, development ideas, community recommendations and changes has been provided to the community. 400 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	A detailed powerpoint presentation of the changes made to the design concept was prepared. This presentation detailed the modifications made to the original design concept following community consultation.
1300 information number	A direct information line has been included in the consultation process to enable the community to have easy access to the project team. The number is: 1300 786 289.

10.2 One-on-one Interviews

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. One hundred and nine interviews 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. Table 12 (over page) lists the cross-section interviewed as part of this community consultation process.

TABLE 12
INTERVIEWEES CONSULTED ON A ONE-ON-ONE BASIS

Tourism associations and operators	Chamber of Commerce	Local Members of Parliament
Progress associations	Winery operators	Coast Care Group members
Aboriginal community members	Surf Club members	Dunsborough GP
Surf School and surf shop proprietors	Local builders	Leisure Centre and Country Club staff
Professional surfers and recreational surfers	Real estate operators	Schools
Local small business operators	Local surf board builder	Naturalist Volunteer Sea Rescue
Shire of Busselton – various interviews	Environment Group members	Angling Club members
Busselton/Dunsborough Arts & Artists Alliance	Local architects	Community members
Smiths Beach Action Group		

10.3 Stakeholder Meetings

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

Meetings were facilitated with the following groups/organisations:

- Smiths Beach Action Group Committee;
- Wardan Aboriginal Cultural Centre;
- Cape Naturaliste Tourism Association Board;
- Naturaliste Volunteer Sea Rescue;
- Yallingup Land Care District Committee;
- White McMullen Real Estate; and
- Dunsborough Progress Association.

11. PROJECT AND ASSESSMENT SCHEDULE

The future timing of the proposed development is dependent on successful resolution of outstanding issues and the environmental and planning approval processes.

The indicative timeline for major elements of the environmental approvals process is as follows:

Referral of Proposal to the EPA	August 2005
Setting of level of assessment and advertising by EPA	26 September 2005
Closing date for 2 week appeal period	10 October 2005
Submission of draft SEA Scoping Document to EPASU	November 2005
Comments from EPASU on draft Scoping Document	December 2005
Submission of final Scoping Document to EPASU	December 2005
Scoping Document presented to EPA for endorsement	December 2005
Scoping Document released for public comment	February 2006
Additional investigations completed	June 2006
Preparation of draft SEA report	July 2006
Draft SEA report viewed by client/consultants	August 2006
Revised draft SEA report submitted to EPASU	August 2006
EPASU comments on draft SEA returned to consultant	October 2006
Finalised SEA report submitted formally to EPA	November 2006
SEA report released for 8 week public review period	January 2007
Responses to submissions from public review prepared	March 2007
EPA report to the Minister	June 2007
2 week appeal period (if appeals are lodged this may add at least 2 months to the process)	July 2007
If no appeals – issuing of approvals and conditions	November 2006

12. PEER REVIEW

Peer review is considered unlikely to be necessary because the proponent has commissioned the use of expert consultants to undertake the specialist studies and prepare the associated documentation. This documentation is/has been peer-reviewed by specialist officers of the relevant government agencies whose role it is to ensure that the information provided is technically accurate and advise the EPA accordingly.

13. STUDY TEAM

The project is being managed by NS Projects Pty Ltd. Completion of proposed investigations and preparation of associated documentation will be undertaken by suitably qualified consultants with the assistance of various state agencies and local authority as appropriate.

The study team for this project presently comprises the following companies/individuals:

• Project Management:	NS Projects Pty Ltd
• Aboriginal Heritage:	McDonald Hales and Associates
• Built Form:	Banham Architects
• Civil Engineering:	Wood and Grieve Engineers
• Coastal Engineering:	MP Rogers and Associates
• Community Consultation:	Creating Communities Australia Pty Ltd
• Economic and Tourism Strategy:	Economic Consulting Services
• Environmental Assessment:	ATA Environmental
• Fire Management:	Fire Plan
• Landscape Planning:	EPCAD and George Lullfitz
• Legal Advice:	Blake Dawson Waldron Les Stein Minter Ellison Phillips Fox
• Public Relations/Marketing:	AdCorp
• Social Impact Assessment:	Planning Solutions South West
• Statutory/Strategic Planning:	Michael Swift and Associates
• Strata Management:	Strata Title Consultancy Services
• Surveying/3D modelling:	McMullen Nolan and Partners
• Tourism and Hotel Design:	PMdR Malcolm McKay
• Traffic Assessment:	Jonathan Riley
• Traffic and Access Management:	Transcore
• Urban Design:	Mackay Urban Design Roberts Day Town Planning and Design
• Visual Amenity:	John Cleary Planning Land Design Partnership Michael Edwards Howard Mitchell (EPCAD)

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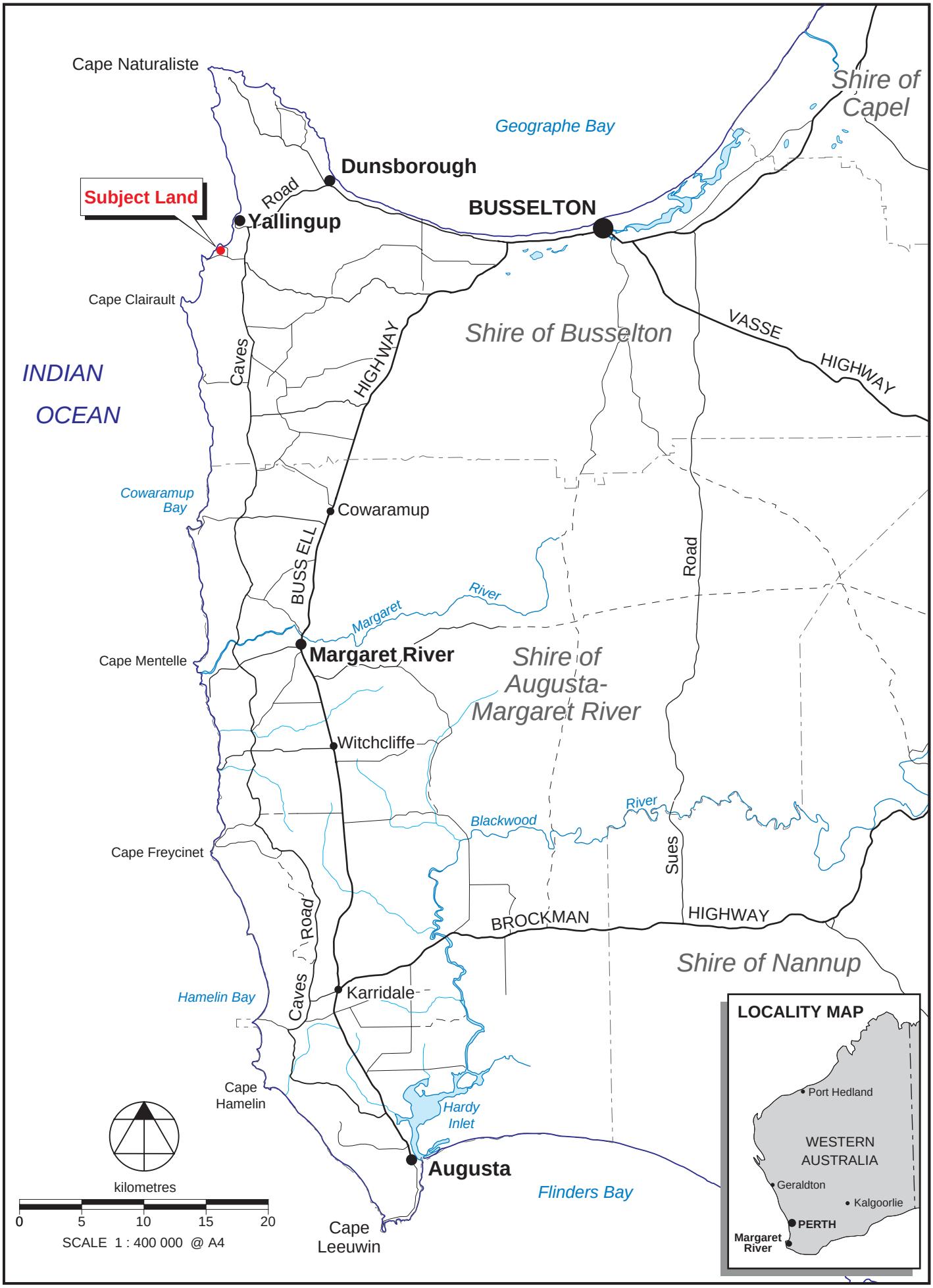
FIGURES



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SUSSEX LOCATION 413, YALLINGUP
SEA SCOPING DOCUMENT

REGIONAL LOCATION

FIGURE 1

LEGEND

- Development Guide Plan Boundary
- Existing Reserves
- Principal Ridge Protection Area
- Public Open Space
- Privately Managed Open Space
- Conservation Covenant Area
- Town Planning Scheme Zoning Boundary
- Special Height Control Area
- Strategic Firebreak
- Residential
- Restricted Residential Building Area
- Tourist
- Restricted Tourist Building Area
- R15 — R-Code Boundary

metres

0 50 100 150 200 250

SCALE 1 : 4 500

SOURCE: Roberts Day, DGP1_11-08-05email.jpg, Received 17/8/2005

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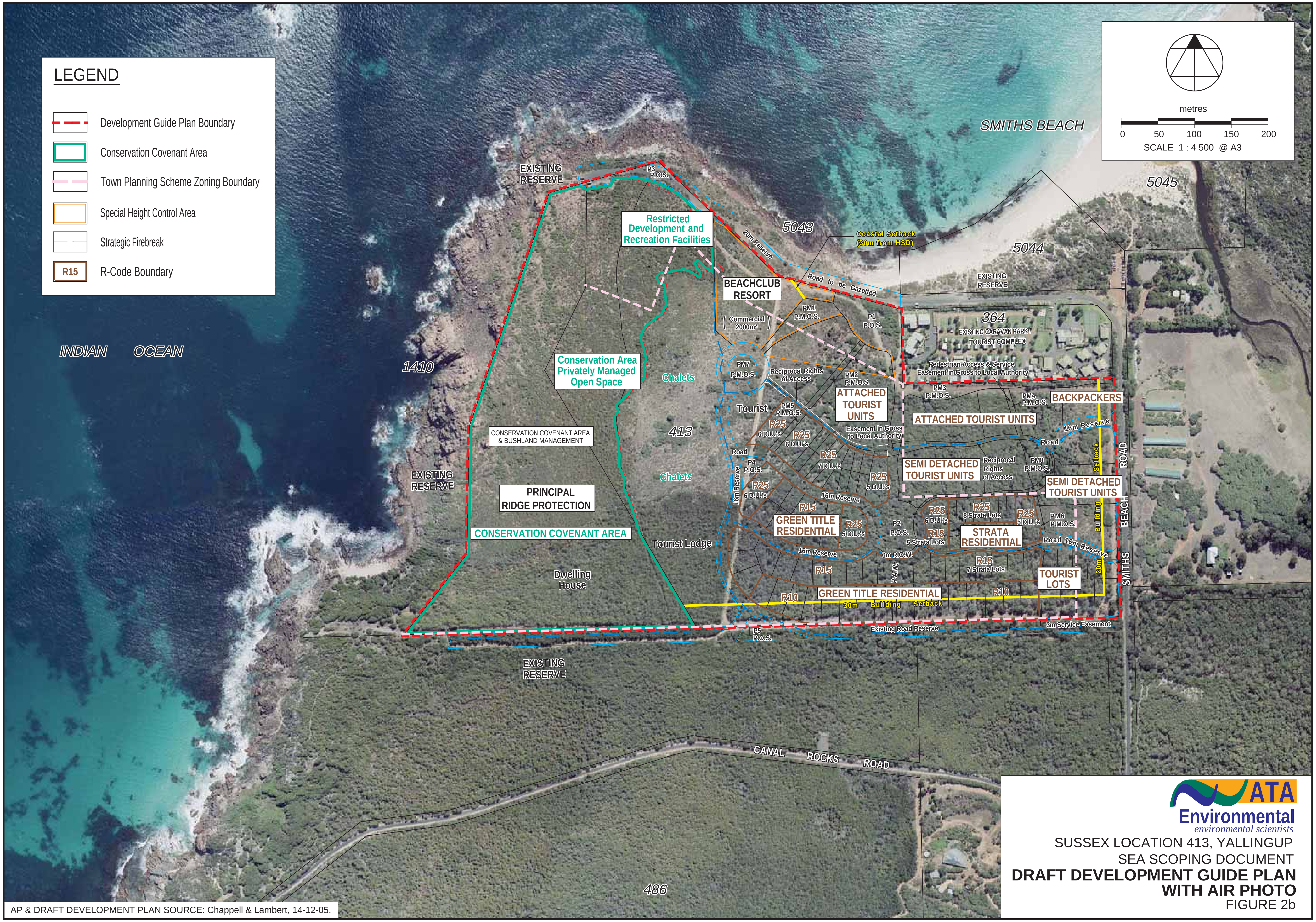
SUSSEX LOCATION 413, YALLINGUP
SEA SCOPING DOCUMENT

DRAFT DEVELOPMENT GUIDE PLAN

FIGURE 2a



LEGEND
Development Guide Plan Boundary
Conservation Covenant Area
Town Planning Scheme Zoning Boundary
Special Height Control Area
Strategic Firebreak
R15
R-Code Boundary
metres
0 50 100 150 200
SCALE 1 : 4 500 @ A3
SMITHS BEACH
INDIAN OCEAN
EXISTING RESERVE
Restricted Development and Recreation Facilities
Conservation Area Privately Managed Open Space
CONSERVATION COVENANT AREA & BUSHLAND MANAGEMENT
PRINCIPAL RIDGE PROTECTION
CONSERVATION COVENANT AREA
Dwelling House
Tourist Lodge
Chalets
BEACHCLUB RESORT
ATTACHED TOURIST UNITS
SEMI DETACHED TOURIST UNITS
BACKPACKERS
GREEN TITLE RESIDENTIAL
STRATA RESIDENTIAL
TOURIST LOTS
Coastal Setback (30m from HSD)
EXISTING CARAVAN PARK / TOURIST COMPLEX
SMITHS BEACH ROAD
CANAL ROCKS ROAD
30m Building Setback
Existing Road Reserve
3m Service Easement

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AP & DRAFT DEVELOPMENT PLAN SOURCE: Chappell & Lambert, 14-12-05.

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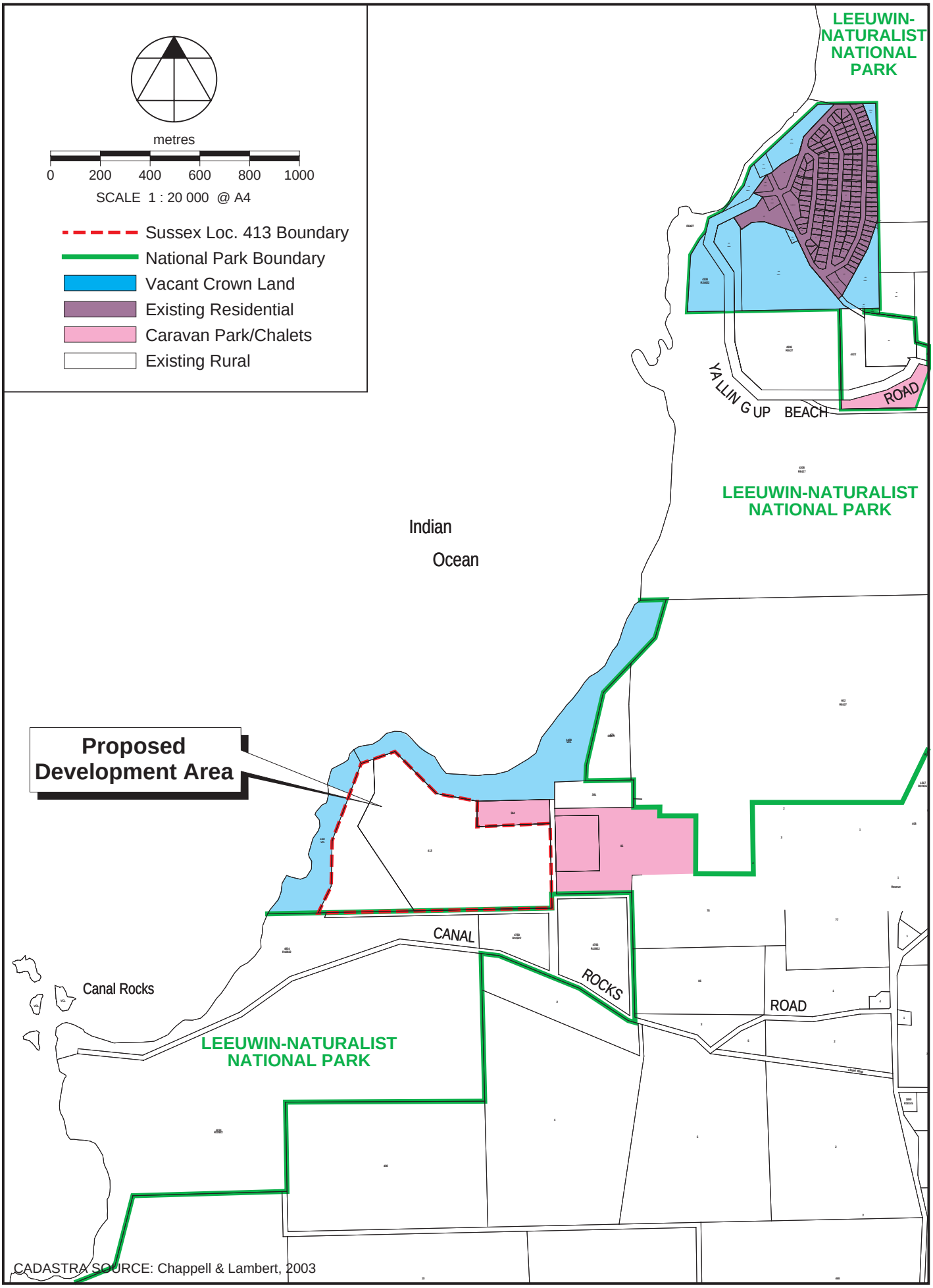
SUSSEX LOCATION 413, YALLINGUP
SEA SCOPING DOCUMENT

DRAFT DEVELOPMENT GUIDE PLAN WITH AIR PHOTO

FIGURE 2b



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SUSSEX LOCATION 413, YALLINGUP
SEA SCOPING DOCUMENT

ADJACENT LAND USE

FIGURE 3

PRINTED: Fri 10 Mar 06

CHECKED: BW 11-10-05

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DATUM: Local Grid

CRP-2003-001/SEA/25-125f4.dgn

metres

0 20 40 60 80 100

SCALE 1 : 3 000 @ A3

INDIAN OCEAN

Smiths Beach

LOT 364
EXISTING RESORT/
CARAVAN PARK

Road

LEEUWIN - NATURALISTE NATIONAL PARK

LEGEND

- Sussex Loc 413 Boundary
- Topographic Contours (2.5m interval AHD)
- Drill Holes

SOIL DEPTH

- < 2.5 metres
- 2.5 - 4.5 metres
- >4.5 metres

SOURCE: CHAPPELL & LAMBERT, 2001

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SUSSEX LOCATION 413, SMITHS BEACH
ENVIRONMENTAL REPORT

TOPOGRAPHY & SOIL DEPTH

FIGURE 4

PRINTED: Fri 10 Mar 06

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DRAWN BY: TE/GLM 10-6-05

DATUM: Local Grid

CRP-2003-001/SEA/25_125F5.dgn

metres

0 20 40 60 80 100

SCALE 1 : 3 000 @ A3

INDIAN OCEAN

Smiths Beach Road

GH4

C

SH9

413

40.4686ha

BaAgJM

AW2

LH6

LH1

LEGEND

- Sussex Loc. 413 Boundary
- 12.5 Topographic Contour (2.5m interval AHD)
- Vegetation Association Boundary
- 1 Ecologia Fauna Study Site

VEGETATION ASSOCIATIONS

GH4	*Pimelea ferruginea, Scaevola crassifolia, Acacia divergens, Spyridium globulosum* Low Heath
LH1	*Melaleuca lanceolata, M. huegelii* Closed Heath
LH6	*Melaleuca huegelii* Closed Scrub 1
AW2	*Agonis flexuosa, Corymbia calophylla, Eucalyptus marginata* Low Woodland to Low Open Forrest
SH9	*Allocasuarina humilis, Melaleuca acerosa, Olearia axillaris* Low Closed Heath
BaAgJM	*Banksia attenuata, Agonis flexuosa* Low Woodland *Eucalyptus marginata, Corymbia calophylla* Low Open Forest
C	Cleared of Native Vegetation

BASE SOURCE: CHAPPELL & LAMBERT, 2001

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SUSSEX LOCATION 413, YANCHEP
SEA SCOPING DOCUMENT

VEGETATION ASSOCIATIONS & FAUNA HABITATS

FIGURE 5