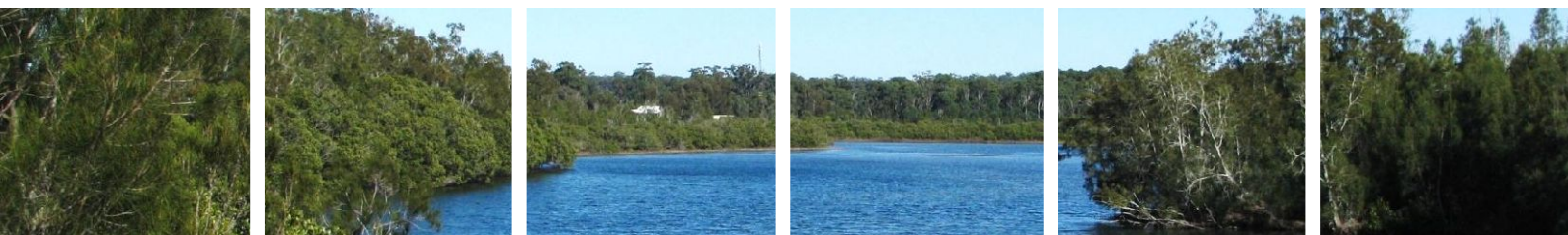




Shoalhaven City Council

Badgee Lagoon Area Environmental Study Report

Spetember 2011



Revision 2 – Issued 14 September 2011

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1. Introduction

1.1 Background

Locale Consulting Pty Ltd (**Locale Consulting**) was commissioned by Shoalhaven City Council (**Council**) to undertake an Environmental Study for an area of land surrounding Badgee Lagoon at Sussex Inlet. The Environmental Study has been prepared in accordance with Section 57 of the *Environmental Planning and Assessment Act (EP&A Act) 1979* (as in place when the process of making the draft Local Environmental Plan (**LEP**) No. 130 was commenced on 25 September 2007).

The area subject to the Environmental Study, referred to as the “**the site**”, occupies a total of approximately 235.9 hectares. The site is shown in Figure 1 (from Eco Logical 2009).



Figure 1: Badgee Lagoon Environmental Study Area

This Environmental Study has been prepared utilising specialist studies undertaken for the purposes of preparing an Environmental Assessment Report for the site as part of a proposed development application under the now repealed Part 3A of the EP&A Act (**the Part 3A studies**). The Part 3A studies were independently peer reviewed for adequacy and completeness by Environmental Resources Management Australia Pty Ltd (**ERM**), with subsequent information provided with respect to some specialist studies. Biosis Research (**Biosis**) was further engaged to peer review subsequent flora and fauna studies following ERM's recommendation for additional work to be completed. AH Ecology were further utilised to assist in final interpretation for the Environmental Study.

The process of utilising the Part 3A studies to inform this Environmental Study was agreed to by the NSW Department of Planning and deemed by them to satisfactorily address the requirements for an environmental study under Section 57 of the EP&A Act (refer to Section 4 for further details).

The Part 3A studies utilised in the preparation of this report include;

- ▶ *Ecological Issues and Assessment Report* by Whelans InSites;
- ▶ *Bushfire Protection Assessment* by Eco Logical Australia;
- ▶ *Cultural Heritage Assessment* by National Heritage Consultants;
- ▶ *Preliminary Geotechnical, Contamination and Acid Sulfate Soil Assessment* by Coffey Geotechnics;
- ▶ *Transport Report* by Colston Budd Hunt & Kafes;
- ▶ *Traffic Noise Intrusion Report* by Day Design;
- ▶ *Sussex Inlet Residential and Mixed Use Development* flood report by WMA Water;
- ▶ *Water Cycle Management Report* by Storm Consulting;
- ▶ *Economic and Employment Impact Assessment* by Rolyat Services and Hincks and Associates;
- ▶ *Social Impact Statement* by Julius Bokor Architect; and
- ▶ *Utilities Investigation Report* by Allen Price & Associates.

It should be noted that Locale Consulting has not peer reviewed these reports and relies on the review of ERM and Biosis to ensure these provide a true and accurate reflection of the site conditions and impacts of the proposal. Locale Consulting has further utilised specialist input from AH Ecology to assist in resolving "areas of contention" with respect to the *Ecological Issues and Assessment Report* completed by Whelans InSites.

1.2 Purpose of the Environmental Study

The purpose of this Environmental Study is to determine the suitability and capacity of the site for a range of land uses. The extent and type of use is constrained by a range of environmental, economic, and social limitations, as detailed throughout this Environmental Study and in studies previously prepared by the land owner in support of a proposed development application under the now repealed Part 3A of the EP&A Act. Nevertheless, opportunities do exist for the development within the site and as an extension to the existing Sussex Inlet community. Appropriate land uses have been determined to include the following:

- ▶ Conservation, recreation and public open space;
- ▶ Residential development of varying densities; and
- ▶ Employment generating uses such as small scale retail.

This report is set out as follows:

- Section 2 provide a detailed description of the site;
- Section 3 outlines the strategic planning framework associated with the site;
- Section 4 outlines the statutory planning framework associated with the site;
- Section 5 provides a summary of the natural environment associated with the site;
- Section 6 provides a summary of the built environment associated with the site
- Section 7 provides a summary of the social environment associated with the site
- Section 8 provides a summary of the consultation undertaken as part of the proposed development of the site;
- Section 9 establishes a land use strategy for the site, taking into consideration the findings of earlier sections;
- Section 10 then provides for recommendations and conclusions relating to the Environmental Study.

1.3 Legislative Context

A wide range of legislation, planning instruments and forward planning policies play a key role in determining the future use of the site. Primarily the EP&A Act (as current when the project commenced) requires a council to prepare an environmental study when it decides to prepare a draft LEP (Section 57). An environmental study is undertaken within this legislative context, and can be summarised under the broad headings of “statutory” and “strategic” frameworks. Sections 3 and 4 of this Environmental Study provide further details of these frameworks respectively, and include more detailed analysis of key documents including:

- *EP&A Act*, which provides the legal mechanism and requirements in undertaking the Environmental Study;
- *South Coast Regional Strategy* (and associated documents), which provides the regional planning context for how the area should be developed;
- *Sussex Inlet Settlement Strategy*, which outlines the broad strategic future for the urban area of Sussex Inlet and surrounds; and
- *Section 117 directions*, which, under the EP&A Act, provide the legal mechanism to ensure that certain matters (including other State policies and guidelines) are considered when councils prepare an Environmental Study and subsequent Local Environmental Plan.

1.4 Consultations

Consultation has been undertaken by both Council and the land owner (**the Proponent**) in the process of preparing a draft LEP and Part 3A studies respectively. These consultations have raised a number of key issues that need to be considered and addressed in the preparation of this Environmental Study. A review of consultation undertaken and responses to key issues are provided and summarised in Section 8.

2. Site Description

This section provides a detailed description of the site, detailing the legal description and ownership, the regional and local context, the history of the site and existing zoning.

2.1 Legal Description and Ownership

The site comprise of the following allotments:

- ▶ Lots 123, 124 and 125 DP 528699;
- ▶ Lot 5 DP 568283;
- ▶ Lots 144 and 145 DP 755937;
- ▶ Lots 156 DP 40207;
- ▶ Lot 2442 DP 1074478; and
- ▶ Lot 51 DP 1033684.

The above land is owned by Taliac and L&T Pastoral, being subsidiaries of the Lucas Property Group.

2.2 Regional Context

The site is located on the NSW South Coast, around 3 hours south of Sydney, and within the Shoalhaven local government area. The site adjoins the urban area of Sussex Inlet, recognised as a “Town” in the South Coast Regional Strategy (Department of Planning 2007) and is on the southern side of St Georges Basin. Adjoining the eastern side of St Georges Basin is the Booderee National Park, which is part of Commonwealth Territory of Jervis Bay (not part of the State of NSW).

The regional centre of Nowra/Bomaderry is around 45 kilometres to the north, providing key regional services including major hospital, tertiary education and other community facilities. South of the site, the major town of Ulladulla and major centre of Batemans Bay, are located around 45 minutes and 1.5 hours from Sussex Inlet respectively.

The site is identified in Figure 2 (based on *South Coast Regional Strategy Map* – Department of Planning 2007).

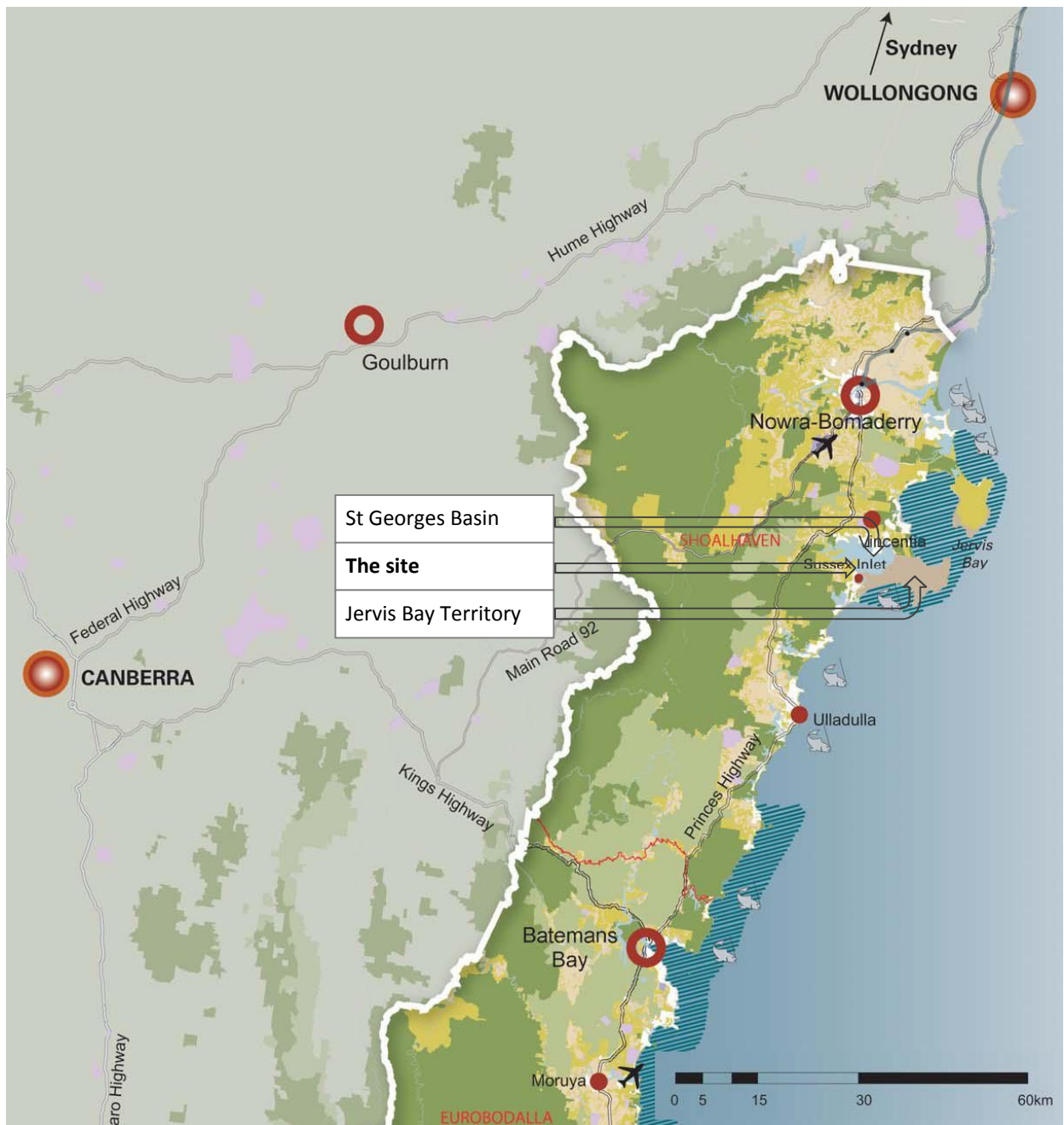


Figure 2: The site in Regional Context

2.3 Local Context

The site lies to the north-west of the Sussex Inlet urban area, and includes the Sussex Inlet Golf Course. The Sussex Inlet urban area can be broadly divided between the main urban area (**Sussex Inlet**) and the urban area to the north of the Badgee Lagoon Bridge (commonly referred to as the **Badgee urban area**). The subject site surrounds Badgee Lagoon, but does not include the lagoon itself. Badgee Lagoon is a tidal backwater, adjoining the upper section of the Sussex Inlet waterway, and measuring around 500 x 200m at high tide. The lagoon is generally surrounded by low-lying wetlands and the area has been identified and protected under *State Environmental Planning Policy 14 – Coastal Wetlands (SEPP 14)*.

The north eastern corner of the site adjoins St Georges Basin. To the west and south of the site, larger rural living allotments are present, generally with frontages to Sussex Inlet Road. Part of the site’s southern boundary also has a frontage to Sussex Inlet Road as it approaches the Sussex Inlet urban area.

Land to the immediate north west of the site is heavily vegetated and commonly referred to as the “One Tree Bay” proposal. Part of the One Tree Bay proposal adjoins the subject site and this part is contiguous with the vegetated areas of the subject site.

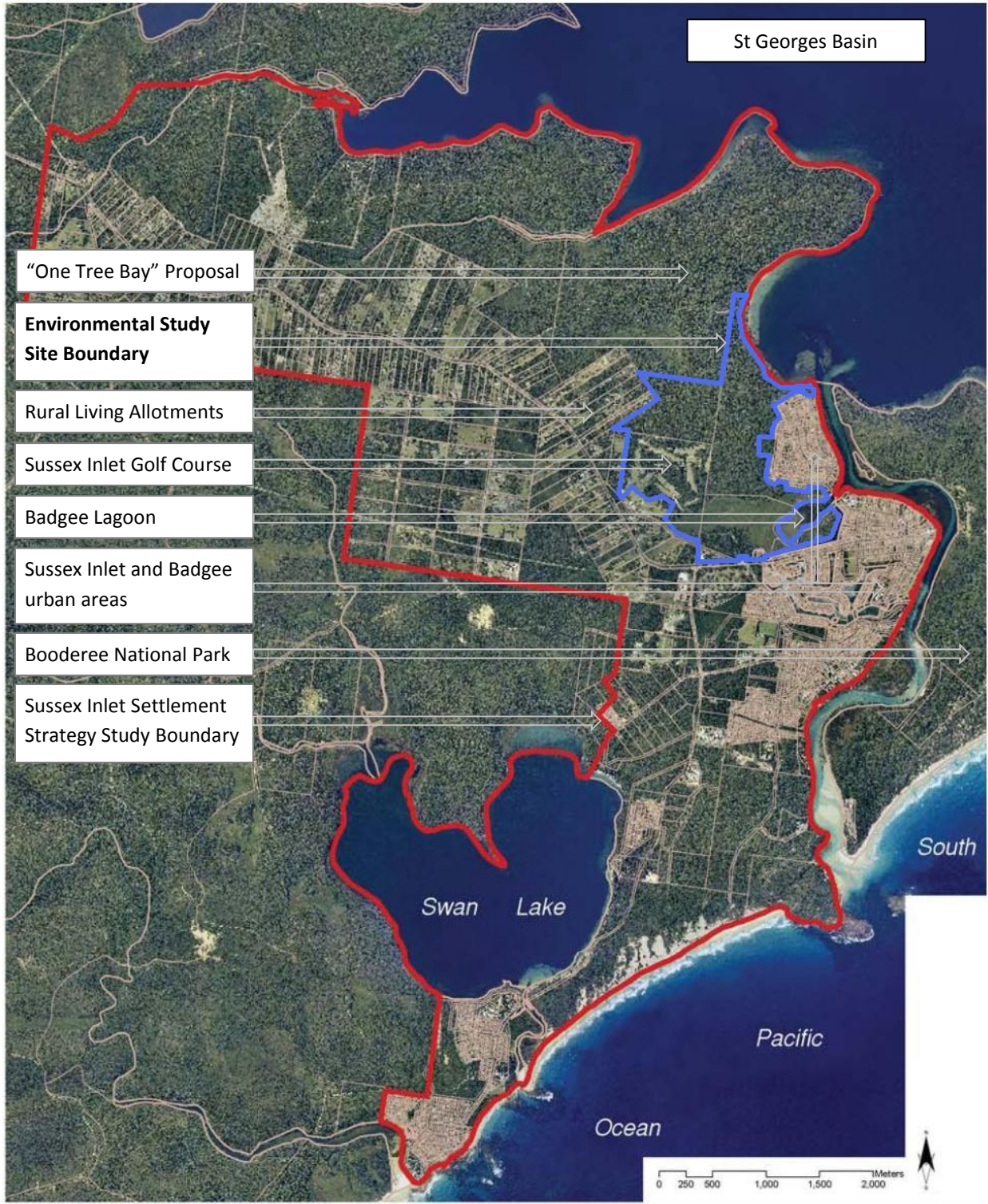


Figure 3: The site in Local Context

2.4 Site History

A review of land title records and aerial photographs of the site indicate that it has remained as undeveloped bushland within private ownership or registered entities until the present day. A golf course (Sussex Inlet Golf Course) may have been established in the western portion of the site (Lot 5 DP 568283) from around 1961, though Council's official records indicate that the land was acquired for this purpose in about 1976. Council records further indicate a series of improvements and modifications to the golf course and associated buildings to its present configuration of 11 holes and 18 tees. The urban expansion of Sussex Inlet onto the site has been discussed since the 1980's. (Coffey Geotechnics 2008)

Aerial photography from 1987 indicates two cleared/disturbed areas along the central southern boundary of the site which appears to be within Lot 125 DP528699. The 1:25,000 Sussex Inlet Topographic Map shows these areas as being a quarry or gravel pit, though no Council records of this activity were found. (Coffey Geotechnics 2008)

While no historic records have been identified, it is also likely that logging of the area has been undertaken in some form, being an historically important industry in the region (Feary 2008 in National Heritage Consultants 2009).

2.5 Site Zoning

The site falls under two planning instruments which determine the zoning of the site. Under the *Shoalhaven Local Environmental Plan 1985 (SLEP 1985)*, parts of the site are currently zoned as follows:

- 1(b) Rural (Arterial and Main Road Protection);
- 1(d) Rural (General Rural);
- 1(g) Rural (Flood Liable);
- 2(c) Residential (Living Area);
- 6(a) Open Space – Recreation (existing);
- 7(a) Environmental Protection (Ecology); and
- 7(d2) Environmental Protection (Special Scenic).

Part of the site was deferred from the SLEP 1985, and operates under the previous planning controls, being *Interim Development Order No. 1 – Shire of Shoalhaven (IDO No.1)* which was gazetted in 1964. Under IDO No. 1 the following zones apply:

- 1(a) – Non-urban;
- 1(b) – Non-urban; and
- V – Village.

The existing zones for the site are described as being primarily rural and non-urban in nature, with a relatively small portion of the site being zoned for urban residential development. The zones applying to various parts of the site are described in Figure 4 (from Julius Bokor Architect 2009).

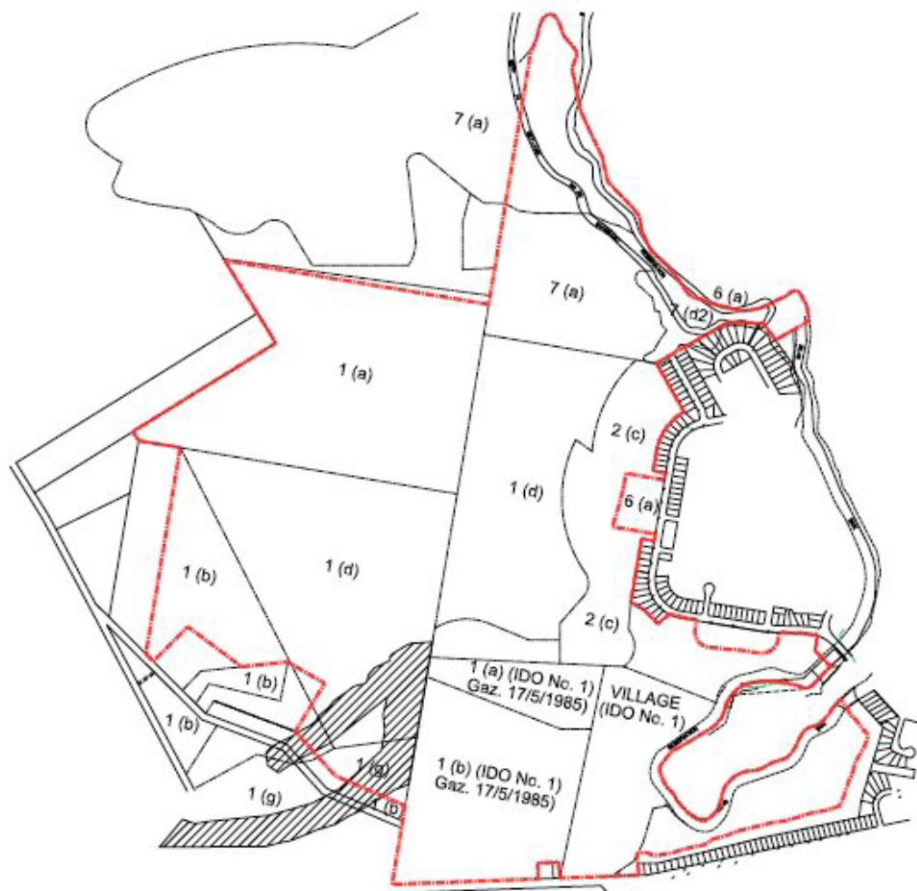


Figure 4: The site Existing Zones

3. Strategic Framework

This section provides an overview of the strategic planning framework under which the Environmental Study and need for urban expansion is being considered. This includes a review of the state, regional, local strategies and policies that apply to the site.

3.1 State Strategic Planning Framework

A number of State level policies and strategies exist that are relevant to the site. These include:

- ▶ Draft Sea Level Rise Policy;
- ▶ NSW Coastal Policy; and
- ▶ Coastal Design Guidelines.

3.1.1 NSW Sea Level Rise Policy and Guidance

In 2009 the NSW State Government released a series of policy documents and guidelines including a whole of government Policy Statement on Sea Level Rise. This Statement was accompanied or soon followed by a Technical Note, *Guidelines for incorporation of the Sea Level Rise Policy into Flood and Coastal Hazard Assessment*, and a Coastal Planning Guideline issued by the NSW Department of Planning. While many aspects of these guides and policies are only in draft form for consultation, the overall Policy Statement is clear that Sea Level Rise does need to be carefully considered in the planning context.

The Policy Statement includes sea level planning benchmarks, developed to support consistent assessment and decision-making with respect to the impacts of sea level rise in land-use planning. The adopted benchmarks are (relative to 1990 mean sea levels):

- ▶ Increase of 40 cm by 2050; and
- ▶ Increase of 90 cm by 2100.

The NSW Government's objective, as outlined in its Policy Statement, is to see coastal communities "*adapt to rising sea levels in a manner that minimises the resulting social disruption, economic costs and environmental impacts*". To assist local communities and councils in adapting to the sea rise policy, the NSW Government will assist by:

- ▶ Promoting an adaptive risk-based approach to managing the impacts of sea level rise;
- ▶ Providing guidance to local councils to support their sea level rise adaptation planning;
- ▶ Encouraging appropriate development on land projected to be at risk from sea level rise;
- ▶ Continuing to provide emergency management support to coastal communities during times of floods and storms; and
- ▶ Continuing to provide up-to-date information to the public about sea level rise and its impacts.

As the site has very low topography in several areas, the sea level rise policy and associated potential impacts is particularly pertinent to the site.

3.1.2 NSW Coastal Policy

The broad coastal policy, *NSW Coastal Policy: A sustainable Future for the New South Wales Coast 1997 (the Policy)*, applies to NSW Coastal Zone, including much of the site. The Policy provides a framework to balance and co-ordinate management of the NSW coastline's unique physical, ecological, cultural and economic attributes. The Policy contains a number of goals, objectives and strategic actions. Section 117 directions (refer Section 4.5) require that a draft LEP shall contain such provisions that give effect to and are consistent with the Policy.

Table 1 within the Coastal Policy provides a summary of the Strategic Actions that are relevant to the preparation of LEPs. A review of these, as well as other actions has identified the following matters to be addressed during the preparation of the Environmental Study:

- ▶ 1.1.9: LEPs will be prepared with appropriate zonings and other provisions for areas of recognised conservation value;
- ▶ 1.1.11: Regional open space networks/corridors (including water areas) should, where possible, be used to protect natural habitats and environments;
- ▶ 2.2.1: Coastline, estuary and floodplain management plans will continue to be prepared by local councils and integrated into LEPs to address planning and development issues in accordance with the Coastline, Floodplain and Estuary Management Manual;
- ▶ 3.1.2: Provisions to protect areas or items of high aesthetic value will continue to be considered when preparing planning instruments and plans of management;
- ▶ 4.2.1: Local and regional coastal heritage resources will be identified and assessed by heritage studies and, where appropriate, identified for conservation or protection by relevant provisions in regional environmental plans and LEPs and relevant provisions of the Local Government Act, 1993;
- ▶ 5.2.3: Management plans prepared for coastal areas will be considered in the preparation of REPs, LEPs and DCPs, so as to achieve integrated, responsible and ecologically sustainable development and use of resources;
- ▶ 6.2.1: Planning instruments and development control plans will define the boundaries of urban areas and indicate the amount and form of development which is appropriate for each location taking into account the environmental and servicing implications; and
- ▶ 6.4.2: Higher density residential development, in close proximity to coastal town centres, should be encouraged through the use of planning instruments and development control plans, to provide easy access to services and employment and create a sustained and stimulating town centre environment without strain on existing infrastructure.

These matters are reflected in this Environmental Study.

3.1.3 Coastal Design Guidelines

The Coastal Design Guidelines, published by the Coastal Council of NSW in 2003, was developed to illustrate how an urban design approach can inform developments within the unique urban and natural character of the NSW coast. The guidelines develop a hierarchy of coastal settlements and how they relate to local area planning, and in doing so seek to help deliver the following key objectives:

- ▶ *To protect and enhance the cultural, ecological and visual characteristics of a locality;*
- ▶ *To limit coastal sprawl by establishing separation and greenbelts between settlements;*
- ▶ *To integrate new development with surrounding land uses;*

- ▶ *To integrate land use with transport;*
- ▶ *To protect local character;*
- ▶ *To encourage new coastal settlements to be appropriately located; and*
- ▶ *To create neighbourhoods centred around services and facilities.*

The Coastal Design Guidelines provide for a hierarchy of settlement types, with Sussex Inlet being at the smaller end of what can be considered as a “town”. The key challenges for coastal towns, as identified in the guidelines, that are relevant to the context of the site include:

- ▶ Degradation of the economic viability of the town centre by new commercial and retail uses, development located remote from the town or its commercial centre;
- ▶ Impact on the environment and reduction of the existing town's character and viability, caused by new settlements and major commercial, retail and tourist developments;
- ▶ Degradation of water quality in waterways and coastal lakes; and
- ▶ Placing buildings and infrastructure in areas subject to natural hazards.

The Coastal Design Guidelines also provide for more general guidance on new settlements. Relevant design guidance relating to new settlements includes:

- ▶ Avoiding the removal of any unique topographic and natural features of the location;
- ▶ Planning to respond to the local context in terms of open space, access and existing centres;
- ▶ Avoiding the privatisation of the coastal and natural edges, whilst providing sufficient public open space for recreation, water management, ecological protection and social functions;
- ▶ Development should not occur too close to fragile coastal environments, particularly dunes, beaches, lakes, riverine and stream corridors;
- ▶ Development should not be located on flood prone land involving land fill or disturb acid sulphate soils;
- ▶ Residential development should encompass a neighbourhood centre;
- ▶ Subdivisions should avoid a street pattern that forces residents to drive rather than walk or cycle; and
- ▶ Building design should utilise materials appropriate for the local climate.

These matters have been considered where appropriate in preparation of this Environmental Study.

3.2 Regional Strategic Planning Framework

At the regional level, the South Coast Regional Strategy provides the key regional plan which applies to the site. Other strategies and plans have also been prepared in support of the South Coast Regional Strategy, including the South Coast Sensitive Urban Lands Review, which is directly relevant to the site. These documents are reviewed in this section.

3.2.1 South Coast Regional Strategy

Applying to the Shoalhaven, Eurobodalla and Bega Valley local government areas, the *South Coast Regional Strategy (Regional Strategy)* provides a framework for the delivery of land use outcomes that balance the demands of growth with the need to protect and enhance the significant environmental attributes of the area. The Regional Strategy provides a hierarchy of urban centres that form the basis of planning and growth within the region.

Aims of the Regional Strategy suggests a preference to the development of new housing within and around existing centres and towns, including the delivery of endorsed structure plans and settlement strategies such as the *Sussex Inlet Settlement Strategy* (refer further details at Section 3.3.1). The Regional Strategy also seeks to protect high value environments such as coastal lakes, estuaries and wildlife corridors.

Sussex Inlet is described as a “town” within the Regional Strategy, which is defined as:

“Small to medium sized concentrations of retail, health and other services with lower density residential but are reliant on major towns and regional centres for shopping and employment. Towns contribute to the South Coast character and to tourism.”

The Regional Strategy also suggests that Local Environmental Plans would identify appropriate sites major tourism developments and specific ‘tourism precincts’ would be further investigated such as Ulladulla Harbour.

In addition, the Department of Planning released an accompanying guideline, the *South Coast Settlement Planning Guidelines*, to assist in delivering and to be read in conjunction with the Regional Strategy. Further details on these guidelines are provided Section 3.2.2. A review of larger scale development proposals and rezoning was also undertaken in the development of the Regional Strategy. The recommendations of this *South Coast Sensitive Urban Lands Review* were included in the South Coast Strategy and include part of the site. Further details of the Review are provided in Section 3.2.3.

3.2.2 South Coast Settlement Planning Guidelines

The *South Coast Settlement Planning Guidelines (the Guidelines)* are designed to support the Regional Strategy by providing guidance to Councils on the “*identification, delivery, management and monitoring of housing and employment land within the Region over the next 25 years*”. More specifically, and as relevant to the site, the Guidelines clarify the Department’s requirements for councils in respect to the adoption of “*appropriate settlement planning principles in the development of new urban areas and the renewal of key towns and centres*”.

The Guidelines also provide the main elements of Neighbourhood Planning Principles being:

- a range of land uses to provide the right mix of houses, jobs, open space, recreational space and green space;
- easy access (including public transport where viable) to major town centres with a full range of shops, recreational facilities and services along with smaller village centres and neighbourhood shops;
- jobs available locally and regionally, reducing the demand for transport services;
- streets and suburbs planned so that residents can walk to shops for their daily needs;
- a wide range of housing choices to provide for different needs and different incomes. Traditional houses on their own block will be available along with smaller, lower maintenance homes, units and terraces for older people and young singles or couples; and
- conservation lands in and around the development sites, to help protect biodiversity and provide open space for recreation.

The Guidelines also reiterate the Regional Strategy support for the Sussex Inlet Settlement Strategy, and the importance of development being consistent with such endorsed and programmed strategic planning documents.

3.2.3 South Coast Sensitive Urban Lands Review

Following the release of the *Draft South Coast Regional Strategy* in 2006, a number of “Sensitive Urban Lands” were identified that were subjected to a review by an expert panel to determine their suitability for urban

development (**the Review**). A total of 16 sites were initially identified, with an additional site added by the Minister after the Draft Regional Strategy was released. Terms of Reference for the Review entailed:

- ▶ Review the suitability of each site for urban development and the scale and type of any recommended land release, having regard to the site's biophysical constraints, servicing and infrastructure issues;
- ▶ Advise on the priority and timing of any recommended releases for urban development, including an assessment against forecast population growth trends; and
- ▶ Advise on what (if any) alternate land uses might be suitable for each site in the event that urban development is not considered suitable.

Included in the Review was part of the site subject to this Environmental Study, as shown in Figure 5 (from South Coast Independent Review Panel 2006). The land included in the Review is zoned Residential (Village or Township) under IDO No. 1, which occurred by default as a consequence of the land having been deferred from consideration under the SLEP 1985.



Figure 5: The site included in Sensitive Urban Lands Review

The recommendations of the review panel identified that the majority of the site was unsuitable for urban development on the basis of the potential for negative impacts on water quality in Badgee Lagoon. Two relatively small areas were identified and having potential for residential development, subject to best practice water sensitive urban design and water quality management. The location of these sites is identified in Figure 6.



Figure 6: Sensitive Urban Lands Review Recommendations

Table 1 identifies the full recommendations made by the Expert Review Panel (South Coast Independent Review Panel 2006).

Table 1: Sensitive Urban Lands Review Recommendations

Terms of Reference	Assessment and Recommendation
1a. Suitability of site	The majority of the Badgee Lagoon site is unsuitable for urban development on the grounds of its potential negative impacts on water quality in Badgee Lagoon. Two areas of the site in the north-western and south-western corners are suitable for residential development in accordance with the proposals put forward by the owner, subject to best practice WSUD and water quality management. It should be noted that the site considered by the Panel includes a subdivided and developed strip of land along Suncrest Avenue on the northern side of the lagoon. The Panel has excluded this area from its recommendations so that development can proceed in line with existing approvals.
1b. Scale and type of land release	Development should provide for a mix of housing, at yields that exceed traditional residential yields in the locality.
2. Priority and Timing	According to market demand
3. Alternate land uses	The land that is unsuitable for development should be zoned for conservation purposes. The most appropriate zone under the new LEP template is either Zone E2 Environmental Conservation or Zone E1 National Parks and Nature Reserves. Negotiations should be commenced with the owner to secure dedication of the land for conservation purposes in return for development of the 2 areas identified above.

3.2.4 South Coast Regional Conservation Plan

The South Coast Regional Conservation Plan (**RCP**) was published in December 2010 and has the primary objective to guide local authorities on the NSW South Coast in achieving biodiversity conservation outcomes. The RCP is said to have its greatest relevance in the production of new LEPs and biodiversity certification processes.

One of the key aims of the RCP is to “*guide development away from area of high conservation value onto largely cleared land or onto native vegetation that has low conservation value and is suited for the intended purpose*”. The RCP further describes what constitutes “high conservation value” (**HCV**) lands, and includes the following areas:

- Endangered ecological communities;
- Rare vegetation types;
- Overcleared vegetation types;
- Overcleared Mitchell landscapes;
- Poorly conserved vegetation communities;
- Old-growth forests;
- Threatened and significant species;
- Significant aquatic habitats;
- Wilderness;
- Statutory conservation protection on private lands; and
- Matters of national environmental significance (EPBC Act considerations).

It is noted that the RCP clarifies that poorly conserved vegetation communities, and heavily cleared Mitchell landscapes (in the 65-70% cleared category) *“are best considered in terms of targeting restoration or enhancement activities rather than requiring absolute protection measures”*.

Verification rules are provided to establish and identify HCV lands and these have been considered in outlining the areas of the site to be retained for conservation purposes (refer details at Section 5).

3.3 Local Strategic Planning Framework

At the local level, the Shoalhaven City Council has developed a number of policies and strategies relevant to the site. These include:

- Sussex Inlet Settlement Strategy;
- Shoalhaven Housing Strategy; and
- A Place for Aging: Social Impacts of an Aging Population in the Shoalhaven.

3.3.1 Sussex Inlet Settlement Strategy

The Sussex Inlet Settlement Strategy (**the SIS Strategy**) was endorsed by the NSW Department of Planning and adopted by Council in August 2007. The SIS Strategy provides a framework for the conservation of much of the area, as well as managing residential and rural residential growth in the area over the next 20-25 years. The SIS Strategy broadly identifies land with development potential, including details of additional assessments required before land should be considered for rezoning or development.

The Traffic and Transport Section of the SIS Strategy identifies that the existing road access to the urban development to the north of Badgee Lagoon is subject to inundation during flood events. A recommendation stemming from this section is to investigate opportunities for “flood free access” through the rezoning and potential development to the west of this area – being the area subject to this Environmental Study.

The Land Based Bio-diversity Section of the SIS Strategy identifies the opportunity to *“afford protection to a viable system of interlinked habitats including the extensive southern foreshore of St Georges Basin and linkages between Badgee Lagoon, Swan Lake as well as Cudmirrah and Conjola National Parks. Specific studies will be required to determine movement paths and effective corridor widths for effective habitat movement and biodiversity conservation.”* Such a wildlife corridor is further identified on the land subject to this Environmental Study.

A large portion of the site is also specifically identified and considered within the SIS Strategy as an “investigation area” with potential opportunity for further settlement to occur. Such investigation areas have undergone further assessment and provided with area specific actions relating to any broad planning issues that are present on the sites. Figure 7 shows the Badgee Investigation Area constraints and opportunities plan as identified in the SIS Strategy.

Specific actions resulting from the “Badgee Investigation Area” assessment include the consideration of a mixed use development (including a small neighbourhood shopping centre) and undertaking of appropriate detailed studies and an environmental study as part of a rezoning process (being this document). The actions also seek to ensure that the recommendations of the South Coast Sensitive Urban Lands Review are addressed.

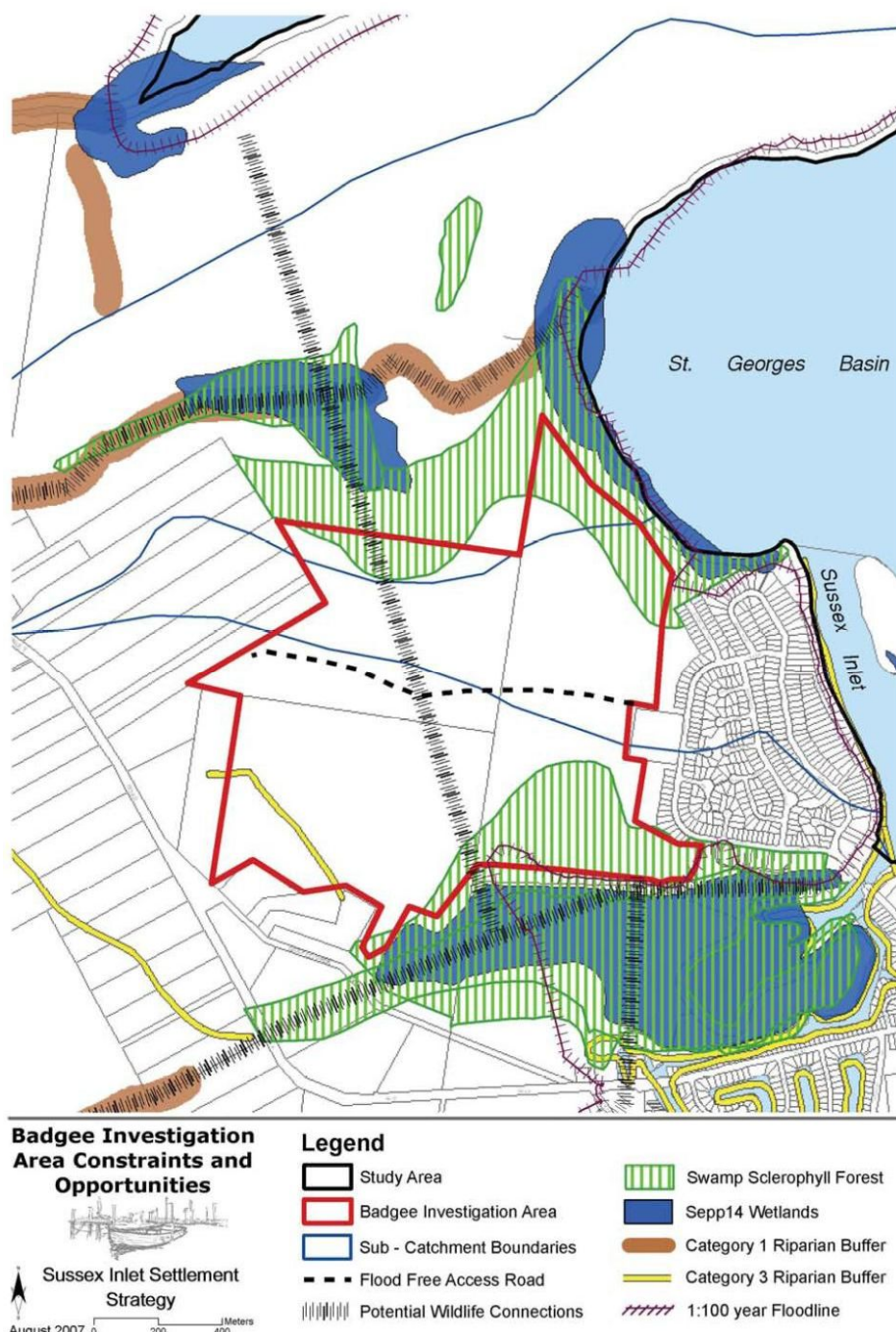


Figure 7: Sussex Inlet Settlement Strategy Badgee Investigation Area

3.3.2 Shoalhaven Housing Strategy

The Shoalhaven Housing Strategy was adopted by Council in June 2006 and seeks to achieve six broad objectives as follows:

...that Council should

- I. Increase the supply of housing appropriate for people whose needs are poorly met by the existing stock (eg aged, disabled, youth);*
- II. Manage local housing supply to minimise unsustainable peaks and troughs in dwelling prices;*
- III. Support local providers to increase the supply of housing for special needs groups;*
- IV. Increase the supply of affordable housing in the Shoalhaven and retain existing affordable housing;*
- V. Ensure maximum accessibility of available community services and facilities to Shoalhaven residents, particularly those with special needs;*
- VI. Pursue an active housing strategy for the Shoalhaven.*

Recommendations on achieving these objectives are directly linked to the Sussex Inlet area. Specifically, there are a number of similar recommendations under each of the above objectives to *“permit villas and integrated development in...Sussex Inlet...and limit this zoning to small parts of the built-up area of these centres, close to retail and community services”*.

3.3.3 A Place for Aging

In 2004 Council commissioned a consultant to undertake an assessment of social impacts of an aging population in the Shoalhaven and the associated implications for housing, services and the community. The study, entitled *“A Place for Aging”*, has a principal focus on the adequacy of a range of services required by the target groups of older people, those with a disability and others covered by the then *State Environmental Planning Policy No 5 – Housing for Older People and People with a Disability (SEPP 5)* and the then newly gazetted *State Environmental Planning Policy (Seniors Living) (Seniors Living SEPP)*.

The study identifies that Council’s planning policies generally favour higher density housing within the Nowra/Bomaderry urban area, Milton/Ulladulla/Mollymook, and to a lesser extent the village areas of Sussex Inlet and Vincentia, a view that is supported by the study and service providers interviewed in its preparation. In this respect the study supports and recommends the implementation of the policy of allowing increased densities in areas with appropriate access to services and facilities.

3.4 Summary Issues and Comments

A number of key issues and comments are identified in relation to the Strategic Planning Framework and are presented in Table 2.

Table 2: Strategic Planning Framework Key Issues and Comments

Issue	Comment
Sea Level Rise	The NSW Government's Sea Level Rise Policy Statement provides for planning benchmarks of an increase above 1990 mean sea levels of 40 cm by 2050 and 90 cm by 2100. These benchmarks should be recognised on the site through flood modelling and hazard risk management.
Coastal Policy	Planning instruments should provide for the co-ordinated protection of high value coastal areas, with higher density residential development occurring in close proximity to coastal town centres to improve accessibility and activation of urban areas.
Coastal Design Guidelines	Consider the character of new urban areas, but ensuring that new areas do not result in the degradation of the economic viability of existing town centres.
Sensitive Urban Lands Review	Identifies opportunities for small areas of development, in the north-east and southern areas of the site. These areas were recommended for development at a density that exceeds traditional development in the locality.
South Coast Regional Conservation Plan	Identifies high conservation value lands are to be protected from development under appropriate conservation zones. Several of these areas are present and have been mapped on the subject site.
Sussex Inlet Settlement Strategy	Recognises the potential for parts of the site to be developed as an extension of the Sussex Inlet community. Recognises the need for a small mixed-use centre as a focal point for the new area.
Housing Strategy and Place for Aging	Recognises that increased densities should be concentrated in areas where services and daily needs are available. This potential could be fulfilled within a mixed use centre precinct.

4. Statutory Framework

This section provides an overview of the statutory planning framework under which the Environmental Study and development proposal is being considered. This includes a review of applicable Environmental Planning Instruments (including Council's LEP and applicable SEPPs), as well as 117 Directions under the EP&A Act. This Section initially provides an overview of the process being used in the preparation of this Environmental Study and other approvals for the site.

4.1 Background to the Environmental Study Process

On 25 September 2007, Council resolved to prepare a draft LEP to rezone the various parcels of land that are subject to this Environmental Study. That resolution provided that:

Council resolve to:

- a) Prepare a Local Environmental Plan over the subject land (being Lots 123, 124 & 125 DP 528699, Lot 5 DP 568283, Lots 144 & 145 DP 755937, Lot 156 DP 40207, Lot 2442 DP 1074478 and Lot 51 DP 1033684) that addresses the provisions of the Sussex Inlet Settlement Strategy.*
- b) Seek clarification from the Department of Planning in relation to the concurrent operation in this case of Part 3 of the EPA Act, 1979 and the lodgement of a Part 3A Development Application with the Department.*

Following discussion between Council, the proponent and the Department of Planning, it was agreed that the preparation of this Environmental Study for the proposed rezoning be based on the Environmental Assessment consultant reports prepared for the (now repealed) Part 3A project application under the EP&A Act. Before being used however, it was agreed that those Environment Assessment consultant reports would be independently peer reviewed for technical correctness and adequacy, including that they adequately respond to Council's consultations required under Section 62 of the EP&A Act.

Accordingly the proponent commissioned a series of consultant reports to inform this study, as well as to prepare an Environmental Assessment Report that addresses the Director General's Requirements (**DGRs**) issued in response to the proponent's Part 3A project application. In September 2009, Council appointed an independent consultant to peer review the Environmental Assessment consultant reports, with some additional information and revision being required before this Environmental Study could be completed.

As such, this Environmental Study has been informed by the Environmental Assessment consultant reports, the peer review, as well as additional information provided subsequent to the peer review process. The Environmental Study has also been assisted by AH Ecology in the interpretation of ecological assessment findings.

4.2 Environmental Planning Instruments

Environment Planning Instrument (**EPI**) is the collective name for Local Environmental Plans (**LEPs**) and State Environmental Planning Policies (**SEPPs**), but does not include development control plans (**DCPs**). EPIs are created under Part 3 of the EP&A Act, and are designed to provide the legislative basis of land-use planning in NSW. Regional Environmental Plan (**REPs**) were also a form of EPI until amendments to the EP&A Act in 2009, which results in all current REPs being now deemed as a SEPP. The relevant EPIs to the site are reviewed in the following Sections.

4.3 State Environmental Planning Policies

4.3.1 SEPP 14 – Coastal Wetlands

The aim of SEPP 14 is to “ensure that the coastal wetlands are preserved and protected in the environmental and economic interests of the State”. In general, no development is allowed within SEPP 14 wetlands, including a specific reference that a person shall not:

- ▶ Clear that land;
- ▶ Construct a levee on that land;
- ▶ Drain that land; or
- ▶ Fill that land.

Some exceptions can be made with the consent of council and the concurrence of the Director General, but are subject to close consideration. Two SEPP 14 wetlands are located on the site subject to this Environmental Study. These are shown in Figure 8 and discussed in Section 5.8.

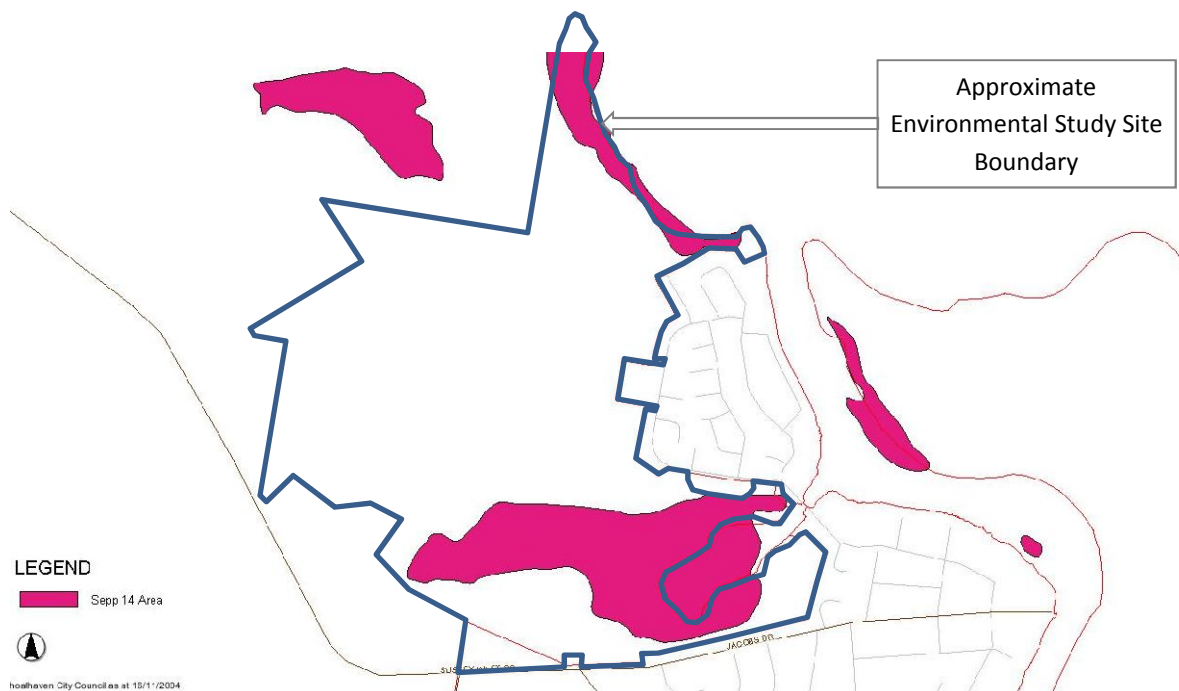


Figure 8: SEPP 14 Wetlands

4.3.2 SEPP 71 – Coastal Protection

Clause 8 of SEPP 71 sets out the matters to be taken into account when preparing a draft LEP for land that is within the Coastal Zone, which includes much of the site as described in Figure 9.

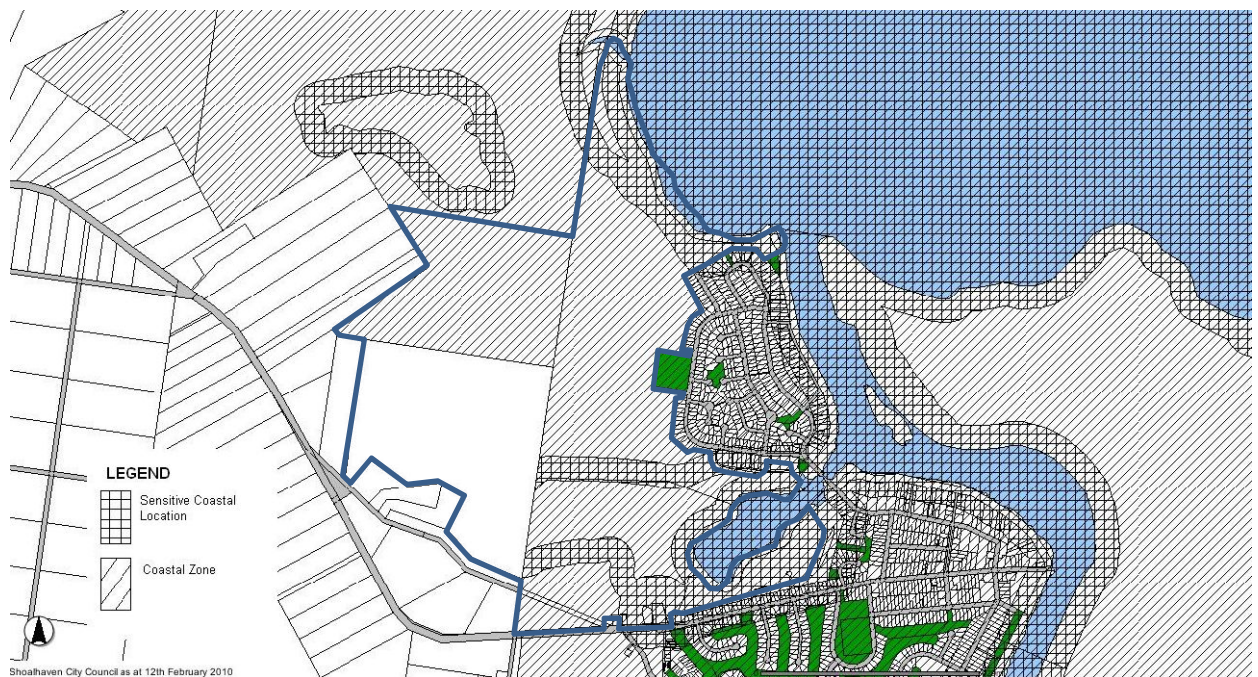


Figure 9: Coastal Zone Mapping

A summary of the matters to be considered under the SEPP includes:

- ▶ Protection of sensitive areas and the coastal character (including scenic qualities and views);
- ▶ Provision of access to and along the foreshore;
- ▶ Suitability of the proposed development;
- ▶ Impacts of coastal processes and hazards;
- ▶ Impacts on water quality of coastal waterbodies;
- ▶ Means to encourage compact towns and walkable neighbourhoods; and
- ▶ Measures to ensure that water and energy usage by the proposed development is efficient.

These matters are considered throughout the Environmental Study.

4.3.3 SEPP 44 – Koala Habitat

SEPP 44 aims to ensure a permanent free-living population of koalas through the proper conservation and management of areas of natural habitat. This is achieved through:

- ▶ Requirements to prepare plans of management before development consent can be granted in relation to areas of core koala habitat;;
- ▶ Encouraging the identification of areas of core koala habitat; and
- ▶ Encouraging the inclusion of areas of core koala habitat in environment protection zones.

When preparing an LEP, Council should identify core koala habitat and any such land should be included in an environmental protection zone. Consideration of habitat types on the site is provided in Section 5.8.

4.3.4 SEPP 55 – Remediation of Land

SEPP 55 aims to promote the remediation of contaminated land to reduce the risk of harm to human health or any other aspect of the environment. The SEPP identifies when consent is required for the undertaking of remediation works and to what standards such work must meet. Particularly relevant to the LEP process however, is the specification of certain considerations that are relevant to the rezoning land. These include:

- Consideration as to whether the land is contaminated;
- If the land is contaminated, it is of a state (or after remediation is of a state) that is suitable for all purposes for which land in the zone concerned is permitted to be used;
- If remediation is required, that the land will be so remediated before the land is used for that purpose; and
- A report is obtained specifying the findings of a preliminary investigation of the land.

A preliminary contamination investigation has been undertaken and is considered in Section 6.3.

4.3.5 Illawarra Regional Environmental Plan No. 1

As of 1 July 2009, regional environmental plans (**REPs**) are no longer part of the hierarchy of environmental planning instruments in NSW. All existing REPs are now deemed to be SEPPs, including the Illawarra REP No. 1, which incorporates the Wollongong, Shellharbour, Kiama and Shoalhaven local government areas.

Illawarra REP No. 1 provides for a series of objectives, development application and consent requirements as well as instruction on the application of the REP to the making of LEPs. Considerations for the undertaking of this Environmental Study include:

- Land is only to be rezoned for urban use if there is adequate community and utility services available;
- Measures should be provided to protect the productive ecosystems and natural habitats of the region's estuaries, wetlands, lakes and lagoons and their scenic attributes;
- Ensuring that development does not take place on hazard prone land include flood prone land; and
- Measures should be provided to protect and conserve the environmental heritage of the region.

These matters have been considered throughout this Environmental Study, including consideration of infrastructure availability at Section 6, the natural environment at Section 5 and of flooding at Section 5.6.

4.3.6 Rural Lands SEPP

The *SEPP (Rural Lands) 2008* (**Rural lands SEPP**) aims to protect rural land uses and to ensure that where rural lands are to be used for other purposes, that there is sufficient consideration of the value of those lands and potential future land use conflicts. The Rural Lands SEPP also identifies Rural Planning Principles that need to be considered in the making of an LEP. These Principles are outlined with planning response in respect of the subject site in Table 3.

Table 3: Rural Planning Principles

Principle	Planning Response
(a) The promotion and protection of opportunities for current and potential productive and sustainable economic activities in rural areas.	The site has little current rural economic activity or land based productivity. Parts of the site are used as a public golf course and the majority is vegetated bushland. Development of the site will provide economic development opportunities in the Sussex Inlet area, but are not rural based.
(b) Recognition of the importance of rural lands and agriculture and the changing nature of agriculture and of trends, demands and issues in agriculture in the area, region or State.	The site has little or no agricultural use and is not considered suitable for such uses in the future. Even if trends do change, much of the land is environmentally sensitive and would result in land use conflicts between these areas and many agricultural pursuits.
(c) Recognition of the significance of rural land uses to the State and rural communities, including the social and economic benefits of rural land use and development.	The site has little or no agricultural use and whilst zoned rural, is not used in this fashion. There is no rural based social or economic benefit from the existing land uses.
(d) In planning for rural lands, to balance the social, economic and environmental interests of the community.	The rezoning of parts of the site will seek to retain key environmental areas while providing development opportunities in appropriate locations to strengthen the social and economic interests of the Sussex Inlet community.
(e) The identification and protection of natural resources, having regard to maintaining biodiversity, the protection of native vegetation, the importance of water resources and avoiding constrained land.	The site contains many areas of environmentally sensitive lands. These would be protected under future zones, with other areas providing suitable areas for urban development. No resource extraction or similar resource industries are present in the immediate area.
(f) The provision of opportunities for rural lifestyle, settlement and housing that contribute to the social and economic welfare of rural communities.	The area is not considered to be a rural community. Sussex Inlet is identified as a town under the South Coast Regional Strategy and the Site immediately adjoins this urban area. Adjoining rural lifestyle allotments do not form part of the Site.
(g) The consideration of impacts on services and infrastructure and appropriate location when providing for rural housing.	Rural housing is not being provided. Consideration of services and infrastructure for the site is provided in Section 6.
(h) Ensuring consistency with any applicable regional strategy of the Department of Planning or any applicable local strategy endorsed by the Director-General	The site is being considered in reference to the South Coast Regional Strategy (Section 3.2.1) and the Sussex Inlet Settlement Strategy (3.3.1).

4.4 Local Environmental Plans and Development Orders

4.4.1 Shoalhaven Local Environmental Plan 1985

The Shoalhaven Local Environmental Plan 1985 (**SLEP 1985**) is the local EPI administered by Council and which informs land-use permissibility via a range of zones and development requirements. The site differs from many

areas of the Shoalhaven LGA, as some allotments which comprise the area were deferred from gazettal as part of SLEP 1985 and as a result remain under the land-use planning requirements of Interim Development Order No.1 (these allotments are considered in Section 4.4.3).

Within the context of the site allotments under SLEP 1985, there are a number of applicable zones including:

- 1(b) Rural (Arterial and Main Road Protection);
- 1(d) Rural (General Rural);
- 1(g) Rural (Flood Liable);
- 2(c) Residential (Living Area);
- 6(a) Open Space – Recreation (existing);
- 7(a) Environmental Protection (Ecology); and
- 7(d2) Environmental Protection (Special Scenic).

A summary of these zones, their objectives and typical land uses is provided in Table 4 below.

Table 4: Summary of Shoalhaven LEP 1985 Zones

Zone	Objectives	Typical Uses
1(b) Rural (Arterial and Main Road Protection)	To minimise impacts on the efficiency of main roads, and to provide a scenic quality adjoining such roads.	Agricultural and environmental protection
1(d) Rural (General Rural)	To provide for non-urban land uses, often in areas of highly vegetated lands, and where a balance can be demonstrated between conservation, resource protection and minimising land-use conflicts.	Agriculture, forestry, conservation and other non-urban type uses
1(g) Rural (Flood Liable)	To recognise flood liable rural land by limiting the erection of structures, reduce potential for impacts caused by inundation and acid sulfate soils, and to conserve prime crop and pasture land.	Agricultural and environmental protection
2(c) Residential (Living Area)	To provide for new residential communities with a range of housing types and provision of urban facilities to serve local communities.	Residential and associated social and economic facilities such as shops, schools and community centres.
6(a) Open Space – Recreation (existing)	To identify land where existing recreational facilities are provide for general community use.	Sporting facilities, parks and open spaces.
7(a) Environmental Protection (Ecology)	To protect and conserve important environmental areas, including threatened species, communities, habitat and the like.	Environmental protection
7(d2) Environmental Protection (Special Scenic)	To protect and enhance scenic quality of a natural area.	Environmental protection

Note: This table provides a summary of the applicable zones and not a detailed assessment of permissible uses.

The extent of the site under SLEP 1985 and applicable zones are shown in Figure 10.

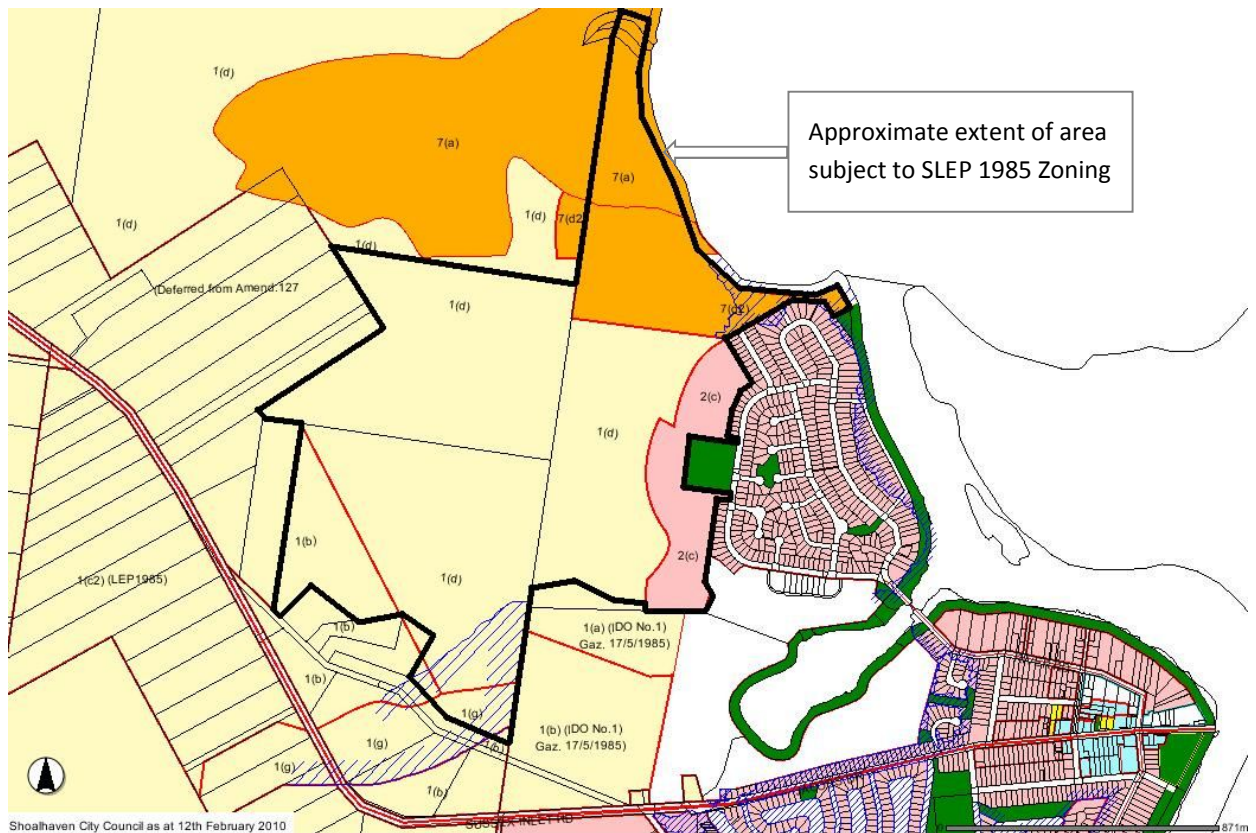


Figure 10: SLEP 1985 Zones applicable to the site

Subdivision of land subject the SLEP 1985 can only be undertaken with the consent of Council. Generally, land within rural and environmental protection zones cannot be subdivided below a minimum lot size of 40 hectares. Within the 2(c) zone, cluster housing (being three or more dwelling houses on a single lot) is permissible with Council's consent.

Under the above requirements of SLEP 1985, substantial areas of the site would need to be rezoned to accommodate the proposed development, and as such this Environmental Study is required to facilitate such rezoning.

4.4.2 Draft Shoalhaven Local Environmental Plan 2009

In September 2008 Council made public a draft version of the new Standard Instrument LEP – known as the *Draft Shoalhaven Local Environmental Plan 2009 (DSLEP 2009)*. Unlike the SLEP 1985, no areas are proposed to be deferred from the plan, and as such DSLEP 2009 applies to the entire site.

DSLEP 2009 identifies much of the land as being within the *RU2 – Rural Landscape* or *E2 – Environmental Conservation* zones. These zones would result in a similar form of development as the existing rural and conservation zones under SLEP 1985. However, in addition to these zones, an area of *R1 – General Residential*, and a smaller area of *R3 – Medium Density Residential* are also present. While the R1 zone would generally align with the similar 2(c) zoned area under the SLEP 1985, the small R3 zoned area is a departure from the previous zone and reflects the recommendations of the South Coast Sensitive Urban Lands Review and subsequent South Coast Regional Strategy.

The DSLEP 2009 zone map relative to the site is shown in Figure 11 below.

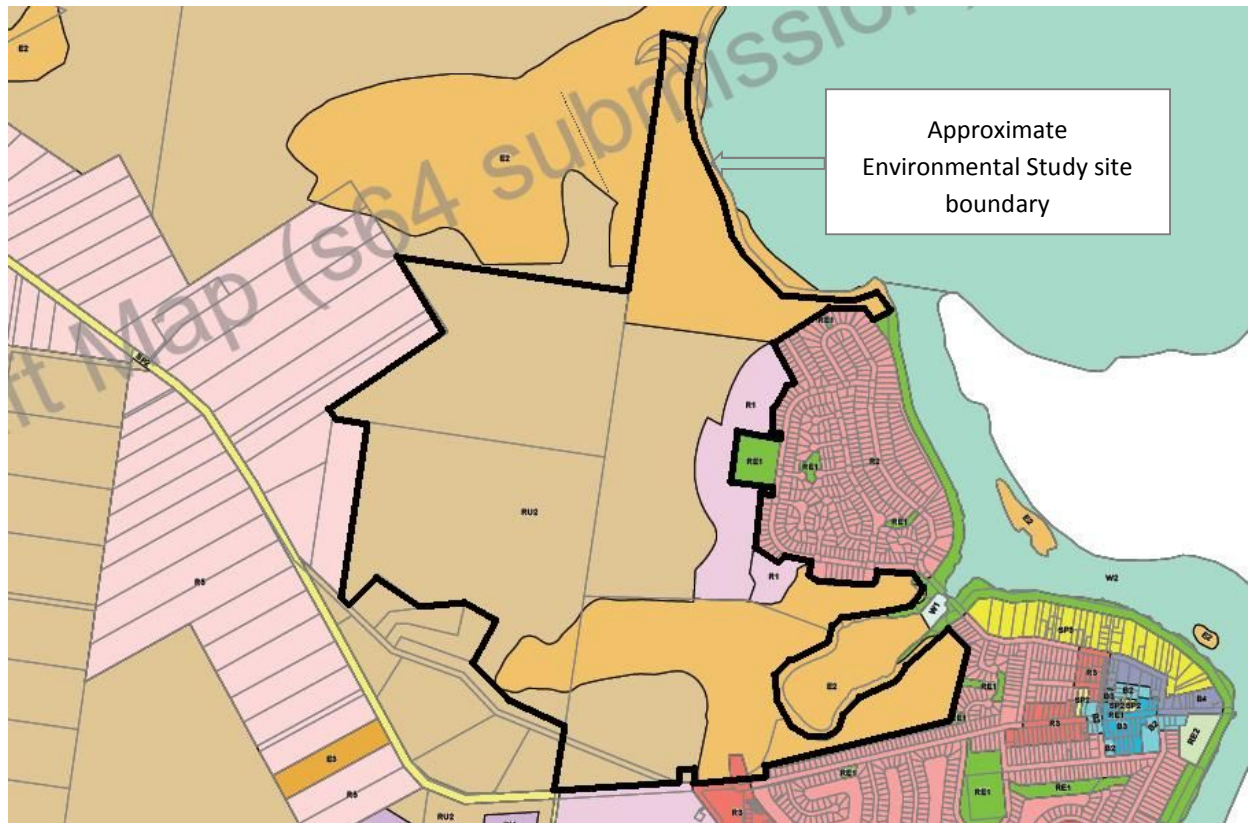


Figure 11: DSLEP 2009 Proposed Zones as applicable to the site

Similar to the zones under the SLEP 1985, substantial areas of the site would need to be rezoned to accommodate the proposed development.

4.4.3 Interim Development Order No. 1 – Shire of Shoalhaven

As a result of the deferral of certain lands from inclusion in SLEP 1985, *Interim Development Order No. 1 – Shire of Shoalhaven (IDO No. 1)*, which was gazetted in 1964, continues to be the primary planning document applying to those land parcels. IDO No.1 is a statutory planning document which formerly covered the entire Shoalhaven LGA, but was generally superseded by SLEP 1985 except where land was deferred. In the instance of the site, several land areas continue to be subject to IDO No.1, including Lots 124 and 125 of DP 528699, and part of Lot 2442 of DP 1074478.

Similar to SLEP 1985 and DSLEP 2009, IDO No. 1 provides for land use zones, however the controls and permissibility of land use is much broader. Within the land areas subject to IDO No. 1, the following zones are present;

- ▶ 1(a) – Non-urban;
- ▶ 1(b) – Non-urban; and
- ▶ V – Village.

The following table provides a summary of the zones and the permissibility of land uses within each zone.

Table 5: Summary of IDO No. 1 Zones within the site

Zone	Typical Uses
1(a) – Non-urban	Agricultural, forestry and other high impact non-urban uses (eg. industrial and extractive uses)
1(b) – Non-urban	Agricultural, forestry and other lower impact non-urban uses (eg. service stations, caravan parks, hotels)
V - Village	Residential, shops and community related facilities. Virtually any use except offensive industries and high impact non-urban uses

The extent of zoning applicable to the site under IDO No. 1 is illustrated at Figure 12.

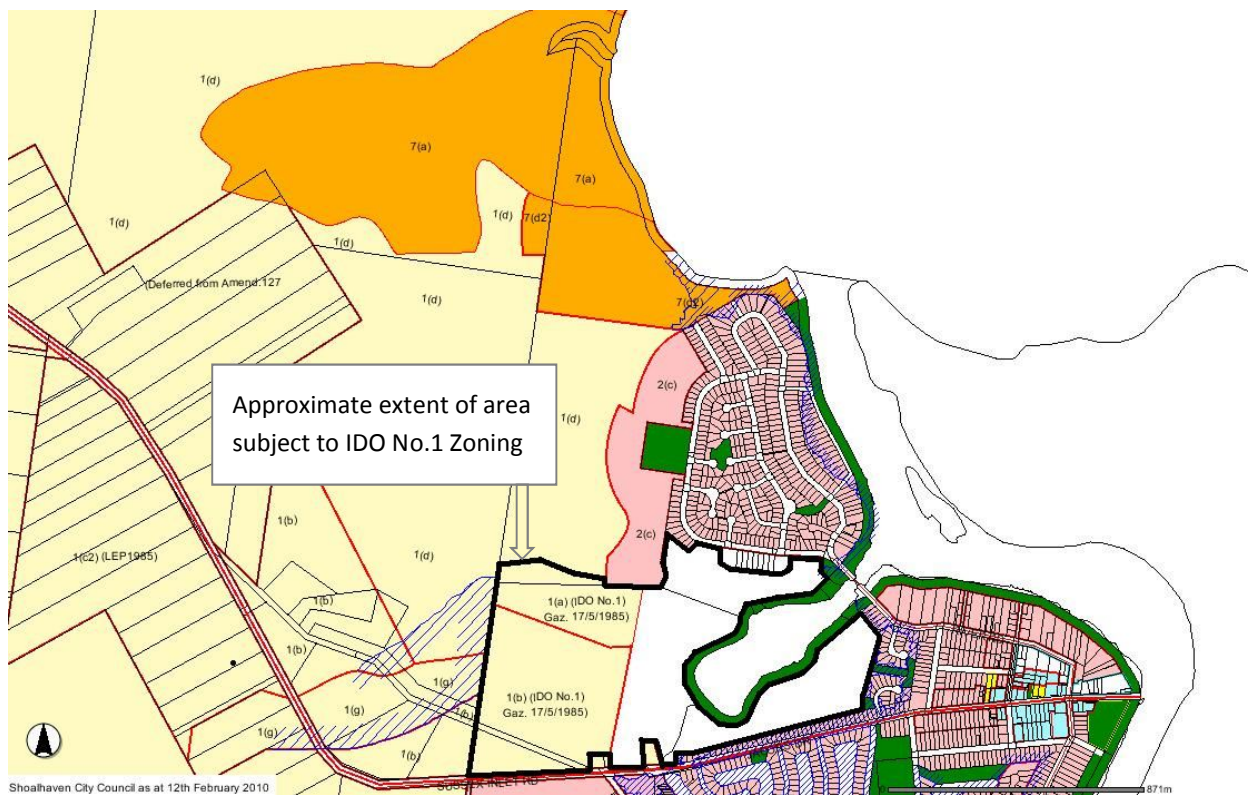


Figure 12: IDO No. 1 Zones as applicable to the site

It is recognised that while these zonings may enable some development of the site, there are a number of high value environmental areas that various authorities require to be protected and that a comprehensive Environmental Study and subsequent rezoning of the site (including those areas under the SLEP 1985) is an appropriate direction to facilitate any development.

4.5 Section 117 Directions

Under Section 117(2) of the EP&A Act, the Minister for Planning can issue directions that councils must follow when preparing new LEPs. Section 117 directions are provided under the following headings:

- ▶ Employment and resources;
- ▶ Environment and heritage;

- Housing, infrastructure and urban development;
- Hazard and risk;
- Regional planning; and
- Local plan making.

A number of these directions are directly relevant to the Environmental Study and the subject site. Several provide for the consideration of other State policies and guidelines, many of which have been identified earlier in this report. The following summary in Table 6 identifies relevant directions, their requirements and where they have been considered within this Environmental Study.

Table 6: Section 117(2) Directions Summary

Direction	Requirement	Response
1.5 - Rural Lands	This direction aims to protect the agricultural production value of rural land and provide for the orderly development of rural lands for related purposes. The direction requires consideration of Rural Planning Principles in <i>SEPP (Rural Lands) 2008</i> .	The Rural Planning Principles of SEPP (Rural Lands) and site specific responses are identified in Section 4.3.6. The SEPP does not otherwise apply to the site.
2.1 – Environmental Protection Zones	The direction seeks to protect and conserve environmentally sensitive areas. A draft LEP shall include provisions that facilitate the protection and conservation of environmentally sensitive areas.	Discussion on the natural environment at the Site is provided in Section 5.
2.2 – Coastal Protection	This direction seeks to ensure the implementation of the principles in the NSW Coastal Policy. A draft LEP must consider the NSW Coastal Policy 1997 and Design Guidelines 2003.	Policies relating to the NSW coastal zone are considered in Section 3.1.
2.3 – Heritage Conservation	The direction seeks to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance. A draft LEP must make provisions to conserve identified indigenous and non-indigenous heritage.	Heritage of the site is considered in Section 6.1.
3.1 – Residential Zones	This direction encourages a variety and choice of housing type, that residential areas have access to and efficiently utilising infrastructure and services, and minimises impacts on environmental and resource lands.	Commentary on the requirements of the proposed residential zones is provided in Section 9.
3.4 – Integrating Land Use and Transport	The direction has the objective of reducing private vehicle use and increasing public transport, cycling and walking opportunities. A draft LEP must ensure consistency with <i>Improving Transport choice</i> 2001 and <i>The Right Place for Business and Services</i> 2001.	Consideration of transport access and availability (including review of relevant publications) is provided in 6.11.
4.1 – Acid Sulfate Soils	The objective of this direction is to avoid impacts from the use of land that has a probability of containing acid sulfate soils. Council shall consider the Acid Sulfate Soils Planning Guidelines when preparing a draft LEP on land identified as having Acid Sulfate Soil potential.	Section 5.4 provides information and consideration of acid sulfate soils.

Direction	Requirement	Response
4.3 – Flood Prone Land	The direction ensures consideration of the potential for flood risks and consistency with the NSW Government's Flood Prone Land Policy and the principles of the <i>Floodplain Development Manual 2005</i> . Council must consider these issues where preparing a draft LEP.	Flood risk and assessment is considered in Section 5.6.
4.4 – Planning for Bushfire Protection	This direction seeks to encourage sound management of bushfire prone areas, and to protect life, property and the environment from bushfire hazards. In preparing a draft LEP in a bushfire prone area, Council must consult with the NSW Rural Fire Service and have regard to the requirements of <i>Planning for Bushfire Protection 2006</i> .	Section 62 consultations, including with the NSW Rural Fire Service is discussed in Section 8.1.1. Bushfire considerations for the Site are considered in Section 5.7.
5.1 – Implementation of Regional Strategies.	This direction gives legal effect to the vision, land use strategy, policies, outcomes and action arising from the South Coast Regional Strategy. A draft LEP must be consistent with the Regional Strategy.	The South Coast Regional Strategy and its associated documents are discussed in Section 3.2.

4.6 Summary Issues and Comments

A number of key issues and comments are identified in relation to the Statutory Planning Framework and are presented in Table 7.

Table 7: Statutory Planning Framework Key Issues and Comments

Issue	Comment
SEPP 14 Wetlands	The site contains two SEPP 14 wetlands, which are required to be conserved and protected through appropriate on-site measures.
Coastal Protection	A vast majority of the site is within the Coastal Zone and appropriate consideration will need to be made of coastal processes and the form of resulting development with respect to protecting and enhancing coastal communities and their values.
Requirements for site servicing	The Illawarra Regional Plan (SEPP) requires sites to demonstrate that adequate community and utility services are available before being rezoned to urban uses.
Existing land use restrictions	Existing land-use documents clearly identify restrictions on large areas of the land with respect to subdivision and development potential. Other areas are identified for development on portions of the land that are clearly not available due to conservation requirements (for example SEPP 14 wetlands). These areas require rezoning to enable a balanced form of development commensurate to the capability of the land.

5. Natural Environment

This section provides a review of the natural environment and how these attributes impact on the future land use applicable to the site.

5.1 Climate

The climate of the region is considered to be meso-thermal, with high rainfall and no notable extremes in temperature. Annual average maximum temperatures are around 20°C, ranging from monthly averages of 15°C in winter to 24°C in summer. Annual minimum temperatures are around 14°C, ranging from monthly averages of 9°C in winter to 18°C in summer. (Marine Parks Authority 2008)

Rainfall is relatively uniform, averaging between 80 and 135mm per month. Heaviest rainfalls are typically experienced from March to June. Prevailing winds are typically stronger from the north-east in summer, while tending to the south and west during winter. (Marine Parks Authority 2008; Bureau of Meteorology 2004)

5.2 Landscape and Visual Character

Much of the site is heavily vegetated with native bushland and wetland communities of varying quality. The main exception to this landscape character is the cleared areas associated with the Sussex Inlet Golf Course, where fairways, access tracks and associated buildings have been constructed in the bushland setting.

From public areas, such as adjoining road reserves and parklands, the site generally presents as a bushland backdrop to the built up area of Sussex Inlet. This landscape character is consistent with much of the surrounding area, and similar to many other coastal villages and towns of the Shoalhaven. The landscape backdrop also surrounds Badgee Lagoon, providing a range of water quality, visual and stabilising functions.

5.3 Slope, Stability and Geotechnical Conditions

The site is generally characterised as being relatively flat or gently undulating bushlands of overall ground slopes up to around 5 degrees. The Sussex Inlet area more generally comprises of two main topographical areas being:

- Low lying areas: with ground slopes of less than about 1 degree, which are typically underlain by alluvial or estuarine soils. Groundwater is often encountered at shallow depths, and the depth to rock is generally assessed as being greater than 10m below the ground level.
- Elevated areas: with ground slope of between 1 and 5 degrees, elevated above RL+2m AHD. These areas are generally underlain by alluvial or residual soils, and away from drainage lines are generally stiff. Soil cover can range between 1 and 10m, and groundwater can be encountered at shallow depths, particularly in drainage lines.

Within the site, some localised and shallow (<0.2m deep) gully erosion exists in areas with exposed soils, however the stability of soils in the elevated areas is generally of a high Emerson Class Number, and earthworks are considered to be able to be undertaken safely provided that provided certain precautions are taken. (Coffey Geotechnics 2008)

5.4 Soils (including Acid Sulfate Soils)

The underlying geology of the site is Wandrawandian Siltstone of the Shoalhaven Group, of Permian age, generally consisting of siltstone or silty sandstone (pebbly in part). The 1:250,000 Geological sheet for the area

(Ulladulla Geological Series Sheet 1974) also indicates that areas around the Badgee Inlet are likely to be covered by Alluvium, described as 'alluvium, gravels, beach and dune sand'. (Coffey Geotechnics 2008)

According to NSW Government mapping (*Sussex Inlet 1:25,000 Acid Sulfate Soil Risk Map – 1997*), there is low probability of Acid Sulfate Soils (which contain iron sulfides that generate sulphuric acid when exposed to oxygen) being present in the southern and north eastern parts of the site, near Badgee Lagoon and St Georges Basin respectively. The central and western parts of the site are marked as having 'no known occurrence' of Acid Sulfate Soils, and are not expected to occur in these areas. Potential for presence of Acid Sulfate Soils in these areas was confirmed through a combination of desk-top study, field mapping and laboratory testing undertaken on or behalf of Coffey Geotechnics (2008).

Extracts of areas where Acid Sulfate Soils are likely to be encountered, as mapped by Coffey Geotechnics (2008) are provided in Figure 13.

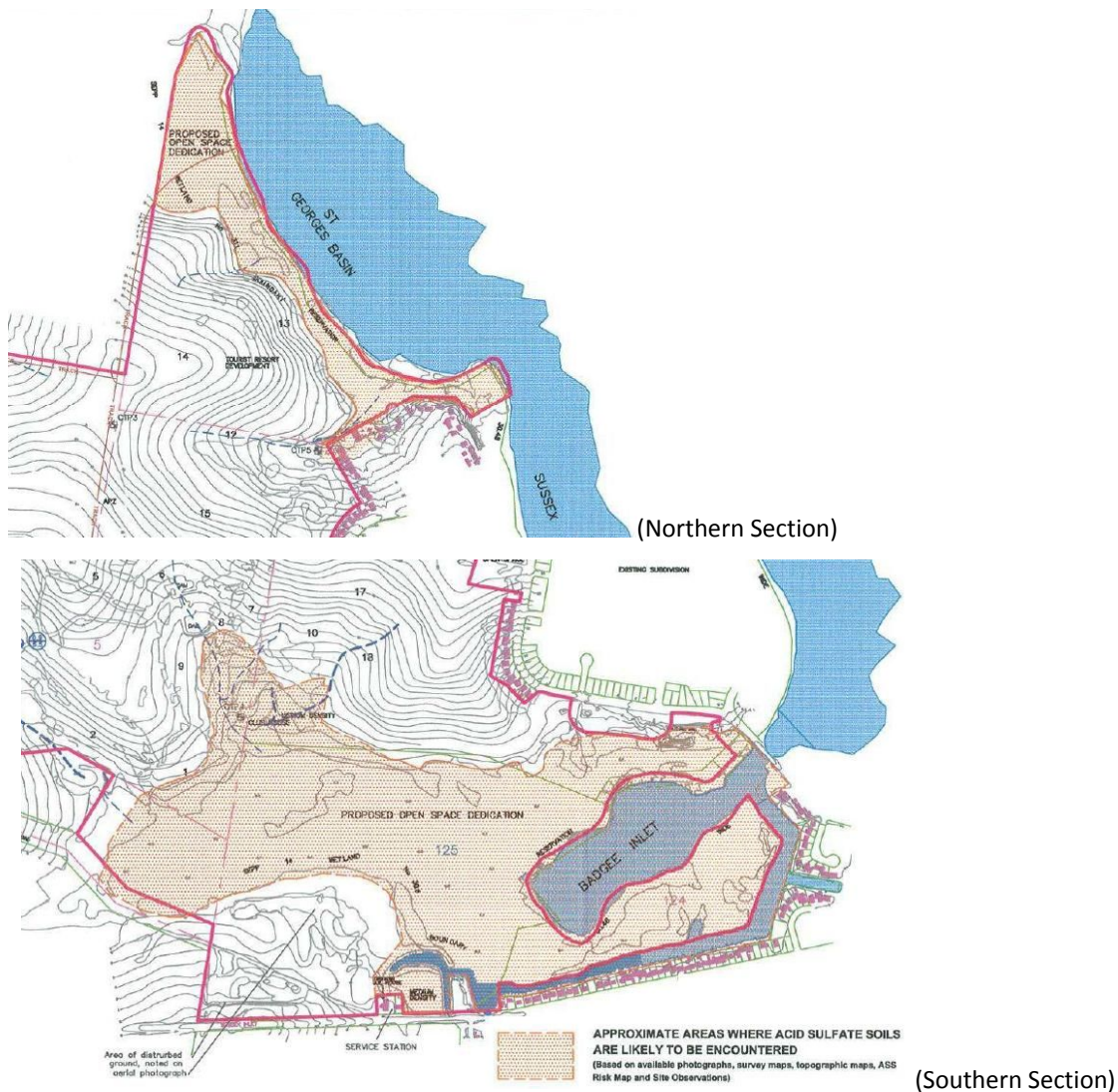


Figure 13: Areas of Likely Acid Sulfate Soil Occurrence

5.5 Drainage and Ground Water

An east-west orientated ridge dissects the site dividing the site into two main catchments, north of the ridge draining directly to St Georges Basin, and south of the ridge draining to Badgee Lagoon. Several small,

intermittent drainage lines or waterways exist throughout the site, the largest of which drains a catchment of about 63 hectares, extending to the west of the site.

A number of dams have also been constructed within the Sussex Inlet Golf Club along these drainage lines/waterways as well as others. The dams are used as water hazards on the golf course, as well as for the supply of irrigation. The dams range in size from approximately 30m x 30m up to 50m x 100m. Outside of the golf course area, drainage lines are generally vegetated and in an unmodified form. (Coffey Geotechnics 2008, Storm Consulting 2009) The Sussex Inlet Settlement Strategy identifies one drainage line/watercourse as being a Category 3 stream potentially requiring core riparian zones and buffer areas.

Investigations undertaken by Coffey Geotechnics (2008) with respect to groundwater assessment suggest that groundwater is expected to occur at about 3 to 5m depth over the site, with deeper aquifers within the underlying rock at about 10m to 20m in depth (Storm Consulting 2009). As noted earlier, in the lower areas of the site and Sussex Inlet more generally, groundwater is likely to be at very high levels. It is also noted by Coffey Geotechnics (2008) that some areas of Sussex Inlet are prone to rapid rises in groundwater levels during or following periods of wet weather.

Using a concept plan for the site, Storm Consulting (2009) developed management measures utilising the principal of a "Neutral or Beneficial Effect" (**NorBE**) in relation to sediment and nutrient loads into the sensitive receiving waters. The focus of this principal is to maintain the existing environmental conditions by ensuring nutrient and sediment loads do not exceed current conditions. Modelling of these measures, based on the concept plan used, showed that this principal could be achieved.

5.6 Flooding

Flooding of roads and residential areas within the St Georges Basin catchment, including Sussex Inlet, has occurred on a number of occasions in the last 20 to 30 years (Webb, McKeown & Associates 2001). In response to the need for improved understanding of the impacts and levels of flooding through the area, the *St Georges Basin Flood Study* was undertaken in 2001. This study determined a 1% AEP design flood level for the Badgee Bridge, located on the south-eastern boundary of the site, as being 2.3m AHD.

A further study was undertaken by WMA Water (2010) to consider the flood levels for the site, taking into consideration sea level rise and climate change scenarios. This study considered a low (0.19m), medium (0.55m) and high (0.91m) level of potential seas levels rise, as well as increased peak rainfall and storm volumes of 10%, 20% and 30%.

The study notes that the (former) Department of Environment and Climate Change (**DECC**) *Flood Risk Management Guideline 2007*, recommends that minimum fill and floor levels in new development include allowances for high scenario climate change. The resulting worst case scenario (0.91m sea level rise combined with 30% increase in peak rainfall and storm volumes), equate to an additional 1.2m at the Badgee Bridge – or a 1% AEP design flood level of 3.5m. (WMA Water 2010)

Filling is required in some areas, with hydraulic modelling showing (WMA Water 2010) that the proposed filling changes flood levels by less than +/- 0.01 m for the existing 1% AEP event as well as for the 1% AEP event plus 0.91m sea level rise. According to WMA Water, a change in flood levels of +/- 0.01 m or less is considered to be within the accuracy of the modelling approach and therefore can be ignored.

This flood levels in relation to the site subject to this Environmental Study is shown at Figure 14.

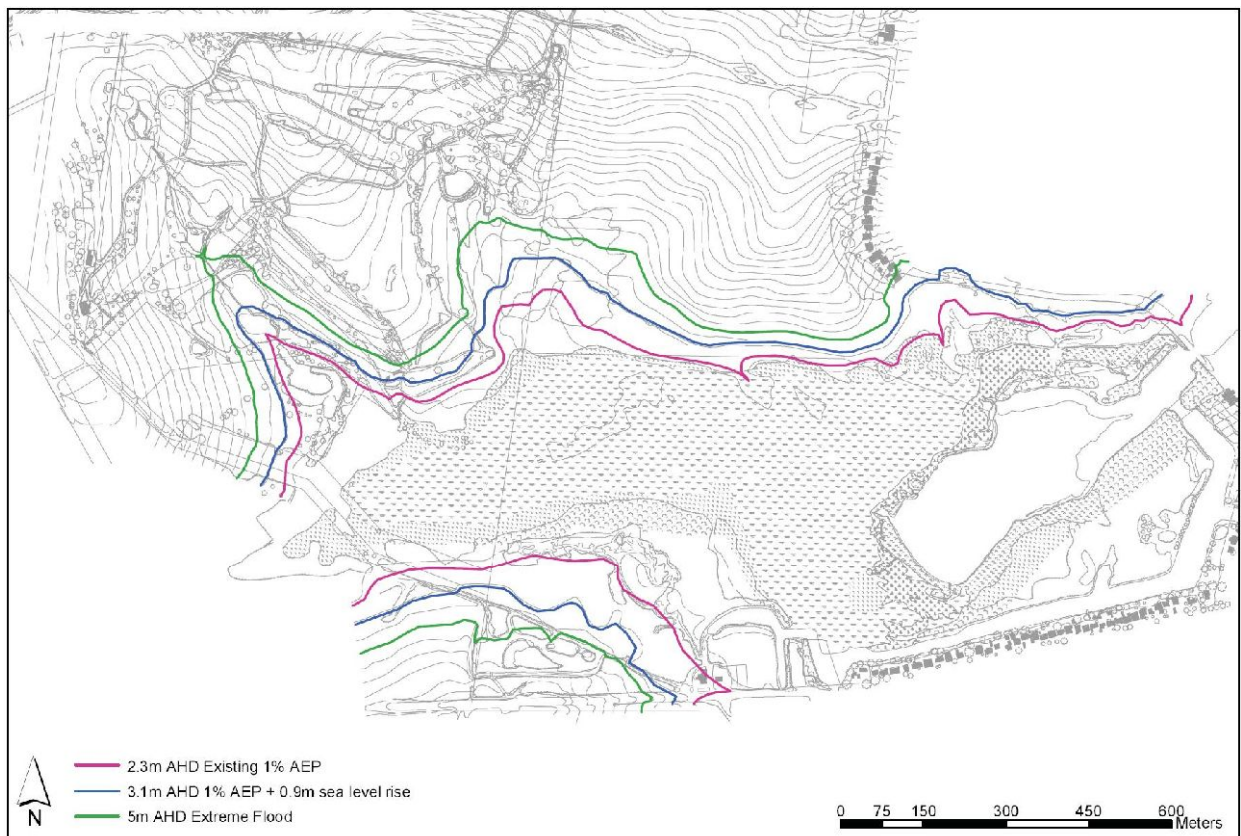


Figure 14: Site Flood Levels

5.7 Flora and Fauna

Investigations undertaken over a number of years, and most recently during the period of 2007 to 2010, identified a total of 254 plant species, including 223 native plant species and 31 introduced or exotic species. Two of the species recorded on the subject site during investigations in 2008 and 1994 are listed as threatened species under the *Threatened Species Conservation Act 1995 (TSC Act)*, being the Leafless Tongue Orchid *Cryptostylis hunteriana*, the Narrow-leaved Wilsonsia *Wilsonia backhousei*. An additional orchid species known as *Pterostylis ventricosa* (also known as *Specularantha ventricosa*), has recently been given a preliminary determination as a Critically Endangered Species.

A search of the Office of Environment and Heritage (OEH) Wildlife Atlas within a 10 km radius of the site identified a further 11 threatened flora species around the site. Of these, only the Biconvex Paperbark *Melaleuca biconvexa* was considered to have limited suitable habitat on the site. The habitat requirements of the Eastern Australian Underground Orchid *Rhizanthella slateri* are not clearly defined and it was not known if the habitat on site was suitable (Whelans InSites 2011).

Targeted and opportunistic fauna surveys have also been undertaken most recently during the period of 2008 to 2010. These surveys recorded a total of 135 native fauna species within the subject site, including 32 mammals, 85 birds, 9 amphibians and 9 reptiles. An additional seven introduced species were recorded on the site. A total of 16 threatened species, as listed by the TSC Act have been recorded on the site, generally being forest-dependent species including a number of bat and bird species.

Threatened flora and fauna recorded on the site are summarised in Table 8 and locations of recordings provided in Figure 15 (based on Whelans InSites 2011).

Table 8: Recorded Threatened Species

Common Name	Scientific Name
<i>Threatened Fauna Species</i>	
East Coast Freetail Bat	<i>Mormopterus norfolkensis</i>
Common (Eastern) Bent-wing Bat	<i>Miniopterus schreibersii</i>
Little Bent-wing Bat	<i>Miniopterus australis</i>
Yellow-bellied Sheath-tailed Bat	<i>Saccolaimus flaviventris</i>
Eastern Pygmy Possum	<i>Cercartetus nanus</i>
Gang Gang Cockatoo	<i>Callocephalon fimbriatum</i>
Glossy Black Cockatoo	<i>Calyptorhynchus lathami</i>
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>
Southern Myotis	<i>Myotis macropus</i>
Powerful Owl	<i>Ninox strenua</i>
Masked Owl	<i>Tyto novaehollandiae</i>
Square-tailed Kite	<i>Lophoictinia isura</i>
Yellow-bellied Glider	<i>Petaurus australis</i>
Eastern Falsistrelle	<i>Falsistrellus tasmaniensis</i>
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>
<i>Threatened Flora Species</i>	
Leafless Tongue Orchid	<i>Cryptostylis hunteriana</i>
An Orchid	<i>Pterostylis ventricosa</i>
Narrow-leafed Wilsonia*	<i>Wilsonia backhousei</i>

* It should be noted that the Narrow-leaf Wilsonia was identified during field work in 1994, but could not be found during more recent searches (Whelans InSites 2011).

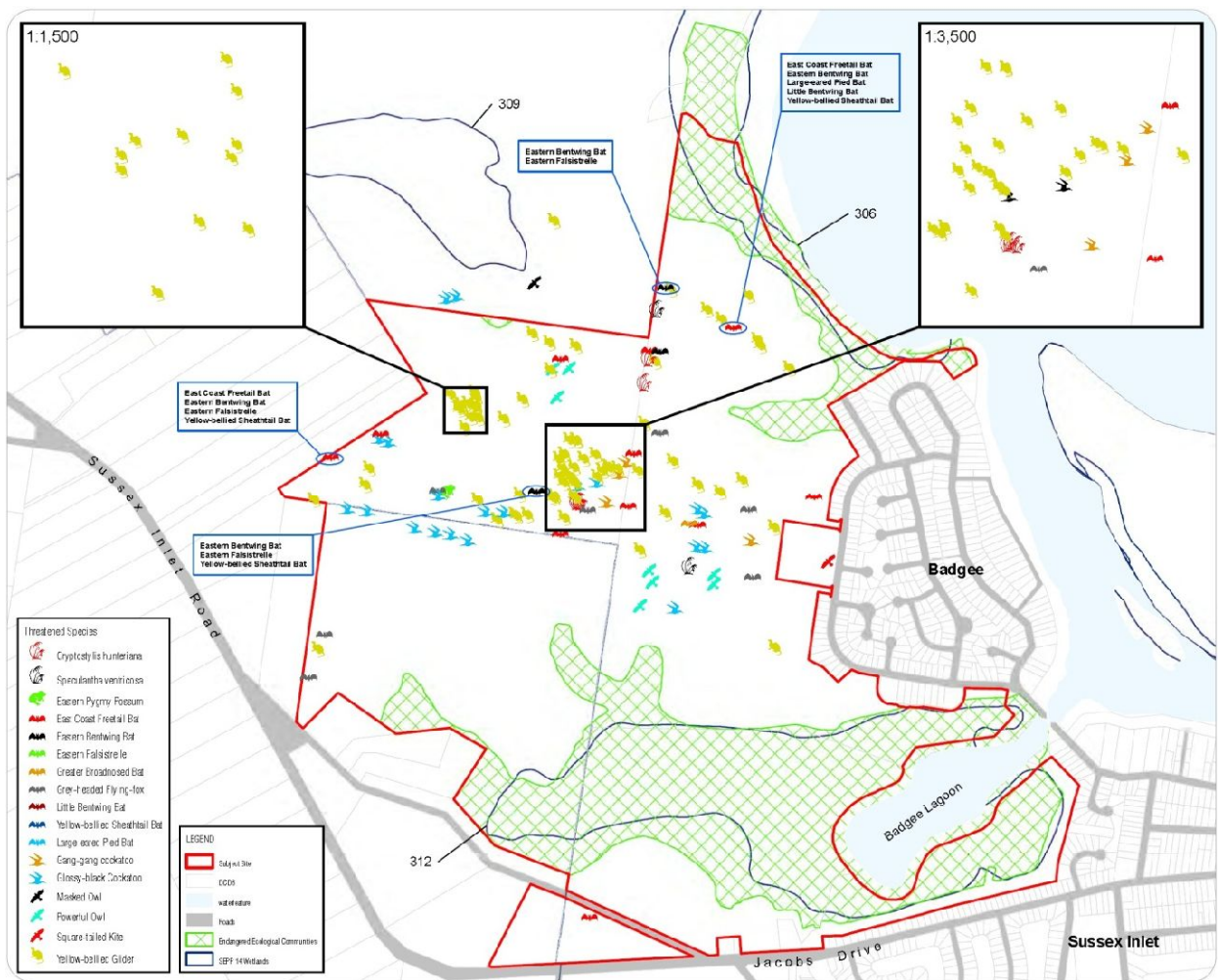


Figure 15: Threatened Flora and Fauna Locations

5.8 Habitat Values

Field investigations also reveal the presence of a number of vegetation communities, including several areas of endangered ecological communities (EECs). A total of eight vegetation communities are present on the site, including (Whelans InSites 2011):

- Currumbene Lowlands Forest;
- Coastal Sand Swamp Forest;
- Coastal Sand Forest;
- Shoalhaven Sandstone Forest;
- Estuarine Fringe Forest;
- Estuarine Creek-flat Scrub;
- Estuarine Mangrove Forest; and
- Estuarine Saltmarsh.

The most common vegetation community is the Currumbene Lowlands Forest (36.2% of the total site area), followed by Shoalhaven Sandstone Forest (14.8%), Estuarine Creek-flat Scrub (13.9%) and Coastal Sand Swamp

Forest (11.3%). A total of 9.0% of the site is cleared area, generally comprising of the existing nine hole golf course. (Whelans InSites 2011)

Four of these vegetation types are considered to be part of broader EECs, being:

- Coastal Sand Swamp Forest, which is part of the *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* and/or *Bangalay Sand forest of the Sydney Basin and South East Corner Bioregions*;
- Estuarine Fringe Forest, which is part of the *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*;
- Estuarine Creek-flat Scrub, which is part of the *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*; and
- Estuarine Saltmarsh, which is part of the *Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*.

Many of the vegetated areas of the site support a high density of hollow-bearing trees, and particularly in the taller and more xeric forest communities including the Currumbene Lowlands Forest and Shoalhaven Sandstone Forest. Hard-Leaved Scribbly Gum, Red Bloodwood and Blackbutt tree species are present on the site, regularly forming hollows and providing a significant resource suitable for hollow-dependent species ranging from microchiropteran bats to the Yellow-bellied Glider and Glossy Black Cockatoo.

Another significant ecological feature of the site is the presence of SEPP 14 wetlands, including the area bordering St Georges Basin on the northern part of the site, and around Badgee Lagoon at the southern part of the site. These wetlands are mapped under SEPP 14 as being part of wetland numbers 306 and 312 respectively. On-site ground verification of these wetlands provides for slight variations to the mapped versions under SEPP 14. The wetlands provide important habitat and resources for a range of native flora and fauna including native fish and wetland bird species that use these areas for both foraging and roosting habitat.

Edge effects associated with development and clearing of land needs to be considered within the context of the ecological integrity of these sensitive areas. Buffers are frequently employed to provide this protection and are generally recommended in this instance consistent with OEH and Council requirements to be 50m around EECs and 100m around SEPP 14 wetlands.

Maps showing the various vegetation communities and an overlay of EECs and SEPP 14 wetlands are identified in Figure 16 and Figure 17 respectively (based on Whelans InSites 2011).



Figure 16: Vegetation Communities



Figure 17: EECs and SEPP 14 Wetlands

5.9 Wildlife Corridors

The site is recognised in the Sussex Inlet Settlement Strategy as having the *opportunity to incorporate the habitat corridors through the site in a north-south direction*. This corridor is identified in the strategy mapping through the site. Whelans InSites (2011) identifies that the site does provide two corridors, a north-south vegetated “connection” through the centre, and an east-west “connection” through Badgee Lagoon, to the southwest through the rural-residential lands adjoining Sussex Inlet Road.

A broad north-south corridor is defined as being at least 250m in width in order to facilitate wildlife movements and connectivity. The east-west connection would be retained by virtue of the presence of the SEPP 14 Badgee Lagoon wetland area and associated EECs, and is between 250m and 500m in width. These areas are proposed to be retained within appropriate conservation zones.

5.10 Other High Conservation Value Lands

As identified in Section 3.2.4, the South Coast Regional Conservation Plan describes what constitutes “high conservation value” (HCV) lands, including:

- ▶ Endangered ecological communities (EECs);
- ▶ Rare vegetation types;
- ▶ Overcleared vegetation types;
- ▶ Overcleared Mitchell landscapes;
- ▶ Poorly conserved vegetation communities;
- ▶ Old-growth forests;
- ▶ Threatened and significant species;
- ▶ Significant aquatic habitats;
- ▶ Wilderness;
- ▶ Statutory conservation protection on private lands; and
- ▶ Matters of national environmental significance (EPBC Act considerations).

Key conservation values as mapped in the South Coast Regional Conservation Plan and of particular relevance to the site are EECs (see Section 5.8), threatened fauna and flora habitat (see Section 5.7 and 5.8), wildlife corridors (see Section 5.9), old growth forests and significant aquatic habitats. A combination of these areas represents HCV lands under the definitions provided by the South Coast Regional Conservation Plan.

As identified in Figure 18, based on mapping by Whelans InSites (2011), HCV lands occupy substantial areas of the site. In addition to those mapped areas of HCV on this figure, three areas were identified by Whelans InSites (as depicted in heavy outline) as being areas of differing opinion between Whelans InSites and both Council and OEH. Within all these areas are identified threatened species (refer Figure 15 for locations), with the following comments provided on each area:

- ▶ Area 1: This area is considered to be HCV land based on the following:
 - The protection of the SEPP 14 wetland and St Georges Basin on the north-eastern boundary, necessitating buffer areas to this, as well as adjoining EECs;
 - The presence of *Pterostylis ventricosa* and need to manage this area within its intact habitat, including appropriate buffer areas;

- The high incidence of microbats within, or near to, an area of high density of hollow-bearing trees, potentially indicating the presence of microbat roost sites; and
 - The resulting land area without these constraints being unsuitable for development of a suitable urban form.
- Area 2: This area is considered to be HCV land based on the following:
- The high density of hollow-bearing trees in this location;
 - The density of threatened species records in this location; including the adjoining Eastern Pygmy Possum record, suggesting suitability of the understorey in this area for a range of threatened species; and the high density of Yellow-Bellied Glider records suggesting suitability of the upper canopy for a range of threatened species; and
 - The contiguous nature of this area with the proposed north-south corridor connection through the site.
- Area 3: This area is considered to be suitable for some development based on the following:
- The area has fewer threatened species records; and
 - The area is compromised in terms of being a movement corridor by the adjacent rural residential allotments.

In accordance with the South Coast Regional Strategy, new urban development is to be prohibited by LEPs where assessed as being HCV land. On the above basis, the HCV areas identified by Whelans InSites (2011), in addition to areas 1 and 2 (as shown in Figure 18), are to be excluded from development and placed within an appropriate conservation zone.

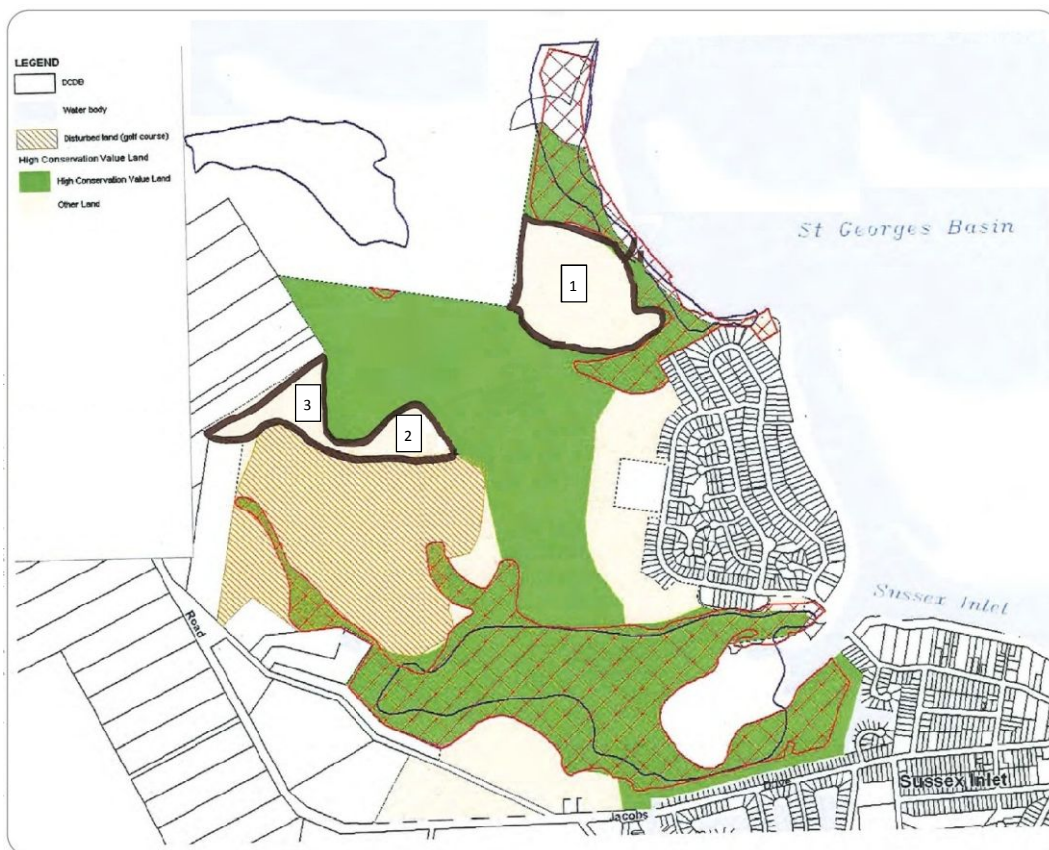


Figure 18: High Conservation Value Lands Mapping

5.10.1 Old Growth Forests

On the basis of the *Verification Rules of DECCW*, the Ecological Constraints Report (Whelans InSites 2011) identifies that most of the vegetation which may be considered old growth forest is located predominantly through the central parts of the site and in the lands proposed to be zoned for conservation purposes. These areas have been identified through evaluation of hollow-bearing tree resources, threatened species numbers and densities, and existing and/or likely future levels of disturbance.

5.10.2 Wetlands and Aquatic Habitats

All SEPP 14 wetlands have been verified and mapped on site, with the intention to retain these, generally with buffers as required by the then Department of Primary Industries (Fisheries). The only exception to this would be the potential to retain the previously cleared and maintained areas associated with the existing golf course, subject to the preparation of management plans to ensure that edge effects and other potential impacts are appropriately managed at the interface with the adjoining wetland. Whelans InSites (2011) identifies that a comprehensive stormwater management regime and program would be prepared for future development of the site, including relevant stormwater quality control and volume discharge measures to prevent the discharge of contaminants or pollutants into the SEPP 14 wetlands.

5.11 Bushfire

The majority of the study area under the Sussex Inlet Settlement Strategy (**SISS**) is classified as being Bushfire Prone Land, including the vast majority of the site. The SISS identifies that bushfire is a major planning constraint on future development, and is likely to become a significant issue with projected weather pattern changes under climate change scenarios. A fine line must also be balanced between adequate bushfire protection and maintaining environmental values.

The SISS goes on to identify risks associated with bushfire in the area, including the need to consider particular strategic investments and design standards, such as the provision of static water supplies dedicated to fire fighting purposes to ensure sufficient access to water during emergency situations.

Of particular note is the provision of a single road in and road out of the urban area, which can become engulfed in fire, and in 2002 it is understood that Sussex Inlet Road was closed by fire and the town evacuated to a nearby beach (ERM 2010).

A Bushfire Protection Assessment (Eco Logical 2009) has been undertaken for the site to demonstrate that the design requirements of *Planning for Bushfire Protection (2006)* (**PBP**) can be met based on a concept plan of a proposed development. In particular, the assessment identifies that:

- Appropriate asset protection zones (APZ) can be provided to meet the requirements of PBP;
- Alternate egress is available for all areas and all roads and trails can be constructed to the standard required by PBP;
- Reticulated water will be provided to meet standards for PBP in urban areas.

Assuming any future development proposal for the site can meet the standards of PBP, bushfire risks should be appropriately managed.

5.12 Summary Issues and Comments

A number of key issues and comments are identified in relation to the Natural Environment and are presented in Table 9.

Table 9: Natural Environment Framework Key Issues and Comments

Issue	Comment
Visual Character	The visual character of the area is largely dominated by natural bushland backdrops within the urban setting. Maintaining this character within the development areas would provide a consistency between newer and older parts of Sussex Inlet.
Soils, including Acid Sulfate Soils	The soil types of the site are of an appropriate type for the development proposed, however some measures will need to be considered at detailed stages to ensure Acid Sulfate Soils are appropriately handled.
Flooding and Sea Level Rise	Given the coastal location and low lying nature of parts of the site, hazard implications associated with flooding, sea level rise and climate change all need to be considered for the long-term safety of the future community.
Ecological Constraints	A number of ecological constraints exist on and around the site. In accordance with the South Coast Regional Strategy, areas of high conservation value (as defined by the South Coast Regional Conservation Strategy) have been identified as areas that are to be retained and protected through the LEP process.
Protection of Sensitive Areas	In addition to direct protection of high conservation value areas, indirect protection through buffering is considered to be necessary, generally including 50m buffers to EECs and 100m buffers to SEPP 14 wetlands (with the potential exception of previously cleared and maintained areas associated with the existing golf course, subject to appropriate management plans).
Bushfire	The site is vulnerable to bushfire. Key design requirements will be necessary to enable compliance with the PBP standards during detailed design and subsequent subdivision approval processes.

6. Built Environment

This section provides a review of the built environment and how these attributes impact on the future land use applicable to the site.

6.1 Archaeology

An assessment of the known and potential for archaeological deposits on the site has been undertaken to identify the conservation significance of these areas (National Heritage Consultants 2009). The assessment included a review of historical, archaeological and environmental background information, followed by a field survey undertaken with the assistance of nominated representatives of the Jerrinja Local Aboriginal Land Council.

No non-indigenous heritage objects or sites were identified within the Site, and the potential for such is considered to be negligible in reference to the criteria listed in the NSW Heritage Office guideline *Levels of heritage significance 2008*. However a total of 23 Aboriginal stone artefact scatters and shell 'middens' were identified. While it is highly likely that additional such sites would be present on site, the potential for identifying other types of Aboriginal sites was assessed by being negligible or low. Additionally, no other Aboriginal objects or places, such as places of social, spiritual and cultural value, were identified to the heritage consultants by representatives of the registered Aboriginal stakeholder prior to or during field work.

Of the Aboriginal sites identified, two midden sites (AHIMS 58-2-251 and 58-2-252) were assessed as having medium and high heritage values within a local context. Two lithic scatters (BL5 and BL6) were identified as having moderate scientific value for research potential, though their heritage values are assessed as being low. All other identified sites were assessed as having low heritage values.

Recommendations of the assessment suggest that the midden sites identified above should be protected within open space area under the care and control of Council. Should unavoidable impact to occur at lithic sites identified above, a substantial part of the sediments containing Aboriginal objects should be excavated and redeposited at an appropriate tagged location.

All identified Aboriginal stone artefact scatters and shell 'middens' are identified in Figure 19 (from National Heritage Consultants 2009).



Figure 19: Identified Aboriginal Stone Artefact Scatters and Shell Midden Sites

Note: The background of this figure is based on an earlier development concept for the site that is no longer supported by background studies.

6.2 Noise

Background noise levels throughout most of the site are considered to be very low, with significant separation from any noise sources such as roads and commercial/industrial development. There are however some area of relatively high noise exposure on the boundary of site along Sussex Inlet Road. A Traffic Noise Intrusion Report was completed for this area, identifying some need for acoustic treatments to any proposed housing within approximately 40m of the road reserve (Day Design 2009). Such treatment would be subject to detailed design at the time of development application being made.

6.3 Contamination

Based on a review of the site history and site walkover, a number of relatively small Areas of Environmental Concern (AEC) and Chemicals of Concern (COC) with respect to contamination were identified on the site. These areas are summarised in Table 10 (based on Coffey Geotechnics 2008).

Table 10: Summary Areas of Concern and Chemicals of Concern

Potentially Contaminating Activity	Summary of Issues
Potential weathering from hazardous materials within on-site structures	- Could include weathering from lead paints, asbestos and galvanised iron, as well as the use of pesticides near buildings. - Impacts (if any) likely to be within a few metres of structures, as well as fragments of asbestos in other areas. - Low to moderate likelihood of soil contamination. - Potential COCs include lead, zinc, asbestos and Organochlorine Pesticides (OCP)
Storage of fuels and chemicals associated with golf course	- Storage and use of insecticides, herbicides and fungicides. - Impacts around storage locations and parts of the golf course. Dams and drainage lines could act as sinks for contamination. - Low likelihood of contamination due to storage and use in low quantities. - Potential COCs include OCP, herbicides and fungicides.
	- Storage and use of fuels, oils and lubricants. - Impacts around storage and workshop sheds. - Low to moderate likelihood of contamination due to storage on hard surfaces and in relatively small quantities. Higher potential around fuel storage. - Potential COCs include Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAH) and Volatile Hydrocarbons (VHC)
Septic tank leaks	- Effluent discharge from septic tank near the golf course. - Low likelihood of contamination. - Potential COCs include Nutrients and pathogens.
Fill of unknown origin	- Fill imported to the site in various area from unknown location and condition. - Low likelihood of contamination and no evidence of extensive filling noted. - Potential COCs include TPH, BTEX, PAH, OCP, PCB, heavy metals and asbestos.
Unauthorised dumped waste	- Small areas of dumped waste and one burnt out car noted on site. - Moderate likelihood of contamination. - Potential COCs include TPH, BTEX, PAH, OCP, PCB, heavy metals and asbestos.
Disturbed area in southern part of Site	- Two areas noted as 'quarry or gravel pit' on topographic map and cleared of vegetation. - Exact activities undertaken in the area are unknown, though based on topography/geology, the area is unlikely to have been a quarry. - Low to moderate likelihood of contamination. - Potential COCs include TPH, BTEX, PAH, OCP, PCB, heavy metals and asbestos.
Area near service station	- Lands immediately adjacent and downslope of the service station from potential leakages of stored fuels. - Moderate likelihood of contamination through migration downslope. - Potential COCs include TPH, BTEX, PAH and lead.

Results of the review and site walkover suggest that a majority of the site has a low likelihood of being affected by any contamination that would preclude development opportunities. While a number of AECs and COCs have been identified, the extent and size of potential contaminated areas are relatively small, as well as there being a low or moderate potential for contamination to actually exist. Further detailed assessment of these areas would be required pending design of the proposed development. (Coffey Geotechnics 2008)

6.4 Sewer

The Sussex Inlet Sewerage Scheme comprises a gravity sewer system, pumping stations, sewage treatment plant (STP) and sand-dune exfiltration. It is operated and maintained by Shoalhaven Water under a licence with OEH. Any proposed amendment to the operation and/or expansion of the facilities would require formal Approval from OEH to adjust the Licence conditions.

The existing Scheme does not extend to the site and a key limiting factor to the rezoning of land in the Sussex Inlet area is the capacity of the STP and the potential for expansion of the STP and effluent disposal.

Shoalhaven Water's *Development Servicing Plans for Sewerage Services* of November 2005 (**Sewerage DSP2005**), identifies a 6,000 equivalent person (EP) upgrade to the treatment plant to be scheduled for 2010/2011, and which would cater for all those areas of land currently zoned for development (including infill). The Sewerage DSP2005 also identified a further upgrade planned for 2024 which would cater for additional growth areas, up to an additional 4,000 EP (Allen Price & Associates 2010). The Sewerage DSP 2005 is currently under review and is due for completion by the end of June 2012. In parallel with this review is an analysis of the existing capacity of the STP and sand-dune exfiltration area.

As such, there is no guaranteed expansion capability to enable rezoning of land to be serviced by the Sussex Inlet Treatment Plant and alternative on-site treatment option will be required for some or all of the re-zoned development area. For the purposes of this Environmental Study, it is assumed that a full water balance analysis would be undertaken to demonstrate that open space or recreation areas can adequately accommodate required holding ponds and irrigation areas that would be required for all on-site treatment of rezoned areas.

6.5 Water

No water supply network currently exists on the site. Surrounding areas of Sussex Inlet are serviced through a local water supply network which is owned and operated by Shoalhaven City Council through Shoalhaven Water. Sussex Inlet is fed from the 13ML Sussex Inlet Reservoir which was designed by the former Department of Public Works and Services based on a peak day demand of 4,000L/ET/day. However in 2006, following recognition of savings from BASIX and other initiatives, Shoalhaven Water adopted a reduced peak day demand of 2,000L/ET/day which was considered to be more realistic and based on actual water usage records. This change had the effect of doubling the capacity of much of the water supply system. (Allen Price & Associates 2010).

Given the potential site development may exceed assumptions used in calculating the *Development Servicing Plan for Water Supply Services 2005* (**Water DSP2005**), it is recognised that the water supply infrastructure that is proposed to be installed by Shoalhaven Water to service the area may be inadequate. Allen Price & Associates (2010) identify that water supply infrastructure will provide no constraint to development proceeding, subject to appropriate water supply strategy work being undertaken by Shoalhaven Water in the revision of Water DSP2005. Negotiation will need to take place between the developer and Shoalhaven Water to ensure adequate water supply infrastructure will be provided to service the development.

6.6 Electricity

Regional electrical infrastructure in the area is provided and operated by Integral Energy. As the site is not currently serviced with electrical infrastructure, discussions with Integral Energy have taken place to identify the infrastructure requirements for any future development. Integral Energy has indicated that there are significant capacity limitations in the following infrastructure:

- ▶ The Sussex Inlet Zone Substation;
- ▶ The 33kV transmission lines that feed the Sussex Inlet Zone Substation; and
- ▶ The 11kV high voltage distribution network that would supply the development area.

Augmentation is therefore required of both the Zone Substation and the 33kV transmission lines to facilitate any development. This augmentation would require design, environmental assessment and construction periods, resulting in significant lead times before supply could be provided. The 11kV high voltage network and low voltage reticulation within the development area would be the responsibility of the proponent. (Allen Price & Associated 2010)

Assuming these augmentation works can be agreed with Integral Energy, provision of electricity to the site is not a constraint to the rezoning.

6.7 Telecommunications

The site is not currently serviced with telecommunications infrastructure. Such infrastructure is provided in the Sussex Inlet by Telstra, who have a statutory requirement to service all dwelling with telecommunications services. The site has been lodged with Telstra to enable the forward planning of the works. Telstra are also able to provide additional infrastructure, such as fibre-optic cabling, multiple telecommunications lines to each allotment, and the necessary infrastructure for free to air digital TV. No impediments to the development of the site have been identified with respect to telecommunication infrastructure. (Allen Price & Associates 2010).

6.8 Gas

No reticulated gas services are provided to the site or to Sussex Inlet generally. Use of gas in the area is provided through bottled gas, as is commonly found in many towns and villages of the South Coast. The nearest reticulated gas is located some 30km to the west of the site, being the Eastern Gas Pipeline. While sufficient capacity exists in the pipeline, provision of reticulated gas from this pipeline to the site is not economically feasible. (Allen Price & Associates 2010)

6.9 Waste Disposal

Solid waste collection services are currently operated through Council by private contractors. Council requirements for kerbside collection include:

- ▶ That the development is in an urban area;
- ▶ The roads within the development have been constructed to Council's standards;
- ▶ The roads are owned and maintained by Council; and
- ▶ Properties requiring kerbside collection are residential in nature.

Kerbside collection for commercial facilities and sites would be assessed when further details are known. Larger waste disposal facilities and recycling centres are also operated by Council, with one such facilities being located

around 400m south of the site on The Springs Road. (Allen Price & Associates 2010) The proposed rezoning would be consistent with the requirements for waste disposal servicing of the site.

6.10 Roads and Access

The site has frontages to a number of public roads, including Sussex Inlet Road, Jacobs Drive, Suncrest Avenue, Lakeshore Parade and an unnamed (and unformed) road in the south-western corner of the Site. Given these frontages, and the potential for a number of connections to existing roads, the site is considered to have sufficient accessibility by road.

The main arterial road servicing the South Coast, the Princes Highway, is accessible to the site via Sussex Inlet Road. The Princes Highway in the vicinity of the Sussex Inlet Road intersection operates as a rural highway with a 100km/h speed limit. The site is located around 12km from the Princess Highway and operates as a rural road also with a speed limit of 100km/h. (CBH&K 2009)

Based on traffic modelling that used traffic surveys undertaken during the AM and PM weekday peak periods (being the recognised time for the maximum amount of traffic movement), all key intersections around the Site were assessment to operate at a good level of service (that is with minimal delay to drivers). (CBH&K 2009)

Access from future development onto Sussex Inlet Road, as well as in other locations, is likely to require traffic control treatments at key intersections. It is noted that a series of roundabouts are proposed at a number of connections to the future development area to achieve an acceptable level of service for all intersections.

6.11 Public Transport

Limited public transport options are available to the site, with the only public service being operated by Shoal Bus who has operations between Nowra and Sussex Inlet and the adjoining villages of Berrara and Swan Haven. One or two services are operated on weekdays and Saturdays, with some services also being school bus services. The only accessible bus stop from the site is located on Tradewinds Avenue, which is located in the northern section of Sussex Inlet over the Badgee Bridge.

The proposed rezoning of the site provides for an opportunity to augment and support these existing services. An east-west road connection through the site and to the northern section of Sussex Inlet would provide a more efficient loop service around the Sussex Inlet urban area, reducing movement through smaller streets and the need for back-tracking through areas with single access roads.

S117(2) directions (refer Section 4.5) require that a draft LEP be consistent with the *Integrating Land Use and Transport: Improving Transport Choice* and *The Right Place for Business and Services* policy papers of the then Department of Urban Affairs and Planning. *Improving Transport Choice* and *The Right Place for Business and Services* are two aspects of the *Integrating Land Use and Transport* series of policy papers and guidelines aimed at better integrating accessibility of people and goods into the land use planning system and design process.

Improving Transport Choice (Department of Urban Affairs and Planning 2001a) provides a series of principles to assist in the design and implementation of better urban form that supports a reduction in car dependence and an improvement in accessibility. This includes principles relevant to the site such as the support higher densities in urban centres, providing a mix of uses to reduce need for travel, integration of public transport, connectivity of streets, improved pedestrian and cycle access, and the implementation of good urban design.

The Right Place for Business and Services policy (Department of Urban Affairs and Planning 2001b) aims to *encourage a network of vibrant, accessible mixed use centres which are closely aligned with and accessible by public transport, walking and cycling*. The policy applies to developments that generate many trips, provide important services and generally have a floorspace of over 1,000m². While the rezoning does not propose this

type of activity, it is important to consider accessibility to such areas, which are generally in the commercial centre of Sussex Inlet.

Providing for a mix of uses, reducing reliance on vehicles to access basic services, and improving access through the site via cycle, pedestrian and public transport infrastructure are therefore considered to be important elements of the built environment.

6.12 Walking and Cycling

Council developed a Pedestrian Access and Mobility Plan (**PAMP**) in 2001, which was revised and updated in 2006. The PAMP covers the entire local government area, including Sussex Inlet and surrounds. The PAMP identifies the intention to provide on-road cycleways on Sussex Inlet Road and Suncrest Avenue which both adjoin the Site. These on-road cycleways would link to existing shared user paths, or footpaths, that are located in the town centre and along the Sussex Inlet waterway.

Extension of this existing and proposed cycle and pathway network by the provision of shared user pathways through the development to link these proposed paths together would enable accessibility by dedicated cycle and pedestrian links to the existing town centre and associated services. Appropriate connections within the development site in accordance with Council requirements would also be important in providing local level access to public transport stops, local community facilities and open spaces.

6.13 Summary Issues and Comments

A number of key issues and comments are identified in relation to the Built Environment and are presented in Table 11.

Table 11: Built Environment Framework Key Issues and Comments

Issue	Comment
Archaeology	Key archaeological finds will need to be carefully considered in the application of zones and subsequent development activities.
Sewerage treatment	Prior to the preparation of the LEP for rezoning of the site, full water balance analysis would need to be undertaken to demonstrate that proposed open space or recreation areas can adequately accommodate required holding ponds and irrigation areas that would be required for all on-site treatment of rezoned areas.
Other servicing infrastructure	Other servicing infrastructure, including electrical, waste disposal and telecommunications, can be feasibly provided to the site without detailed investigations at the current time. Such detailed investigations and demonstrated capacity to service the development would however be required with development applications.
Regional Infrastructure	A Section 54 response from DoP suggests <i>“given the size of the release area, a clause relating to provision of regional infrastructure should be included in the Draft LEP. The Department’s Regional Team will be able to provide Council with an appropriate clause.”</i> Council should liaise with the Department of Planning to ensure that this request can be fulfilled under the Standard Instrument LEP.
Reducing reliance on private vehicles	Providing for a mix of uses, reducing reliance on vehicles to access basic services, and improving access through the site via cycle, pedestrian and public transport are considered to be important elements of the built environment.

7. Social Environment

This section provides a review of the social or human environment and how these attributes impact on the future land use applicable to the site.

7.1 Population

The existing Sussex Inlet urban area comprised a population of just over 3,000 people during the 2006 Census. According to those Census statistics, a large portion (37%) of the population was aged over 65, compared with just 14% within this age group in the State of NSW, and 21.2% for the Shoalhaven local government area. This figure, which indicates a large proportion of retired residents, is reinforced by the proportion of family type of “couple without children” at 62%, compared with the NSW average of 36%, and Shoalhaven average of 47%. (Bureau of Statistics 2007)

The Sussex Inlet Settlement Strategy identified low, medium and high level forecasts for population growth, as well as subsequent dwelling demand, as presented in Table 12. The forecasts highlight the strong likely demand and Council’s intention to reinforce the Sussex Inlet urban area as a key coastal town within the region.

Table 12: Sussex Inlet Population Forecast

Year	Forecast Population			Cumulative Net Increase			Cumulative Dwelling Demand		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
2005	4000	4000	4000						
2010	4424	4526	4751	424	526	751	283	350	500
2015	4806	5120	5642	806	1120	1642	537	747	1095
2020	5174	5793	6701	1174	1793	2701	783	1195	1801
2025	5543	6554	7959	1543	2554	3959	1029	1703	2639
2030	5911	7416	9453	1911	3416	5453	1274	2277	3635
2035	6267	8390	11227	2267	4390	7227	1511	2927	4818

The Sussex Inlet Settlement Strategy also identifies the projected growth of the population by age, identifying that *“there will be a substantial increase in the number of people aged over 65 in Sussex Inlet. While not all these people will need or choose to live in smaller houses, it is imperative that a greater degree of housing choice be provided to meet the needs of this increasing segment of the local community”*.

Under any of the population growth scenarios, there is a clear need for increased dwelling provision in the area and for that dwelling increase to provide for a greater level of housing choice.

7.2 Housing and Affordability

In the 2006 Census there were 1,425 occupied private dwellings counted in Sussex Inlet, with a total of 92% being separate houses, 3% were semi-detached, 1% units and 4% were other dwellings types. According to the Census figures, there were an additional 678 dwellings which were not occupied. Of the occupied dwellings, 57% were fully owned, 16% were being purchased and 20% were rented. The average household size was 2.1 persons. (Bureau of Statistics 2007)

Median weekly individual income for persons aged 15 years and over in Sussex Inlet was \$273, compared with \$461 in NSW and \$349 in the Shoalhaven. The median weekly household income was \$518, compared with \$1,036 in NSW and \$659 in the Shoalhaven. Home loan repayments are also lower than the NSW and Shoalhaven comparisons, being \$1,083 compared with \$1,517 in NSW and \$1,200 in the Shoalhaven (Bureau of Statistics 2007). Nevertheless, this cost represents over 90% of the average weekly income, reflecting a high potential for issues of housing affordability. Increasing housing demand based on population growth in the area will exacerbate this issue if adequate housing supply is not maintained.

7.3 Employment

During the week prior to the 2006 Census, around 700 people aged 15 years and over who were usually resident in Sussex Inlet were employed. Around 100 more were unemployed (being 12.6% of those people in or seeking employment), and 1,816 who were not in the labour force (many of whom are likely to be retirees). Of those employed, 45% were employed full-time and 36% part-time.

These statistics show high levels of unemployment compared with the Shoalhaven (9.2%) and particularly with NSW (5.7%). It also shows high levels of those not in the labour force (around 66% of Sussex Inlet residents were not in the employment market), compared with Shoalhaven where this figure is only 50% and NSW (36%). (Bureau of Statistics 2007)

These statistics clearly show that employment opportunities are limited in and around Sussex Inlet.

7.4 Health and Aged Care

Given the large, and increasing, proportion of aging population in Sussex Inlet, access to appropriate levels of health and aged care is an important aspect of social composition and services availability. Within the town centre is a medical practice, as well as a community health centre. Ambulance services are also located in the town. The nearest major public hospital is located in Nowra. (Julius Bokor Architect 2010)

A study undertaken on behalf of Council (Judith Stubbs & Associates 1994) identifies a deficiency in virtually all types of aged care facilities and beds, and Community Aged Care Packages (**CACPs**). The study identified a three level care facility is located in Sussex Inlet (Inasmuch) containing 48 self-contained apartments, 24 serviced apartments, 40 hostel beds and 30 CACPs. The facility is a non-profit centre, with government subsidies for the hostel component. The facility indicated at that time that demand was very high and waiting times were already significant for self-contained and hostel vacancies.

Given the estimated growth in the local population, and significant aging of the population over time, access to health and aged care facilities will continue to be critical.

7.5 Community Facilities

Council's community information directory (Shoalhaven City Council 2010) identifies a number of community organisations and services in the Sussex Inlet area including:

- Neighbourhood centre;
- Community health centre (including Early Childhood Centre);
- Sussex Inlet Aquatic Centre;
- Various clubs (including Lions Club, Rotary Club, Golf Club, Bowling Club and RSL);
- Various churches (including Anglican and Baptist churches); and
- Various community groups (such as Girl Guides, Chamber of Commerce, sporting clubs, Men's Shed etc).

The existing facilities available in Sussex Inlet have been judged to be adequate for the existing population and to accommodate modest growth into the future. However, there will be a need for some additional facilities to meet the social and community needs of the population and to implement the social planning policies of Shoalhaven Council, including a neighbourhood retail centre, community centre and child care centre. (Julius Bokor Architect 2010).

7.6 Open Space and Recreation

The Sussex Inlet area has a number of sporting and recreation facilities. Existing passive open space is provided in a number of locations, with the Ellmoos Reserve fronting the Sussex Inlet waterway providing a key community asset and one of few “icon parks” within the Shoalhaven (Heather Nelson Consulting 2006). Ellmoos Reserve extends from Badgee Lagoon in the north for around 2km to Gordon Street in the south, with a water frontage along the entire length. The reserve is around 30m wide in the northern section, widening to around 60m toward the centre and southern areas. A range of park facilities are provided and the area is very popular with local and regional visitors.

A limited number of smaller local parks and playgrounds are also located throughout the area and in low lying foreshore reserves. It is noted that there are few local parks or playground areas within the section of the Sussex Inlet area north of the Badgee Bridge, and that these types of facilities play an important role within the local context of urban areas.

In respect of active recreation opportunities, two areas provide for sporting fields in the Sussex Inlet area, being the Finkernagal Reserve close to the main town centre, and the larger Thomson Street Sporting Complex in the south-west of the urban area. These areas provide for a total of six fields (soccer/league/touch football), one oval (cricket/AFL), five netball courts, five tennis courts and the Sussex Inlet Aquatic Centre. An assessment undertaken by Council (Shoalhaven City Council 2008a) of all sportsgrounds found that the Sussex Inlet area (being part of Planning Area 4) would require an additional sporting field based on population projections to 2036. The study identified that this field could be accommodated within existing Thomson Street Sporting Complex which provides a range of existing facilities. The study identifies the need for the field is not likely until the 2026 to 2036 period.

It is appropriate that such facilities be provided off the subject site in accordance with this study, with appropriate payments made in the form of development contributions towards the future provision of these envisaged facilities.

Council’s Public Open Space Plan (2008b) found that the existing average level of passive open space provision was around 12 square metres per person, and that this existing level of provision should be retained for the provision of future passive open space. This Plan also identifies that the catchment for local open space is predicated on a walking time of a maximum of 10 minutes which corresponds with 250 dwellings within 400-800 metres, and such parks should be of a minimum acceptable area not less than 3,000sqm or 0.3ha.

Allocation of appropriate passive recreation and associated areas (including playgrounds) should be fully determined at the development application stage, though it is likely that a larger integrated central park with a limited number of smaller local parks would be appropriate to service the entire site. Consideration should also be given to the provision of spaces in the eastern portion of the site that can be easily accessible to the existing and future communities. This may, for example, include negotiation with Council regarding the upgrade of the existing undeveloped open space area that protrudes into the site.

It is also noted that the site owner has proposed the redevelopment of the existing Sussex Inlet Golf Course into a higher standard 18-hole course for use by the general public. Should this proposal proceed, and given the demographics of the area, this would meet a key recreation market. Nevertheless, the provision of this privately

owned facility should not be assumed to negate the need to provide for broader active and passive recreational areas.

7.7 Summary Issues and Comments

A number of key issues and comments are identified in relation to the Social Environment and are presented in Table 13.

Table 13: Social Environment Key Issues and Comments

Issue	Comment
An aging and growing population	The Sussex Inlet area shows trends of an aging and growing population. This requires recognition of a variety of housing types and affordability levels, moving away from more traditional low density detached housing types in appropriate locations.
Employment, health and aged care	Opportunities for increasing the available level of employment, health and aged care facilities have been identified throughout the Sussex inlet and Shoalhaven areas more generally. Whilst ensuring not to undermine the existing town centre viability, new development area should add to the capacity of employment, health and aged care services in the area.
Community facilities	Provision of community facilities over and above a centralised neighbourhood precinct should include provision for a small community centre and child care opportunities.
Recreation planning	As a significant development, there will be requirements for both active and passive recreation. Strategic planning for the area suggests contributions towards off-site active recreation would be appropriate with integrated passive parks to be located within the various areas of the site.

8. Consultation

This section provides a review of consultation undertaken by Council and the proponent with respect to preparing the Environmental Study and associated reports.

8.1 Consultation by Council

A number of provisions of the EP&A Act prescribe consultation to be undertaken by council's in the preparation of Environmental Studies and LEPs. These include:

- Section 34A: Consultation with the Director-General of National Parks and Wildlife Service (and by inference the Director of NSW Fisheries), if in the opinion of the Council, critical habitat or threatened species, populations or ecological communities, or their habitats, will or may be affected by the proposal;
- Section 54: In reference to any requirements issued by the Director-General of the Department of Planning following Council's notification to the Department of its intention to prepare a Draft LEP;
- Section 62: Consultation with relevant public authorities or bodies and other persons;
- Section 66: Public exhibition of the draft LEP and the Environmental Study; and
- Section 117: Consideration of any directions made by the Minister for Planning in relation to the preparation of draft LEPs.

To date, Section 62 consultations have been undertaken and are further considered in the next section. Consultation under Section 34A, will only be required following the completion of this Environmental Study if Council are of the view that relevant ecological impacts will or may occur. No additional consultation requirements were identified by the Department of Planning in response to Council's Section 54 notification, and Section 66 will occur following the completion of the Environmental Study and draft LEP. Section 117 directions have been considered at Section 4.5.

8.1.1 Section 62 Consultations

Shoalhaven City Council carried out consultation with relevant agencies under Section 62 of the EP&A Act. Table 14 provides a summary of the agencies consulted and their comments (where received). A copy of the received Section 62 consultation letters is also provided in Appendix A.

Table 14: Section 62 Consultation Summary

Agency	Summary of comments received	Response
NSW Rural Fire Service	Site is identified on the Shoalhaven Bush Fire Prone Land Map and thus subject to the requirements of Section 79BA of the EP&A Act, and Section 100B of the <i>Rural Fires Act 1997</i> . The requirements of <i>Planning for Bushfire Protection 2006</i> are also to be considered.	Consideration of bushfire and compliance with <i>Planning for Bushfire Protection 2006</i> is considered in Section 5.7.
Fire Brigades NSW	Identify that the site is within the responsibility of the Rural Fire Service and no requirements are provided.	N/A

Agency	Summary of comments received	Response
Integral Energy	Notes that the impact of development on the subject land will require the existing electricity network to be augmented. Additional electrical load can be appropriately assessed when a proponent makes an application for the connection of load to Integral Energy's Network Connections Branch.	Electricity supply and infrastructure is considered at Section 6.6.
Roads and Traffic Authority	Does not object, in principle, to the development application.	N/A
Southern Rivers Catchment Management Authority	Advocates for retention of all environmental 7(a) and 7(d2) zones through conversion to E1 National Parks or E2 Environmental Conservation	All areas of high conservation value, including the existing 7(a) zoned land, is proposed to be retained in appropriate conservation zones.
	Advocate for use of the PVP Developer assessment tool in vegetation management	Vegetation assessment and management has been assessed using appropriate processes agreed with Council and OEH. Substantial review and verification of methods has been applied.
	Endangered Ecological Communities are to be identified, including the preparation of plant species lists to be determined from multiple plots	EECs have been identified mapped and agreed with Council and OEH. On site assessment methods were reviewed and agreed appropriate.
State Emergency Service	Recommends that any proposal consider flooding and coastal processes strategically in accordance with the NSW Government's Flood Prone Land Policy and Coastal Management Policy.	These matters are considered in Sections 3.1.2 (Coastal Policy) and 5.6 (Flooding). While the Flood Prone Land Policy has not been directly addressed, the techniques used to assess impacts has been reviewed and agreed by Council.
	Recommends that the developer conduct an Evacuation Capability Assessment – particularly the ability of the future community to evacuate the flood prone area.	A new flood free access road will be provided through the site connecting Sussex Inlet Road and the Badgee residential area. No Evacuation Capability Assessment has been prepared.
	Provision of a new flood free road should be provided to the existing Badgee residential area through the subject site prior to occupation.	A new road will be required between the existing Badgee residential area in the east and connecting to Sussex Inlet Road through the site, this will be required above the 3.1m AHD.
	Existing evacuation centres are at capacity during flood events. An additional evacuation centre should be identified to cater for any additional population in the floodplain (up to and including the PMF).	No new population will be located in the floodplain. Thus no new evacuation centre is required or proposed. New community facilities are nevertheless proposed and should be suitable for emergency purposes.
Department of Lands	Does not object, in principle, to the proposed draft LEP.	N/A

Agency	Summary of comments received	Response
Department of Primary Industries	LEP will need to give effect to the requirements for future development in the catchment of SEPP 14 wetlands to demonstrate no net impact on the hydrology, water quality or ecology of the wetland.	Hydrological considerations are provided in Section 5.5. Testing of a concept plan for the site demonstrates that the no net impact (NorBE) test can be met.
	DPI policy for new development on foreshore and riparian buffer zones adjacent to significant and ecologically sensitive areas should be a minimum of 100m in width measured from Highest Astronomical Tide Mark.	100m buffer zones are generally proposed around SEPP 14 Wetland areas which would be retained within conservation zones.
	Areas with high to moderate probability of Acid Sulfate Soil occurrence should be clearly indicated as an overlay on LEP maps and associated controls implemented to ensure no generation of acidic runoff to waterways.	ASS have been assessed and mapped for the site. Appropriate controls and actions would be required at development application stage. The Standard Instrument LEP is to contain standard clauses with respect to ASS.
Department of Environment and Climate Change – Wollongong	The South Coast Regional Strategy has an action that LEPs will not include further residential or rural residential zoning in the catchments of important coastal lakes, unless it can demonstrate neutral or beneficial effect on water quality as measured at the boundary of the proposed new zoning.	Hydrological considerations are provided in Section 5.5. Testing of a concept plan for the site demonstrates that the no net impact (NorBE) test can be met.
	The South Coast Regional Strategy provides a key action that new urban development is to be prohibited in LEPs on land assessed as being of high conservation value.	HCV land has been identified, mapped and is excluded from development zones.
	Outlines requirements under the Sussex Inlet Settlement Strategy.	The Sussex Inlet Settlement Strategy is outlined in Section 3.3.1.
	Outlines requirements under the Independent Review Panel for the South Coast Sensitive Urban Lands Review.	The South Coast Sensitive Urban Lands Review is outlined in Section 3.2.3.
	EEC boundaries should be verified by detailed mapping and excluded from the development area.	EECs are considered in Section 5.8, have been mapped for the site, agreed with OEH and excluded from development areas.
	The need for conservation corridors is supported. The species and local populations need to be considered in determining width and to include additional width to counter edge effects.	The need for and provision of wildlife corridors is outlined in Section 5.9.
	Development should be excluded from the existing environmental protection zones on the site.	Existing environmental protection zones have been retained in the north-east of the site.
NSW Police	No response received	

Agency	Summary of comments received	Response
Department of Education and Training	No response received	
Department of Water and Energy	No response received	
Department of Environment and Climate Change – Planning and Heritage Office	No response received	
Telstra	No response received	

8.2 Planning Focus Meeting

A Planning Focus Meeting was held by the proponent on 7 November 2007 at the Sussex Inlet Golf Club (being part of the site). A number of representatives were present including a range of State Agencies, Council and a number of the proponent's specialist consultants. The meeting was designed to discuss a range of issues in an open forum for the consideration of all involved. It was also an opportunity for the Department of Planning to gain an understanding of the site and potential issues prior to providing the Director General's Requirements (DGRs) for the proponent's submission of an application under the now repealed Part 3A of the EP&A Act.

Matters raised in the meeting included:

- That the proposal was not currently permissible and any application would need to be developed concurrently with a rezoning of the site;
- Investigation and the long term management of the proposed open space areas would need to be considered;
- Two major issues relating to the South Coast Regional Strategy – the need to consider high conservation value lands, and the sensitive urban lands review;
- Bushfire is a major concern and there may be a need for evacuation areas etc. Compliance with *Planning for Bushfire Protection* will be required;
- Provision of a flood free access road to the northern part of Sussex Inlet is supported;
- Department of Primary Industries would be seeking 100m buffers to relevant waterbodies and the ground truthing of the wetlands; and
- Stormwater management is a key issue and would need to be considered in response to the Catchment Action Plan for the area.

These matters have been considered in the development of specialist reports and the compilation of this Environmental Study.

8.3 Consultation by the Proponent

A public meeting was conducted by the proponent on 5 August 2009 at the Sussex Inlet Community Centre. A range of local business, community organisations, Council representatives and Councillors were invited, as well as advertisements being displayed and distributed to encouraged general public attendance. Around 60 people attended the meeting, including Council staff and Councillors Fergusson, Watson, Proudfoot and Miller (apologies were given for Councillors Green and Ward).

The meeting outlined the process undertaken to that time and what the future process would entail. Several of the proponent's consultants outlined some of the constraints on the site and how these were being considered in the overall planning. Questions were taken from the audience and opportunities identified for future involvement. Feedback forms were also provided at the meeting and three responses were received by the proponent. These responses were generally positive with respect to the development proposal, though some noted that the presentations provided were of a poor quality.¹

A second community initiated meeting was also held in January 2010, with a range of projects being discussed including the subject site. Discussions and comments at that meeting are understood to have been positive towards the proposal as presented by the proponent².

8.4 Summary Issues and Comments

A number of key issues and comments are identified in relation to Consultation undertaken and are presented in Table 15.

Table 15: Consultation Key Issues and Comments

Issue	Comment
Section 62 consultations	The proposal is generally consistent with Section 62 consultations. Where inconsistencies occur, the intent of the consultation has been achieved through alternative or improved methods. In some instances references are no longer applicable and have been taken to mean a newer version or replacement of the document referred to.
Public consultation	Additional public consultation is proposed by the proponent once a development application is finalised. This would include a project website, public display in prominent local area, and an additional formal public meeting.
Additional statutory consultations	Additional consultation is proposed to be undertaken by Council including Section 34A consultation, and additional consultation with the Department of Planning's Coastal Branch prior to finalising the Draft LEP.

¹ It is noted that the author of this report was not present at the meeting and has relied on meeting notes and information provided by the proponent and Council.

² It is noted that the author of this report was not present at the meeting and has relied on information provided by the proponent.

9. Land Use Strategy

This Section seeks to establish a land use strategy for the site as a basis for the preparation of a draft LEP. The land use strategy will utilise the information and outcomes from the previous sections to inform and guide its direction and ultimately determine and recommend the development potential of the site.

9.1 Development Precincts

For the purposes of outlining the future structure of the site, four precincts are identified:

- ▶ The **“Eastern Precinct”** which adjoins the northern portion of the existing Sussex Inlet urban area (otherwise known as the Badgee urban area);
- ▶ The **“Western Precinct”** which lies to the west of the identified wildlife corridor between Badgee Lagoon and existing high value conservation lands to the north of the site;
- ▶ The **“Southern Precinct”** which lies to the south of Badgee Lagoon and adjoins Sussex Inlet Road; and
- ▶ The **“Central Precinct”** which generally aligns with the area incorporating Badgee Lagoon, its surrounds and linkages to existing high value conservation lands to the north of the site.

These precincts are generally illustrated at Figure 20.

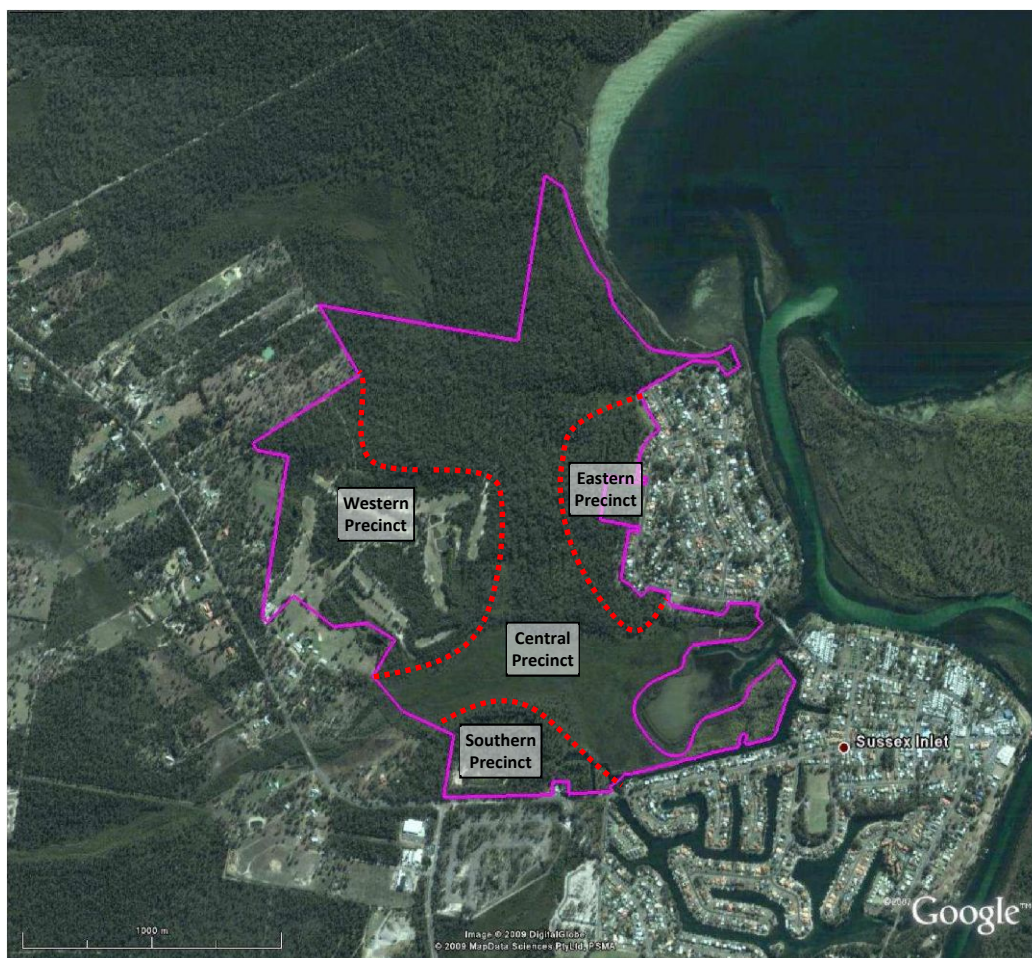


Figure 20: Site Land Use Precincts

9.2 Eastern Precinct Area

The eastern boundary of the Eastern Precinct adjoins the existing northern section of the Sussex Inlet urban area (otherwise known as the Badgee urban area). The western boundary of this precinct adjoins existing vegetated areas and the identified wildlife corridor that extends through the centre of the site, and forming part of the Central Precinct. The southern boundary adjoins the Badgee Lagoon SEPP 14 Wetland (no. 312). Virtually the entire area is vegetated, with undulating landform that falls from a ridge running from east to west through the centre of the precinct.

The area is a logical extension of the existing urban area, with a large portion of the area currently being zoned for residential development (zone 2(c) Residential Living). The provision of a number of access points can provide a high level of connectivity between the existing and future residential areas. The area also provides direct connection to existing services, and includes a large portion of the site which has previously been allowed for in Shoalhaven Water's sewer and water planning.

However some areas are also subject to ecological constraints, including EECs and SEPP 14 wetland areas. These areas are considered to be of high conservation value, and new urban development is prohibited on such lands under the South Coast Regional Strategy. Setbacks or buffers to sensitive areas are also to be protected to ensure no edge effect impacts on these sensitive areas. Buffers of 100m to SEPP 14 wetlands and 50m to EECs are recommended, consistent with requirements of OEH and Council.

9.2.1 Recommended Development Outcome

Relatively low density residential development would be appropriate for this precinct. This type of development would be consistent with the existing neighbouring urban area and enable an appropriate level of compatibility. The *R1 – General Residential* zone would provide the appropriate level of housing flexibility, and may include small scale neighbourhood shops, child care centres and community facilities, as well as a variety of residential development types including dwelling houses, residential flat buildings and seniors housing. Such uses should be centred on the main east-west flood free axis road, with potential for rear laneways accompanying this road to reduce traffic conflicts, increase kerbside parking and ensure high levels of passive surveillance.

Opportunities for extensive open space linkages could be provided within asset protection zones (APZs), with areas to the north and south potentially required for stormwater treatment and more extensive open spaces. These areas could then be connected by pedestrian or shared user pathways around the western boundary of the site (within APZs).

The centrally owned Council open space area should also be integrated into this precinct through embellishment that provides for additional local level parklands. A high level of passive surveillance of this area would be required to ensure safety of the resulting vegetated "island". An open space area may also be appropriate on Suncrest Avenue to the south of the Precinct to provide for a landscaped entry feature area/parkland.

A development scenario for the Eastern Precinct has been developed at Figure 21 that demonstrates these opportunities. This scenario provides for a flood free access road commencing from the northern side of the existing Council owned open space land and continuing through the Central and Western Precinct areas (east-west). Connections to the existing Badgee urban area would also be provided on the southern side of the Council owned open space area and to the south adjoining the Badgee Lagoon wetland.

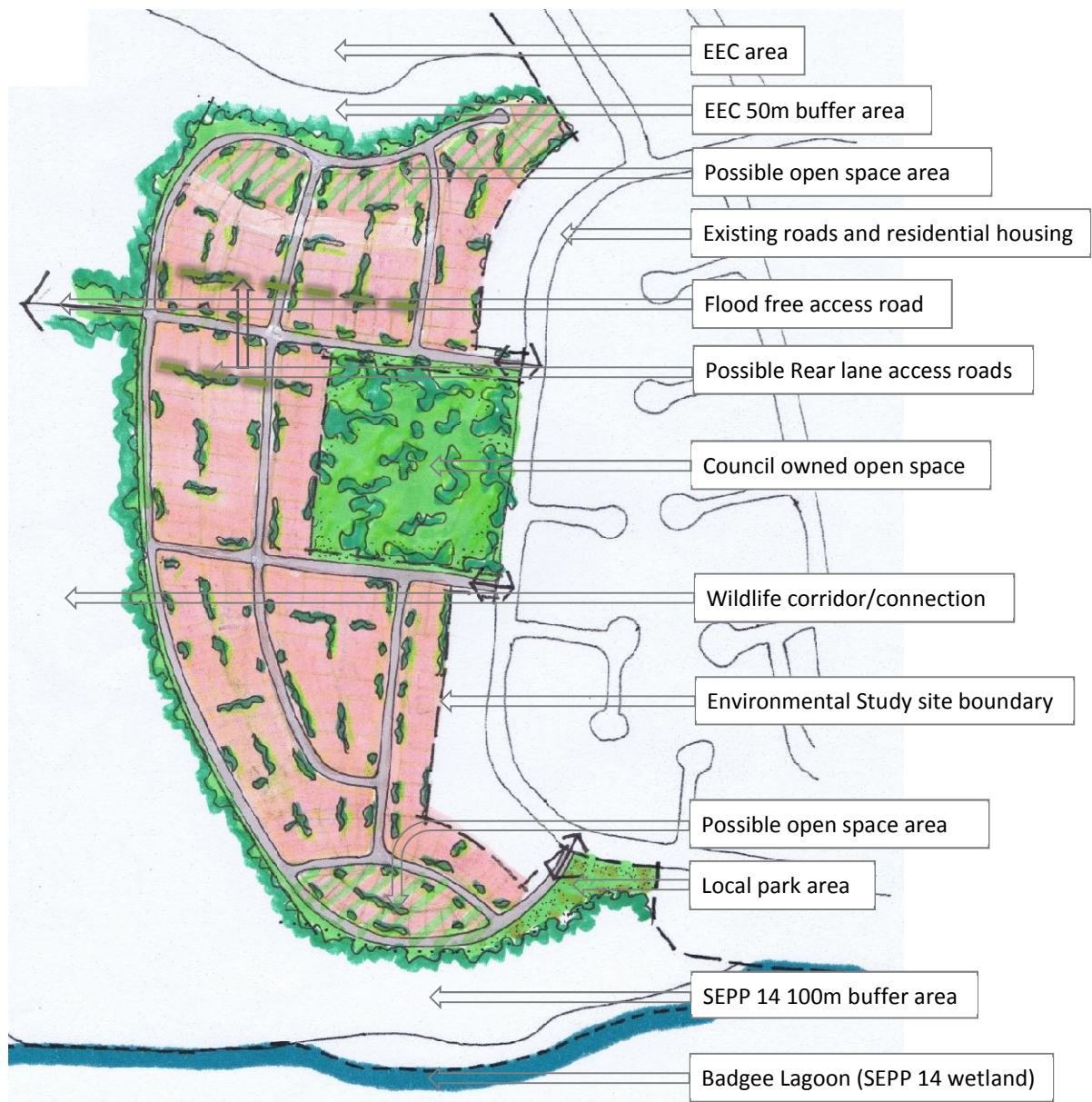


Figure 21: Eastern Precinct Development Concept

9.3 Western Precinct Area

The eastern and northern boundaries of the Western Precinct adjoin existing vegetated areas and the identified wildlife corridor that extends through the centre of the site and which forms part of the Central Precinct. The western boundary of this Precinct adjoins the rural living style development which extends westward along Sussex Inlet Road, and the southern boundary adjoins the Badgee Lagoon SEPP 14 Wetland (no. 312).

Large areas of the Western Precinct are disturbed by the existing Sussex Inlet Golf Course. The remaining area is predominantly vegetated, with undulating landform that falls from a ridge running from east to west through the upper portion of the Precinct.

Like the Eastern Precinct, there are some areas that are subject to ecological constraints, including EECs and SEPP 14 wetland areas. These areas are considered to be of high conservation value, and new urban development is prohibited on such lands under the South Coast Regional Strategy. Setbacks or buffers to sensitive areas are also to be protected to ensure no edge effect impacts on these sensitive areas. Buffers of 100m to SEPP 14 wetlands

and 50m to EECs are generally recommended, consistent with requirements of OEH and Council, with the exception of previously cleared and maintained areas associated with the existing golf course. These existing cleared areas could be retained as part of a golf course with an appropriate management plan to ensure edge effects and other impacts are mitigated.

Two small waterways are located in this precinct, one of which is identified as a Category 3 riparian buffer area in the Sussex Inlet Settlement Strategy. In the context of surrounding urban development, there may be opportunities to rehabilitate these currently degraded areas and to include these as part of the urban form/open space network. The categorisation of these waterways and any recommended core riparian zone areas would need to be confirmed.

9.3.1 Recommended Development Outcome

Being separated from existing urban areas, there is potential to provide some alternative development in the Western Precinct, including small scale shopping, mixed use or higher density residential area based around a small “Main Street”. These areas should be concentrated to the north eastern corner, where they can be within reasonable walking or cycle distance from the Eastern Precinct and Badgee urban area via the flood free access road that extends through the Central Precinct.

This type of development would assist in diversifying the available housing whilst providing some level of local scale social inter-connectedness through a centralised community meeting area. These areas may contain aspects of district open space, community facilities, higher density housing, shop-top housing and home office suites. Immediately surrounding this local community based area, further housing options could be provided in the form of seniors housing, residential flat buildings and other housing types of higher than traditional density.

Further to the south-west and more separated from the central facilities would be more traditional low density housing, which would provide further extension of the overall Sussex Inlet urban area.

While a number of standard LEP zones through this area could be used, the detail of their boundaries should be subject to more detailed social and economic analysis that could be incorporated into a DCP or staged masterplan for the site. The use of the *R1 – General Residential* zone would therefore be an appropriate zone for this precinct that allows for a range of uses that can be further detailed at the DCP and development application stage.

Opportunities for extensive open space linkages could be provided within APZs, with small local parks being disbursed throughout the network and enabling a high level of access from within the subdivision. Pedestrian or shared user pathway connection would be developed from the eastern precinct to encourage a larger interconnected open space network and easy access to the centralised local community based area. Potential also exists, depending on condition and future treatments, for two small waterways to be integrated into the open space networks or conserved as environmental assets.

A development scenario for the Western Precinct has been developed at Figure 22 that demonstrates these opportunities. This scenario provides for a main central link road that completes the flood free access road commencing in the Eastern Precinct through to Sussex Inlet Road. Minor roads then extend from this through road, including the “Main Street” being orientated to the north-east and creating a main intersection at this location.

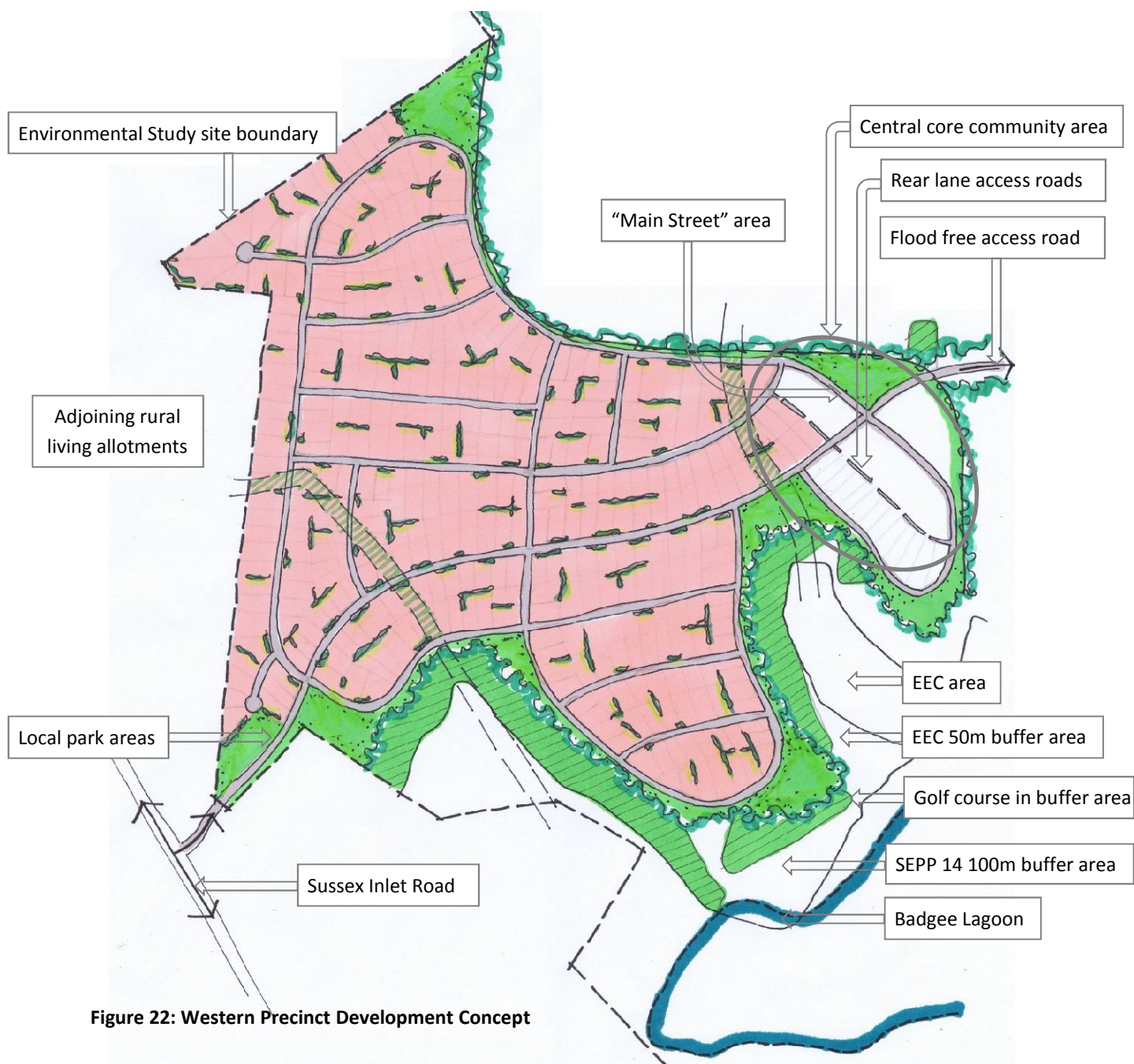


Figure 22: Western Precinct Development Concept

9.4 Southern Precinct Area

The Southern Precinct is generally bounded by the Badgee Lagoon SEPP 14 wetland to the north and Jacobs Drive (Sussex Inlet Road) to the south. Large areas of the Southern Precinct are below the 3.1m flood level. Much of this precinct is forested, though some areas are disturbed by previous quarry or gravel pit use, and some of this area was also noted to have some illegally dumped waste and vehicles (Coffey Geotechnics 2008).

As a result of the low lying nature of the area, large areas are proposed to be filled (WMA Water 2010). Given the OEH and Council requirement for a setback or buffer to the SEPP 14 Wetland area and EECs, some of this area proposed for filling is unable to be included within any development zone and is proposed to be protected in, or rehabilitated to, its natural state. Furthermore, areas proposed to be filled within the Badgee Lagoon catchment need to be considered with respect to potential environmental impacts and Section 117 directions in relation to

flood impacts. The Sussex Inlet Settlement Strategy identifies that land within the Flood Planning Area (1% AEP) will not be rezoned to provide for residential development.

Further discussion is therefore recommended between the proponent, Council and OEH with respect to these areas to determine whether the proposed filling of this land meets the requirements of the Section 117 directions and what subsequent uses may be appropriate.

9.4.1 Recommended Development Outcome

While located adjoining the main access road to the Sussex inlet area, the southern precinct is largely separated from the commercial centre or Sussex Inlet, as well as from the proposed local community area in the Western Precinct. Some more densely developed residential uses are located immediately to the south of Jacobs Drive, however this form of development in a relatively isolated urban area is not recommended in the Southern Precinct.

In available development locations, and taking into account flood liability and sensitive environmental areas including their buffer areas, it would be recommended to allow for a variety of housing, though be generally low density housing within the R1 zone. Should the proposed filling of the site be supported, a larger area of urban land would be recommended to the extent of buffer areas of the adjoining EEC and SEPP 14 wetland. At the eastern side of this Precinct, larger residential sites would be supported with direct access to Jacobs Drive/Sussex Inlet Road, providing the opportunity for an increase in density.

Like the Eastern and Western Precincts, an integrated network of open space would be envisaged adjoining the conservation areas, with pedestrian or shared-user paths connecting local parks through asset protection zones. Road connections would be recommended in at least two locations along Jacobs Drive/Sussex Inlet Road, as well as allowing for a connection to the existing road reserve to the north-west.

A development scenario for the Southern Precinct has been developed at Figure 23 that demonstrates these opportunities. The hatched area indicates the extent of the potential urban uses below the 3.1m AHD flood line that would require filling and is subject to further confirmation prior to being zoned for urban purposes.

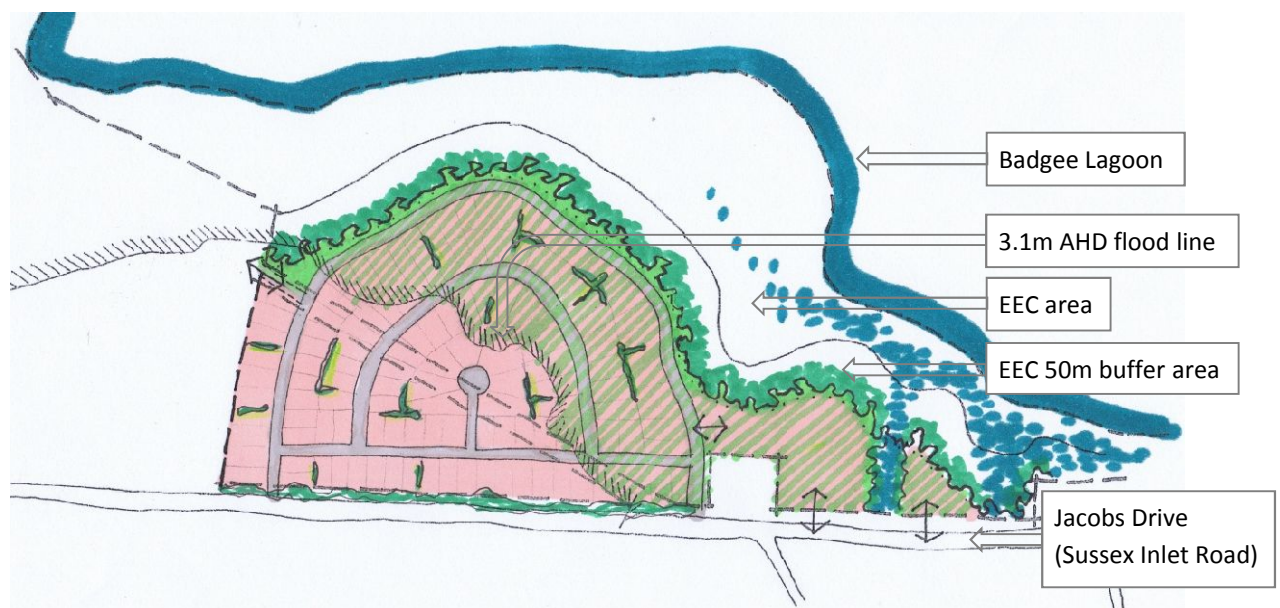


Figure 23: Southern Precinct Development Concept

9.5 Central Precinct Area

The Central Precinct area comprises the remaining area of the site and includes the most significant environmental attributes including areas adjoining SEPP 14 wetlands (306 and 312), large areas of EECs, as well as the central wildlife corridor/connection. The entire of this area is proposed to be protected under a suitable conservation zone such as the E2 – Environmental Conservation Zone.

As part of the dedication of this area, assuming that ownership would ultimately be transferred to Council, appropriate rehabilitation should be undertaken where required and a Conservation Management Plan be developed to guide the use and on-going management of these areas into the future.

9.6 Potential Development Yield

Based on the precincts discussed above, the approximate potential development yield is provided in Table 16. This yield is based on an assumed density of 10-12 dwellings per hectare taking into account all areas that are not proposed for conservation purposes. Allowances have been made for the inclusion or exclusion of areas identified in the Western and Southern Precincts as being areas that require further clarification. As this table demonstrates, there is significant development potential at the site, with a range of between 620 and 844 dwellings being envisaged at relatively low densities.

Table 16: Approximate Potential Development Yield

Precinct	Yield including hatched areas	Yield excluding hatched areas
Eastern Precinct	14.4ha 144 – 173 dwellings	14.4ha 144 – 173 dwellings
Western Precinct	44.7ha 447 – 537 dwellings	43.0ha 430 – 516 dwellings
Southern Precinct	11.2ha 112 – 134 dwellings	4.5ha 45 – 54 dwellings
Total	70.4ha 704 – 844 dwellings	62.0ha 620 – 744 dwellings

9.7 Golf Course Potential

Under the Standard Instrument LEP, a *Recreation Facility (Outdoor)* is the term used to define large recreational facilities such as golf courses. Within Council's Draft Standard Instrument LEP (DSLEP 2009) *Recreation Facility (Outdoor)* is not permissible within the *R1 – General Residential* zone.

However, development of an integrated golf course and residential estate, as envisaged by the proponent in various forms, could be facilitated through inclusion of the site, or an area of the site, in *Schedule 1 – Additional Permitted Uses* of the Standard Instrument LEP. This, or another alternative process enabling such as outcome, should be considered in any future planning proposal to the Department of Planning to enable this form of development to occur.

Given the extensive areas of the site that have been determined to be HCV lands, the remaining development footprint may not be of sufficient size to feasibly enable this to occur. Nevertheless, the provision of a golf course on the site could still be progressed in-lieu of urban development, and would be subject to detailed design considerations to be undertaken by the proponent.

9.8 Land Use Plans

Based on the above precinct concept planning, Figure 24 identifies the envisaged concept land use plan that could be used to provide direction to a DCP or masterplan for the site. These indicative land uses do not constitute fixed zones, and a broad based residential zone, such as the *R1 – General Residential* zone, would be recommended as a blanket zone across the site (with the exception of the conservation and golf course areas as indicated) to enable an appropriate level of flexibility for the site into the future.

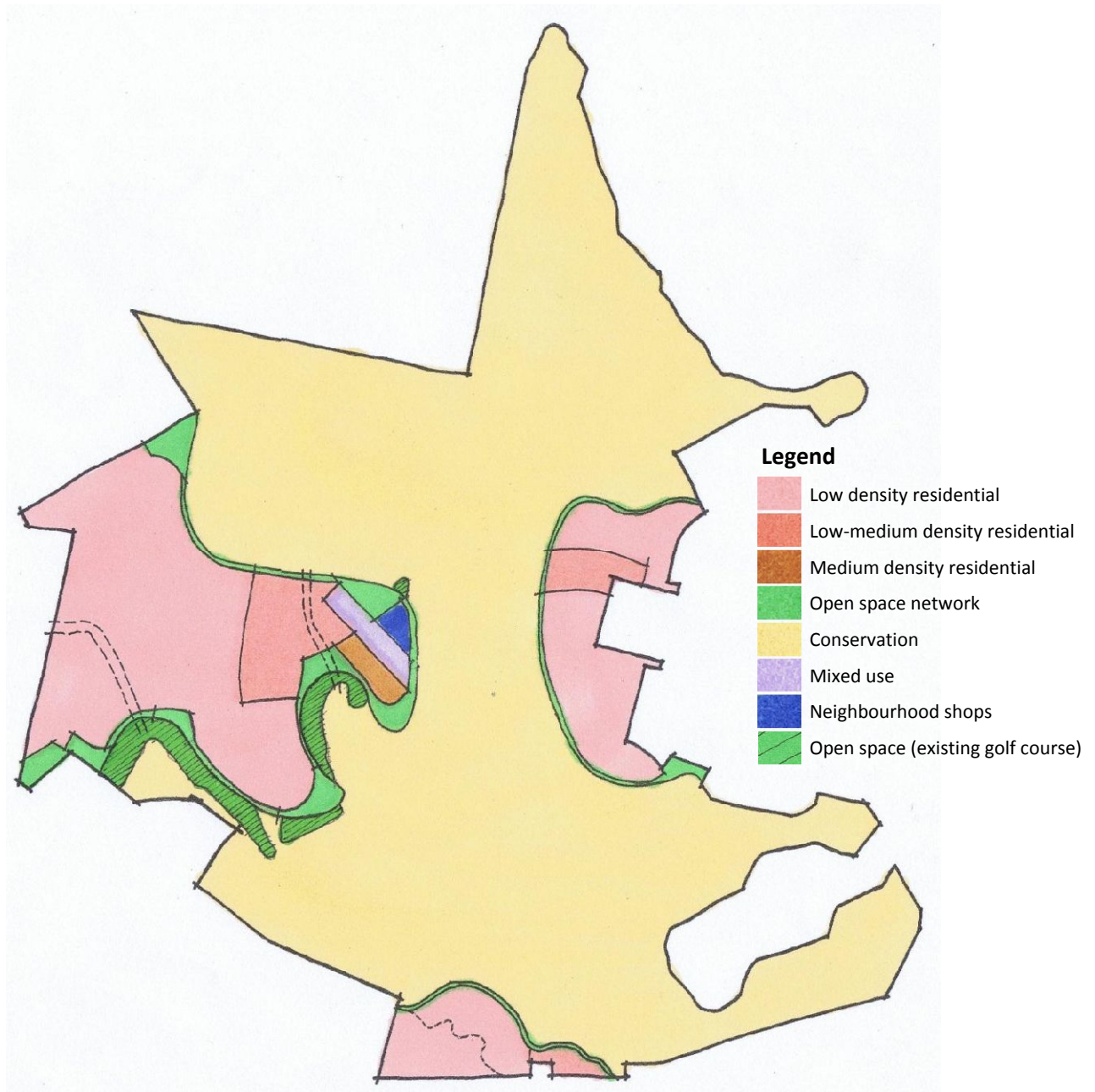


Figure 24: Concept Land Use Plan

10. Conclusions and Recommendations

This Environmental Study Report identifies that significant development potential exists within the subject site. Nevertheless, the area is not without sensitive environmental attributes that should be retained and enhanced through appropriate zoning and protection. The remaining development footprint should seek to integrate into the existing urban areas, providing current and future residents and businesses the opportunity to build a cohesive and well services community.

Further steps are required to ensure that the site can continue to progress towards final development. Many of these steps will ultimately provide the detail and assurances required to implement the project in a sustainable and effective way. A number of recommendations have been identified as a result of this Environmental Study Report and are further outlined below. Provided these are implemented, the future development of the site should form a valuable component of the future of the Sussex Inlet area.

The key recommendations resulting from this Environmental Study include:

- ▶ That the site be identified as part of the Urban Release Area Map as part of a Standard Instrument LEP;
- ▶ That a DCP be prepared for the site, in accordance with requirements of an Urban Release Area, to guide the development in terms of its detailed urban design and planning requirements;
- ▶ That any “rezoning” of the site provide for an appropriate level of flexibility to achieve the planning intent as discussed through the precinct planning and land use concept plan at Figure 24, and the constraints and opportunities presented by the site;
- ▶ That further detailed investigations be undertaken in consultation with Council, OEH, and NSW Office of Water in relation to:
 - The identification of the watercourse order and any recommended core riparian zone requirements for waterways through the south-western portion of the site; and
 - The filling of land within with 1 in 100 flood area, and in areas with direct run-off to Badgee Lagoon, given the Section 117 directions with respect to flood liable land, and potential for environmental impact on Badgee Lagoon.
- ▶ That detailed investigations be undertaken with respect to the local community centre/main street area to ensure an appropriate balance between alternative land uses, economic development and compatibility with the existing Sussex Inlet commercial area;
- ▶ That open space connections be provided throughout the boundaries of the precincts (where adjoining natural areas), to provide a distinct connection and relationship between the development areas and the surrounding natural environment;
- ▶ That the boundary of the SEPP 14 wetlands be confirmed and mapped in detail to guide the boundary of zones where applicable;
- ▶ That sensitive natural areas be protected by buffers, to be included in appropriate environmental conservation zones, at distances of 50m around EECs and 100m around SEPP 14 wetlands as required by the OEH and Council, with the exception of previously cleared and maintained areas associated with the existing golf course. These existing cleared areas could be retained as part of a golf course with an appropriate management plan to ensure edge effects and other impacts are mitigated;

- That water quality treatment devices, including WSUD and detention basins, be provided as part of integrated open space areas and in accordance with the principles of Neutral or Beneficial Effect on sensitive receiving waters;
- That a Conservation Management Plan be prepared for all land to be conserved in conservation zones, as well as an Open Space Management Plan designed to ensure the integration of all publicly accessible open space areas; and
- That, in accordance with the Department of Planning's Section 54 response, Council liaises with the Department to ensure that regional infrastructure can be adequately provided for through the Draft LEP.

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Appendix A

Section 62 Consultation Letters

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Revision 2 – Issued 14 September 2011

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