



West Culburra Mixed Use Concept Plan Major Project 09-0088 Environmental Assessment

Response to Submissions

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West Culburra Mixed Use Concept Plan

Response to Submissions

In preparing this response to submissions the proponent has carefully reviewed each of the submissions. The Concept Plan has been amended in response to the submissions. The amended plan (Drawing No. 25405-37) should be read in conjunction with this response.

Each part of the response identifies the issues raised, and the submissions in which the issue is raised, and concludes with a response to each issue.

This response to submissions is structured in ten parts.

Part One outlines the changes that have been made to the Concept Plan. It also details those elements of the Concept Plan that the Proponent considers it vital to retain following a careful review of the comments in the submissions.

Part Two outlines the current (SLEP 1985) and proposed (Draft SLEP 2013) zonings to establish the permissibility of the proposed uses.

Part Three discusses the foreshore area. The foreshore area attracted the most attention in the submissions; the proponent has made a number of changes to the foreshore area of the concept plan in response to the submissions.

Part Four reviews the several encroachments into the catchment of Lake Wollumboola. A dominant theme of many submissions was a concern to protect the lake from any adverse environmental effects. Each encroachment and the proposed mitigation actions for each are outlined in detail.

Part Five discusses the proposed vegetation removal and the proposed offsets.

Part Six reviews the impact of the proposal in terms of population and housing demand.

Part Seven reviews matters relating to subdivision design, the density of development and the overall urban design concept.

Part Eight deals with matters relating to water quality control and the monitoring system.

Part Nine deals with traffic in response to issues raised by SCC and RMS.

Part Ten considers the provision of infrastructure and the staging of the project.

Part One: Changes to the Concept Plan

The object of the Part 3A West Culburra Mixed Use Concept Plan is to accommodate primarily residential development that will enable Culburra to increase in permanent and tourist population.

1. Changes to the plan

A number of changes to the plan have been made in response to the submissions. These are outlined below.

1.1. The foreshore area and the 7(a) zone

The submissions from OEH, DoPI, Department of Primary Industry, Shoalhaven City Council and some private submissions either questioned the permissibility of or sought the removal of some or all of the water quality treatment elements (swales and basins), the cycle/walkway and various recreational elements such as children's play areas, keep fit equipment, shelters and seating etc. from the 7(a) zone.

In response to these submissions all the water quality elements have been relocated outside the 7(a) zone, together with the recreational elements such as children's play areas.

- 1.2. The principal drainage swales are now located immediately adjacent to the outer boundary of the 7(a) zone thus affording extra protection to the zone. Crossings of the swales are located at strategic positions to enable the pedestrian network in the residential area to connect to the cycle/walkway. Locations for children's play areas and other embellishments are located at breaks in the system of swales; some of these are also locations for pumping stations. Generally these locations are at intersections between the foreshore drive and key transverse roads linking the foreshore drive and the collector road. These intersections are both highly accessible and very visible.
- 1.3. As a consequence of the above changes the area available for residential development has been marginally reduced necessitating some changes to the subdivision layout. The most affected area is the central section (Stage 3) where there is a minor reduction in the number of lots and the lots are slightly reduced in area.
- 1.4. There was strong criticism from residents of the proposed five-storey units on the south side of Culburra Road. DoPI stated that residential development is not permissible in the 5(a) Special Uses zone and required its removal. The area (Stage 1) has now been surveyed and an alternative arrangement of small-lot dwellings is

proposed. Although the area allocated to this form of development extends into the catchment of Lake Wollumboola, it can all be drained by gravity to the Crookhaven catchment (Culburra Road). The proposed development extends to the edge of the woodland, that is a depth of about 125m. The free-standing band of Forest Red Gum will be retained in open space within the proposed subdivision.

2. What it is not proposed to change

- 2.1. Some private submissions, notably the Lake Wollumboola Protection Association Inc., sought the complete removal of the proposed foreshore cycle/walkway, allowing only narrow 'finger' pathways off the proposed ridgeway cycle/walkway. OEH allowed the cycle/walkway provided it followed the route of the existing track giving access to the rising main sewer line from Greenwell Point which is aligned along the foreshore, partly defining and partly within the 7(a) zone. Others considered the cycle/walkway to be not permissible in the zone. In our opinion the proposal is permissible in the zone together with a limited range of embellishments including the proposed interpretation panels, seating, shelters, boardwalks and bird hides. It is our strongly held view that the controlled access that can be achieved with good design is superior to the potential for indiscriminate access with its potential for random vandalism that a 'no-access' policy implies. It is our view that the former will achieve better 'community policing' than the latter.
- 2.2. Shoalhaven City Council requested that the visual corridors to Curleys Bay and Coolangatta Mountain be assessed against the objectives of the E2 zone (equivalent to the 7(a) zone – see Part Three under). One or two submissions thought the visual corridor was designed to provide water views for the (now abandoned) units south of Culburra Road whilst a few saw the vistas as being a positive attribute for Culburra Beach. Notwithstanding that some minor clearing of estuarine vegetation within the 7(a) zone is proposed, the proponents consider the vistas to be a vital element of the urban design concept. The vistas are intentionally narrow partly to limit the extent of clearing involved, partly to heighten the effect of visual access to Curleys Bay and partly to give visual cues to the fact that physical access to the Bay can be obtained (the route of the foreshore cycle/walkway) through the vista park.

The proponents consider that the foreshore mangrove vegetation type exists in abundance in the Crookhaven estuary (estimated to be at least 12000m of estuary frontage) (see Fig 16B Appendix O, EA) and that the clearing of a 50m wide corridor to provide a clear visual and physical access to the edge of Curleys Bay, a public

domain experience that does not exist anywhere else around Curleys Bay, is a minor ecological cost for a significant public benefit. Vista Park is a vital part of the urban design intent for West Culburra.

- 2.3. The proponent intends to retain the 'leisure hub' concept at Cactus Point. It is evident from the submissions, including that of OEH, that many believe that the 7(a) zone at Cactus Point is dominantly mangroves, salt marsh and swamp oak. In fact the 7(a) zone is dominantly pasture with a thin discontinuous band of Swamp Oak at the edge of the estuary; this edge is partly worn away by wave action or erosion, exposing partly eroded middens, and, in our opinion needs stabilisation. The grassland extends to the waters edge in this section of the 7(a) zone. The northern orientation of Cactus Point and the attractive views across the Crookhaven River make this location ideal for recreation purposes. The 'leisure hub' concept is a vital component of the overall plan which aims to diversify the economic base of Culburra Beach.

Part Two: Current and Proposed Zonings and Proposed Uses

2.1 Review of Submission

DoPI sought clarification of the zoning of the land on which the components of the project are located to establish the permissibility of the various proposed uses. The relevant instrument is Shoalhaven Local Environmental Plan 1985 (SLEP 1985). Draft SLEP 2013 is also a matter for consideration.

2.2 SLEP 1985

The zonings of SLEP 1985 were based on there being considerable development in the lands west of Culburra. Some 400ha were zoned Residential 2(c) with an estimated capacity of some 3000 dwellings and a potential population of 7500. Substantial areas were allocated to a 3(f) business zone (11ha), a 4(a) industrial zone (14ha), a high school (10ha), a sports complex (10ha), and community purposes (1.5ha).

The foreshore area to the Crookhaven River and Curleys Bay was zoned 7(a) Environmental Protection with an estimated area of about 25ha. The foreshore areas to Lake Wollumboola and riverine areas along Downs Creek and Wattle creek were also zoned 7(a) with an estimated area of 55ha. The uses and areas imply an integrated and significant urban expansion of Culburra, which at that time was planned to be a major town along with Huskisson/Vincentia and Milton/Ulladulla.

2.3 The Residential 2 (c) zone

The objective of the Residential 2(c) zone is:

'to provide for new residential areas with a range of housing types with provision for urban facilities to serve the local community'.

A wide range of uses are permissible in the zone. Prohibited uses include those that have significant externalities and are generally deemed incompatible with a residential environment

2.4. The 3(f) Business (village) zone

The objective of the 3(f) Business (village) zone is:

'to provide for village retail and business development to serve the needs of the village community and which is compatible with the village environment'.

A wide range of uses are permissible in the zone. Prohibited uses include most types of residential accommodation and certain industrial uses with significant externalities. Residential flat buildings are permissible in the zone.

2.5 The Industrial 4(a) General zone

The objectives of the Industrial 4(a) General zone are:

- a. to provide for a wide range of general industrial development, including warehousing, processing and general service industries;
- b. to allow non-industrial uses which are ancillary to industry;
- c. to allow for retailing of bulky goods, and
- d. to allow other non-industrial uses that do not significantly compromise the existing or potential industrial development of the area.

Prohibited uses include low density types of residential development and a range of non-residential uses that are incompatible with industrial uses, such as hospitals, educational establishments, hotels and places of public worship.

2.6 The 5(a) Special Uses zone

The objective of the 5(a) Special Uses zone is:

'to identify land for certain community facilities and services including areas for off-street parking in private ownership'.

The use specified in scarlet lettering on the map is the only permissible use.

2.7 The 7(a) Environmental Protection (Ecology) zone

The objectives of the 7(a) Environment Protection (Ecology) zone are:

- a. to protect and conserve important elements of the natural environment, including wetland and rainforest environments;
- b. to maintain the intrinsic scientific, scenic, habitat and educational values of natural environments;
- c. to protect threatened species and habitats of endangered species;

- d. to protect areas of high bio-diversity value; and
- e. to protect and enhance water quality in the catchment.

Permissible uses include agriculture, aquaculture, bed and breakfast accommodation, dwellings, roads and structures for educational and recreational purposes which assist in promoting and interpreting the area's ecological values.

All other uses are prohibited.

2.8 Draft SLEP 2013

The exhibited Draft SLEP 2013 made one significant change from SLEP 1985 with regards to Culburra Beach. This followed the Commission of Inquiry into a proposed residential development at Long Bow Point which led to that application being refused consent; a subsequent South Coast Sensitive Urban Lands Review panel determined that the land within the catchment of Lake Wollumboola, including Long Bow Point, is considered unsuitable for urban development' and 'the remaining land within the catchment of the Crookhaven River is considered suitable for limited urban development'. The consequence of this determination was that the area zoned for urban expansion of Culburra was reduced to an area of about 150ha defined, on its south side, by an assumed ridgeline being the divide between the catchments of Lake Wollumboola and the Crookhaven River. This reduced the capacity of the land zoned for residential purposes to about 1500 dwellings. The land excised from the previous residential zoning was re-zoned in the draft SLEP 2013 to either E2 or RU2. The land for residential purposes is zoned R1.

The areas of the 7(a), 4(a), 3(f), and 6(a) zones remained the same as in SLEP 1985; they were allocated to the most appropriate zoning under the new template – namely E2, IN1, B2 and RE1.

The only notable changes are that the site for a high school was foregone and the zoning became E2 and the site for special uses (community purposes) was amended to R1.

2.9 The R1, B2 and IN1 zones

The objective for the R1, B2 and IN1 zones under Draft SLEP 2013 are virtually identical to the objectives of the comparable zones in SLEP 1985.

2.10 The E2 zone

The objectives of the E2 zone of Draft LEP 2013 differ in significant respects from the objectives of the 7(a) zone in SLEP 1985.

The objectives of the E2 zone are:

- a. to protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values;
- b. to prevent development that could destroy, damage or otherwise have an adverse effect on those values;
- c. to protect the scenic, ecological, educational and recreational values of wetlands, rainforests, escarpment areas and fauna habitat linkages.
- d. to conserve and, where appropriate, restore natural vegetation in order to protect the erosion and slippage of steep slopes.

The range of uses permitted with consent also varies in significant respects.

Uses permitted with consent include: Bed and breakfast accommodation, dwelling houses, emergency service facilities, environmental facilities, environmental protection works, home businesses, home industries, recreation areas, research stations, roads, water recreation structures and water supply systems.

The issues arising from these changes are discussed in Part Three; The Foreshore Zone (see under)

2.11 Post exhibition of Draft SLEP 2013 actions

Subsequent to the exhibition of Draft SLEP 2013 and following representations to Council made on behalf of Mr W. Halloran, owner of the subject Lands, Council resolved to suspend all the Halloran Lands from Draft SLEP 2013 with a view to preparing a Master Plan for all these lands. The object of the Master Plan is to determine the lands that should be allocated to urban development and the lands that should be allocated as offsets, these lands possibly becoming part of Jervis Bay National Park.

2.12 Table of proposed uses and zonings

Table 1. indicates the zoning in SLEP 1985 and Draft SLEP 2013 and the proposed uses in this Part 3A project. It demonstrates the degree of compliance of the proposed uses with the relevant zonings.

TABLE 1. PROPOSED USES AND ZONINGS

Area	Proposed Use	Zoning SLEP 1985	Complied	Zoning Draft SLEP 2013	Complied
Stage 1	Small lot development	Residential 2(c) and Special Uses 5(a)	Yes and No	E2 – Env conservation and R1 – General Residential	No and Yes
Stage 2	Residential and mixed used development	Residential 2(c)	Yes	R1 – General Residential	Yes
Stage 3	Residential and oval	Residential 2(c)	Yes	R1 – General Residential	Yes
Stage 4	Residential and 'leisure hub'	Residential 2(c)	Yes	R1 – General Residential	Yes
Stage 5	Industrial estate	Industry 4(a) General	Yes	IN1 – General Industrial	Yes
Town centre	Vista Park, hotel etc.	Business 3(f) village	Yes	B2 – Business-village	Yes
Foreshore	Conservation, restoration and management of ecological and cultural items, cycle/walkways and shelters for educational and recreational purposes.	7(a) Environmental Protection (Ecology)	Yes	E2 – Environmental Conservation	Yes

Part Three: The Foreshore Area

3.1. Review of submissions

The foreshore park concept attracted considerable comment in the submissions. Some, such as the Lake Wollumboola Protection Association Inc., sought total conservation with only limited access whilst others were generally supportive.

The submission from OEH emphasises the need for careful design and site planning to protect the sensitive environmental nature of the lands. OEH expressed a view that the layout could be further modified to avoid the Lake Wollumboola catchment. OEH stated the need for a redesign of the 7(a) zone, described as a foreshore buffer, to ensure it is managed for environmental purposes. OEH state the zone is not suitable as a mixed use zone 'including as a Leisure Hub and Foreshore Park'. OEH indicate that walking/bike path may be an exception to this, assuming it is based on the existing cleared sewer line access track. OEH is satisfied that development is 'unlikely to have a significant impact on threatened species and their habitats'. OEH suggest that further aboriginal heritage investigation will be required if ground disturbance is proposed in the foreshore area and the Cactus Point area.

OEH indicate their opinion that satisfying water quality requirements for the proposed development remains the greatest challenge; OEH emphasise the extremely sensitive nature of the wetlands and foreshore environments and state that 'considerable improvement of the water sensitive design and monitoring measures' is required (see Part Eight).

Finally OEH state that the development should only proceed 'if suitable offsets can be located and secured to ensure overall biodiversity values are maintained' (see Part Five).

Fisheries NSW does not support approval of the concept plan in its current form for the following reasons: (1) risk of adverse water quality impacts upon the Crookhaven River estuary and Curleys Bay, specifically the ability of the 100m riparian buffer to adequately filter pollutants emanating from the residential subdivisions; (2) reliability of the water quality assessment; (3) suitability of the Crookhaven River for foreshore tourist development, specifically the leisure hub stating that 'the waterway adjacent to the proposed development dries to an exposed mudflat at low tide'. Fisheries go on to say 'all that is appropriate is some low key canoe/kayak landing facilities'; (4) potential impact on oyster aquaculture, specifically adverse water quality impacts and certain direct impacts on adjacent oyster leases.

Other issues raised by Fisheries NSW include the inadequacy of the foreshore buffer, potential harm to marine vegetation (clearing for the vistas) and inadequate and inconsistent information on water quality management and monitoring.

NSW Office of Water (NOW) also express concern about compromising the buffer with a range of ancillary uses and has 'no direct objection to the provision of formalised access for low impact passive recreational uses in appropriate locations' but shares the concerns of Fisheries NSW with respect to the broader purposes indicated in the EA. NOW recommend a reconsideration of the type and extent of foreshore development at Cactus Point.

3.2. The Planning rationale of the Part 3A Project

The rationale adopted by the proponent is that the location of some 600 dwellings adjacent to a waterfront will inevitably lead to the future residents, both adults and children, seeking to access that waterfront. Such access is likely to be indiscriminate with unpredictable impacts on the items of significant cultural heritage (the middens) and on sensitive ecologies such as the coastal salt marshes. Acknowledging this the proponent has taken the view that a carefully designed and managed system of access within the 7(a) foreshore zone is the best method of securing the protection of the significant eco-systems and cultural artefacts.

3.3. Permissibility of the proposed uses under SLEP 1985

The 7(a) zone in SLEP 1985 has the following objectives:

- a) to protect and conserve important elements of the natural environment, including wetland and rainforest environments;
- b) to maintain the intrinsic scientific, scenic, habitat and educational values of natural environments;
- c) to protect threatened species and habitats of endangered species;
- d) to protect areas of high biodiversity value; and
- e) to protect and enhance water quality in the catchment.

Uses permitted with consent include, inter alia, 'roads, structures for educational and recreational purposes which assist in promoting and interpreting the area's ecological values'.

In our view the proposed cycle/walkway, the proposed seating and shelters, the proposed board walks, viewing platforms and bird hide, the proposed (as yet unspecified) measures to protect the aboriginal middens, the secondary pathways to particularly significant ecologies or cultural items (middens) and the proposed interpretative panels are all permissible in the zone. The water quality control structures are arguably not and have been relocated outside the 7(a) zone. The permissibility of the proposed children's play areas, keep fit equipment and other embellishments (such as public art) is debateable; these items are also relocated outside the 7(a) zone.

3.4. Permissibility of the proposed uses under exhibited Draft SLEP 2013

The foreshore zone in Draft SLEP 2013 is zoned E2 Environmental Conservation with the following objectives:

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.
- To protect the scenic, ecological, educational and recreational values of wetlands, rainforests, escarpment areas and fauna habitat linkages.
- To conserve and, where appropriate, restore natural vegetation in order to protect the erosion and slippage of steep slopes.

Uses permitted with consent include, inter alia, 'environmental facilities, recreation areas and roads'.

The standard definition of 'environmental facility' is:

'Environmental facility means a building or place that provides for the recreational use or scientific study of natural systems, and includes walking tracks, seating, shelters, board walks, observation decks, bird hides or the like, and associated display structures.'

and 'environmental protection works' is:

'Environmental protection works means works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and includes bush regeneration works, wetland protection works, erosion protection works, dune restoration works and the like, but does not include coastal protection works.'

and 'recreation area' is:

'Recreation area means a place used for outdoor recreation that is normally open to the public, and includes:

- (a) a children's playground, or
- (b) an area used for community sporting activities, or
- (c) a public park, reserve or garden or the like,

and any ancillary buildings.

In our opinion the proposed cycle/walkway together with the associated interpretive panels (see illustration 9, p 84 in the EA) and the provision of shelters, viewing decks and the like is entirely consistent with the objectives of both the 7(a) zone (SLEP 1985) and the E2 zone (Draft SLEP 2013).

In our opinion the proposed children's play areas and keep-fit equipment and other embellishments are also permissible in the E2 zone.

Further, it is our considered opinion that the proposed swales are in fact wetland protection works and are therefore permissible in the E2 zone.

3.5. Consideration of staging

Shoalhaven City Council, in its submission, recommend 'a staged proposal is requested for each stage of the foreshore park to be included with subsequent staged project applications'.

The proponent supports this recommendation. The foreshore park is considered to be an integral component of the overall concept plan. The plan for each stage will be developed in detail when the planning of each stage takes place. Each stage will incorporate detailed design of the pathways, any structures such as shelters or bird hides and any recreation areas; each stage will also include detailed designs for protecting items of aboriginal cultural heritage

as well as indicating areas of significant ecological value and, where appropriate, defining areas where ecological restoration will be undertaken. There is clearly a significant difference between the 7(a) and E2 zones in terms of the range of permissible uses. It may well be the case that the E2 zone will apply to the foreshore zone by the time detailed planning for stages 3 and 4 takes place. The proponent wishes to reserve the right to vary the design of the foreshore areas in the later stages of the plan should that be considered beneficial.

The proponent proposes that the foreshore park areas be dedicated to Council; Council will assume management of the foreshore park after the works have been completed.

The works associated with the foreshore park will be part of an offset package to be negotiated with OEH and DoPI and a Voluntary Planning Agreement to be negotiated with Council.

3.6. The Foreshore Zone in detail

The proposed treatment of the foreshore area, the 7(a) zone, has generated a range of responses in the submissions. These responses range from those that seek total prohibition of any change to those that recognise the area has significant ecological and cultural values that warrant being made both physically and intellectually accessible. Some submissions suggest the 7(a) zone be totally conserved, even with additional buffer zones, whilst others see the 'foreshore park' as an important facility for Culburra Beach.

It was probably unwise to apply the term 'foreshore park' to this area because the term 'park' seems to be associated in the minds of some of the submissions with an area of grassland with few trees.

The proponent's intention is to retain, rehabilitate and restore the majority of the 7(a) zone vegetation. The EA makes the point that the proposed cycle/walkway will be 'threaded' through the existing vegetation, implying a pathway that is carefully designed to avoid unnecessary destruction of vegetation whilst at the same time giving access to items/areas of significant cultural or ecological interest and/or view points demonstrating the scenic or ecological value of the area. Within this framework the following key areas raised in the submissions are addressed below:- (1) the level of protection of existing vegetation in the 7(a) zone; (2) the design of the cycle/walkway; (3) the extent and location of any embellishments (seating etc); (4) the vista clearings; and (5) the proposed leisure hub and associated activities.

3.7. The level of protection of existing vegetation

The major part of the waterfront of the site for the Part 3A project is characterised by a 100 feet (30m) Crown reserve at the waters edge which is part of the area zoned 7(a) (SLEP 1985) and E2 (Draft SLEP 2013). The 7(a) zone is generally about 100m in width from the High Water Mark. The 100m riparian zone differs from the zone boundary in some locations. Photographs of typical examples of the foreshore vegetation are shown in Appendix I of Appendix O of the EA.

The rear boundary of the 7(a) zone is generally at a height of RL7.0 or greater, typically supporting a xeric woodland. Within the 7(a) zone the land below RL5.0 is where the transition from a xeric to a mesic community occurs with swamp oak woodland and salt marsh predominating at the lower levels (RL0 to RL3.0). Below high water mark the SEPP14 wetlands are dominant, principally mangrove forest. A series of cross-sections demonstrates the transition at various points around the foreshore (see Drawings No.25405-23, 24, 25, 26 and 27).

The photographs illustrate the infestation of the foreshore zone with Lantana and Bitou bush. Some areas of the foreshore zone (including some areas of salt marsh and some areas where the slopes are steep and/or uneven) are heavily degraded on account of them being used as motorbike circuits. The proponent intends to eradicate weed infestations and restore the native vegetation where this is necessary. Bike tracks will be prohibited in the foreshore zone.

There is an existing rising main sewer line that partly traverses and partly defines the 7(a) zone. At least part of this sewer will be relocated to better fit with the proposed subdivision. This is not expected to impact on the 7(a) zone to any significant degree because the sewer line is mostly the defining edge of the zone; any areas that are affected by the relocation works will be rehabilitated.

In sum, virtually 100% of the vegetation in the 7(a) zone will be conserved with significant areas being restored. The proposed cycle/walkway together with the proposed seating areas will not take up more than 5% of the area of the 7(a) zone. The pathway is planned to be 3.0m wide with minor spurs to places of ecological or cultural significance. The children's play areas are co-located with but are located outside the 7(a) zone.

The E2 zone that is proposed to apply to the foreshore zone is more permissive than the 7(a) zone; it allows, for example, children's playgrounds and public parks and associated facilities which would

include public BBQ facilities and shelters. Should the E2 zone apply to Draft SLEP 2013 when it is finally made it will be the intention of the proponent to include such elements where appropriate. Should that be the case the area occupied by the cycle/pathway and other embellishments will not exceed an estimated 7.5% of the area of the zone.

We estimate that there is at least 12000m of foreshore vegetation (mainly mangroves) in the Crookhaven estuary including Curleys Bay. Most of the mangrove frontages in the estuary are privately held land and inaccessible. There is virtually no public access to the foreshore. The proposed estuarine frontage of the 'foreshore park' is some 3000m long, providing the public with a controlled access to this wonderful resource.

The vegetation will be retained and, where necessary, rehabilitated. The limited clearings proposed (see below) will be inconspicuous when considered in the context of the whole of the Crookhaven estuary.

3.8. The design of the cycle/walkway

The cycle/walkway that is proposed to be threaded through the 7(a) zone is intended to function as a recreational route that promotes awareness and understanding of the various foreshore ecologies and cultural elements.

It is planned to be generally 3.0m wide which allows for leisurely movement; side spurs to particular features will be 1.5m wide, allowing two people to pass each other comfortably.

The alignment of the cycle/pathway will be selected to expose a variety of ecological, cultural and scenic experiences along its length. It will be fitted to its topographical setting using different surfaces as appropriate; the rise and fall of the land will be exploited to expose views and vistas with grades meeting disabled access standards throughout.

The alignment will be selected to maximise the sensual and pleasurable experience as well as being an educational and informative experience.

3.9. The extent and location of embellishments

The embellishments will be primarily seating, shelters and interpretive panels. Both seating and interpretive panels will be arranged off the main pathway to ensure comfort to sitters and readers. Seating will be positioned to capture views of particular

elements having regard to micro-climate and comfort. Interpretive panels will be located to ensure a direct link between that which is observable and that which is being interpreted.

Embellishments will, as far as possible, be clustered at key points along the length of the pathway to give a sense of rhythm to movement along the pathway and to give a sense of identification to a sequence of locations along the pathway.

In order to achieve the full potential of the foreshore cycle/walkway it will be necessary for it to traverse the foreshore area which is part of the STP. This area is owned by Council. Council have been approached regarding making the pathway across their land and they have indicated they have no objection subject to consideration of detailed plans.

The proponent will undertake the construction and embellishment of the pathway across Council land as part of the foreshore park contribution.

3.10. The vista clearings

The observation that there are very few public places from where the aquatic setting of Culburra Beach can be seen received wide endorsement at the public presentation of the Part 3A project.

Nevertheless a significant number of submissions express objection to the clearing of any vegetation for the proposed vistas.

The proponents emphasise that the vistas are designed to enhance the public domain of Culburra Beach.

We estimate that the perimeter of Curleys Bay is approximately 6km. At no point around the bay is there a public space where the extent of the bay can be readily appreciated.

The proposed 'Vista Park' is intended to open up a view of Curleys Bay; it will also, at the interface with the lake, incorporate a boardwalk, sitting areas which will provide a viewing deck from which the whole bay can be seen and a bird hide. To achieve this it is proposed to clear a 50m wide section of waterfrontage mangroves. This is less than 1% of the waterfrontage of Curleys Bay.

The opening up of the proposed Vista Park received support in several independent submissions. It was opposed by the Lake Wollumboola Protection Association Inc., and its supporters. It was questioned by Council in terms of its permissibility.

A second 50m wide vista clearing is proposed at the interface of Vista Avenue East. The low point of the roadway of Vista Avenue East on the axis of the vista is RL8.0. The distance from this point to the waters edge is about 125m. We envisage clearance of all vegetation to the top of the bank (at RL5.0) except groundcover. Below RL5.0 we envisage clearance of small trees, mainly Swamp Oak (see Cross-section No. 6, Points 1 and 2, Appendix I of Appendix O in the EA) as well as clearance of Lantana to create the vista along the avenue. The vista along Vista avenue East is across Curleys Bay towards Goodnight Island (see cross section number 6 in Drawing No 25405-27).

The third vista, Vista Avenue West, is aligned across open grassland. The vista will require the removal of a small number of swamp oak along the edge of the Crookhaven River. There is no mangrove fringe in this location. At low tide the underlying siltstone is exposed. A low bank, circa 1.0m in height, defines the edge of the Crookhaven River. This bank appears to be subject to erosion, perhaps through wave action, with at least one midden partially eroded.

It is envisaged that a low sea wall will be introduced at Cactus Point to provide protection from further erosion.

The Vista Avenue West is considered the most dramatic of the proposed vistas. The point at which it springs from the Collector Road is at RL26.0; this vista has a long sweep down to the Crookhaven estuary, here about 300m wide, with Mount Coolangatta forming a terminal element in the mid-distance.

3.11. The Leisure Hub

The rationale for locating the leisure hub at the western end of the Part 3A project is four-fold. The primary reason is that this area is open grassland, part of Cactus Point paddock, which runs right down to the waters edge of Crookhaven River. The second reason is that the location enjoys an outlook over a 300m wide section of the Crookhaven estuary towards Greenwell Point and Mount Coolangatta. The third reason is that the orientation of this location to the north, and its protection from southerly winds, is an ideal micro-climate for outdoor leisure pursuits. And, fourthly, there are in the immediate vicinity some excellent examples of aboriginal middens which are ideal for demonstration/information purposes and which need to be carefully conserved.

Although this area is in the 7(a) zone it actually has little ecological value; the few remnant stands of Swamp Oak are discontinuous along the waterfront; there are significant gaps between the remnant

stands of trees. The significant middens do need protection; some are partially eroded away on the river bank. The area needs a comprehensive plan to ensure conservation of the middens and to maximise the potential leisure benefits.

The indicative illustration showed a low sea wall, a boat ramp and a jetty. The depth of water at low tide is not known; visual assessment indicated an operable depth for shallow bottomed boats but local knowledge suggests it would only be suitable for kayaks and canoes. The boat facilities do not form part of the Part 3A application because they are not permissible uses in the 7(a) zone. Nevertheless the area is still considered suitable for some low-key tourist activities including boating. This section is part of Stage 4 which is likely to be developed in 2022-4. The final decisions relating to land uses in the leisure hub will not be taken until the detailed plans for Stage 4 are being prepared, probably about 2020.

3.12. Management

The proponent will undertake the making of the foreshore park in stages concurrent with each stage of residential development. Each stage will be managed by the proponent for 1 year after completion at which time the foreshore will be dedicated to Council. It is envisaged that the making of the pathway and other embellishments together with the weed eradication and restoration of degraded vegetation will form part of an offset package to be negotiated with OEH and DoPI; each stage will also form part of the VPA which will be drawn up with Council to establish an overall funding and management framework for the Part 3 A project.

Part Four: Development in Lake Wollumboola Catchment

4.1. Review of The Submission

Many submissions, led by that of Lake Wollumboola Protection Association Inc., objected to any development in the catchment of Lake Wollumboola. Many made reference to the proposed golf course on Long Bow Point and used this opportunity to voice opposition to the course although that proposal does not form part of the Part 3A project.

A significant number of private submissions indicated opposition to any development in the catchment of Lake Wollumboola. Most of these submissions were 'in principal' opposition citing the 'negative and irreversible impacts on the catchments of Lake Wollumboola and the Crookhaven River'. (Little, Dingley, Verdun, Mrongovius and Davies.) Some claim the proposal is 'inconsistent with the DGR's requirements that the proposal demonstrate consistency with the SCRS (as well as the recommendation resulting from the South Coast Sensitive Urban Lands Review)'. (Lake Wollumboola Protection Society, Anon and Martin).

DoPI identified the locations where encroachments into the catchment of Lake Wollumboola occurred and, recognising that some development in the catchment is unavoidable, sought stronger justification for the identified elements to be allowed within the lake catchment.

OEI noted that there appeared to be some scope to further modify the layout to avoid the Lake Wollumboola catchment in the detailed urban design stage for roads and industrial land. The Department of Primary Industry and its sub-agencies (Fisheries, Marine Park Authority, NSW Office of Water, Crown Lands and NSW Agriculture) make no comments with specific reference to the catchment of Lake Wollumboola, focussing entirely on the impact of the proposal on the Crookhaven River.

The encroachments are considered minor and have been designed to ensure that any potential adverse effect on water quality in Lake Wollumboola are fully mitigated.

4.2. The Statutory framework

The South Coast Regional Strategy (SCRS) states (p. 14) 'Local Environmental Plans will not include further residential or rural-residential zoning in the catchments of the coastal lakes and estuaries shown in Map 2 unless it is demonstrated that a neutral or

beneficial effect on water quality as measured at the boundary of the proposed new zoning can be achieved.'

Lake Wollumboola is identified on Map 2.

The recommendations of the South Coast Sensitive Urban Lands Development Review Panel (see Appendix 2 of the SCRS) are intended to guide future planning and development; the recommendations are subservient to the Strategy.

The key findings of the panel are:

- i) 'Land within the catchment of Lake Wollumboola is considered unsuitable for urban development, principally on the grounds of the potential negative impacts on the lake which is a sensitive intermittently closing and opening lake or lagoon (ICOLL): and
- ii) The remaining land within the catchment of the Crookhaven River is considered suitable for limited urban development.

These statements are qualified recommendations; the panel did not say 'land within the catchment is unsuitable. The panel stated land is CONSIDERED (my emphasis) unsuitable.'

The other inference to be drawn from the recommendation is that the overwhelming issue is the potential impact on the lake. That is primarily water quality and the chemistry of water entering the lake.

The permissibility of development and the potential for adverse environmental impacts and the mitigation methods proposed in each of the encroachments is considered below.

The DGR's require the proponent to consider, inter alia, the SCRS.

Only one of the components of the Part 3A proposal that encroach upon the catchment of Lake Wollumboola is a residential or rural-residential uses.

4.3. The zoning of the encroachments

The encroachments are all consistent with the zoning of SLEP 1985 and mostly with the zoning in Draft SLEP 2013. The details of each encroachment are as follows:

- i) The collector road and roundabout

Roads are a permissible use in all the possible zones that might apply to the Part 3A proposal in both SLEP 1985 and Draft SLEP 2013.

ii) The Oval

Recreation areas are normally zoned for such purposes in both SLEP 1985 and Draft SLEP 2013. Recreation areas are permissible, that is not prohibited, in all zones that might apply to lands covered by this proposal other than the 7(a) zone (SLEP 1985) although they become permissible in the E2 zone, considered to be equivalent to the 7 (a) zone, in Draft SLEP 2013. The oval is located in a 2(c) General Residential zone in SLEP 1985 and is a permissible use. It is located in an R1 – General Residential zone in Draft LEP 2013 and is also a permissible use.

The oval is a permissible use in both SLEP 1985 and Draft SLEP 2013.

iii) Part of the Industrial Zone

The area covered by the Industrial Zone is zoned for industrial purposes in both SLEP 1985 and Draft SLEP 2013. The SCRS does not exclude the possibility of land being zoned for industry in the catchments specified referring only to residential and rural residential uses. The industrial use is a permissible use in both SLEP 1985 and Draft SLEP 2013. A small part of the area allocated to industrial uses falls within the catchment of Lake Wollumboola.

iv) Southern Part of Stage 1

The residential development in Stage 1, located south of Culburra Road, is zoned primarily for residential purposes in SLEP 1985; an area approximately 100m x 120m adjacent to Culburra Road is zoned 5(a) special uses; no use is specified for the site.

Under Draft SLEP 2013 the area zoned for special uses in SLEP 1985 is zoned R1 – General Residential. The balance of the site is zoned E2 – Environmental Conservation in Draft LEP 2013. Dwellings are a permissible use in the E2 zone. The section of Stage 1 that falls within the catchment of Lake Wollumboola has been identified as the area that can be drained by gravity to the Crookhaven River catchment.

v) The Central Section of the Collector Road and Part of Lots with frontage to the Collector Road.

Part of the collector road and part of some of the lots fronting the collector road are all at RL16 which is the height of the saddle

previously referred to. The saddle at RL16 is approximately 300m long and some 40m (min) to 100m (max) wide; it is very flat. The ridgeline is virtually indistinguishable at this point. The making of the collector road and the oval will require some regrading in this location. The flat grades enable the engineering design to drain all of the saddle area to the Crookhaven catchment. This is a technical encroachment. We see no adverse impacts on Lake Wollumboola arising from this encroachment.

The area is zoned 2(c) General Residential in SLEP1985 and R1 General Residential in Draft SLEP 2013.

4.4. Consideration of specific encroachments

i) The proposed roundabout.

Roads are permissible in the zones that apply to the catchment of Lake Wollumboola. The roundabout is located on the existing alignment of Culburra Road where the road crosses the natural drainage line of the uppermost reaches of Wattle Creek catchment. There is no formal drainage line of Wattle Creek adjacent to the road nor for at least some 800m downstream from Culburra Road.

The only works provided at the existing natural drainage line of Wattle Creek where it crosses Culburra Road are a 20cm culvert under Culburra Road. There is no formal drainage line nor any form of traps for pollutants or debris washed off the 450m length of Culburra Road within the Wattle Creek catchment. The wash simply dissipates into a grassy swale.

The area required for the roundabout will require Culburra Road to be widened at the roundabout by up to 20m. The location of the extra width will be determined at detailed engineering design stage. It is anticipated that run-off from the section of Culburra Road and the Collector Road that are within the Wattle Creek catchment will be treated via a vegetated bioswale located down slope of the road and upslope of the existing drainage line. The bioswale shall treat road runoff via detention, infiltration and evapotranspiration.

The roundabout is considered a minor additional encroachment to an existing element, Culburra Road, which for some 3km of its length falls within the lake catchment. The proposed treatment is considered to have a beneficial effect on water quality in Lake Wollumboola. The proposed bioswale has been designed to ensure stormwater runoff quality from the roundabout area

achieves a neutral or beneficial outcome when comparing the proposed development scenario to an undeveloped forest area. Specifically, this treatment measure achieves:

- 90% reduction in total suspended solids
- 4% reduction in total phosphorus
- 35% reduction in total nitrogen

It is therefore considered that the proposed roundabout will have a beneficial impact on the water quality of Lake Wollumboola by providing bioswale treatment to existing and proposed road as recommended within the Water Cycle Management Report (Martens and Associates, 2013).

ii) Parts of the Collector Road

There are two sections of the proposed collector road that encroach upon the Lake Wollumboola catchment. One is the 200m long section from the proposed roundabout to the divide. The second is a 350m section where the collector road is aligned along the southern side of the 'saddle' in the catchment divide.

The 200m long section from the roundabout to the divide has a fall of about 6.0m and is considered as part of the proposed roundabout drainage treatment strategy considered above.

The second encroachment of the 1.7k long collector road is located approximately mid-way between the roundabout and the western boundary of the Part 3A project. The encroachment occurs over a distance of approximately 350m where the collector road is aligned along the southern side of the 'saddle' that marks the catchment divide.

The central section of the saddle is an extensive flat area at RL16. The encroachment is located in this flat area which extends some 300m along the length of the alignment of the collector road and which is, at its eastern end, some 80m wide and at its western end, some 140m wide narrowing to 40m in the central section. This flat area extends a further 250m to the south. The self-evident suitability of the area for playing fields led to the decision to locate an oval in this location (see below).

The engineering design of the collector road is based on its entire length north of the catchment divide adjacent to the roundabout being drained to the Crookhaven catchment. Drainage will be an integral component of the engineering

design of the collector road which is an integral component of the engineering design of the neighbourhood road network.

Drainage flow to the Crookhaven River will be treated through a series of roadside bioretention swales and GPTs providing 'at source' treatment before discharging into one of a series of water quality treatment wetlands for 'end of line' treatment.

The treatment measures have been designed in accordance with best engineering practice and to ensure a neutral or beneficial impact on the receiving environment (the Crookhaven estuary). Modelling demonstrates this outcome is achieved prior to runoff discharging into the fringing Environmental Protection (7a) zone which in turn means:

1. There is a neutral or beneficial impact on this protected zone.
2. The 7(a) zone will provide further treatment to runoff discharging from treatment wetlands to the estuary by acting as a vegetated buffer. This effect was not included in water quality modelling.

This encroachment will have no adverse effect on the water quality of Lake Wollumboola.

iii) The Oval

The oval is located in the upper reaches of the NE arm of Downs Creek. It is some 2000m upstream from Lake Wollumboola. There is no existing defined creek line in the north east of Downs Creek.

The site of the oval has been selected because it is the best site available for playing fields, being very flat, and is centrally located in relation to the current Part 3A proposal. It will also be well located in relation to foreshadowed future development of Cactus Point to the west. The location is endorsed by Shoalhaven Council. During detailed design of the oval a bund or similar shall be included at the upslope side to redirect runoff from the upslope catchment around the oval to allow it to continue downstream as part of the Downs Creek catchment.

A wetland is proposed downstream of the oval and parkland. It has been designed in accordance with best engineering practice and in accordance with the principles of water sensitive urban design to not only provide water quality treatment but allow detained water to be reused for irrigation on the oval. Water

quality modelling demonstrates that runoff discharging from the wetland to Lake Wollumboola achieves the required neutral or beneficial outcome. The impact on water quality is therefore negligible.

This encroachment will have no adverse effect on the water quality of Lake Wollumboola.

The treatment of surface drainage of the oval is designed to ensure that there is no effect on natural drainage of Downs Creek.

ii) Part of road reserve in medium density site on hillock.

This point appears to refer to the circle on the top of the hillock. This is the location of the 'outlook tower' which is intended to be accessed by pedestrian footpaths. The lines shown indicate pedestrian pathways. The object of the outlook tower is to provide a vantage point from which the topographical setting of Culburra Beach and environs can be viewed.

The pedestrian usage of this area is not considered to have any effect on natural drainage. Any formal drainage from the outlook tower will be integrated with the surface water drainage design of the medium density housing.

The minor encroachment, amounting to an area of about 1200m², is limited to usage as a pedestrian pathway. It is not considered to have any impact on water quality in the Downs Creek catchment.

iii) Southern Part of Stage 1

The plan of Stage 1 has been amended to exclude the area zoned for special uses in SLEP1985. The area allocated to housing does encroach on the catchment of Wattle Creek.

The area allocated to residential development is very flat. The location of the catchment divide is shown on the detailed survey of the site.

In general terms the site has a fall from west to east of about 2.5m over some 280m; that is about 1 in 100. The divide runs parallel to and at a distance of between 50m and 70m from Culburra Road. The fall from the divide to Culburra Road is about 1.0 to 1.5m; that is about 1 in 50.

The fall from the divide towards Wattle Creek ranges from about 1 in 50 at the divide to 1 in 25 down slope.

These characteristics enable a part of the site south of the divide to be drained by gravity to Culburra Road.

As for the collector road, those parts of this area that can be drained to roadside bioswales are treated in this way together with GPTs before discharging to the proposed 'Vista Park' and into an end of line treatment wetland which overflows into the 7(a) zone and the Crookhaven Estuary. Those parts of the area that cannot be treated by bioswales are treated via the same path but omitting the roadside bioswale. Roof catchment areas shall drain to individual lot rainwater tanks with overflow following the same treatment path.

Modelling concludes there is a neutral or beneficial effect on the water quality of Lake Wollumboola

iv) The SW corner of the Industrial Zone

The location of the Industrial Zone adjacent to the STP is considered good planning practice. It is noted that the site of the STP incorporates a 100m wide buffer zone within its boundary. This buffer zone is retained woodland.

The existing industrial establishments are accessed off Culburra Road via Strathstone Street which also gives access to the STP; the site of the sub-station that has been agreed with Endeavour Energy is also accessed off Strathstone Street. The balance of the existing industrial establishments have access off Reg Moore Close which is aligned parallel to Culburra Road.

As noted in the Environmental Assessment, demand for industrial premises is not expected to be strong. Consequently the planned industrial area will be developed in stages. The first stage will be the extension of Reg Moore Close to include lots 11-17 and 123-124. Stage 2 will be the rear lots 18, 19, 110-114 and 119-122. Stage 3 will comprise lots 115-118 and 124-128.

Stage 1 will involve an extension of Reg Moore Close together with all town services.

The proposed management of surface water will include the following:

- Rainwater tanks for roofwater collection and onsite reuse.
- Approximately 10% of individual industrial lot areas dedicated to bioretention basin to provide at source treatment of runoff.

A bioretention basin to collect runoff from industrial lots and associated roads, and rainwater tank and lot biobasin overflow.

All runoff from the industrial area shall be directed to the Crookhaven River. The end of line bioretention basin shall treat industrial area runoff through detention, infiltration and evapotranspiration. As for the proposed roundabout, the industrial 'catchment' was assessed separately from the rest of the site to ensure the basin has been designed to achieve a neutral or beneficial stormwater quality outcome. Basin treatment achieves:

- 88% reduction in total suspended solids
- 20% reduction in total phosphorus
- 33% reduction in total nitrogen

Modelling therefore demonstrates a beneficial impact on the Crookhaven River and negligible impact on the Lake.

Consequently the area of encroachment on the Lake Wollumboola catchment will not detrimentally affect the catchment.

Part Five: Vegetation Removal and Offsets

5.1. Review of Submissions

The proposal involves the removal of some 70ha of woodland comprising mainly Blackbutt Open Forest, Hard Leaved Scribbly Gum, Woodland and Black She-oak Closed Forest (Appendix O in EA)

OEH reports that it is satisfied that development is unlikely to have a significant impact on threatened species and their habitats. OEH state "the land proposed to be cleared in the residential/industrial parts of the project are lowland coastal forest in moderate to good condition which have considerable environmental values", and providing "suitable offsets can be located and secured to ensure overall biodiversity values are maintained", the proposed development can proceed.

In particular OEH sought to resolve outstanding concerns about whether or not the West Culburra site was likely to support the predicted threatened orchid species. On the basis of further field surveys carried out by OEH Regional Operations staff accompanied by local orchid expert, Mr Allan Stephenson, OEH concluded that the site is unlikely to be a habitat for threatened orchid species.

A significant number of the private submissions express concern about the proposed removal of woodland. These include the Lake Wollumboola Protection Association Inc., who deem the project to be ecologically unsustainable and therefore inconsistent with the aims and objectives of the EPA Act 1979. The Association's submission makes the following key points:

- . Likely unacceptable impacts on vegetation,
- . Inadequacies in environmental survey and assessment methodology;
- . Unacceptable assessment of impacts on native vegetation, endangered ecological communities and wetlands;
- . Likely unacceptable impacts on wildlife corridors;
- . Likely unacceptable impacts on threatened fauna.

This view was also expressed in varying degrees in other private submissions (Stephenson, Dingley, Little, Mrongovius and Davies, Martin, Hood, Della Torre, Anon, Anon).

In response the proponents advise that balancing the competing claims between land for urban development and non-urban land, whether agriculture or bush, always presents problems.

The planning system relies on evidence to determine whether or not land can be converted to urban uses. In this instance the broad strategy was set by the South Coast Sensitive Lands Review. It indicated that land in the Crookhaven River catchment was considered suitable for limited urban development.

The detailed studies in the EA provide the necessary evidence to demonstrate that the proposed removal of vegetation is unlikely to have a significant impact on threatened species and their habitats. The land is therefore suitable for urban development.

The proponent considers there are no substantive barriers to the Part 3A project proceeding.

5.2. Supplementary Investigations and Discussions

Subsequent to the lodgement of the original *Ecological & Riparian Issues Assessment Report* for the Culburra West Urban Development Project by SLR Ecology (22 March 2013), a number of supplementary and ongoing investigations have been undertaken on the subject site by SLR Ecology.

Following discussions with officers of the Office of Environment & Heritage (OEH), some dedicated supplementary investigations and surveys for the Glossy Black Cockatoo were undertaken within the subject site and on adjoining lands, specifically in an attempt to identify any breeding by Glossy Black Cockatoos that may be occurring within the subject site or nearby. (see 5.3 under).

Additional ongoing surveys for flora and fauna (including supplementary orchid surveys and inspections of various elements of the subject site and adjoining land, particularly along the Crookhaven River) have also been undertaken. The intent of those investigations was to provide additional information to refine various design elements of the project. Those additional surveys do not constitute a concession that the flora and fauna investigations for the March 2013 SLR Ecology *Report* were other than adequate.

In addition, there have been supplementary and associated discussions and negotiations with the Office of Environment & Heritage (OEH) with respect to the significant issue of environmental biodiversity offsets relevant to the Culburra West Urban Development Project. These matters are considered in great detail in Chapter 4.6 of this *Report*.

5.3. Threatened Species Surveys

Additional investigations were undertaken by SLR Ecology for:

- The Glossy Black Cockatoo; and
- Threatened orchids.
- With respect to the Glossy Black Cockatoo-the supplementary surveys fulfil the requirements of the OEH for the undertaking of particular investigations for that species at an appropriate time of the year; and
- The additional threatened orchid surveys were undertaken by SLR Ecology to supplement further information already provided.

Relevant observations from those additional surveys include:

- No Glossy Black Cockatoos were recorded during the appropriate survey periods either at any watering points or within stands or near individuals of the Black She-Oak within the Culburra West development site; and
- No threatened orchids were located in the supplementary surveys. It is noted (as documented below) that the OEH states in its submission that "*the site is unlikely to be habitat for the threatened orchid species*".

5.4. Corridors

The issue of biodiversity corridors or "wildlife corridors" was addressed in some detail in the SLR Ecology *Ecological & Riparian Issues & Assessment Report* (dated March 2013).

As indicated in The SLR Ecology 2013 *Report*, there is no functional ecological or "wildlife corridor" in a north-south direction which would include the subject site at Culburra West. Whilst it is acknowledged that there are substantial areas of open forest and woodland to the immediate south of the subject site, the "lands" to the immediate north consist of *inter alia*:

- Tidal estuaries and saline waters;
- Mangroves and mudflats;
- Developed lands (e.g. Greenwell Point and Orient Point); and
- Substantial areas of cleared grazing land.

There is a distance of many kilometres between the subject site and any open forest and woodland vegetation to its north.

As a consequence, and given the nature of the habitats along the Crookhaven River estuary, the concept of a north-south "*corridor*" is fundamentally flawed.

In the first instance, there are no species which are likely to move between estuarine habitats and dry open forest and woodland communities. Thus, even on an immediate local basis, there is no relevant north-south "*corridor*'.

Furthermore, the only species which could conceivably move between the subject site and any relevant or available habitat to the north are highly mobile species capable of crossing significant tracts of inhospitable habitats. Small forest birds, for example, will be extremely unlikely to move between the subject site and the nearest open forest or woodland to the north.

The only biota likely to move in a north-south direction (between the subject site and any other lands to the north) are large, highly mobile species, - such as larger birds, microchiropteran bats and the Grey-headed Flying Fox.

For those species, the removal of vegetation on the subject site would not constitute an impediment to any north-south movements which might currently occur.

5.5. Biodiversity and Environmental Offsets

As indicated in the original SLR Ecology 2013 *Report*, the *Environment Offsets Policy* for the Culburra West Urban Development Project is the subject of ongoing negotiations with the OEH.

There has been substantial consideration of the biodiversity and environmental offsets proposal for the Culburra West Urban Development Project, including with respect to:

- The extent of areas of open forest and woodland vegetation to be conserved to compensate for the removal of vegetation from within the project area;
- The value of other offset measure for biodiversity (eg the significant rehabilitation and habitat enhancement works required within the Crookhaven River Foreshore Park);
- The relevance or appropriateness of the *BioBanking Methodology* for determining offsets; and

- Other relevant offset measures (with respect to the *NSW Offsets Policy for Major Projects*) such as the provision of community recreation and education facilities (boardwalks, information boards, etc), implementation of the approach to salvage and re-use tree hollows and other environmental offsets.

5.6. Offset Considerations

The OEH indicates *inter alia* that the Culburra West Urban Development project "*should only proceed if a suitable offsets (sic) can be located and secured to ensure overall biodiversity values are maintained*".

The proponent and author of this *Report* have provided a preliminary desktop *BioBanking Assessment* for the project. In addition, the OEH has undertaken its own preliminary *BioBanking Assessment*.

However, there are some notable issues with the desktop *BioBanking Assessment* that had previously been prepared, particularly in relation to:

- The identification of certain vegetation types on which the desktop *BioBanking Assessment* was prepared by Cumberland Ecology;
- The application of *Threatened Species Credits* for the whole of the development site with respect to the Grey-headed Flying Fox which is not justified in the opinion of the author of this *Report*; and
- Significant problems with anomalies within the *BioBanking Methodology* (for example EECs do not generate any greater *BioBanking Credits* per hectare than do common and abundant ecological communities. This makes no sense. There are a number of other significant problems with *BioBanking Methodology* as currently practiced).

Given those considerations, and given the *NSW Offsets Policy for Major Projects* as discussed below, it is the opinion and approach of the author of this *Report* and the proponent that the desktop *BioBanking Assessment* should constitute only an initial discussion position with respect to the overall Offsets Strategy for the Culburra West Urban Development project.

It is noted that the development of an *Offset Strategy* for the Culburra West Urban Development Project is currently the subject of negotiations between the proponent and the Office of Environment & Heritage (OEH). Such investigations are continuing.

5.7 Review of Current Biodiversity Offsets Policy

The NSW government has recently (in July 2013) announced the generation of *"a new biodiversity offsets policy for major projects in NSW that will include a new biodiversity offsets fund"* (NSW Environment Minister Robin Parker). The Minister's Media Release (*dated the 20th July 2013*) states inter alia that the new "biodiversity offset principles" "seek to apply a cost-effective, strategic approach to biodiversity offsets in NSW".

The Office of Environment & Heritage (OEH) has prepared a set of "NSW Offset Principles for Major Projects" (attached), which provides information regarding the seven Principles that need "to be used in assessing impacts to (on) biodiversity and determining acceptable offsets" for the loss of vegetation or habitats for native biota with respect to the State Significant Development and State Significant Infrastructure projects.

The seven Principles of the NSW Offset Policy for Major Projects are:

1. Avoid, minimise and only then offset impacts
2. Base offsets on a reliable and transparent assessment of losses and gains.
3. Target offsets to biodiversity values being lost, or higher conservation priorities.
4. Offsets must be additional to other legal requirements.
5. Offsets must be enduring, enforceable and auditable
6. Supplementary measures can be used in lieu of offsets
7. Offsets can be discounted with significant social and economic benefits.

The application of those seven *Biodiversity Offset Principles* with respect to the Culburra West Urban Development Project is documented below.

5.8. Principle No.1 – Avoid, Minimise then Offset

1. Before offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining impacts.

The Principle states *inter alia* that the "first priority in a development proposal is always to avoid any unnecessary impact to (on) biodiversity. Where impacts cannot be avoided, a reasonable attempt should be made to minimise the impacts as much as possible".

The Culburra West Urban Development Project is confined substantially to that part of the subject land at Culburra which is located within the Crookhaven River catchment, with only very minor encroachments into the Lake Wollumboola Catchment. The whole of the development footprint is restricted to lands which are zoned for urban or residential purposes (with one minor exception).

As noted by the OEH in its submission on the *Environmental Assessment* (EA), the development is located on land which has been identified for urban development purposes in the South Coast Regional Strategy.

Thus, to the extent that is possible, and appropriate, the Culburra West Urban Development Project has "avoided" and/or "minimised" impacts upon native habitats and ecosystems. That outcome has been achieved by its location outside the catchment of Lake Wollumboola and by the implementation of relevant environmental protection measures.

In addition, a comprehensive *Biodiversity and Environmental Offsets Strategy* is being generated for the Culburra West Urban Development Project by the proponent, in consultation with the OEH. This *Offset Strategy* provides an array of appropriate offsets – including *inter alia*:

- the retention and dedication of native vegetation for biodiversity conservation purposes;
- the extensive rehabilitation and enhancement of areas of native open forest and woodland; and
- the provision of additional offsets (community facilities, boardwalks and educational material etc).

5.9 Principle No. 2 – Offset Requirements

2. Offset requirements should be based on a reliable and transparent assessment of losses and gains.

The "losses and gains" which will occur as a result of the Culburra West Urban Development Project, including the Biodiversity and Environmental Offset Strategy, are identified in Table 2. this Offset Strategy has been developed to satisfy the NSW Offset Principles for Major Projects, and includes the conservation of privately owned native open forest and woodland for biodiversity conservation purposes, as well as providing an array of additional environmental and community benefits (educational facilities, dedicated paths, tracks and walkways, etc).

The Culburra West Biodiversity and Environmental Offset Strategy is designed to satisfy the "Maintain or Improve" Principle. The area under consideration achieves a net offset ratio (in respect solely of hectares of native vegetation) of about 4:1 for lands which are proposed for biodiversity conservation purposes. The Offsets Strategy also provides for the conservation and the rehabilitation of the forested part of the Crookhaven River Foreshore Park (approximately 20.14ha)

In addition to achieving an offset ratio of about 4:1, the Environmental Offset Strategy for the Culburra West Urban Development Project provides an array of additional environmental benefits including those identified above.

The combination of a substantial additional area of native open forest and woodland allocated for biodiversity conservation purposes, and the array of other environmental offsets (see Table 2) is considered to satisfy both the NSW Offsets Policy and the "Maintain or Improve" Principle.

Table 2 Environmental "Losses and Gains" (Benefits) from the Culburra West Environmental Offset Strategy.

Losses	Gains or Benefits
Removal of 73 hectares of open forest and woodland vegetation in "moderate to good" condition. Removal of a small number of hollow bearing trees (noting that the proposal includes the	The management in perpetuity of up to 300 hectares of private open forest and woodland for biodiversity conservation purposes. Location of the main offset adjacent to the existing Conjola National Park.

<p>salvage and re-use of tree hollows).</p>	<p>The inclusion of higher ecological value vegetation within the offsets lands – including "endangered ecological communities:</p> <p>Rehabilitation and dedication of an additional 20.14 hectares of open forest and woodland as a foreshore reserve between the Crookhaven River and the development footprint).</p> <p>Dedication of an additional 4.34 hectares of open land – in part for community recreation purposes and in part for biodiversity conservation.</p> <p>The establishment of and dedication of the Crookhaven River Foreshore Park as a place of high ecological value, in addition to providing for the maintenance and protection of the culturally significant middens along the Crookhaven River Foreshore.</p> <p>The provision of educational material within the Crookhaven River Foreshore Park – with respect both to ecological values and the Aboriginal heritage.</p> <p>The construction of relevant and appropriate recreation facilities for the local community – including an open grassland park, dedicated and carefully designed and located boardwalks and bicycle paths, educational material etc.</p> <p>The salvage and re-use of tree-hollows and/or the provision of artificial nest boxes to replace tree-hollows that cannot be re-used – at a ration of 2 replacements for each hollow lost.</p> <p>The creation of new habitat and resources for aquatic (within the detention basins and bioretention swales within the development site (on the southern side of the Crookhaven River Foreshore Park).</p>
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5.10 Principle No. 3 – Targeted Offsets

3. Offsets must be targeted to the biodiversity values being lost or to higher conservation priorities.

This Principle of the NSW Offset Principles for Major Projects states that "Offsets should reflect the biodiversity values, including threatened species and their habitat...,that are being lost".

There are two areas of native open forest and woodland vegetation which are to be allocated to biodiversity conservation purpose as offsets for the removal of vegetation on the Culburra West Urban Development Project. Those two separate areas are:

- The 20.14ha of open forest and woodland within the Crookhaven River Foreshore Park (located on Lots 5,6 and 61); and
- Up to 300ha of land at Sussex Inlet comprising Lot 8 DP755937 and part Lot 1 DP117456 (see accompanying maps).

The land at Sussex Inlet proposed as a 'Biodiversity Offset' has *inter alia* the following characteristics.

- a total of up to 300 hectares of native open forest and woodland in excellent condition;
- an array of vegetation types, including:
 - dry Spotted Gum and/or Scribbly Gum open forest and woodland.
 - a substantial area of Swamp Oak forest – floristically equivalent (at least) to the Swamp Oak Floodplain Forest (SOFF) "*endangered ecological community*" (EEC):
 - an area of uncommon Blue Gum Forest on Coastal Lowlands;
 - areas of fringing Coastal Saltmarsh and Mangrove Forest;
- the 'Biodiversity Offset' land will enhance Conjola National Park – by providing a connection between two parts of the Park (to the immediate north and immediate west), and by strengthening the security of ecosystems at this location;
- it will increase the security of Tullarwalla Lagoon and the St Georges Basin foreshore – by protecting a substantial area of foreshore and the southern shoreline of the lagoon.

In addition, an array of "supplementary measures" are proposed as part of the Biodiversity & Environmental Offsets Strategy for the Culburra West Urban Development Project, which (in accordance with Principle No.6) "can be used in lieu of offsets" as discussed below.

5.11 Principle No. 4 – Offsets Additional to Other Legal Requirements

4. Offsets must be additional to other legal requirements.

The Principal of the NSW Offset Principles for Major Projects states that the "biodiversity protection and management requirements of an offset must be in addition to any legal requirement already in place for biodiversity on that land".

Importantly, the Principle also states that "improvements in the condition of native vegetation not currently required by other legislation would count as an offset".

Clearly, the allocation of the land at Sussex Inlet as a biodiversity offset for the Culburra West Urban Development Project is "additional" to any "legal requirements". There is no legal requirement for the maintenance of that vegetation for biodiversity conservation purposes, or for its dedication for those purposes.

Similarly, dedication to Council of the 20+ hectares of private land (ie. The "donation" of that land) for biodiversity conservation purposes (principally) is not a "legal requirement". That land could readily (and legally) be retained in private ownership.

In addition, the considerable expenses associated with the rehabilitation and enhancement of native vegetation within the Crookhaven River Foreshore Park, which will be considerable, is "additional to other legal requirements". There is no legal requirement currently for any weed removal, bush regeneration or other enhancement of that vegetation. Those activities therefore constitute an appropriate offset – as part of the Culburra West Environmental Offsets Strategy.

A notable number of other measures are proposed as part of the Biodiversity & Environmental Offsets Strategy. Such "additional" offsets include inter alia;

- The construction of a well-designed and sensibly located series of bicycle paths and walking tracks through the Foreshore Park;
- The provision of education signage; and
- The salvage and re-use of tree hollows and/or the use of artificial nest boxes.

5.12 Principle No. 5 – Enduring, Enforceable and Auditable

<i>5. Offsets must be enduring, enforceable and auditable</i>

The fifth Principle of the NSW Offset Principles for Major Projects states that "Offset sites must be subject to good governance arrangements to ensure they are not inadvertently developed in the future. This includes having an appropriate plan of management, resourcing for management, legal security and accountability mechanisms".

The Biodiversity & Environmental Offsets Strategy for the Culburra West Urban Development Project eminently satisfies this Principle of the NSW Offsets Policy. The Strategy for the Culburra West Project inter alia:

- The conservation up to 300ha of private open forest and woodland at Sussex Inlet,
- Dedication of the Crookhaven River Foreshore Park to Council – in stages after the completion of weed removal and bush regeneration activities. That dedication is also "enduring, enforceable and auditable";
- The enhancement of that vegetation – which would be the subject of a Vegetation Management Plan (VMP). Implementation of the VMP would be a condition of any future Development Application (on a staged basis) and would be both "enforceable and auditable" through the VMP monitoring program; and
- The other environmental management measures (eg bicycle and pedestrian paths, educational signage etc) – which would also be subject to the VMP and the monitoring program contained therein.

5.13 Principle No. 6 – Supplementary Measures

6. Supplementary Measures can be used in lieu of offsets.

The sixth Principle of the NSW Offset Principles for Major Projects contains the following considerations:

- "For terrestrial offsets, supplementary measures can be used in lieu of offsets in situations where land based offsetting is not feasible or practical. The supplementary measure must be relevant to the biodiversity value being impacted. The monetary value of a supplementary measure is to be determined by an appropriate method that is repeatable and transparent".

In addition to the allocation of some 300ha of open forest and woodland vegetation to offset the loss of 73ha of open forest and woodland for the Culburra West Urban Development Project, a number of "supplementary measures" are proposed as part of the Culburra West Biodiversity & Environmental Offsets Strategy:

- The construction of bicycle and pedestrian paths through the Crookhaven River Foreshore Park – to prevent uncontrolled damage by unmanaged human access and to provide a means for the community to understand and appreciate the environmental values of the Foreshore Park;
- The provisions of educational material and signage – in respect both of elements within the natural environment and aboriginal items (to the extent that the aboriginal community approve); and
- The salvage and re-use of tree hollows and/or provisions of supplementary artificial nest boxes.

5.14 Principle No. 7 – Social and Economic Benefits

7. Offsets can be discounted with significant social and economic benefits accrued to NSW as a consequence of the proposal.

The Principle of the NSW Offset Principles for Major Projects states that:

- "While an outcome in which biodiversity values are improved or maintained is preferred, it is acknowledged that in some circumstances flexibility may be required, especially in the context

of a project providing significant social or economic benefits to NSW".

The Culburra West Urban Development Project will provide "significant social and economic benefits" to NSW generally, and to the community of Culburra. The project will provide inter alia:

- The opportunity to access elements of the local environment that have previously been denied to the general public, notably the waterways of Curleys Bay and the Crookhaven River;
- The promotion of a healthy living environment by the introduction of walkways and cycle ways that will serve the whole population of Culburra Beach;
- A significant and substantial contribution to employment in the local tourist, healthcare and building industry over a long period;
- Employment opportunities for local residents including the Aboriginal community, in the maintenance and management of the Crookhaven River Foreshore Park; and
- The generation of a "critical mass" to justify the expenditure of resources on improved community recreation and "healthy living" amenities at Culburra Beach.

On the basis of those substantial and "significant social or (and) economic benefits", the requirement for biodiversity offsets for the Culburra West Urban Development Project should reasonably be "discounted", pursuant to Offset Principle No. 7.

5.15 Culburra West Environmental Offsets Strategy

The Culburra West Environmental Offsets Strategy has been prepared on the basis of the NSW Offsets Policy for Major Projects.

The Offsets Strategy provides for both the provision of open forest and woodland vegetation for biodiversity conservation purposes (at a ratio of approximately 4:1) and an array of additional offsets-including rehabilitation and protection of native vegetation, the provision of substantial educational and public recreation facilities which celebrate the natural environment and aboriginal heritage along the Crookhaven River Foreshore, and the provision of supplementary habitats (in wetlands) and enhancement of the local tree-hollow resource (as detailed above).

As discussed above, the BioBanking Assessment Methodology to determine offsets for the project has been taken into account to some extent. However, there are significant problems with the

BioBanking Assessment Methodology (with respect to the offset ratios, ecosystem types, threatened species credits, the 'binomial approach', and the treatment of EECs) – as illustrated by the fact that the Methodology is currently under review by the State government.

Whilst a desktop BioBanking Assessment was prepared for the Culburra West Urban Development Project, the Environmental Offsets Strategy does not apply that assessment on a numerical or area basis – because of the problems discussed above with respect to BioBanking. Nevertheless, the benefits to be achieved through application of the Environmental Offsets Strategy for the Culburra West Project deliver a significant net environmental benefit, and satisfy the 'Maintain or Improve' Principle.

Table 3 Elements of the Environmental Offsets Strategy for West Culburra.

Offset Item	Location
The management in perpetuity of up to 300 hectares of private open forest and woodland vegetation for biodiversity conservation purposes (Lot 8 in DP755937) and part Lot 1 in DP1174562 St Georges Basin) – through a binding agreement with the OEH.	All in the St Georges Basin catchment, occupying the Tullarwalla Peninsula and lands to its immediate west. Adjacent to the existing Conjola National Park.
The inclusion of higher ecological value vegetation within the offset lands. The Tullarwalla Peninsula 'Biodiversity Offset' area has Swamp Forest vegetation and Swamp Oak Forest – which conform floristically with the Swamp Sclerophyll Forest and Coastal Floodplains (SSFCF) and Swamp Oak Floodplain Forest (SOFF) " <i>endangered ecological communities</i> ", These EECs are of higher biodiversity conservation value than any of the vegetation which is being removed from the Culburra West project site.	In the Tullarwalla Peninsula 'Biodiversity Offset' area.
The dedication of an additional 20.14 hectares of private open forest and woodland, between the Crookhaven	Along the Crookhaven River Foreshore.

Offset Item	Location
River and the Culburra West Development-to be the Crookhaven River Foreshore Park.	All of this land is to be dedicated for biodiversity conservation purposes with some limited and carefully designed and constructed boardwalks and paths, educational signage and 'look outs'.
The dedication of an additional 4.34 hectares of existing mostly cleared grassland at the western end of the Crookhaven River Foreshore Park – in part for the community recreation purposes (open grassy space, paths, picnic tables, barbeques, etc) and in part for biodiversity conservation and the celebration and protection of the aboriginal middens.	At the western end of the Crookhaven River Foreshore Park.
The construction of relevant and appropriate recreation facilities for the local community – including an open grassland park (at the western end of the foreshore park), dedicated and carefully designed allocated boardwalks and bicycle paths, educational material, 'lookouts', and 'bird hides' and the protection and celebration of Aboriginal heritage (the middens at the western end of the Foreshore Park).	Along the Crookhaven River Foreshore Park.
The creation of new habitat and resources for aquatic biota within the detention basins and bioretention swales within the development site (on the southern side of the Crookhaven River Foreshore Park).	Along the northern side of the Culburra West development footprint, immediately adjacent to the Crookhaven River Foreshore Park

5.16. Conclusions

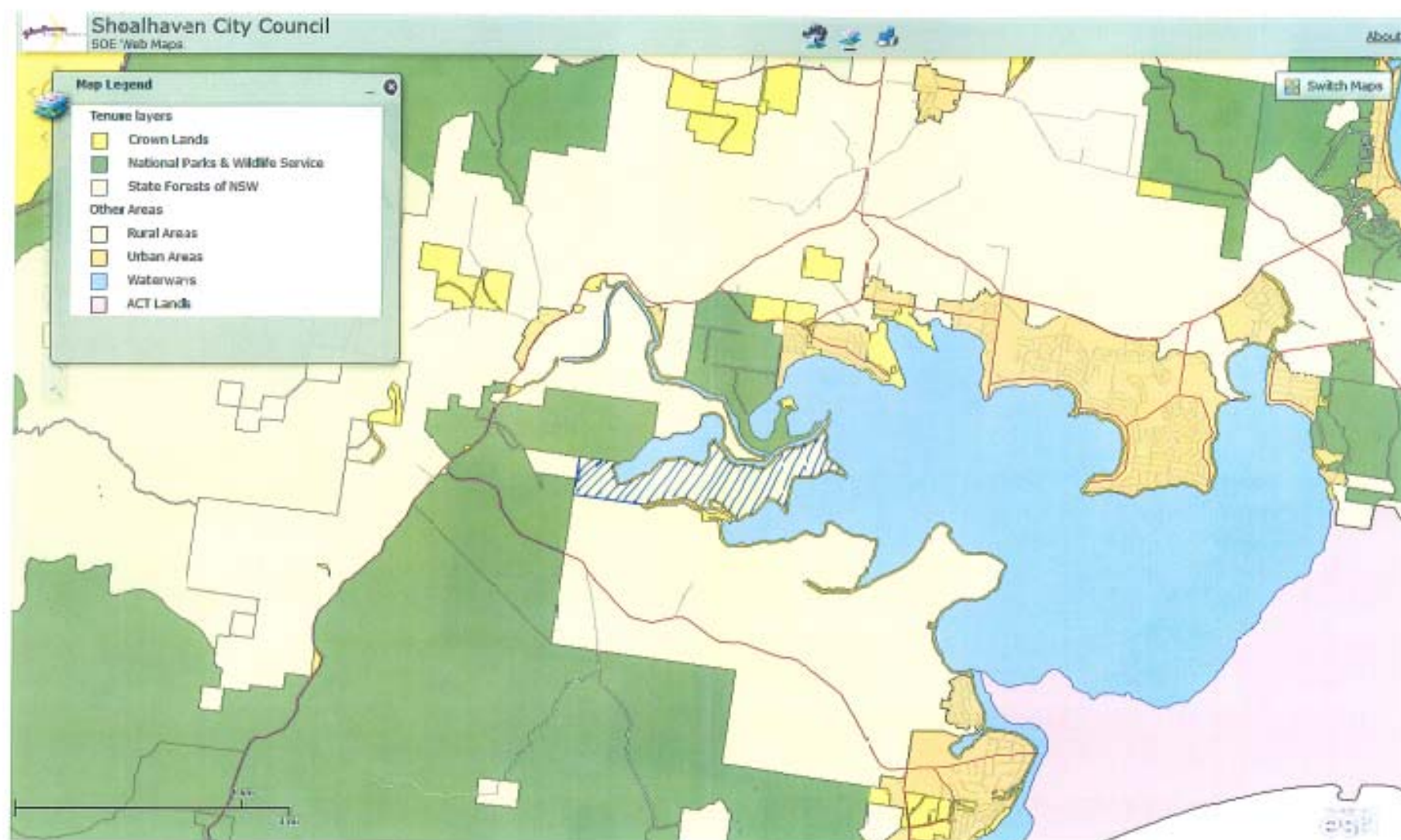
The environmental and biodiversity offsets required to compensate for the removal of vegetation for the Culburra West Urban Development Project have been considered with respect to the *NSW Offset Principles for Major Projects* – promulgated by the OEH, as detailed above. The seven *Offset Principles* have been taken into account in determining an appropriate *Environmental Offsets Strategy* for the Culburra West Urban Development Project (as documented in detail above).

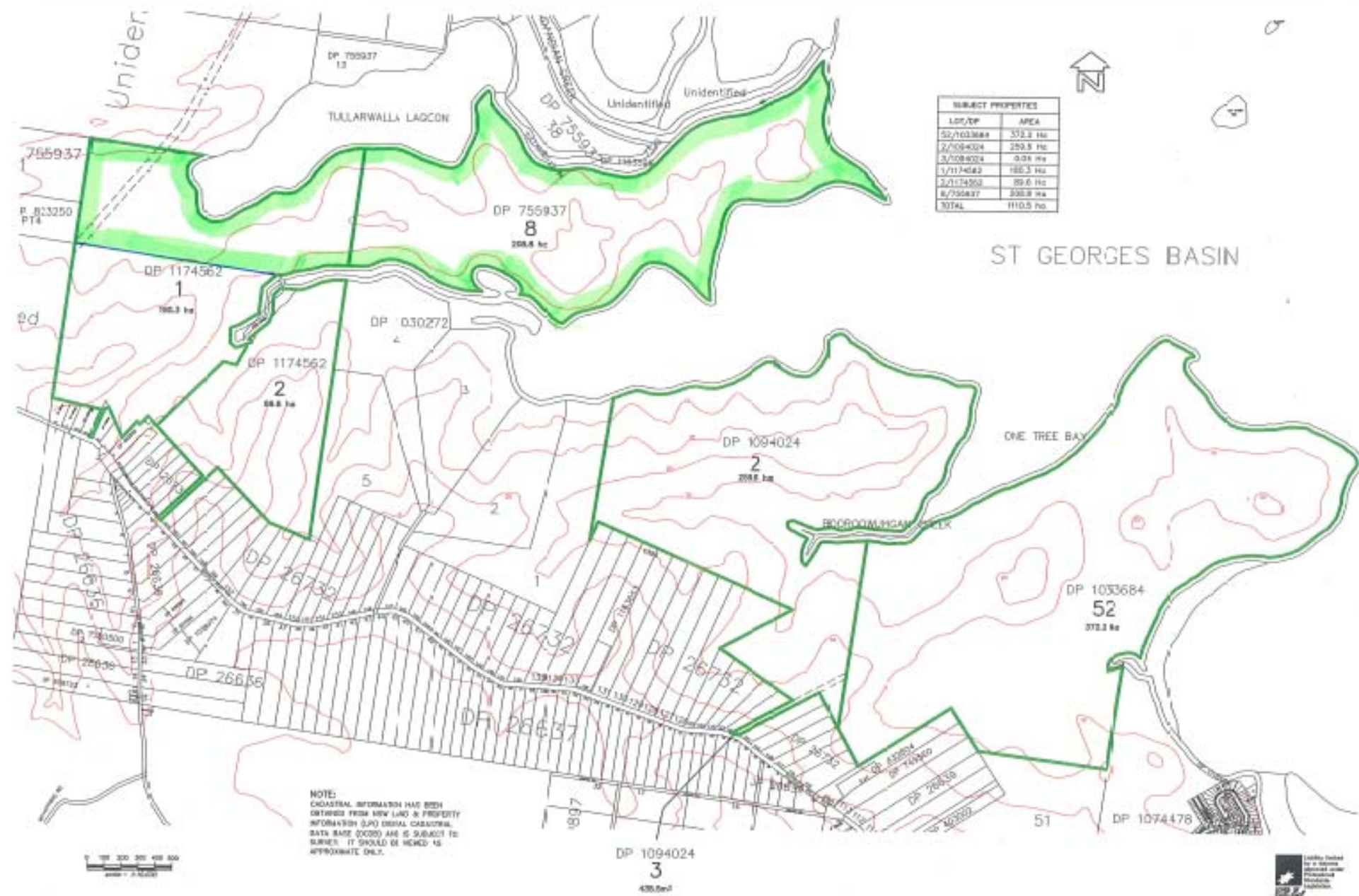
The *Environmental Offsets Strategy* for the Culburra West Urban Development Project has sought to satisfy the seven *Offset Principles*:

- providing appropriate biodiversity offsets (through the protection, enhancement and management in perpetuity of approximately 300ha of private open forest and woodland for biodiversity conservation purposes;
- the rehabilitation and enhancement, and dedication, of an additional 20ha of open forest and woodland vegetation along the Crookhaven River Foreshore Park;
- providing alternative and additional offsets (by virtue of the provision of community involvement and education opportunities, the salvaging and re-use of tree hollows and/or the provision of replacement artificial nest boxes, and the provision of facilities and educational material for the local community);
- the protection and celebration of aboriginal heritage (eg. the middens along Crookhaven River Foreshore) – to the extent approved by the local aboriginal community; and
- the creation of additional habitat for aquatic biota in the detention basins and bioretention swales adjacent to the Crookhaven River Foreshore Park.

The Culburra West Urban Development Project will achieve an appropriate balance between development opportunities and the generation of a new community at Culburra, as well as satisfying biodiversity conservation goals and outcomes by virtue of:

- satisfying the *Biodiversity Offset Principles*;
- satisfying the '*Maintain or Improve*' Principle; and
- providing environmental benefits (the dedication of native forest and woodland, rehabilitation of degraded vegetation, enhancement of the tree-hollow resource, and the provision of novel habitats) whilst also creating a high quality and sustainable community facility.





SCALE 1 : 10,000 (AT A4 SIZE)	DATE	SUBJECT	REVISION	BY	DATE
	0000	05			
	DATE OF PLAN: 8 OCTOBER 2013				

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PLAN SHOWING MASTERPLAN OVER
LOT 52 DP 1033684 & LOT 2 DP 1094024
AT SUSSEX INLET ROAD, SUSSEX INLET
FOR REALTY REALIZATIONS PTY LTD

REF. No.	26014-02		
WEEK	1	OF 1	PAGES 0

Part Six: Population and Housing Demands

6.1. Review of Submissions

A significant number of the private submissions refer to the scale of the project being excessive (Verdun, Harding, Little, Thompson). Several (Little, Martin, Stevens) are from owners of holiday homes who generally object to the scale of development and the loss of 'village' lifestyle. Others claim that it will create two distinct towns (Dingley, Wiggins) and that it will lead to a doubling of the population (Dingley, Stephenson, Verdun).

Many private submissions comment that the population of Culburra Beach would double as a consequence of this project. DoP1 sought stronger justification for the proposed residential mix.

DoP1 also sought an update of the demographic data. Two reports prepared by the Public Practice were commissioned to bring the demographic data up-to-date by analysing the results of the 2011 Census. These reports are 'Culburra Community Portrait, 2011' and 'Demographic Projection for Culburra 2011 – 2036'. These two reports are appended under separate cover.

The following information is derived from these two reports.

6.2. Population and Demographic change

Like many coastal settlements, Culburra Beach experiences fluctuations in population being 'overcrowded' in summer-time and 'empty' for long periods through the winter months. The census, conducted in August, reflects the fact that the population is at, or close to, its lowest point at the time of the count.

The 2006 and 2011 census counts reveal that: (1) the permanent population is continuing to decline at about 1.5% per annum; (2) the number of unoccupied dwellings is increasing at about 1.0% per annum; (3) there is an out-migration of young adults and aged persons; (4) there is an in-migration of young households with children and the near retiring age cohorts; (5) overall the population age structure has changed little; and (6) the number of dwellings has remained constant.

The proponents interpretation of these facts is that: (1) Culburra Beach is becoming more of 'week-ender' or 'holiday home' settlement with fewer permanent residents and more unoccupied (at Census) dwellings; (2) the 'turn-over' in population and dwellings is very limited; (3) there is high levels of youth unemployment (18%) and low workforce participation; (4) youth and young adults migrate

out of Culburra Beach most probably in search of work or higher education opportunities; (5) young households migrate into Culburra Beach probably because housing is affordable (rents <\$250 per week; or dwelling price c. \$350k); (6) the near-retirement age cohorts (45-65) migrate into Culburra Beach; and (7) the few new dwellings (mainly replacements) indicate a static residential market.

6.3. Housing Demand

The inherent inertia caused by the stability in ownership and 'length of residence' is demonstrated by the slow rate of change. The demographic analysis (2011) clearly illustrates in-migration of young households with young children and near-retiring age cohorts. The increase in the number of unoccupied dwellings indicates Culburra Beach is still a location offering affordable 'holiday homes'. There is a strongly expressed local demand for more 55+ housing with preference being expressed for both small lots (lower maintenance) and units (easy to go away for extended periods) indicating the absence of a range of housing types and densities. It is noted that practically all dwellings are detached cottages on single lots with very little turn-over of property. There is some replacement of older dwellings by more expensive modern homes; this is more pronounced in areas adjacent to the beach where land prices reach in excess of \$1 million.

The thin local real estate market is attributed to the stability of the population in Culburra Beach. The demographic evidence combined with the proponents' long experience with real estate development on the south coast leads to the conclusion that there are four distinct sub-markets for housing in Culburra Beach. These are: (1) young households with young children, most probably employed in the sub-region; (2) older couples, in the retiring age cohorts (45-69) looking to permanently reside in Culburra Beach; (3) existing older residents (55+) in Culburra Beach or the sub-region seeking to down-size to a smaller dwelling in a pleasant and convenient setting; and (4) families, most probably metropolitan, seeking a holiday home. The fact that suitable housing for all these groups is available at affordable prices in Culburra is underpinning the market. Discussions with local real estate agents confirm these market characteristics.

6.4. Estimation of Rate of Development

In the absence of any market lead the proponents have based the proposal on there being three prongs of demand. These are: (1) young middle-income households, probably with young children; (2) retirees and 'down-sizers' and (3) families (sub-regional or metropolitan based) wanting a holiday home.

The rate of development is difficult to predict because there is no precedent to guide the proponent. The small lot development will be constructed on demand. The mixed use (The Circus) and the medium density site will also be built on demand and in stages. The house lots will be sold with a range of home-designs being on offer in a small display village. We estimate that the sales rate of house lots will be about 50 per year with actual home construction and occupation reaching about 80% of each stage of the subdivision within five years.

6.5. Estimated Population Growth

The forward projections in terms of occupied dwellings and population are shown on Table 3. These figures show that by 2024 the population of the Part 3A project will have reached 1385, implying something like a 40% increase over the existing population of Culburra Beach. The concerns expressed on the part of some submissions are not borne out by the projections. The growth is anticipated to be gradual so that by year 5 (2018) of the development program the population increase is projected to be 416 (12% growth) and by year 8 (2021) the population increase is projected to be 941 (28% growth).

We consider this a slow rate of growth. It will be barely noticeable to the existing population. But it is expected to lead to an improved turn-over in the retail and commercial businesses in Culburra Beach. It is expected that it will also lead to an increase in demand for aged services and facilities.

Part Seven: Subdivision Design

7.1. Review of Submissions

The Department of Planning and Infrastructure raise subdivision layout/urban design as a key issue, suggesting a re-design to make it more energy efficient, more permeable and to include more useable open spaces; a subdivision with more small-medium blocks of east-west oriented lots designed around open sized space was suggested.

Comments in the public submissions refer to the design being 'inconsistent with the existing character of Culburra Beach', the design being a 'throwback to Art Deco age' (Stephenson), that it will create 'two distinct towns' (Griffiths, Wiggins), and 'cramming 700 dwellings into a beautiful environment without facilities' (Griffiths).

SCC raised the matter of street trees, pointing out that Council does have a Tree Planting Strategy-Streets and that 'the required species for Culburra Road does not include Norfolk Island Pines'. A number of private submissions sought the replacement of the pines with native species (Lake Wollumboola Protection Association Inc., Verdun, Stephenson, Anon., Anon.).

A number of submissions expressed concern about the scale of development (Dingley, Harding, Thompson, Robertson).

A number were in favour of the proposal (Hansen, Templeton, Kerr, Wright, Clarke).

Many supported a more moderate increase (Verdun, Trotter, Mrongovius and Davies, Martin, Anon, Bray, Macarthur, Griffiths).

A number expressed opposition to the proposed flats along Culburra Road (Wiggins, Stephenson, Dingley, Verdun). Others were in favour of a more diverse range of dwellings including flats along Culburra Road (Clarke, Templeton, Hansen, Martin (two-storey)).

Two submissions made more favourable comments about the subdivision design indicating strong support for the urban design intention. Even so there were reservations concerning the lack of an internal open space network and the absence of 'fine-grained' permeability (Wiggins).

SCC support the adoption of a design code should the project be approved. The proponent is requested to work with Council to ensure a quality design outcome of both buildings and the public domain for the whole development area. The proponent is strongly supportive of this approach.

7.2. Scale and Density of Development

The concern expressed about the scale of the proposal is not considered justified on two grounds. One, the area of the new suburb is the same as the section of Culburra Beach located north of the intersection of Prince Edward Avenue and Penguin Head Road and Park Road, bounded on the west by Curleys Bay and on the east by the Tasman Sea. This area is about one third of the area of Culburra Beach; most people would not consider this area to be excessive in scale or even a major component of Culburra Beach. Secondly, the proposal will be developed in stages over an estimated 10-year period. Change is expected to be very gradual. Most of the change, particularly the new neighbourhood, will occur out of sight because it will be screened by retained woodland along Culburra Road. The first stages, generally located west of the ambulance station, will be more noticeable. Their impact is considered to be comparable in size and scale to that of the retirement village which was the most recent expansion to Culburra Beach. The proponents consider Culburra Beach to be an attractive location for further 'retirement villages'.

The concern expressed about the introduction of flats to Culburra Beach is both understandable and predictable. The proponent is strongly of the opinion that an increase in residential density adjacent to the existing town centre is desirable and justified. It is desirable because it increases the range of dwelling types available, thereby increasing the range of choice of place to live for potential new residents or down-sizers within Culburra Beach, and it is justified because of the proximity to shops and services in that these are within easy walking distance. This is basically good town planning, good energy conservation and good long-term sustainability.

In deference to the opposition the proponent proposes to reduce the height of any flats to conform with the Shoalhaven flat code.

7.3. Two Settlements

The concern expressed about the proposal being two settlements recognises the difficult spatial problem that exists. This is due to the location of the STP and industrial zone separating the new development from the existing township; it is also due to the narrowness of the area available for development arising from the limitations of development in the catchment of Lake Wollumboola. Overcoming this has been a prime concern of the proponent.

The proposal has been structured to be reliant upon and have strong links to the existing town centre of Culburra Beach; at the same time the new neighbourhood has been designed to add to the attractiveness of Culburra Beach as a destination by capturing the potential of specific locations for economic activities. These locations are considered to add to the diversity of recreational and business opportunities in Culburra Beach, and importantly enhance the range of employment opportunities in Culburra Beach. The non-residential uses incorporated into the plan for the new neighbourhood are not intended to compete with or detract from Culburra Beach town centre.

7.4. Subdivision Design and Energy Efficiency

DoPI suggest there should be more lots facing east-west.

In response we point out that the whole site is a north-facing slope with an attractive outlook over the Crookhaven River and Curleys Bay. This enables an ideal north-south orientation to be achieved for the vast majority of lots; this is the most energy efficient orientation for dwellings allowing maximum solar exposure in winter and cooler southern exposure in the summer months. In addition the northern outlook is attractive and, on the steeper parts of the site, offers compelling views. The east-west orientation suffers from poor solar exposure in winter and excessive early morning and late afternoon sun exposure in summer. For the majority of the area of this proposal it would mean dwellings facing each other across streets and backyards with little or no opportunity to capitalise on views. In our opinion this would be a most inferior design.

The contours along the length of the site are irregular, generally following the shoreline. There are elevated areas to the east and, more pronouncedly to the west. The subdivision design is based on water sensitive design principles with all roads incorporating a swale which is designed to minimise surface water run-off. Thus the roads are designed to follow the contours, leading to the distinctive road pattern. One consequence of this is that there are some east-west oriented lots; the less desirable orientation of most of these lots is partially offset by the view potential; for the more elevated lots the outlook is likely to be a determining factor. In our opinion there are absolutely no grounds for asserting the layout is not energy efficient. In our view it is highly energy efficient and very strong on water sensitive design principles.

7.5. Structure of the subdivision

The overall subdivision design is a linear form some 1500m long ranging in width from 200m at its narrowest point to 400m at its widest point. The linear form is given emphasis by the two principal east-west links – the collector road and associated cycle/walkway and the foreshore driveway and its associated cycle/walkway. These two routes define the development area and connect this proposal to the town centre. These two routes are considered to be critical to the effective integration of the proposed development with the existing development at Culburra Beach, particularly the town centre.

These two routes are also designed as a series of community focus points. The collector road has three key bus-stops and the main sports ground, the oval, as significant local focal points. When extended westwards, as is foreshadowed (see Plan 8, EA), the collector will give access to the proposed Hilltop local centre and associated parklands prior to connecting to Culburra Road, thus forming a complete loop.

The foreshore drive is designed as a slower road to prevent rat-running. The associated, but separate, cycle/walkway is designed as a leisure route with events (children's play areas, fitness equipment, BBQ shelters as well as interpretative panels and associated observation points) established at intervals along its length. The overall design is based on the elements of local open space being focussed on these two critical items of infrastructure. The aim is to establish these two principal items of infrastructure as linear gathering centres along their length to increase activity and enhance their significance as linkages to the existing development of Culburra Beach. The recreation spaces are located where they are useable as well as being points to which residents will naturally gravitate. The overall spatial structure is designed to overcome the potential for a 'two town' type of development emerging.

7.6. Permeability of the subdivision

We consider the overall design to be permeable. It is consistent with current and historical residential district design. The block dimensions are typical of current practice. Each street and section of street is designed to have its own identity with most sections being visually contained (see illustrations 19 and 20, EA). Only the principal collector road has a continuity of flow which is appropriate for its function (see illustration 17, EA). The vista avenues and the two outer circuits are designed to distribute traffic efficiently from the collector road.

The layout has nine cul-de-sacs. None have more than 10 lots in them which is consistent with the recommendations in the Landcom 'Street Design Guidelines'. All are upslope from the main streets from which they spring. The arrangement along the foreshore drive is considered to be particularly attractive with the houses in the cul-de-sac being positioned some 3-4m above the level of the dwellings with frontage to foreshore drive. It is expected that the dwellings in the cul-de-sacs will have views over and between the dwellings on foreshore drive (see illustration 20, EA).

7.7. Pedestrian flows through the subdivision

Pedestrian flows across the site have been carefully considered. The principal destination for pedestrians are: (1) the bus stops; (2) the oval; (3) the foreshore park with its focal points at intervals; (4) the leisure hub; (5) the cycle/walkways giving access to the town centre; and (6) the circus which may have some minor convenience shopping.

The linear form of the proposed development is contained by the two dominant east-west routes linking the project area to the existing development at Culburra Beach. This linear form is traversed by major pathways that focus pedestrian movement on the set of destinations outlined above. The major pathways will be readily identifiable in design and materials and by being wider than conventional street footpaths; the residential streets will have footpaths on one side only.

The concentration of pedestrian flows on major routes linking key destinations is considered to be superior urban design.

The dominant overall movement is considered to be east-west, primarily to and from the town centre. The two major pedestrian routes, the ridgeway and the foreshore pathways, are shaped to satisfy this desire line. Secondary desire lines are expected to be generated by the foreshore park embellishments which will include children's play areas, seating, fitness equipment, shelters as well as formal uses such as those proposed for the leisure-hub. All of these are proposed to be located in or adjacent to the foreshore park. The park is conceptualised as a linear multi-purpose activity centre. The oval is also considered to be a secondary attraction, particularly for youth and organised sports events. The primary desire line is considered to be to the collector road, also a bus route, which is co-located with the principal cycle/walkway leading to the town centre. The two vista avenues and the central pathway lead directly to the bus-stops.

The secondary desire line is considered to be to the foreshore park with its various embellishments and activity focal points. There is a range of pedestrian pathways that lead directly to the waterfront and the leisure oriented cycle/walkway.

Both the Foreshore Park and the oval are expected to attract people from the Culburra Beach urban area as well as to residents of the proposed extension area. Each is readily accessible from the collector road and the associated footpath and cycleway; each is also directly accessible by foot and car from within the foreshadowed extension area.

We consider the integration of this proposal with the existing development at Culburra Beach to be the primary objective of the overall design. We wish to see Culburra town centre strengthened. We will support the location of community facilities in and around the town centre. We endorse the concept of a town plaza (supported in a number of submissions including that of the Lake Wollumboola Protection Association).

We consider the Part 3A proposal is designed to integrate the proposal with the existing Culburra community.

It is pointed out that the separation appears more significant than will actually be the case because the details of the proposed residential uses in the business zone have been excluded from the submitted Part 3A project because the proposed uses are not permitted in the zone. The proposed uses include a 60 small lot subdivision and sites for apartments.

7.8. Street tree planting

The proposed tree planting is required to be consistent with Council's 'Town Street Tree Planting Strategy'. Reference is made to the Landcom publication 'Street Tree Design Guidelines' which sets out the principles of street tree selection. These principles were followed in nominating specific trees for particular streets. The Landcom publication notes that certain trees are associated with particular locations or characteristics. In particular it cites Norfolk Island Pines as being associated with coastal towns and liquidambar being associated with distinctive autumn colour.

It is noted that Council have planted trees along the section of Culburra Road defined as the Culburra Beach Entrance as set out in the Council Street Tree Planting Strategy. These trees have not taken well. The intention of the proponent is to plant a species of street trees along the collector road that will arch over the road and that will have distinctive autumn colouring.

The reason for these choices is that avenues of distinctive trees give a place identity. That remains the aim of the proponent. The proponent is willing to discuss preferred tree species' with Councils' tree strategist and the community.

7.9. Bushfire Control and APZ's

The Rural Fire Brigade made a detailed assessment of the proposal. Subject to some fine tuning the majority of the APZ's satisfy the requirements of PBP, the relevant publication.

RFS raise the matter of an escape route from the major estate which will rely on only the single access to Culburra Road until the Cactus Point areas are approved for development. RFS indicate that in this type of woodland setting all components of development should have two points of access. RFS note that the collector road will, subject to consents for future development being forthcoming, be extended to form a loop road off Culburra Road with a second access point being located at or close to the existing farm access to Lots 55, 62, 63, 80, 81 and 90. There is a well established access track off Culburra Road giving access to these lots. The proponent owns these lots and the access track. It is proposed that emergency access to this track will be provided on an interim basis in case of fire, pending endorsement of a subsequent stage of development which the proponents expects to achieve in the next few years.

Part Eight: Water Quality Control

8.1. Review of Submissions

There is a significant number of submissions expressing concern about the impact of the proposed development on water quality in Curleys Bay and the Crookhaven River.

OEH stated the Crookhaven Catchment is extremely sensitive area of wetlands and foreshore environments. Considerable improvement of the water sensitive design and monitoring measures is required to support the EA claim that a treatment system can be implemented to reduce the export of pollutants in the order of pre-development levels.

Both Fisheries NSW and NSW Office of Water also expressed significant concerns about run off and it's impact on the Crookhaven. In particular the Oyster Industry expressed strong concerns through both individual submissions and an over-arching submission from the South Coast Oyster Farmers Association.

Concern was expressed by the Lake Wollumboola Protection Association Inc. noting it is "concerning that a development of this scale has been proposed for such sensitive coastal environments". Other private submissions echoed their concerns..

8.2. Amendments to the Proposal

In Part One of this Response we outline the amendments to the Plan. With respect to water quality controls all the swales and basins were re-located outside the 7(a) zone with some consequential minor changes to the development area. This led to a re-calibration of the size and capacity of the swales.

Further to consideration of the submissions the proponent arranged a stakeholder consultation on 13 August 2013. The stakeholders attending included:

- Local Oyster Farms
- Australia's Oyster Coast Inc.
- NSW Food Authority
- Southern Rivers Catchment Management Authority
- Shoalhaven Water
- Shoalhaven City Council

- NSW Environmental Protection Authority;
- NSW Fisheries; and
- The Proponent and their Consultants: (1) Martens and Associates; and (ii) Allen Price and Associates.

Draft documents were prepared and circulated to all stake holders. A subsequent meeting was held on 12 September 2013 at which additional feedback was obtained and the documents reviewed accordingly.

8.3. Water Quality Control Measures

The proposed measures have been enhanced in a number of ways as outlined in the reports "Water Cycle Management Report" and the "Estuary Management Plan" which are attached under separate cover.

8.4. Water Quality Monitoring Plan.

The monitoring regime now proposed is considerably amplified over the original proposal. This is in response to the matters of concern to the oyster farmers as well as the NSW Food Authority.

The 'Water Quality Monitoring Plan' is attached under separate cover.

8.5. Conclusion

The proponents are satisfied that the design of the Water Quality Control System is satisfactory and that the Monitoring program proposed will ensure on-going satisfactory performance.

Part Nine: Transport and Accessibility

9.1. Review of Submissions

Roads and Maritime Services (RMS) and Shoalhaven City Council (SCC) both expressed concern about the impact of the proposal on traffic at the intersection of Kalander Street and Princes Highway, Nowra.

They requested further analysis of this intersection and the sequence of intersections between Kalander Street and the bridge over the Shoalhaven River. They also requested the proponent to recommend methods of resolving the Kalander Street/Princes Highway intersection.

RMS also indicated their opposition to the proposal to move the 50kph signage some 800m to the west of the present location. The proponent located the 50kph sign some 250m west of the proposed roundabout. RMS recommended that an alternative to the roundabout be developed to allow the 50kph sign to remain in its current location. However, elsewhere RMS stated that all access to stage 5 should be via the roundabout at the new collector road.

In response to these submissions the traffic consultants, GTA Consultants, undertook additional analysis of the various issues raised. Following further representations to RMS it was agreed that the SIDRA analysis of the sequence of intersections north of Kalander Street is not required. The GTA report 'Transport and Accessibility Impact Assessment: Addendum Report' is appended over separate cover.

9.2. The Kalander Street Intersection

More detailed analysis of the performance of the Kalander Street intersection is presented. It is concluded that the most critical improvement required is increasing the capacity of the Princes Highway to three lanes in each direction. This is considered to be part of the wider traffic congestion problem along the Princes Highway in Nowra.

The consultants were requested to review the performance of this intersection assuming a 2.5% linear growth in traffic on this section of the highway, comparing this with and without the development proposal. This analysis indicated that the intersection is already over capacity during the existing Friday AM and PM peak periods with an average delay for all vehicles of 89.2 secs (Friday AM) and 160.00 secs (Friday PM). With full site development these delays increase to 102.8 secs (Friday AM) and 168.4 secs (Friday PM).

GTA Consultants conclude that the intersection currently operates overcapacity in the Friday AM and PM peaks without traffic generated by the development. There are no planned upgrades of this intersection.

9.3. The Proposed Roundabout

An alternative intersection to the proposed roundabout is presented. The proponents advise that a cross street is planned for Culburra Road some 400m west of Canal Street East giving access to residential development south of Culburra Road and commercial and residential development north of Culburra Road. Some 300m west of this proposed intersection is Strathstone Street which is the current access to the industrial area; this road will be incrementally extended into the balance of the industrial zone as land is taken up. The roundabout is located some 300m west of Strathstone Street. We consider this frequency of intersections and the visual impact of urban development along the frontage of Culburra Road east of the STP to be incompatible with a 100kph speed limit.

We consider, and GTA Consultants concur, that a roundabout is a good solution to traffic management for the proposed development. The proponent also considers a roundabout to be desirable in urban design terms, effectively announcing arrival at Culburra Beach.

Part Ten: Infrastructure availability and staging

10.1. Review of submissions

DOPI requested further particulars on the provision of infrastructure-principally electricity, water supply and sewage treatment and reticulation.

10.2. Electricity Supply

Further discussions have been held with Endeavour Energy on the requirements for a site for a new "Culburra Beach" zone electrical substation and a route for the required transmission lines to feed the substation.

Endeavour Energy has now agreed to a much reduced site from the original 10,000m² site requested. Endeavour Energy's requirements are now to have a site fronting Strathstone Street that is 2,581m² in area. We have met representatives from Endeavour Energy on site, the proposed site has been pegged out to allow Endeavour Energy to undertake it's required 'Due Diligence' tests, and negotiations have commenced in regard to the transferring of the site to Endeavour Energy in due course. A detail site plan of the Zone Substation site is attached, being APA drawing 25405-36.

The new Zone Substation is likely to take approximately 18 months for construction (from when the Part 3A is approved), and the transmission feed mains are likely to take approximately 12 months to construct (from when the Part 3A is approved). All of this construction work will be undertaken by Endeavour Energy. Endeavour Energy has also confirmed that the first 50 lots released can be adequately serviced from existing infrastructure without the need for the construction of the new Zone Substation to be complete.

Water Supply Information Relating to West Culburra Expansion

Extract from Shoalhaven Water, Water and Wastewater Servicing Strategies Project – Part A: Water Servicing Strategy Report, May 2013 (page 88).

4.3.6 Culburra Beach Future Residential

The Culburra Beach future residential area is bounded by the Crookhaven River in the north and west and the Village of Culburra Beach in the east. The expected development consists of approximately 507 ET of residential development by the 2041 horizon.

A preferred connection option has been developed that involves connecting to the existing Coonemia Large water supply system (i.e. Tapping to AC/C DN300; Asset ID: 30243). In addition to this, 700 m of DN150 water main to be constructed along proposed Collector Road intersecting with Culburra Road.

Construction of the trunk main should be installed as development comes online in those areas. It is expected that these will be required by 2014. Figure 36 shows the Culburra Beach future residential area and the location of the existing and proposed mains.

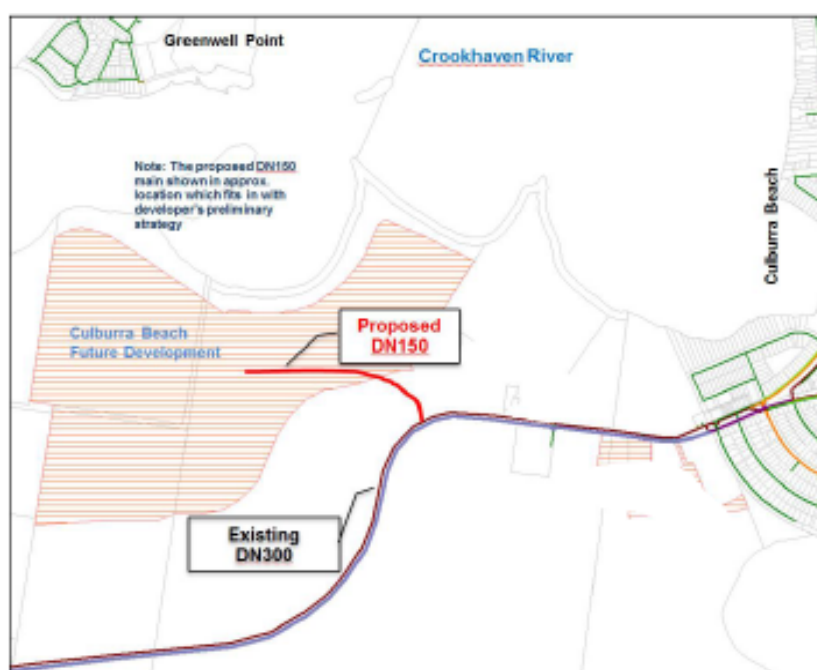


Figure 36 Culburra Beach Future Residential

10.3. Shoalhaven City Council Water and Sewerage Strategies

Since preparation of the initial Part 3A submission, Shoalhaven City Council, through its Consultants GHD, has prepared an updated water supply strategy and sewerage strategy for Shoalhaven LGA including Culburra Growth area which is the Part 3A application. Allen Price and Associates (APA) have reviewed the GHD update and make the recommendations outlined below.

10.4. Water Supply

APA have undertaken basic calculation confirming that the water supply strategy adopted by GHD can be suitably sized to provide adequate water pressure throughout the area covered by the Part 3A project.

APA's calculations indicated that a DN150 main (as adopted by GHD) is inadequate to cater for the area covered by the Part 3A, and it is more likely that a DN250 main will be required.

Based on APA's calculations, the trunk main will need to be DN250 for approximately 1.1km along the collector road and then progressively reducing in size as it progressed westwards.

With the pipe size as outlined, the minimum pressure at the western end of the development is 16.29m which is above SCC's minimum pressure of 15.

During detailed design, the size of these trunk mains will be further refined, and may be able to be reduced in consultation with Shoalhaven Water.

It is also possible that a second connection point to the existing trunk main on Culburra Rd will be established further to the west to reduce the reliance on the single main. This will also improve security of supply to the development.

10.5. Sewerage

Allen, Price and Associates (APA) has prepared some basic sewer main alignments to check the number and location of sewer pumping stations (SPS) required and to ascertain the feasibility of the sewer strategy adopted by GHD.

APA's investigations indicate that the optimal sewer strategy requires a total of 2 major sewer pumping stations (SPS) with some isolated areas of "Low Pressure Sewer Mains". The SPS sites are shown on the subdivision concept plan.

During detailed design, the exact levels of the sewer mains and size/location of these SPS sites will be further refined in consultation with Shoalhaven Water.

10.6 Conclusion

The proponents consider the provision of primary infrastructure for the whole of Part 3A project to be manageable. The proposed Stage 1 comprises 30 small lot dwellings which will be developed as soon

as a consent for the Part 3A is obtained. The above indicates that the basic infrastructure is available for Stage 1. Stage 2 is expected to commence development in 2015 by which time all the basic infrastructure required for the whole of the Part 3A project will be in place.