Figure 7.46: Landscape Masterplan – Northern portion of site

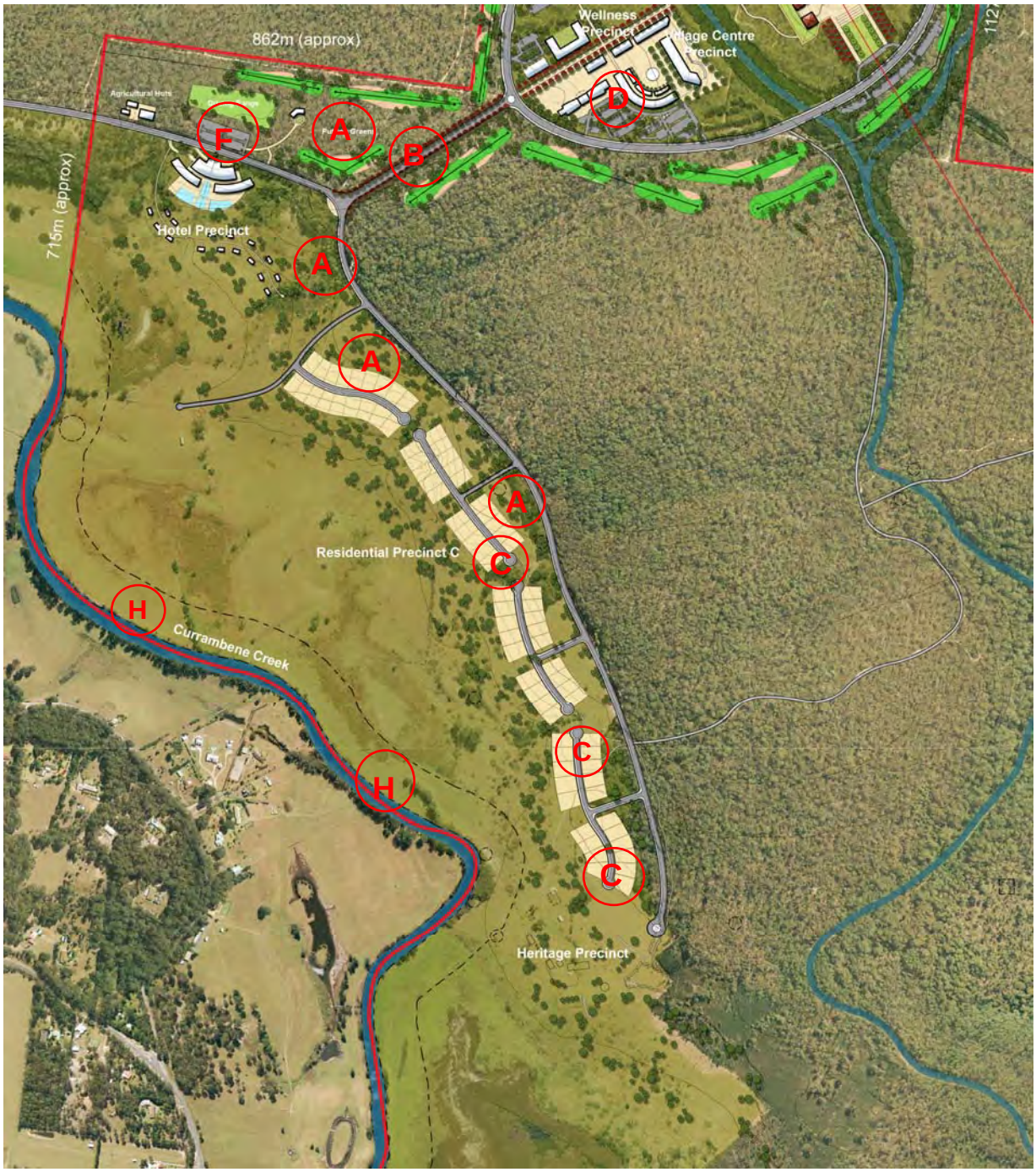

Figure 7.47: Landscape Masterpl.an – Southern portion of site

7.19 Property Ownership

The *South Coast Regional Strategy* and its accompanying report, the *South Coast Sensitive Urban Lands Review,* state that:

> *The land developed for tourism and residential purposes should be retained in one ownership.*

The site will be subdivided under the community land legislation of the *Community Land Development Act 1989 (NSW*). The proposed tourist and residential development (and its subdivisions) will be developed with a common theme and managed in a community title arrangement in accordance with the requirements of the *Community Land Management Act 1989 (NSW)*. Under the Management Act, the land will be developed with a common theme.

The residential component of the land will be divided into individual allotments with each lot owners responsible for the care and maintenance of their homes and lots.

The remaining tourist component of the land comprising the Buddhist Temple, Village Centre, Educational, Health and Wellness, Hotel, Heritage and Chinese Garden precincts, and the buildings within these precincts, golf course and associated clubhouse, will be managed under the *Community Land Management Act 1989*, under the ownership of the Shaolin Temple Foundation (Australia) Limited.

7.19.1 Objectives

The objectives of the proposed titling for the site (and its consequence management structure) are:

- To ensure the site, when subdivided, accommodates the physical integration of the tourist component with the residential component;
- To place all “common areas” (such as open spaces, bushland areas, asset protection zones and accessways (such as roads) in one ownership;
- To put in place arrangements for the management, maintenance and funding of the “common areas” (e.g. the standard to which they are used to managed, the parties who will pay for them and the parties who can use them); and
- To put in place arrangements to allow public access (and the conditions of access) over some parts of the “common areas”.

7.19.2 Subdivision

The community land legislation provides great flexibility in determining the subdivision pattern of the site.

A community plan will be established with subdivision undertaken in stages, as subsequent plans comprising community development lots (being the development precincts) in the community plan.

Accordingly, community development lots can be further subdivided to create subsidiary schemes (which can be precinct schemes or neighbourhood schemes). These subsidiary schemes may have their own management arrangements or may be governed by the community management statement.

Applying the above principles to the site, each of the precincts (comprising the Temple Sanctuary, the Educational, Health + Wellness, Village Centre, Information, Hotel and tourist cabins, serviced apartments, golf course and the 300 residential dwellings) could each be the subject of a separate subsidiary scheme.

Each subsidiary scheme could either have its own internal management arrangements (through the management statement lodged with the relevant subsidiary plan), or could be the subject of overriding management arrangements contained in the community management statement.

7.19.3 Management

A community management statement is registered with the community plan, which sets out the management regime for Comberton Grange. This is the vehicle by which the built environment and the open areas are managed and administered by the community association.

This will occur as follows:

- The community association will have the responsibility to manage and administer the common areas (whether contained on community association land, on subsidiary body land or lots);
- Management plans may be adopted by the community association;
- Management plans cover a variety of topics – which may comprise:
  - Landscape management plan;
  - Stormwater management plan;
  - Threatened species management plan;
  - Fire/ emergency evacuation plan;
  - Bushfire management plan;
  - Vegetation management plan for the conservation area;
  - Vegetation management plan for the balance of the site.
- The community management statement may also contain procedures governing the manner in which improvements may be erected on Comberton Grange. This is done by introducing the concept of a Design Review Panel from whom approval must be obtained to erect or change improvements anywhere on the site.

7.20 Staging of the Development

The proposed development will be constructed in stages. The Shaolin Temple (the key feature of the tourist development) will be constructed at the first stage of the development. Other facilities, such as educational buildings, the Traditional Chinese Medical Centre, hotel and retail-commercial buildings within the Village Centre Precinct, and associated road network, will be developed accordingly, depending on investor support and financial capability. The residential precincts will be also developed incrementally, at the same timeframe as the tourist development.

8.0 ASSESSMENT OF IMPACTS OF THE PROPOSAL

This section of the report provides an assessment of the key environmental issues for the project as nominated by the Director-General's Environmental Assessment Requirements dated 20 October 2010.

For each key issue, the existing environment is described, the potential impacts of the Masterplan Development proposal and proposed management and mitigation measures.

8.1 Indigenous Heritage

Director-General's Requirements

Heritage and Archaeology

Identify whether the site has significance to Aboriginal cultural heritage and identify appropriate measures to preserve any significance. The assessment must address the information and consultation requirements of the draft *Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DEC 2005) and *Interim Community Consultation Requirements for Applicants* (DEC 2004). The cultural heritage assessment should include areas not previously surveyed including the former pine plantation. Note that the personal/ contact details of any individual should not be publicly disclosed without first making it known to those concerned that their details may be publicly disclosed in the EA.

The *Aboriginal Cultural Heritage Assessment – Shaolin Temple and Academy, Comberton Grange, Jervis Bay, NSW* (July 2012) was prepared by Navin Officer, Heritage Consultants Pty Ltd to address the indigenous heritage and archaeology of the site – **Appendix 2**.

The cultural heritage assessment is of areas potentially affected by the proposed Shaolin Temple development. The assessment included literature review and database searches, field inspections and Aboriginal consultation.

The *South Coast Sensitive Urban Lands Review* identified a key environmental issue on the Comberton Grange site is cultural heritage, and that development is considered acceptable if adequate measures are taken to ensure that there is no significant disturbance to areas with high cultural heritage values.

8.1.1 Existing environmental features

Indigenous sites

There are 25 Aboriginal cultural heritage recordings, including 4 archaeologically sensitive areas/ Potential Archaeological Deposits (PADs), within the Comberton Grange study area. With the exception of the reported burial location (CG7), no areas of particular Aboriginal cultural sensitivity were identified within the study area.

8.1.2 Assessment of potential impacts

Assessment Criteria

Aboriginal archaeological sites have been assessed using five potential categories of significance:

- Significance to contemporary aboriginal people;
- Scientific or archaeological significance;
- Aesthetic value;
- Representatives; and
- Value as an educational and/or recreational resource.

Cultural significance can be defined as the cultural values of a place held by the local and wider contemporary Aboriginal community. Places of significance may be landscape features as well as archaeologically definable traces of past human activity. The significance of a place can be the results of factors which include continuity of tradition, occupation or action, historical association, custodianship or concern for the protection and maintenance of places, and the value of sites as tangible and meaningful links with the lifestyle and values of community ancestors.

Archaeological impacts

The majority of the Aboriginal cultural recordings that would potentially be impacted by the permissible development area identified in the *South Coast Sensitive Urban Lands Review* (October 2006) have been assessed to be of low archaeological significance. These sites have low archaeological research potential and no specific concerns on the sites Aboriginal cultural heritage values.

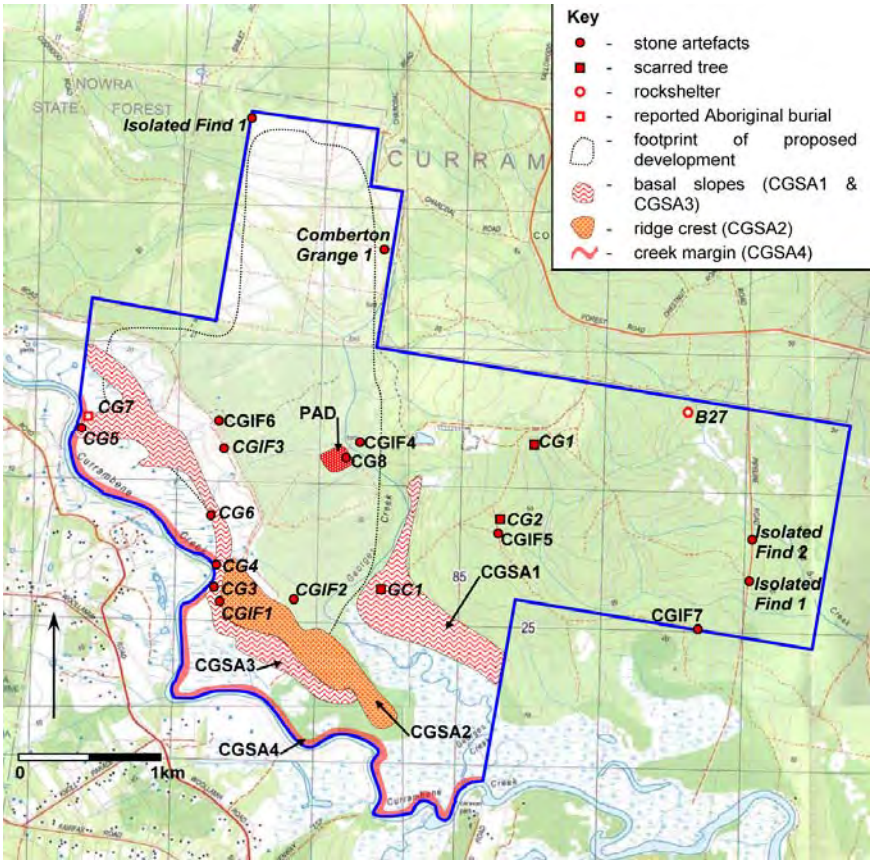

Figure 8.1: Location of Aboriginal sites, areas of PAD & archaeologically sensitive areas on the site

As such, the majority of the identified Aboriginal sites within the Comberton Grange study area will not be impacted by the proposed development area. However several recordings are situated in close proximity to the development area. These comprise:

Archaeological find	Location of archaeology	Archaeological description	Significance assessment
Isolated Find 1	Located in the far north-west corner of the former Pine Plantation in a disturbed area that was used as the main access point to the Pine Plantation. The proposed golf course is located near this find.	A quartz core artefact (recorded in 1993) This area has been subject to mechanical disturbance and impact associated with traffic along the trails.	The artefact could **not** be **located** during the current archaeological survey. It is unlikely that artefacts at this site could be found without recourse to vegetation clearance and/ or excavation. Recording considered to be of **low significance** within a local context.
Comberton Grange 1- Former Pine Plantation	Located near the eastern boundary of the former Pine Plantation. The proposed golf course is located near this find.	A small artefact scatter comprising a silcrete flake and a chert flake (recorded in 1993) on a fire trail 30m west of Georges Creek in the former Pine Plantation. The area has been subject to extensive mechanical disturbance and the provenance of the artefacts is unclear.	The artefact could **not** be **located** during the current archaeological survey. It is unlikely that artefacts at this site could be found without recourse to vegetation clearance and/ or excavation. Recording considered to be of **low significance** within a local context.
Isolated find CGIF2	Located east of the southern end of Residential Precinct C within the forested area, with Residential Precinct C is sited west of this find. CFIF2 is **not within the proposed development area**.	A silicified wood, broad platform flake (previously recorded) located on low gradient upper spurline slopes. The artefact may represent a disturbed remnant from a former site or an isolated discard.	The artefact could **not** be **located** during the current archaeological survey. It is unlikely that artefacts at this site could be found without recourse to vegetation clearance and/ or excavation. Recording considered to be of **low significance** within a local context.

Archaeological find	Location of archaeology	Archaeological description	Significance assessment
Isolated find CGIF3	Located near within Residential Precinct C, but **not in the proposed development area**.	A grey silcrete flake (previously recorded) situated on low gradient upper ridge slopes. The artefact may represent a disturbed remnant from a former site or an isolated discard.	The artefact could **not** be **located** during the current archaeological survey. It is unlikely that artefacts at this site could be found without recourse to vegetation clearance and/ or excavation. Recording considered to be of **low significance** within a local context.
Isolated find CGIF6	Located near the existing road along the upper slopes of Currambene Creek. The existing road alignment will be maintained.	A single stone artefact on a low gradient ridge crest. The artefact was exposed on an informal vehicle tract that extends up to the N-E from the main access track.	The subsurface archaeological potential of the area is considered to be of **low significance** within a local context.
CG6	Located on the mid-slopes along Currambene Creek, south-west of Residential Precinct C and is **not in the proposed development area**.	A scatter of 4 stone artefacts located 9m apart on an eroded portion of an unsurfaced vehicle track situated on the basal slopes of a narrow spurline. The location of this artefact is within the archaeologically sensitive area of CGSA3.	These recordings have been assessed to be of **low to moderate significance** within a local context.
CGIF4	Located within the central forest area, the trail is not anticipated to be developed, but trail retained for forestry maintenance purposes.	A single stone artefact along a west facing slope bordering Georges Creek on a fire trail.	The subsurface archaeological potential of the area is considered to be of **low significance**.
CG8 & associated PAD	Located within the central forest area, this area is not anticipated to be developed and is **not within the proposed development area**.	A scatter of at least 14 artefacts visible along a section of fire trail less than 100m from Georges Creek, situated on a relatively undisturbed and elevated landform close to fresh water.	CG8 and the associated PAD has a high potential to contain a low to moderate density of artefacts and low to moderate potential for insitu archaeological material. The overall find is of **moderate archaeological potential**.

Archaeological find	Location of archaeology	Archaeological description	Significance assessment
CGSA2 (Comberton Grange Sensitive Area 2)	Located along the upper slopes of Currambene Creek, south-west of the Georges Creek tributary and south of Residential Precinct C. It is **not within the development area**.	The area identified as being sensitive extends for about 1600m along the undulating ridge crest and associated saddle, and averages 200-300m in width.	This area may have been the focus of activities such as camping, and is assessed to be of **moderate archaeological potentia**l. The assessment of the heritage significance of this archaeologically sensitive area is dependent on the results of further archaeological investigations in the form of subsurface testing.
CGSA3 (Comberton Grange Sensitive Area 3)	Located along the upper slopes of Currambene Creek, along the cleared lands. The area is south-west of Residential Precinct C and the Hotel Precinct. Development (which includes walking trails and agriculture) is **not proposed within this area**.	CGSA3 encompasses the SW facing basal slopes (pastureland) adjacent to wetlands & Currambene Creek. Previous disturbance in this zone are vegetation clearance, fencing and grazing. These slopes are likely to have been primary access routes between the woodlands to the north and wetlands & estuaries to the south, with areas likely used for activities such as camping.	This area is assessed to be of **moderate to high archaeological potential**.

Refer to Figure 8.1.

The majority of sites of Aboriginal and archaeological sensitivity will not be impacted by the proposed development. However, 4 recordings are situated either partially or wholly within the proposed development footprint. These are Comberton Grange 1, Isolated Find 1, CGIF3 and CGIF6.

Comberton Grange 1 and Isolated Find 1, located within the northern (former Pine Plantation) portion of the site could not be relocated during field survey and is unlikely that these previously recorded artefacts could effectively be salvaged prior to any ground disturbance work that may occur in this area.

CGIF3 and CGIF6, located at the central portion of the site, are considered to be of significance within a local context and have low archaeological research potential.

These recordings raised no specific concerns in regard to Aboriginal cultural heritage values by Aboriginal representatives who participated in the field survey.

Refer to Figure 8.2.

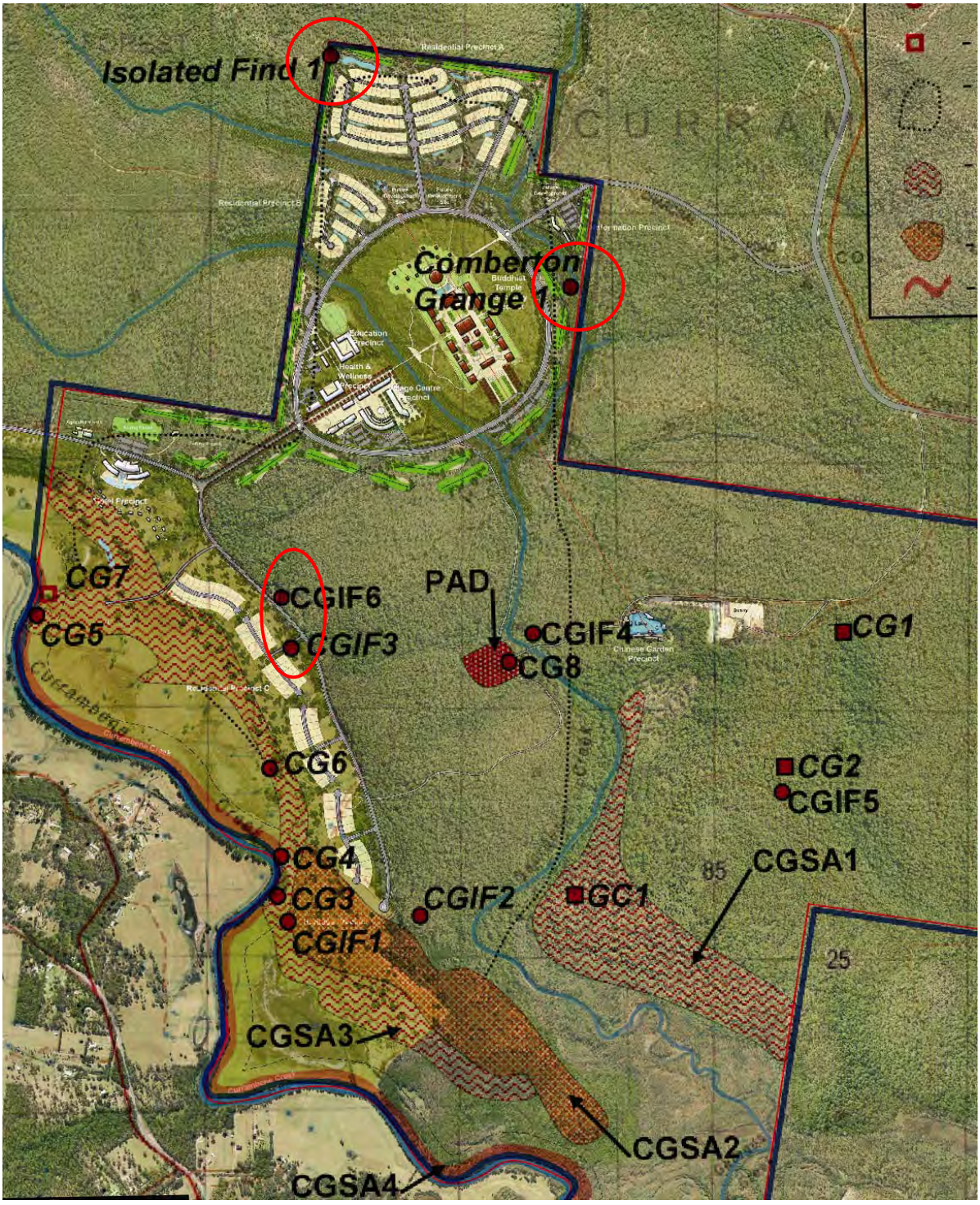

Figure 8.2: Location of areas of Aboriginal and archaeological significance overlaid with proposed development area

The Aboriginal Cultural Heritage consultant concludes that there are no absolute constraints to the proposed development and that it is unlikely that any archaeological resource encountered during archaeological testing programs would prevent construction provided that recommended mitigation actions are followed.

8.1.3 Mitigation and management measures

The consultant report recommends that:

Area	Significance	Recommendations
▪ Comberton Grange 1 ▪ Isolated Find 1 ***Location:*** Northern portion of the site)	These sites could not be relocated during survey for this project. These recordings are considered to be of **low significance**.	If impacts are anticipated at these sites, the location of each site is inspected by a qualified archaeologist, together with representatives from the registered Aboriginal organisations, immediately after initial clearance and ground disturbance works. Any artefacts visible at that time should be collected/ moved from the area of impact.
Isolated find CGIF3 & CGIF6 ***Location:*** Above Residential Precinct C	These recordings are located within the proposed development area and are considered to be of **low significance**.	These recordings will be directly impacted. Prior to the commencement of ground disturbance works; the artefacts should be collected/ moved from the area of impact by a qualified archaeologist together with representatives from the registered Aboriginal organisations.
Artefact scatters CG3-CG6 ***Location:*** Above Currambene Creek.	These items are not within the development area and are of **low to moderate significance**.	
Archaeologically sensitive area CGSA2 ***Location:*** SE of Residential Precinct C.	Of **moderate archaeological potential**.	If impacts are anticipated in certain portions of CGSA2 and CGSA3, a program of archaeological subsurface investigation should be conducted prior to development impact, to determine the presence, extent and integrity of any potential archaeological deposits that may be impacted by the development. While a broad area has been identified for each of these recordings, subsurface investigations would be focussed within those sections of lower gradient, and/ or places with relatively deep and undisturbed soil deposits. It is likely that testing would involve excavation (either by hand or mechanical excavator) of test pits along a series of transects within the areas of highest potential in each archaeologically sensitive area. Testing would only be necessary within those areas that are going to be impacted by the development.
Archaeologically sensitive area CGSA3 ***Location:*** SW of Residential Precinct C.	Of **moderate to high archaeological potential**.	

The protocols for the unanticipated discovery of archaeological material and suspected human remains are to be adopted and complied with during construction activities involving ground surface disturbance and excavation.

Artefacts are to be recorded and collected as prescribed in the Aboriginal Heritage Assessment Report, with any recovered Aboriginal objects managed according to a long term management strategy determined in consultation with the JLALC (Jerrinja Local Aboriginal Land Council) and other registered Aboriginal stakeholders.

8.2 European Heritage

Director-General's Requirements

Heritage

Identify any items of non-heritage significance and, where relevant, provide measures for the conservation of such items. Submit a Heritage Assessment of the non-indigenous heritage values of the site, including any built, archaeological, landscape and moveable items of potential significance. Submit a draft Statement of Heritage Impact detailing and evaluating any likely impacts from the proposal on the site's non-indigenous heritage significance.

The *Statement of Heritage Impact* (June 2012) on the Comberton Grange former homestead and landholding was undertaken by Heritage Division of Conybeare Morrison to address the European heritage of the site – **Appendix 3**.

8.2.1 Existing environmental features

Historic overview

The site is one of the early land grants in the Jervis Bay region to remain in its original extent without subdivision. The Colonial Homestead is one of the earliest in the area, related to initial settlement at Currambene Creek. The Homestead was built by convict labour in the early 1840s with bricks for the house made on the site.

The former homestead and immediate surrounds is sited on a ridge above Currambene Creek. From the homestead complex are uninterrupted views across the Currambene Creek valley.

The farmland has not been used intensively since 1999 and the pastoral land is generally covered in thick grass. The pastoral landscape contains several disused structures and remains of structures.

Refer to Figure 8.3.

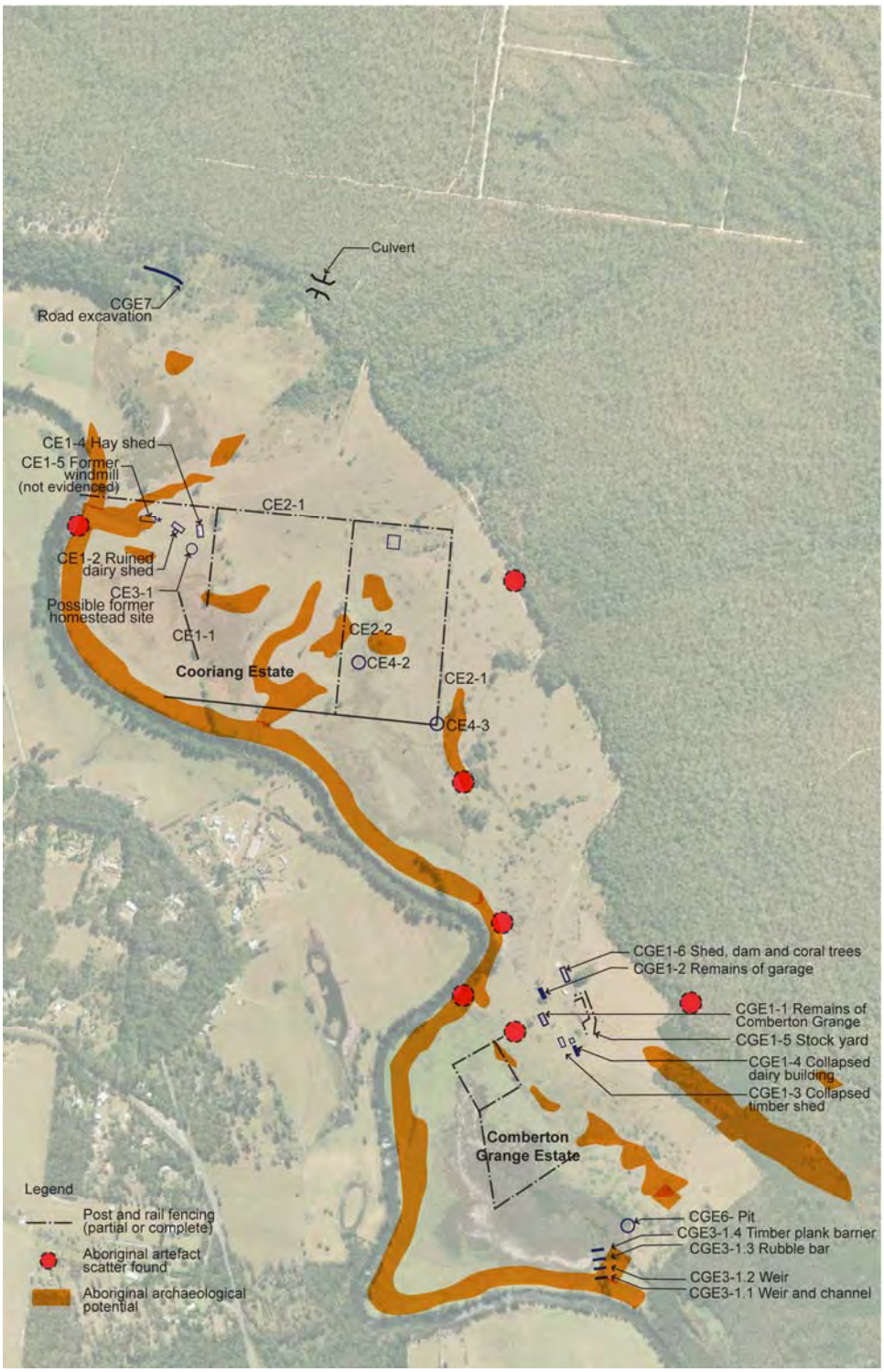

Figure 8.3: Location of European heritage findings of the former Comberton Grange Homestead

Heritage listing

The Comberton Grange Homestead is an item of local heritage significance and is listed in *Shoalhaven Local Environmental Plan 1985* as a terrestrial archaeological site relating to the initial settlement of Currambene Creek. The archaeological site covers the homestead precinct including its surrounding gardens.

Statement of Significance

Comberton Grange is a former farm landholding and homestead and has been assessed as being of local heritage significance for the following attributes:

- The site is strongly associated with the early European settlement of the district and is significant for the retention of the original land grant boundary.
- The former farm complex and its pastoral curtilage are a representation of an early farm in the Shoalhaven region, is locally rare, and provides evidence for the early settlement and agricultural activities involving sheep, dairying and market gardening in the region.
- The visible remnants show the location of the homestead and its agricultural structures, and the advantageous use of the topography for fresh water, views and protection from floods.

Heritage curtilage

The area of heritage significance of Comberton Grange is the former homestead site and immediate surrounds, which contain the remains of the farm complex, date from the mid-19th century to the mid-20th century.

The heritage curtilage is defined as "the area of land surrounding an item of heritage significance which is essential for retaining and interpreting its heritage significance."[23] An expanded curtilage is proposed to protect the landscape setting and visual catchment of the former homestead. The wider setting of the homestead, of views and vistas to its pastoral landscape is important to the historical, social and cultural associations and uses which is integral the of heritage significance of the item.

The heritage curtilage is identified as the cleared grazing area on the north-eastern side of Currambene Creek, with the backdrop of forested area north-east of the unformed internal road.

8.2.2 Assessment of potential impacts

Development siting

The proposed use of Comberton Grange provides for the managed conservation of the majority of the site. The design avoids the portions of the site that have considerable natural and cultural heritage significance.

Development is concentrated in areas that have been disturbed but do not contain elements of heritage significance, being the former Pine Plantation and the upper slopes of the cleared pastoral land overlooking Currambene Creek.

The most intensive parts of the development are located on the former Pine Plantation site, which is a post-war development and does not have heritage value as a cultural landscape. The buildings within the Temple precinct are unlikely to be visible from Currambene Creek or the former Homestead site. The development within this portion of the site would have no heritage impact on Comberton Grange.

[23] Heritage Office, Department of Urban Affairs and Planning, *Heritage Curtilages* (1996), p.3.

The central, eastern and south-eastern portions of the site which is heavily forested and sited within an ecological corridor (designated in *Jervis Bay Regional Environment Plan*) are to be conserved and undeveloped.

The proposed Hotel Precinct and Residential Precinct C at the south-western portion of the site are on the elevated cleared pastoral land of Comberton Grange above Currambene Creek and its floodplains. The lower portion of the pastoral land is to be retained and managed for passive recreation and agricultural purposes.

The heritage remains of the former Homestead site are to be retained and conserved.

Allotment integrity

The Shaolin Tourist and Residential development would conserve the Comberton Grange allotment under a community title. Comberton Grange is one of the early land grants in the Jervis Bay region to remain in its original extent without subdivision. The proposed development conserves its original allotment boundary and, in this respect, has a positive heritage impact.

Use

The site will have a range of agricultural uses of market and herbal gardens and forestry. The conservation of the majority of the site in its natural state (forest) with the proposed development, as a new use, on a minor portion of the site would not have an adverse heritage impact subject to heritage recommendations.

Setting

A significance of Comberton Grange is its representation as an early farm in the Shoalhaven region that does not have any intrusive 20th century buildings. The proposal to construct approximately 78 low-rise detached dwellings and associated roads on the periphery of the heritage curtilage of the former homestead have a minor adverse impact on the heritage fabric of the site but will not detract from the rural setting if appropriate development controls are in place to ameliorate the development.

Comberton Grange fabric

The remains of Comberton Grange's farm complex would be retained by the development proposal, including remnant post and rail fencing. The remnants of farm structures of the interlocking split timber, post and rail fence at the northern central portion of the clearing, dating possibly to the 1840s, is considered to be of high local significance.[24] The north-eastern corner of the post and rail timber fencing of the corner of the Cooriang Estate main paddock will be affected by proposed residential allotments. Where the development site intrudes on the small corner of remnant fencing, the portion of fence should be removed, whilst retaining the remaining fence alignment. Intact pieces of the fence should be stored for future relocation to the proposed Cultural Museum within the Information Centre at the entrance to the development.

Moreover, there are existing remnants of post and rail fencing located within the site that provide an appreciation of the site's former pastoral uses.

[24] Varman, V.J.P, *Archaeological Assessment – Comberton Grange, Falls Creek, Nowra* (26 July 1999), p.15.

Comberton Grange Curtilage — Existing Pastoral Landscape

Residential Precinct C is proposed on existing cleared land on the upper slopes of Currambene Creek, against the forest line, away from the known remains of the Homestead complex. These dwellings will be set against the backdrop of tall forest and screened from the former Homestead Heritage Precinct. The majority of the cleared pastoral landscape will remain remains unbuilt upon.

Visual Impact

The proposed hotel and dwellings are to be located close to the existing access road on the higher elevations of the slopes above Currambene Creek. These developments have no significant impact on views from the former Homestead site looking over the Currambene Creek valley.

The Homestead and agricultural remains would be seen against a backdrop of low-rise residential development (Residential Precinct C). This would have a small adverse heritage impact that could be mitigated with the use of recessive colours, unassertive building forms, and landscape screens of indigenous trees.

The proposed Temple on the former Pine Plantation site would be approximately 21.3m high, and the proposed Pagoda would be approximately 23.2m high. It is unlikely that any of these structures be visible from the pastoral landscape of Comberton Grange. In the event that the roof structures of these developments are visible from the pastoral landscape, it would be a minor impact.

Integrity of the Road Network

The Masterplan development utilises a substantial part of Comberton Grange Road's original alignment, with new road surface constructed. Using the original roads and tracks has a positive heritage impact if the culvert and any other elements of heritage significance are conserved.

Refer to Figure 8.4.

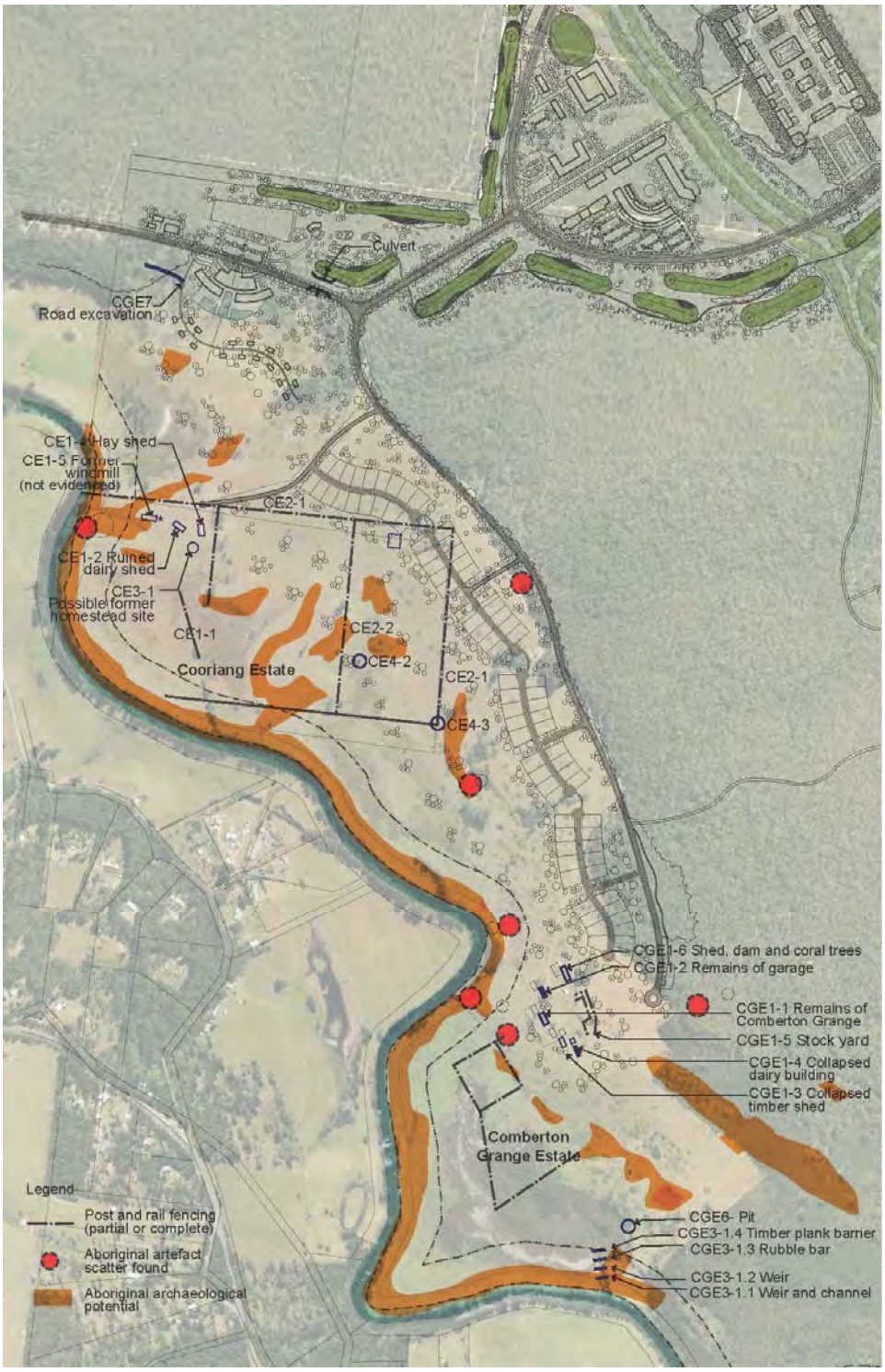

Figure 8.4: Location of areas of European heritage significance overlaid with proposed development area

8.2.3 Mitigation and management measures

A. Design recommendations

If intact contiguous bays of 19th century post and rail fencing are found in the north-east corner of the Cooriang Estate paddock (CE2-1) which is impacted by the proposed development, the section of corner fencing should be relocated and housed within the proposed Cultural Museum or in a location where the remnant fencing can be displayed. Photographs of the fence and its alignment should be recorded.

Other areas of intact 19th century fencing, where not impacted by development should be preserved within the rural landscape for public appreciation of the former pastoral activities on the site.

The heritage curtilage around the former Comberton Grange Homestead site should be set back at least 50m distance from the ruins of the farm complex. It is recommended that development and roadways be kept a distance from the remains of Comberton Grange homestead.

Ameliorative measures for development within the visual catchment of the Homestead site in the form of development controls are to be implemented. These include:

- Maintaining a heritage curtilage of at least 50m from the Homestead site to development;
- Consideration of height, form and scale of development;
- Retention of existing significant vegetation; and
- Landscape buffers with screening of development through planting.

B. Archival recording

A photographic archival recording of all heritage elements affected by the proposed development including the existing clearing should be undertaken before and during the works. The recording is to be prepared in accordance with the NSW Heritage Council's *How to Prepare Archival Records of Heritage Items* (1998) and *Photographic Recordings of Heritage Items Using Film or Digital Capture* (2006).

C. Interpretation

An Interpretation Strategy should be undertaken for the former Homestead site and farm complex, based on the original archaeological remains of the buildings.

D. Conservation Management Strategy

A Conservation Management Strategy should be prepared to guide the management and/ or conservation of the heritage fabric, according to its level of heritage significance.

E.Structural Assessment of Remains of Outbuildings

A structural assessment of the remaining outbuildings that are not ruins should be obtained from a qualified professional with heritage experience. This should guide the conservation of the remaining outbuildings by retarding deterioration and to fix down or remove loose material of potential danger from weather conditions.

F. Maintenance

The conservation of the former Comberton Grange site requires the implementation of an ongoing Maintenance Plan that may be incorporated into the Conservation Management Strategy. This will include:

- A schedule of regular inspections to ensure the remaining structures are maintained and do not deteriorate in an uncontrolled manner;
- A plan of land management so that the pastoral lands and significant remnants of early agriculture do not become covered in thick vegetation;
- A program of maintenance in accordance with NSW Heritage Council guidelines of *Minimum Standards of Maintenance and Repair*. This does not apply to ruins;
- Inspections carried out by suitably qualified heritage consultants and any remedial works carried out by trades people experienced in heritage conservation; and
- The establishment of a budget in conjunction with a program to ensure funding is available for essential repairs when they become necessary.

8.3 Ecology

Director-General's Requirements

Flora and Fauna

- Assess the potential direct and indirect impacts of the development on flora and fauna, including impacts on any threatened species, populations, ecological communities and/ or critical habitat, ground water dependent ecosystems, and any relevant recovery plan, in accordance with the *Draft Guidelines for Threatened Species Assessment* (DECC and DPI 2005) and *Threatened Biodiversity Survey and Assessment Guidelines Working Draft* (DEC 2004), and *Threatened Species Assessment Guidelines: The Assessment of Significance* (DECC 2007). Provide measures for the conservation of flora and fauna, where relevant.
- Outline measures for the conservation and long-term management of existing wildlife corridors and the connective importance of any vegetation on the site. Explore the potential for the reestablishment of corridors along drainage lines to wetlands and Currambene Creek.
- Demonstrate suitable riparian corridor management and appropriate corridor widths/ buffering between the development and adjacent waterways/ drainage lines or SEPP 14 wetlands, in accordance with DECCW's stream classification system.
- Investigate the opportunity to permanently conserve the eastern portion of the site (east of the existing quarry and including SEPP 14 wetland in the southern portion of the site).

The *Biodiversity Assessment on the Proposed Shaolin Temple and Associated Developments, Comberton Grange* (May 2012) was undertaken by Kevin Mills & Assoc. to address the ecological and natural environmental issues of the site – **Appendix 4**.

The *South Coast Sensitive Urban Lands Review*, in regard to environmental and ecological considerations of the Comberton Grange site, states that "development of certain parts of the site is considered acceptable if adequate measures are taken to ensure that:

- Riparian vegetation is rehabilitated and protected;
- There is no significant disturbance to salt marshes and mangroves along the banks of Currambene Creek;
- There is no significant disturbance to other EECs on the site;
- Water quality of Currambene Creek is maintained; and
- Sufficient natural vegetation is retained within habitat corridors on the site to maintain the integrity of these corridors.

8.3.1 Existing environmental features

About 75% of the Comberton Grange site is covered by forest, woodland and wetlands. The remainder has been cleared and farmed over many years. The bushland is in a fairly natural condition, contiguous with the forests and woodlands to the north and east, of Currambene State Forest and Jervis Bay National Park, and with the wetlands

around Currambene Creek. Much of this forest and woodland on the Comberton Grange property is within a Habitat Corridor identified in the *Jervis Bay Regional Environmental Plan*, and as such must comply with the controls of the Plan.

There are several endangered ecological communities (EECs) that occur in the site. They occur in coastal salt marshes, swamp oak floodplain forest, swamp sclerophyll forest river flat forest and freshwater wetland. Areas **not suitable** for development comprise:

- The eastern portion of Comberton Grange (east of the existing quarry). This area support habitat for numerous threatened species, ecologically endangered communities and has important habitat corridor functions;
- An extensive area of wetland in the vicinity of Currambene Creek and the lower section of Georges Creek (SEPP 14 wetland) in the southern portion of the site;
- Three separate freshwater wetlands on the cleared farmland, attached to Currambene Creek by small floodplain channels, nearly all of which are identified as endangered ecological communities; and
- The tributaries of Georges Creek which contain swamp forests of Mahogany, Paperbark and Woollybutt.

Areas **suitable** for development include:

- The former Pine Plantation, the site's northern portion, was logged and supports a regrowth vegetation of mainly native plants and trees and wildling pines; and
- The cleared and elevated grazing immediately south of Comberton Grange Road and the former Pine Plantation site.

8.3.2 Assessment of potential impacts

The proposed development is generally located outside the EECs but intrudes slightly on the designated Jervis Bay REP habitat corridor. The development proposes to intrude into the habitat corridor by approximately 34.5 hectares, in the form of golf course fairways, small structures and a car parking area. Whilst the fairway will be a modified landscape, the vegetation surrounding the fairways will be indigenous, and wildlife corridors will be retained.

The impact of the development on the various biodiversity values are as follows:[25]

Biodiversity in general

The proposed development has avoided, in general, the key biodiversity areas on the Comberton Grange property. The footprint of the development on the natural forest is very small, with areas of wetland, forest (particularly tall forest), watercourses taken into account in the placement of the development.

Habitat corridor

The proposed development has generally been designed to avoid the *Jervis Bay Regional Environmental Plan* Habitat Corridor, except for a section of road and adjoining golf course that traverses the corridor to the south-west of the former pine plantation site. Development within the corridor removes approximately 34.5 hectares of forest and woodland. The loss of native woodland and associated vegetation is approximately 3.5% of the original native forest/ woodland on the site. From a fauna

[25] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple, Comberton Grange*, p. 54-56.

conservation perspective, the loss of the forest and woodland at that location in the corridor is not of high importance.

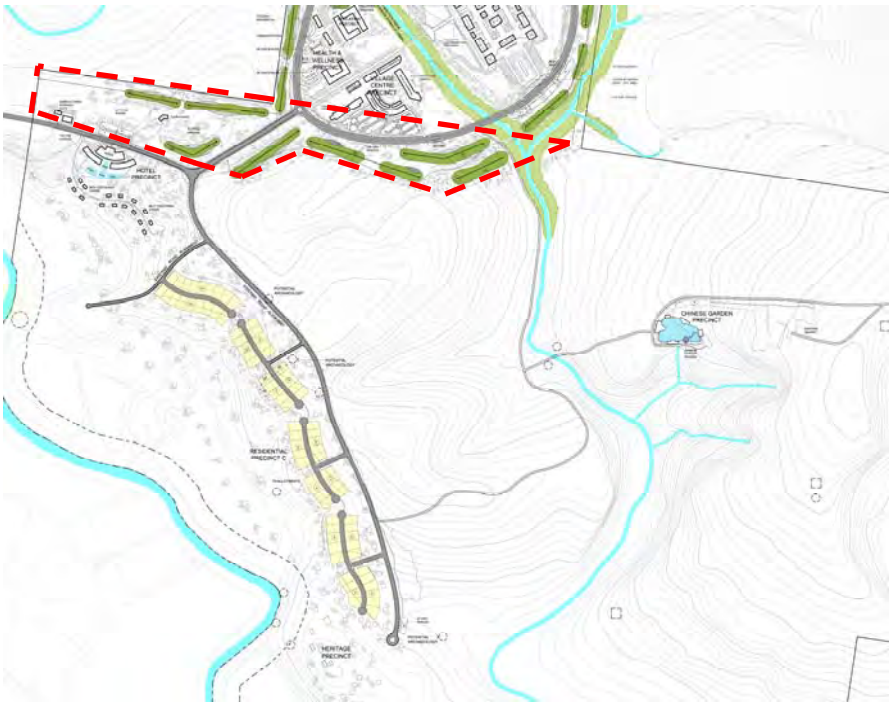

Figure 8.5: Map indicating loss of habitat corridor

Currambene Creek and wetlands

Currambene Creek is a major tributary entering into Jervis Bay. The development is set back a minimum of 100m from the bank of this watercourse. This will ensure that there are no direct impacts upon the creek. The wetlands on the floodplain of the Currambene Creek will be retained, with major benefit for these wetlands will be the removal of grazing stock.

Creek corridors and wetlands in northern portion of the site

The Georges Creek tributaries cross this portion of the site (former pine plantation). The riparian zones (ecological corridors) of these creeks are retained in the development, with a buffer of at least 40m free of development to be maintained from the creek.

Access roads

A new access road (principal access) will be created from Forest Road into the north-eastern portion of the site. The access has been agreed by Shoalhaven City Council who is in the process of negotiating this route with NSW Forest (which is supported by both authorities). The existing route to the site (Comberton Grange Road) is likely to be upgraded with the result that some fringing vegetation will be removed.

Residual forest land and its management

There is little direct impact upon the forest on the site. The design specifically avoids incursions into the forest as far as possible. A management plan is proposed to be prepared for the site, which will provide direction to maintaining and enhancing the forest environment.

Assessment of potential impacts in the consultancy report is as follows:

Issue	Occurrence in relation to proposed development	Implications for development
Threatened plants	No species are located and none are expected to occur within the development footprint.	No implications.
Threatened animals	Recorded in creeklines, wetland and forested areas.	All wetlands must be avoided by the development and protected. Minimise clearing of forest and woodland. Maximise retention of forest.
EECs: ▪ Coastal Saltmarsh ▪ Swamp Oak Floodplain Forest ▪ River Flat Forest ▪ Freshwater Wetland	None near development areas.	Control quality of runoff into creeklines and riparian areas.
EECs: ▪ Swamp Sclerophyll Forest	Occurs along watercourses in Pine Plantation and along Georges Creek.	Maintain forest along watercourse in Pine Plantation. Control quality of runoff into Georges Creek.
Wetlands: ▪ SEPP 14 Wetlands ▪ Other wetlands ▪ Riparian areas	Whilst none near proposed development, development will drain to wetlands and riparian areas.	Control quality of runoff.

The impact of a proposed development on matters of national environmental significant has been assessed under the provisions of the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

No critically endangered species or ecological communities occur on the area of development or on its vicinity. None of the relevant endangered ecological communities listed in NSW are listed under the EPBC Act. No plant species listed under the EPBC Act have been recorded in the area.

Impact on vulnerable species

None of the 14 species of NSW listed threatened animal species recorded are listed under the EPBC Act. The proposed development is not likely to have a significant impact on listed migratory species. The Grey headed flying fox is predicted to occur but not recorded. The development is not likely to have a significant impact on Grey-headed Flying-foxes or on any other matter of national environmental significance. The proposed development, designed to avoid removing forest, is only likely to have a minor impact on foraging resources for the flying fox and listed migratory species (diurnal birds of prey). A much larger area of the forest will be retained and managed for its conservation. A mitigation plan has been prepared to address this issue.

Impact for listed migratory species

There is no important habitat for such species within the development area and the habitat in that area is not likely to support an ecologically important proportion of a population of such species. Only small populations of listed migratory species inhabit the area and most of that habitat is unaffected by the development.

The proposed development is not likely to have a significant impact on matters of national environmental significance listed under the *Environment Protection and Biodiversity Conservation Act.* Referral to the Commonwealth Minister for the Environment for assessment and approval is therefore not warranted. The proposed development is not likely to constitute a "controlled action" because it is not "likely to have a significant impact on a matter of national environmental significance".

8.3.3 Mitigation and management measures

The proposed development is generally limited to the areas identified in the *South Coast Sensitive Urban Lands Review* (2006), being the northern portion of the site and the cleared pastureland above Currambene Creek.

A. Habitat corridor

The development preserves the habitat corridor across the central portion of the site identified in the *Jervis Bay REP*, with development limited to areas not identified as habitat corridor, except for the roads and adjoining golf course that traverse the corridor to the south-west of the former Pine Plantation site (Figure 8.7). The design of the development is such that almost all of the biodiversity values associated with the site are avoided.

Connectivity is a fundamental requirement of healthy, productive landscapes and is a critical function of wildlife corridors. The development will provide landscape and habitat connectivity through endemic open space areas located throughout the development areas and riparian corridors along the Georges Creek tributaries that will be maintained in their natural state and augmented as required.

B. Riparian corridors

Within the former plantation land, riparian corridors are to be maintained along the main tributaries of Georges Creek, with development kept 50m clear of each side of these tributaries as an environmental corridor. This is recommended by the *South Coast Regional Conservation Plan* additionally recommends a Category 1 – *Environmental Corridor*, with the maintenance of a minimum core riparian zone (CRZ) of 100m (2 x 40m fully vegetated, 2 x 10m buffer) to provide biodiversity linkages by maintaining connectivity for the movement of aquatic and terrestrial species. Riparian areas are recognised as having high value for biodiversity, and the provision of development curtilages along these water courses are in accordance with the *South Coast Regional Conservation Plan* (2010). Road crossings and paths across the creek lines are minimal with services located outside the CRZ.

To minor creek lines flowing into the Georges Creek tributaries, a Category 3 – Bank stability and water quality CRZ is to be maintained to prevent accelerated rates of soil erosion and to enhance water quality. The *South Coast Regional Conservation Plan* recommends a CRZ of 20m (2 x 10m) from each side of the watercourse.

C. Wetlands

Development will be kept clear of the SEPP 14 wetlands and flood plains along Currambene Creek. All stormwater discharge will be treated prior to entering the CRZ and creek lines.

D. Management strategies

A compensation package has been developed as an environmental offset to the impact of the development on flora and fauna. This comprises:[26]

Management of the Eastern and Western Forests

The Eastern and Western forest areas (Figure 8.6) will be the focus of a proposed Plan of Management that would guide the protection and enhancement of forests for conservation. The Plan would address matters such as interfacing with development areas, access, passive recreation, pest control and rehabilitation of disturbed areas. It is proposed to develop the Plan in consultation with the NSW Office of Environment and Heritage.

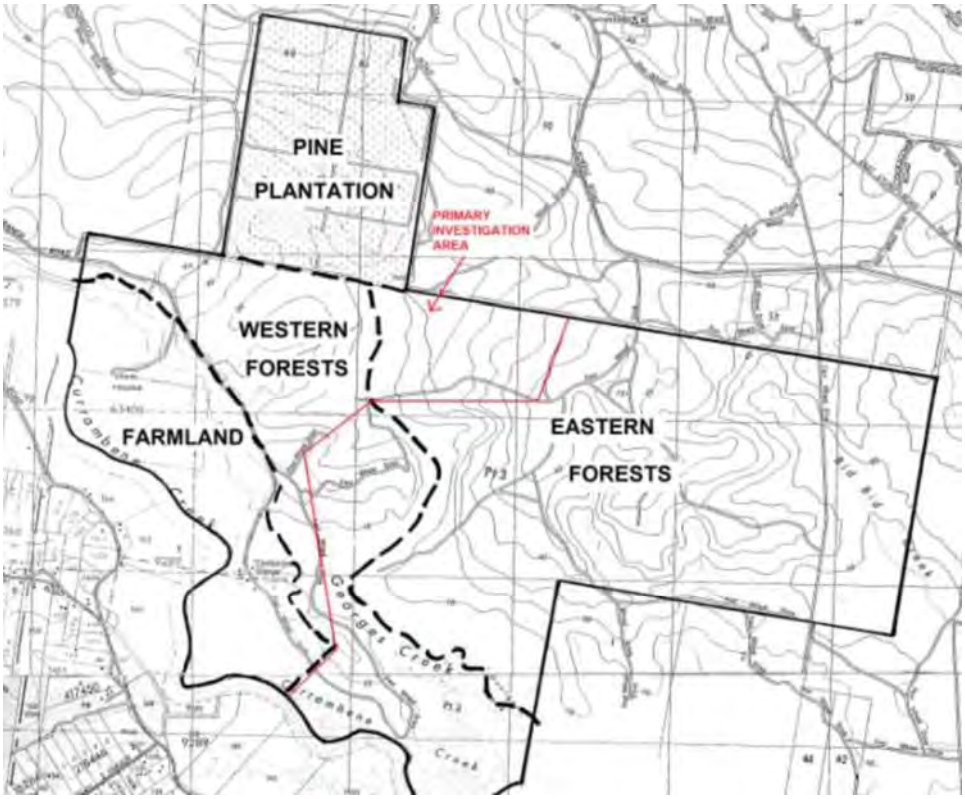

Figure 8.6: Ecology survey precincts (*source: Biodiversity Assessment Report, Kevin Mills & Associates*)

The Eastern and Western forest areas will remain intact except for a slight incursion for a roadway and adjoining golf course in the far north-western corner near the former pine plantation site (Figure 8.5). This incursion into the Jervis Bay REP habitat corridor will cause a loss of approximately 34.5 hectares of delineated habitat corridor.

[26] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple, Comberton Grange*, p. 57-58.

There are vast areas of forest to the east and north of the site that forms an extensive habitat link, despite not delineated as habitat corridor. With careful clearing for the golf course, the function of that part of the corridor can remain viable for most species.

Additionally, there are extensive heavily forested areas on the eastern portion of the site not identified as habitat corridor (circled red), although it is contiguous with the REP habitat corridor (Figure 8.7). As compensation/ environmental offset for clearing part of the defined corridor near the pine plantation, it is recommended that the defined corridor be modified to incorporate the forest in the eastern part of the site, which is part of the same habitat link. This area is much larger than the 34.5 hectares to be cleared. This area will be retained and conserved as an environmentally sensitive area, but with the ability to have eco-trails and managed camping facilities for engagement with the natural environment.

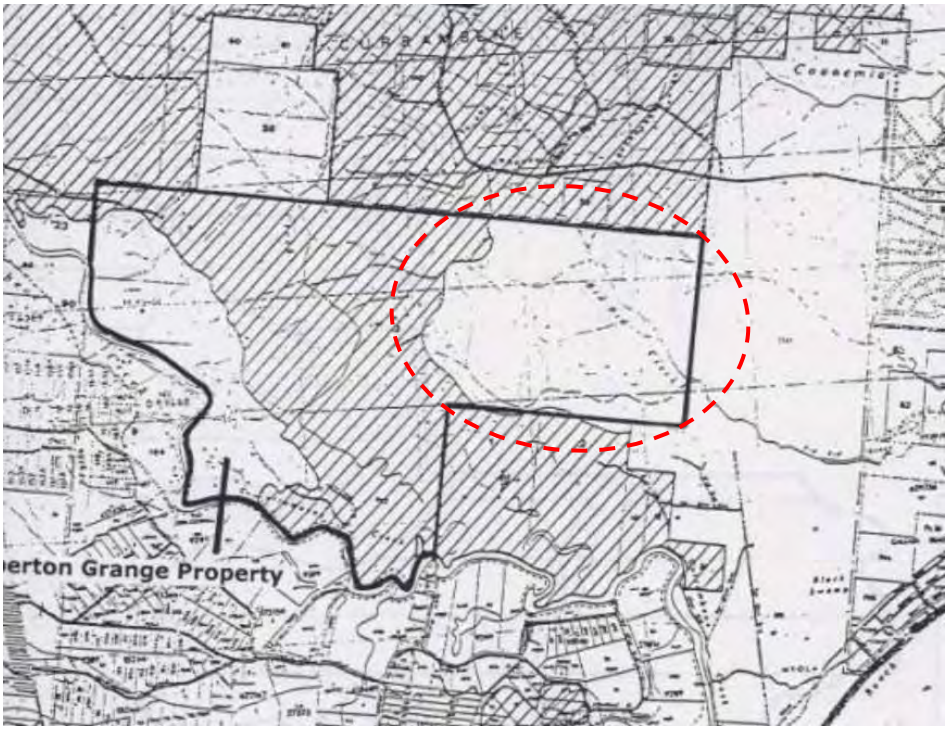

Figure 8.7: Map of Jervis Bay REP habitat corridor within Comberton Grange

Rehabilitation and management of Currambene Creek, wetlands, and minor riparian zones

The wetland areas near Currambene Creek and creeklines throughout the site will be managed for their conservation and subject to a sub-plan of the proposed Plan of Management. Issues to be addressed include protection during construction activities, stormwater management following completion of development, water quality control and rehabilitation of floodplain wetlands.

Revegetation of the riparian zone and the floodplain areas of Currambene Creek should utilise locally occurring species, such as Swamp Oak (*Casuarina glauca*). Revegetation will provide the opportunity for increasing the extent of existing ecological endangered vegetation communities of Swamp Oak Floodplain Forest and Floodplain Swamp Forest on the site.

Plan of Management

The Plan of Management to be prepared would be in accordance with Shoalhaven City Council's *Generic Community Land Plan of Management – Natural Areas* (adopted July 2001).

Community land is defined by the Local Government Act 1993 as "land which is set aside for community use". This includes natural areas, which are further categorised to include foreshores, bushland, wetlands and watercourses.

Management of natural areas in the Shoalhaven requires consideration of the core objectives for natural area management, community values and legislative requirements that guide land use and management. The proposed Plan of Management for the natural areas of the site should comply with the following core objectives for the various categories of natural land, as stated in Shoalhaven's *Community Land Plan of Management – Natural Areas*. These are:

Core objectives for management of natural areas:

- To conserve biodiversity and maintain ecosystem function, feature or habitat in respect of the land;
- To maintain the land, feature or habitat in its natural state and setting;
- To provide for restoration and regeneration of the land; and
- To provide for use and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion.

Core objectives for management of bushland:

- To ensure the on-going ecological viability of land by protective the ecological biodiversity and habitat values of the land, the flora and fauna of the land and other ecological values;
- To protect the aesthetic, heritage recreational, educational and scientific values of the land;
- To promote the management of the land in a manner that protects and enhances the values and quality of the land and facilitates public enjoyment of the land, and to implement measures to minimise and mitigate any disturbance caused by human intrusion;
- To restore degraded bushland;
- To protect existing landforms such as natural drainage lines, watercourses and foreshores;
- To retain bushland in parcels of size and configuration that will enable the existing plant and animal communities to survive in the long term; and
- To protect bushland as a natural stabiliser of the soil surface.

Core objectives for management of watercourses:

- To manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and water flows;
- To manage watercourses so as to protect the riparian environment, riparian vegetation, habitats and bank stability;
- To restore degraded watercourses; and

- To promote community education, access and use of the watercourse, without compromising the above core objectives.

Core objectives for management of foreshores:

- To maintain the foreshore as a transition area between aquatic and the terrestrial environment, and to protect and enhance all functions associated with the foreshores' role as a transition area; and
- To facilitate the ecologically sustainable use of the foreshore, and to mitigate impact on the foreshore by community use.

Other issues for inclusion in the Plan of Management are:

- **Pets and feral animals** – which could potentially have significant impact on native fauna. Measures would include:
  - Prevention of keeping of domestic cats within the development;
  - Leasing of dogs within external areas.
- **Weeds and rubbish dumping** – with prevention of dumping of garden clippings and other rubbish within natural areas, as these items cause a variety of problems, in particular the growth of weed species, as well as removal of weed species. Weeds tend to out-complete, out-grow and smother native vegetation, destroy the habitat of fauna that is dependent on native vegetation, stop the replacement of canopy trees, destroy understorey and reduces biodiversity.
- Protection of foreshore, riparian and coastal vegetation to reduce soil erosion and improve water quality, as this vegetation acts as a soil stabiliser and prevents erosion.
- Prevention of uncontrolled vehicular access to and through natural areas – to prevent degradation of these areas.
- Management of walking trails in accordance with the *Shoalhaven Walking Tracks Strategy*.

8.4 Contamination

Director-General's Requirements

Contamination

Provide a Preliminary contamination Assessment, identifying any contamination on site and appropriate mitigation measures in accordance with the provisions of SEPP 55 – *Remediation of Land*.

The *Report on Preliminary Contamination Assessment – Proposed Tourist & Residential Development, Comberton Grange, Jervis Bay* (September 2009) was prepared by Douglas Partners to investigate address any contamination on the site – **Appendix 5**.

8.4.1 Existing environmental features

The preliminary contamination assessment focussed on the two proposed development areas totalling 285 hectares, being the northern development areas (NDA) and southern development area (SDA)) located in the north-western part of the 1249 hectare site.

History of previous uses on the site indicates that the:

- Northern Development Area (NDA) was previously used as a timber plantation;
- Southern Development Area (SDA) has previously and continues to be used for rural purposes including dairying and grazing;
- Former Homestead area was used for residential purposes.

8.4.2 Assessment of potential impacts

Based on the site history, site inspection and laboratory analysis, ***the overall potential for contamination at the site is considered to be low***.

Results of the site history and site inspection indicate that:

- The **Northern Development Area (NDA)**, previously used as a timber plantation, has been affected by fly tipping with household rubbish, plastic oil containers, oil drums, car parts, concrete rubble and timber logs. Laboratory analysis of soils indicates that all levels of contaminants analysed are within the assessment criteria and published background ranges. The precinct has the potential for contamination arising from possible spillage of fuels from bulldozers and trucks at the refuelling point (location unknown, if any), wastes burial, pesticides, use of herbicides and fertilisers, and the presence of filling from potentially contaminated sources.
- The **Southern Development Area (SDA)**, used for rural purposes, has the potential for contamination arising from the use of pesticides and herbicides, burial of wastes/farm animals, zinc leaching from galvanised iron structures and the use hazardous building materials such as asbestos.
- Within the **Homestead area**, asbestos and lead paint were detected in two fibre board samples taken from a structure in the homestead area. Test results in the vicinity of the large shed at the homestead indicated that the asbestos and lead contamination is most likely limited to the structure and immediate area. The homestead and associated structures presents a potential for contamination from the use of hazardous building materials such as asbestos and lead in paint.
- **Groundwater sampling** indicated that levels of nickel and zinc exceed the assessment criteria.

8.4.3 Mitigation and management measures

Whilst the overall potential for contamination at the site is considered to be low, the following mitigation and management measures are recommended:

- Existing buildings and other structures identified in the SDA should be inspected by an occupational hygienist and any asbestos containing material should be removed off site by a licensed contractor and the underlying soils and surrounding area be validated by an occupational hygienist using visual and laboratory analytical validation methods.
- Similarly, material which has been coated with lead paint should either be sealed or removed off the site to prevent lead contamination of soils.
- Any stockpiled material currently identified on site should be assessed for its suitability to be reused on site or be disposed off-site with appropriate classification prior to development.
- Land filling located adjacent to Currambene Creek consisting of bottles, ceramics, fabric, corrugated iron, terracotta pipes, old washing machine drum and corrugated iron tank observed in the creek, should be removed off site following appropriate classification. If signs of contamination such as staining, odours or asbestos containing materials are encountered, the underlying soils should be validated.
- Following clearing, areas inaccessible at the time of this assessment should be inspected by a qualified consultant to assess for potential signs of contamination.
- For verification purposes, low density sampling should be undertaken across the site, particularly in future areas, following site clearing and an inspection. Low density sampling would be undertaken at a nominal rate of 1 sample per 10 ha and samples would be analysed for heavy metals, TRH, BTEX, PAH, OCP, OPP, PCB and asbestos.

8.5 Acid Sulphate Soil

Director-General's Requirements

Acid sulphate soils

Identify the presence and extent of acid sulphate soils on the site and, where relevant, appropriate mitigation measures. Identify the need for an Acid Sulphate Management Plan (prepared in accordance with ASSMAC Guidelines).

The *Report on Preliminary Acid Sulphate Soil Assessment – Proposed Tourist & Residential Development, Comberton Grange, Jervis Bay* (September 2009) was prepared by Douglas Partners to address the potential of acid sulphate soil on the site – **Appendix 6**.

8.5.1 Existing environmental features

Sub-surface conditions

Relatively uniform conditions were encountered underlying the site, with the succession of strata broadly summarised as follows:

- Topsoil/ filling: To depths of 0.1- 0.5m (but generally to 0.2- 0.4m).
- Clay: Variably stiff to hard clay and shaly clay to depths of 0.8- 3.7m. Pits 9, 11- 16, 18 and 19 were terminated in residual clay at depths of 1.5- 3.3m.
- Bedrock: Initially extremely low to very low strength sandstone and siltstone becoming low to medium strength at refusal of the backhoe bucket at depths of 0.8- 2.8m in Pits 4, 6-8, 10 and 20- 24. Pits 1, 2, 5 and 17 and Bores 26- 28 were terminated in extremely weathered rock at depths of 1.8- 0.6m.

Groundwater

No free groundwater was observed in any of the pits during excavation or whilst auger drilling in the boreholes. It is noted that the pits were immediately backfilled following excavation, which precluded long term monitoring of groundwater levels.

Acid sulphate Soils

The results of the testing undertaken indicate the absence of acid sulphate soils.

8.5.2 Assessment of potential impacts

The proposed development area is located above RL10 (RL5, below which acid sulphate soils are generally situated) and underlain by residual soils. The results are consistent with the broad scale mapping and as such, acid sulphate soils are not expected to be encountered within the proposed development area.

8.5.3 Mitigation and management measures

As acid sulphate soils are not encountered within the proposed development area, the formation of an acid sulphate management plan is not required.

8.6 Geotechnical

Director-General's Requirements

Geotechnical

Provide a detailed assessment of any geotechnical limitations that may occur on the site and, if necessary, appropriate design considerations addressing the limitations.

The Report on *Preliminary Geotechnical Investigation – Proposed Tourist and Residential Development, Comberton Grange* (September 2009) was prepared by Douglas Partners to address geotechnical matters on the site – **Appendix 7**.

8.6.1 Existing environmental features

A total of 25 test pits were excavated and 3 boreholes were drilled and converted to groundwater wells across the site.

Sub-surface investigation

Sub-surface investigation indicates relatively uniform conditions were encountered underlying the site, with the succession of strata as follows:

- Topsoil/filling: To depths of 0.1- 0.5 (but generally to 0.2- 0.4m);
- Clay: Variably stiff to hard clay and shaly clay to depths of 0.8- 3.7m. Pits 9, 11- 16, 18 and 19 were terminated in residual clay at depths of 1.5- 3.3m;
- Bedrock: Initially extremely low to very low strength sandstone and siltstone becoming low to medium strength at refusal of the backhoe bucket at depths of 0.8- 2.8m in Pits 4, 6- 8, 10 and 20- 24. Pits 1, 2, 5 and 17 and Bores 26- 28 were terminated in extremely weathered rock at depths of 1.8- 6.0m.

No free groundwater was observed in any of the pits during excavation or whilst auger drilling in the boreholes.

8.6.2 Assessment of potential impacts

The Preliminary Geotechnical Assessment indicates that the site will be geotechnically suitable for the proposed development.

Site stability

The areas of slight topographic relief are classified as either very low or low risk of damage to property occurring as a result of slope instability, whilst the area of moderate relief would be classified as moderate risk.

Development of the site for the proposed development is considered geotechnically feasible with respect to slope stability.

Site classification

Based on the field investigations and limited laboratory testing, the subsurface profiles are equivalent to Class M (moderately reactive) or Class H (highly reactive). Final classification will depend on soil reactivity, soil strength and rock depth.

Class P (hillside) conditions may be present in the drainage depressions should weak soils be encountered during more detailed sub-soil investigation.

8.6.3 Mitigation and management measures

Whilst the preliminary geotechnical assessment undertaken has indicated that the site will be geotechnically suitable for development, detailed geotechnical investigation and assessment will be required as the design of the development proceeds.

Conceptual comments on site preparation and earthworks are provided as follows:

A. Within building areas

Site preparation for the construction of structures should include the removal of topsoil and other deleterious materials from the proposed building areas. In areas that require filling, the stripped surfaces should be proof rolled in the presence of an experienced geotechnical engineer.

In areas where filling is required to achieve design levels, allowance should be made for filling within building areas to be compacted to at least 98% standard compaction, with placement moisture contents to be within 2% of standard optimum (as measured in the standard compaction test).

B. Within road alignments

Filling within road alignments should be compacted to at least 95% standard compaction to within 0.5m of design sub-grade level, with the top 0.5m to be compacted to at least 100% standard compaction. Placement moisture contents should also be within 2% of standard optimum. Residual soils underlying the site appear suitable for re-use as filling, subject to appropriate geotechnical validation testing being undertaken both prior to and during construction.

Earthworks for pavement construction should be based on batters formed no steeper than 3:1 (H:V) in residual clays and 1.5:1 (H: V) in weathered rock. All batters should be suitably protected against erosion, with toe and spoon drains constructed as a means of controlling surface flows on the batters.

Subject to the existing site contours, excavation and filling may need to be limited to a maximum vertical height of 1m respectively below or above the existing ground surface. Proposed earthworks that exceed the above requirements would require engineer-designed retaining walls founded on bedrock and be subject to review by a geotechnical engineer.

Site observations have indicated the presence of silty and sandy topsoil and clay which could be adversely affected by inclement weather with difficult trafficability conditions. Surface drainage which directs runoff away from work areas should be installed prior to construction.

Conventional sediment and erosion control measures should be implemented during the construction phase, with exposed surfaces to be provided with topsoil and vegetated as soon as practicable following the completion of earthworks.

C. Footings

All footing systems should take into account subsurface profiles and proposed loads and be designed and constructed in accordance with engineering principles.

As a guide, typical bearing pressures on various strata are as follows:

- Allowable base bearing on stiff clay or compacted filling (for loads up to 300kN): 100kPa
- Allowable base bearing on very low strength rock: 500kPa
- Allowable base bearing on low strength rock: 1500kPa

D. Surface drainage

Surface drainage should be installed and maintained at the site. All collected stormwater, groundwater and roof runoff should be discharged into the stormwater disposal system and effluent flows to the sewerage system.

8.7 Bushfire

Director-General's Requirements

Bushfire

Address the requirements of Planning for Bushfire Protection 2006 (RFS)

The *Bushfire Assessment Report – Shaolin Tourist and Residential Development, Comberton Grange, South Nowra* (August 2012) was prepared by Conacher Environmental Group to address the bushfire protection requirements for the proposed development – **Appendix 8**.

8.7.1 Existing environmental features

Bushfire Risk Category (SCC)

The site is located within an area mapped as containing ***Category 1 Vegetation*** of Shoalhaven City Council's (SCC) fire area.

Forest Fire Danger Index (FDI)

The Forest Fire Danger Index for the Shoalhaven Fire Area is rated at 100 for use in determining asset protection zone requirements and categories for bushfire attack (Table 2.1, AS 3959-2009).

State legislative requirements

The residential and rural residential development must conform with *Planning for Bushfire Protection* (NSW Rural Fire Service, 2006), AS 3959 (2009): *Construction of buildings in bushfire-prone areas* and the Building Code of Australia. Development within the site is subject to the EP&A Act and the Rural Fires Act in relation to bushfire hazard assessment and protection.

Vegetation classification

The surrounding forest vegetation is the principal bushfire hazard impacting on future development. As such, vegetation within 140m of the proposed development is classified as forest. The site is adjoined to the north, east and west by highly forested areas. With changes to the natural forest following development of the site, the internal vegetation types will change and therefore result in a lower bushfire hazard.

Fire protection category

The proposed tourist and educational portion of the development is classified under *Planning for Bushfire Protection, (2006)* as a Special Fire Protection Purpose (SFPP) as it comprises schools, medical facilities and tourist accommodation.

8.7.2 Assessment of potential impacts

Bushfire attack assessment

Whilst the assessment by the bushfire consultant was based on the draft Concept Masterplan, the assessment of bushfire attack in relation to each of the proposed development precincts remain the same and are as follows:

Direction	Vegetation classification (within 140m) after development	Effective slope (within 100m)	Recommended width of APZ (m)	Bushfire Attack Level (BAL)
Village Centre & Health Precinct				
North (down)	Forest	0-5^0 downslope	70	▪ BAL 12.5 construction (minimum) generally. ▪ BAL 19 for between 43-<57m. ▪ BAL 29 for between 32-<43m.
South (down)	Gold course/ Managed land	0-5^0 upslope	NR	
East (down)	Forest	0-5^0 downslope	70	
West (up)	Gold course/ Managed land	0-5^0 upslope	NR (No Requirements as no bushfire hazard present)	
Temple Sanctuary Precinct				
North ((down)	Gardens/ Managed land	0-5^0 downslope	NR	▪ BAL 12.5 construction minimum; ▪ BAL 19 for between 43-<57m.
South (down)	Forest	0-5^0 downslope	70	
East (down)	Golf course/ Managed land	0-5^0 downslope	NR	
West (up)	Forest	0-5^0 downslope	70	
Hotel Precinct				
North (down)	Forest	0-5^0 downslope	70	▪ BAL 12.5 construction minimum generally. ▪ BAL 19 in some instances.
South (down)	Forest/ Grassland	0-5^0 downslope	70	
East (down)	Forest/ Grassland	0-5^0 upslope	60	
West (down)	Forest	0-5^0 upslope	60	
Education Precinct				
North (down)	Forest	0-5^0 downslope	70	BAL 12.5 construction minimum.
South (down)	Managed Land	0-5^0 downslope	NR	
East (down)	Forest	0-5^0 downslope	70	
West (up)	Forest	0-5^0 upslope	60	
Information Precinct				
North (up)	Forest	0-5^0 upslope	Not classified as a residential subdivision or a Special Fire Protection Purpose Development. Future buildings are generally Class 5 and not subject to bushfire attack level construction requirements.	
South (down)	Forest	0-5^0 downslope		
East (down)	Forest	0-5^0 downslope		
West (down)	Forest	0-5^0 downslope		
Residential Precinct A				
North (up)	Forest	0-5^0 upslope	20	▪ BAL 12.5 construction minimum generally. ▪ BAL 19 in some instances.
South (down)	Forest	0-5^0 downslope	25	
East (down)	Managed land	0-5^0 downslope	25	
West (down)	Forest	0-5^0 downslope	25	
Residential Precinct B				
North (down)	Forest	0-5^0 downslope	25	▪ BAL 12.5 construction minimum generally. ▪ BAL 19 in some instances.
South (down)	Forest)	0-5^0 downslope	25	
East (up)	Managed Land	0-5^0 downslope	NR	
West (up)	Forest	0-5^0 upslope	20	
Residential Precinct C				
North (down)	Forest	0-5^0 upslope	20	BAL 12.5 construction minimum generally.
South (down)	Forest	0-5^0 downslope	25	
East (up)	Forest	0-5^0 downslope	25	
West (down)	Forest	0-5^0 downslope	25	

For asset protection zones around developments, refer to Figures 8.8, 8.9 and 8.10.

Figure 8.8: Bushfire map of asset protection zones (APZs) for the proposed development at the northern portion of the site

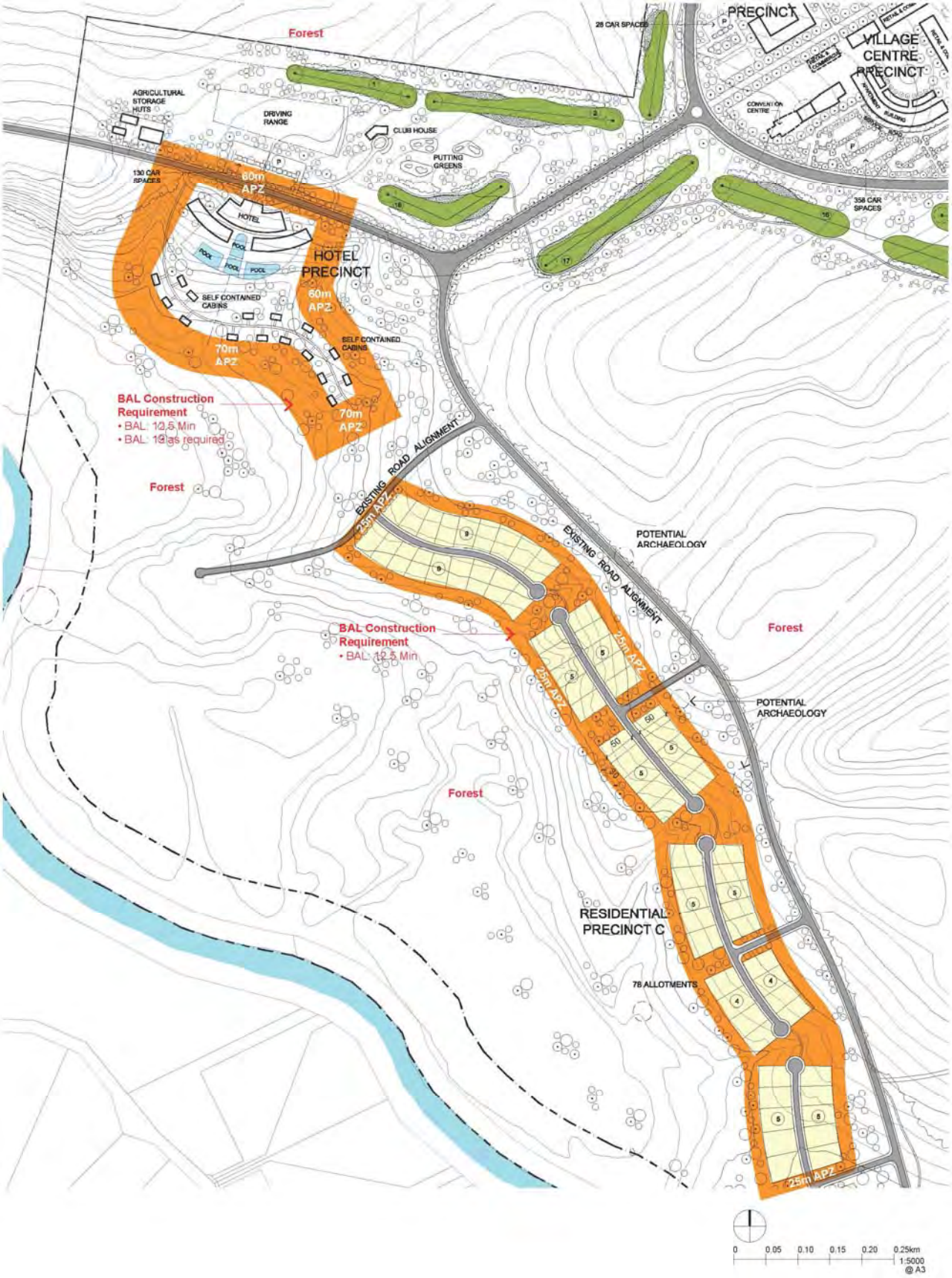

Figure 8.9: Bushfire map of asset protection zones (APZs) for the proposed development at the southern portion of the site

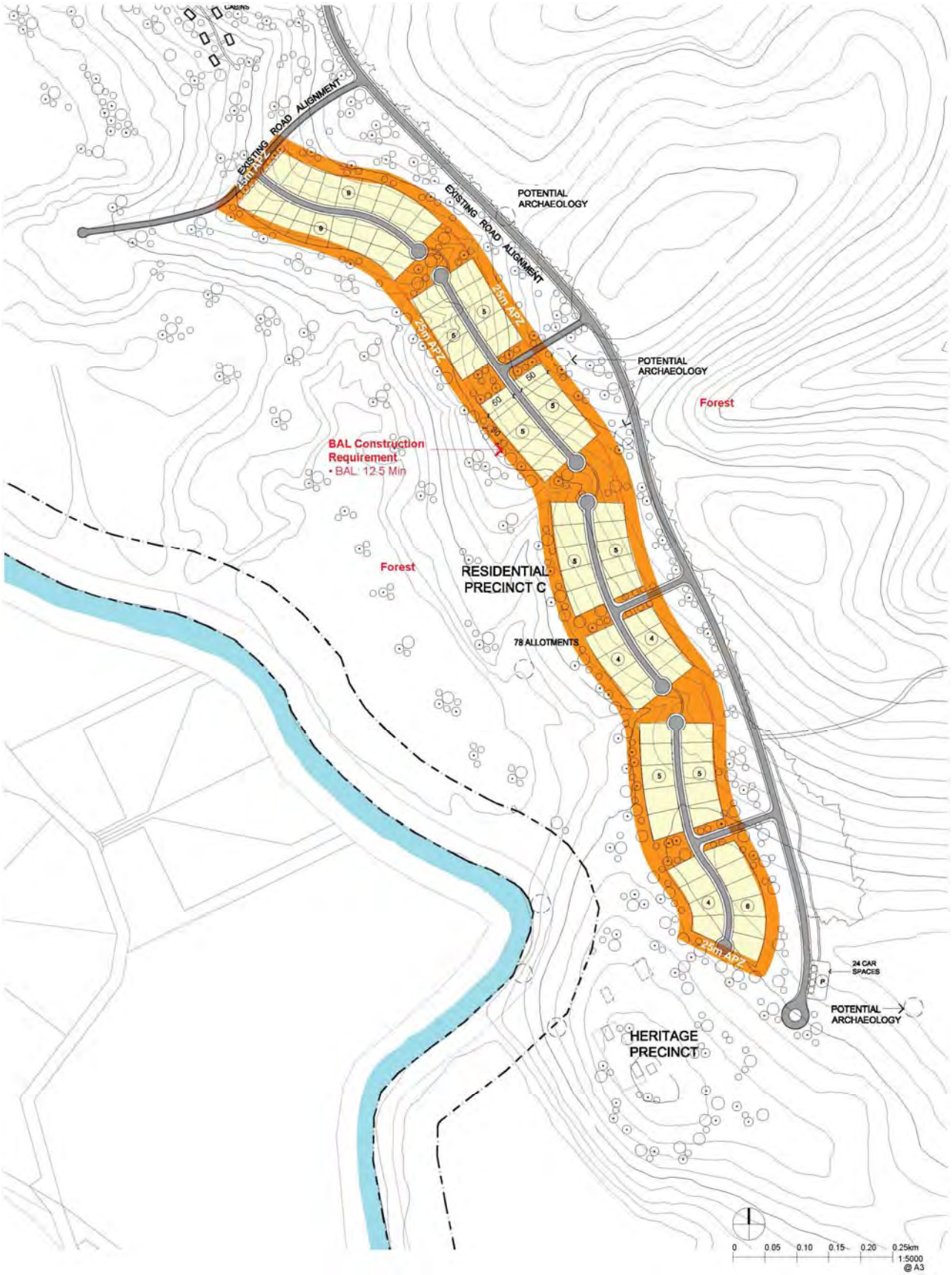

Figure 8.10: Bushfire map of asset protection zones (APZs) for the proposed development at the southern portion of the site

8.7.3 Mitigation and management measures

A. Bushfire protection measures (BPMs)

The following bushfire protection measures are to be implemented:

- Provision of clear separation of buildings and bushfire hazards in the form of fuel reduced APZ, of inner and outer protection areas and defendable space;
- Construction standards and design;
- Appropriate access standards (public roads, private access and fire trails) for residents, fire fighters and emergency service and evacuation workers;
- Adequate water supply and pressure;
- Suitable landscaping to limit the spread of fire; and
- Emergency management, arrangements for fire protection and/ or evacuation.

Maintain the recommended APZ widths for the various development precincts as stated in the previous table (Section 8.7.2 of EA report).

B. Building construction level for residential precincts

Bushfire protection is achievable by establishing separation distance and suitably sized asset protection zones to all aspects and the utilisation of an adequate water supply.

Construction for bushfire protection requirements for the proposed buildings will be required to comply with NSW Rural Fire Service's *Planning for Bushfire Protection* (2006) and Australian Standard AS 3959 (2009) – *Construction of buildings in bushfire prone areas*. Bushfire construction requirements are stated in Section 7.17 of this report.

Due to the isolated nature of the site and potential bushfire hazard affecting the areas of proposed tourist and residential development and the distance to the bushfire hazard, the future dwellings should be constructed to at least **Bushfire Attack Level BAL 12.5 and BAL 19** depending on extent of APZ area, with construction requirements to AS 3959 (2009) – *Construction of buildings in bushfire prone areas*, depending on slope gradient, topographical location of future dwellings and overall distance from the dwelling to the forested vegetation external to the site or located within riparian or other site areas. APZ can include roads buildings or managed properties. Appropriate building construction levels will reflect the extent of APZ allowed around developments. For construction requirements, refer to Section 7.17 of this report and to AS 3959 (2009).

C. Access

Access roads to any part of the proposed development are to comply with the requirements for Special Fire Protection Purpose Developments in Section 4.2.7 of *Planning for Bushfire Protection* (RFS, 2006) and Section 7.17 of this EA report.

Egress from the site is provided from Forest Road. Alternative access/ egress is from Comberton Grange Road.

D. Recommendations

1. All APZs should be maintained as Inner Protection Areas (IPAs) as described in Section 4.1.3 of Planning for Bushfire Protection (RFS 2006);
2. Access roads to any part of the proposed development are to comply with the requirements of 4.2.7 of PBP (RFS 2006) – refer to Section 7.17.4 of EA report.
3. Regular inspections and maintenance of the APZs within the subject site is to be undertaken by the owners/ managers (or their agents) according to PBP (RFS 2006).
4. Requirements for access, APZs and adequate water supply within the proposed development should be discussed with the Rural Fire Service.
5. An Evacuation Plan is recommended for this site.
6. A Fuel Management Plan/ Bushfire Hazard Reduction Plan is to be prepared for any future development of the site.
7. This report should be referred to the Rural Fire Service for their review and comment, and also for their advice regarding possible solutions for bushfire protection and compliance issues for the proposed development.

8.8 Infrastructure Services – Electrical, Communications & Gas

Director-General's Requirements

Infrastructure Provision

- Address existing capacity and proposed requirements for water and sewerage (including effluent and waste water reuse/ recycling, alternatives to town water supply, and use of farm dams), electricity, waste disposal, telecommunications and gas in consultation with relevant agencies. Identify and describe any staging of infrastructure works.
- Address and provide the likely scope of any planning agreements and/ or development contributions with Council/ Government agencies (including relevant community/ State infrastructure contributions).

The *Electrical Services Infrastructure Concept Report on the Shaolin Tourist and Residential Development, Comberton Grange* (February 2012) were prepared by Umow Lai to address the electrical, communications and gas infrastructure services availability and requirements for the proposed development – **Appendix 9**.

8.8.1 Existing environmental features

Electrical services

An existing Integral Energy Zone Substation is located at South Nowra near BTU Road intersection, approximately 6km from the site. Existing overhead transmission lines are located along the eastern side of the Princes Highway, crossing over to the western side near Parma Road.

Communications

An existing communications hub is located on the eastern side of Princes Highway, near Parma Road, approximately 4km from the site. The hub is supplied with underground optical fibre cabling.

Gas

The nearest gas authority main is located 6km from the site at Gimlet Road (which intersects with Forest Road) or at Comberton Grange Road. There are no existing gas services within or in close proximity to the site.

8.8.2 Assessment of potential impacts

The following supply services are proposed for the development:

Electrical services

The maximum electrical demand for the proposed development has been assessed and determined to be approximately 3.8MVA, with the diversified load estimated at 2.7MVA.

According to an Integral Report the South Nowra Zone Substation is equipped with 2 x 25MVA transformers. Based on the data sourced this substation has capacity to supply the proposed development, however modifications to their network are as outlined in this report.

Integral Energy has advised that there is no suitable infrastructure in the immediate vicinity of the proposed site and that a new feeder shall be required from the South Nowra substation. The new 11kV high voltage feeder shall be via a new underground cable service running from the Integral Energy Zone substation located adjacent the Princes Highway, approximately 650m north of BTU road, to the Shaolin site (approximately 6km from the site).

A request for a Design Information Package (DIP) will need to be made to Integral Energy with an assessment of the calculated maximum demand for the development, and outlining the proposed works required to the existing Integral Energy network to facilitate new electrical supply to the site. Integral Energy will provide the DIP upon payment of the monopoly fees by the proponent of the development.

The proponent of the development will be responsible for the funding and installation of the network connection assets, high voltage cable and associated switchgear in accordance with Integral Energy's *Network Connection Contestable Works General Terms and Conditions*.

Once the DIP is obtained from Integral Energy, a Level 3 Accredited Services Provider will be appointed to provide a detailed design of the high voltage electrical works based on Integral Energy's outline design information. A Level 1 Accredited Service Provider will then be engaged to undertake the electrical network construction. Application should be made to Integral Energy approximately 12 months before works commence on site to allow for the required electrical infrastructure upgrades to be carried out.

Communications

The proposed development will require new underground incoming copper and fibre lead-in services. These services will be sourced from the existing communication hub and will be confirmed by the Authority. An Intent-To-Develop (ITD) lodgement is to be made through Telstra Smart Community, with a description of the proposed development and a preliminary assessment of the services required.

Gas services

As there are no existing gas services within or in close proximity to the site, the following options have been identified with the gas authority, Jemena, for:

- Supply from medium pressure network:
  - 6km of 160mm PE main to Gimlet Road (north of the site, off Forest Road); or
  - 7.5km of 160mm PE main to Comberton Grange Road.
- Supply from high pressure network:
  - 7.5km of 100mm ST main (MAOP 3MPa) to Gimlet Road; or
  - 9km of 100mm ST main (MAOP 3MPa) to Comberton Grange Road.

Where costs are found prohibitive for such main extensions, tanks can be located on site which can be filled from trucks. The space required for a suitable tank farm would be in the order of 20m x 10m. Such area would need to be located 20m away from buildings and bushland in a well-ventilated area.

The site is a bushfire prone zone; hence fuel sources need to be kept min. 20m away.

8.8.3 Mitigation and management measures

The use of renewable energy systems within the services design will be able to reduce the energy demand from the supply authority. However, due to environmental factors, energy provided by renewable systems can vary. The extent of incorporation of renewable energy systems will be fully explored at the detailed design of each precinct and building, with following systems being considered for implementation within the development:

A. Electrical services

Photovoltaic (PV) systems will be implemented to reduce the electrical energy demand. The amount of energy that could be derived from these systems will depend on:

- the extent of suitable roof area available and/ or locations for free-standing PV installations; and
- power generated by and economic feasibility of PV installations.

PV systems for energy generation combined with solar hot water heating systems, and gas boosting will make a considerable impact on the energy demands during the day. The amount of energy generated during the day can significantly offset the energy requirements during the evening. Additionally, PV systems can offset lighter loads in commercial premises such as artificial lighting, both internally and within the public domain.

The use of PV systems will be fully explored in the design of buildings within the development. The PV system could:

- to export power to the authority grid during the day and import power at night. This is a more effective system than the storage of power within individual buildings;
- store the energy generated within the site for use as required. This requires additional capital expenditure associated with storage facilities.

Hybrid or mixed mode mechanical/ air conditioning systems of comfort control, energy efficient fittings and appliances and energy management systems will be implemented in the detailed design of each building.

B. Gas powered services plant and co-generation plant

Systems that present an intensive energy demand (such as commercial laundry services, cooking facilities, etc.) could be powered by natural gas supplies instead of electrical power. This would reduce the amount of carbon required for the amount of energy consumed. The use of gas powered co-generation systems will be investigated in the detailed development of the project.

C. Building automation and lighting control systems

Electrical services within buildings will be designed to reduce energy use with timers, building controls and monitoring systems installed.

D. Visual impact

Power lines, communication and other utilities will be located underground to allow for tree canopy development and to avoid adverse impact from potential bush fires.

8.9 Infrastructure Services – Water Supply and Sewerage

Director-General's Requirements

Infrastructure Provision

- Address existing capacity and proposed requirements for water and sewerage (including effluent and waste water reuse/ recycling, alternatives to town water supply, and use of farm dams), electricity, waste disposal, telecommunications and gas in consultation with relevant agencies. Identify and describe any staging of infrastructure works.
- Address and provide the likely scope of any planning agreements and/ or development contributions with Council/ Government agencies (including relevant community/ State infrastructure contributions).

The *Hydraulic Services Infrastructure Concept Repor*t *on the Shaolin Tourist and Residential Development, Comberton Grange* (February 2012) were prepared by Umow Lai to address the electrical, communications and gas infrastructure services availability and requirements for the proposed development – **Appendix 9**.

8.9.1 Existing environmental features

Water supply

The closest water main runs through the eastern side of the site approximately 4km from the proposed development area at Forest Road. Potable cold water supply is likely to be sourced from this existing authority 450mm trunk water main which services the Callala Beach and Bay areas.

Sewerage

Shoalhaven City Council's sewer pressure main is located approximately 6km from the proposed development, east of the site along Forest Road.

8.9.2 Assessment of potential impacts

The following services are proposed for the development:

Water supply

The site is currently serviced by two 25mm services, from a 55mm main at the southern side of Currambene Creek adjacent to Falls Road which connects to the Bewong reservoir (with capacity of 20ML) and a 450mm trunk main along the eastern part of the site which connects to the Vincentia reservoir (with capacity of 13ML).

The proposed point of connection to the authority water main is to be adjacent to the trunk main crossing at Forest Road. The supply will extend along Forest Road for and then along the site entrance road for the total of approximately 4km to the site boundary. The site water meter and water storage tanks will be located within the site boundary. Alternatively, connection could be made to the water main at the south-western portion of the site.

Potable water system

Potable water can provide 35% of the overall daily water demand. A potable water storage reservoir located on the site will be sized to meet peak variations in demand.

The storage reservoir, in the form of a storage tank will reduce peak loads on the authority supply and provide back-up in the event of a loss of supply. Storage tanks are proposed to be located within the Information Precinct, north of the car parking area, in close proximity to the entry roadway.

Non-potable water system

65% of the total site water demand can potentially be provided from non-potable water. Water recycled from captured rainwater is proposed to be used for toilet flushing, clothes washing, landscape and grounds irrigation and mechanical cooling.

Surface stormwater from paved surfaces and roadways will be channelled into localised dams for landscape, agricultural, golf course irrigation, and for fire fighting purposes.

Hot water service

Pre-heated solar systems are to be utilised and integrated into the design of each building. Alternative options, particularly for commercial and institutional buildings, include waste heat from mechanical plant, geothermal and heat pumps.

Sewerage

The site is not serviced by the town sewerage system. Sewerage from the site will be connected to the Authority sewer main at the intersection of Forest Road and Callala Beach Road (Currarong sewer rising main) via sewer pumping stations to Callala waste water treatment plant. The existing Callala treatment plant is designed for a 6,000 EP capacity with future augmentation proposed to increase its capacity to 12,000 EPs.

Sewerage will be treated by the Northern Shoalhaven Reclaimed Water Management Scheme (REMS) project, which will utilise up to 80% of the reclaimed water from six of Shoalhaven waste water treatment plants (of Callala, Vincentia, Culburra Beach, St Georges Basin, Bomaderry and Nowra) for landscape and agricultural irrigation. The treatment process includes primary screening, extended aeration, tertiary filtration and chlorine disinfection.

Trade waste

Trade waste drainage will be required for all food preparation areas in restaurants, cafes and retail food outlets. The capacity of trade waste pre-treatment systems required will be determined at detailed design of each building.

Servicing status and capacity

Shoalhaven Water is currently reviewing its water supply and waste water servicing strategies for its major distribution systems and water and waste water treatment plants. The authority has been advised of this proposed development and will include it in its strategies and hydraulic assessment to determine source of supply of water to the development and the capacity of its existing systems to accommodate the transferral of sewerage from the development. It is anticipated that the works will be completed late in 2012 and early 2013.

8.9.3 Mitigation and management measures

A. Water supply

The environmental goal for the development is to implement water efficient strategies to minimise water supply from the authority water main and potable water use, for environmental and cost benefits. Implementation of water efficient strategies includes:

- Rainwater harvesting from roofs with storage via water tanks for non-potable water usage for toilet flushing, domestic clothes washing, mechanical cooling, landscape irrigation and external water usage (greywater strategy);
- Centralised capturing of stormwater from dwellings and buildings for site landscape irrigation and golf course watering (greywater strategy);
- Explore black water recycling measures and the economy of implementation;
- Use of water efficient appliances; and
- Monitoring of water use via a water management system.

Of the amount of anticipated water consumption of 798.3KL/ day, approximately 35% of the water supply (283KL) can be from potable source (from the authority water main) and 65% (515KL) can be used from non-potable water sources. This will reduce the environmental impact of the development, improve sustainability and provide long term cost savings.

B. Hot water service

A pre-heat system, such as solar pre-heat system, will be used extensively, integrated into the design of buildings on the site. Alternatives will be sought where solar pre-heat system is not suitable. Alternative options include waste heat from mechanical plant, geothermal and heat pumps.

C. Sewerage

Approximately 65% of the total site water demand could potentially be sourced from non-potable water.

The use of septic systems for dwelling allotments has not been pursued due to the environmental factors of waste discharge on downstream waterways. Moreover, septic systems do not effectively treat wastewater to remove disease causing pathogens.

The advantages and disadvantages of the use of grey or blackwater treatment systems for non-potable water purposes have been investigated with:

Advantages being:

- Environmental benefits of reduction in potable water demand;
- On-going cost savings through reduced potable water use;
- Potentially lower on-going discharge to sewer charges and contribution charges.

Disadvantages being:

- Significant capital set up cost;
- Significant on-going maintenance and running costs;
- Energy and maintenance intensive operation;
- On-going testing and validation requirements;
- Disposal of by-product waste;
- Issues of potable water supply in case of recycling plant shutdown;
- Requirement of a recycled water use management plan.

Preliminary findings indicate that a sewer treatment plant is not recommended for the development, at this stage as:

- Shoalhaven Water's Reclaimed Water Management Scheme (REMS) provides sewer treatment on a municipal scale;
- Whole-of-Life cost projections do not conclusively indicate any long term cost saving advantages in installing an on-site treatment plant; and
- The owner of the development would be responsible for the production of recycled water and will be subject to validation and testing requirements of such water for reuse.

The recycling of all sewer discharge with use of grey or blackwater treatment systems for non-potable water will be further investigated and re-evaluated at the detailed design of buildings and precincts for its economic viability and feasibility.

D. Trade waste

The trade waste will be treated via approved grease arrestors, with discharge waste to sewer or to a Blackwater Treatment Plant, for future investigation.

8.10 Flooding

Director-General's Requirements

Flooding

- Prepare a site specific flood studies in accordance with Shoalhaven City Council's *Flood Risk Management Policy* and *Development Control Plan No. 106 – Floodplain Management* and any relevant provisions of the *NSW Floodplain Development Manual 2005*. The study should include, but not be limited to, the identification of the 10 year Annual Recurrence Interval (ARI, 100 year ARI and Probable Maximum Flood (PMF) extent associated with the Currambene Creek and Georges Creek. The study is to include the identification of floodways, flood storage and flood fringe areas along with a determination of high and low hazard areas as defined by the NSW Floodplain Development Manual 2005. The study should reference flood levels outlined in Council's Currambene Creek and Moona Moona Creek Flood Studies.
- Assess the potential impacts of sea level rise and an increase in rainfall intensity on the flood regime of the site and adjacent lands with consideration of *Practical Consideration of Climate Change – Floodplain Risk Management Guideline* (DECC, October 2007); *NSW Government Sea Level Rise Policy Statement* (DECCW, October 2009); Draft *Coastal Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments* (DECCW, 2009); and *NSW Coastal Planning Guideline: Adapting to Sea Level Rise* (DoP, April 2010).

The *Site Specific Flood Study: Proposed Shaolin Temple Project, Comberton Grange, South Nowra* (May 2012) was prepared by Brown Smart Consulting to evaluate the potential of flood and climate change on the proposed development – **Appendix 10**.

8.10.1 Existing environmental features

The site comprises approximately 1,284 hectares and is bounded on the south by Currambene Creek and is traversed by Georges Creek and its tributaries. Currambene Creek discharges to Jervis Bay at Callala Beach. Most of the site drains towards these creeks and a small portion on the eastern side drains towards the upper reaches of Bid Bid Creek.

Creek slopes at the lower reaches of Georges Creek (to the south-east of the site) are generally mild, with broad overbank areas and bed slopes of less than 0.1%. In the upper reaches and in the tributaries, the bed slopes increase with narrower overbank areas and bed slopes of over 0.4% and up to 1.5% in the study area.

8.10.2 Assessment of potential impacts

Flood levels for the 10 year ARI, 100 year ARI and PMF (Probable Maximum Flood) have been plotted. The backwater effect from tidal variability does not extend to the upper reaches of Georges Creek or its tributaries.

In the assessment of **flood hazards**, there are no bank overflows that would cause floodways (natural channels) outside the main creek zones. There are many minor natural channels that drain towards the larger waterways of Georges Creek and its two major tributaries. These natural channels are considered as overland flow paths as the

volume of water conveyed by these channels are not great and the effects of filling or diversion would be defined to the immediate property. In general, velocities in overbank areas are low and the high hazard zone does not extend past the 1m depth limit. For planning purposes, the high hazard limit may be taken as the 10 year ARI flood line.

In assessment of the **effects of climate change** in accordance with the *Practical Consideration of Climate Change – Floodplain Risk Management Guideline (*PCCC Guideline), the site was modelled for the 100 year ARI 12 hour storm with rise in sea level of 0.18m (low), 0.55m and 0.91m (high) respectively. The modelling demonstrates that for this river system, sea level rise only affects flood levels in the lower reaches of Currambene Creek and Georges Creek. There would be no measurable difference upstream in Georges Creek even for 0.91m rise in sea level.

Climate change modelling predicting varying changes in rainfall patterns between coastal and inland areas were undertaken. In coastal areas, **rainfall intensities** in severe storms could increase by 30%. Modelling indicated that increases in rainfall intensity will have a noticeable effect on the overall system with increases in flood level greater in Currambene Creek than in Georges Creek. Typically, for each 10% increase in rainfall intensity, the 100 year ARI flood levels would increase by:

- 30-100mm in the upper reaches of Georges Creek and its tributaries;
- 200-300mm in Currambene Creek; and
- about 200mm in the lower reaches of Georges Creek.

8.10.3 Mitigation and management measures

All the proposed development areas are above the Probable Maximum Flow (PMF) level, with the exception of roads crossing the creeklines. These roads may potentially affect flood levels immediately upstream and downstream of the roadway crossing. These potential impacts will be modelled as part of the detailed design process to ensure that localised increases in flood level do not affect developed areas.

All buildings are sited away from and above flood lines and overland flow paths (minor natural channels that drain towards the larger waterways). Proposed residential allotments and buildings in non-residential zones are well clear of both the 100 year ARI and PMG flood contours.

Development in the vicinity of overland flow paths must have floor levels with freeboard above the overland flow.

For the proposed development, it is recommended that:

- All residential allotments should be located above the 100 year ARI flood line;
- Additional clearance should be provided at the upstream side of all road crossings of major creeks (Georges Creek and its two tributaries) to allow for possible backwater from bridges or culverts;
- Floor levels for all buildings should be at least 500mm above the 100 year ARI flood levels;
- The golf course may extend within the 100 year ARI flood extents but no associated structures should be located within this zone;
- Any structures within the PMF flood extents should be designed to withstand Probable Maximum Flows.

8.11 Water Cycle Management and Water Quality

Director-General's Requirements

Water Cycle Management and Water Quality

- Prepare an Integrated Water Cycle Management Strategy which considers water supply, sewage, stormwater and catchment management interactions of the urban water cycle issues.
- Address stormwater management based on Water Sensitive Urban Design principles, including impacts on the surrounding environment, drainage/ on-site detention and water quality controls for catchment, and erosion and sedimentation controls at construction and operational stages.
- Assess the impacts on surface and ground water hydrology and quality during construction and occupation. Demonstrate adequate protection of receiving waters, including SEPP 14 Wetlands and ground aquifers.

The *Water Management Report, Comberton Grange, South Nowra* (March 2012) was prepared by Brown Smart Consulting to address the water cycle management and maintenance of water quality on catchment areas for the proposed development – **Appendix 11**.

8.11.1 Existing environmental features

The site comprises approximately 1,284 hectares and is bounded on the south by Currambene Creek and traversed by Georges Creek and its tributaries. Currambene Creek discharges to Jervis Bay at Callala Beach. Most of the site drains towards these creeks with a small portion on the eastern side draining towards the upper reaches of Bid Bid Creek.

Creek slopes at the lower reaches of Georges Creek (to the south-east of the site) are generally mild, with broad overbank areas and bed slopes of less than 0.1%. In the upper reaches and in the tributaries, the bed slopes increase with narrower overbank areas and bed slopes of over 0.4% and up to 1.5% in the study area.

The Flood Study undertaken by Brown Consulting indicates that the High Hazard Floodway zone is generally bounded by the 10 year ARI flood line in Georges Creek and its two tributaries within the site, which flow from west to east. The Low Hazard Flood Fringe zone extends between the High Hazard zone extends between the High Hazard zone and a line defining a level 500mm higher than the 100 year ARI flood level. At the upper reaches of the Georges Creek tributaries, the PMF (Probable Maximum Flood) level is less than 500mm above the 100 year ARI flood level.

8.11.2 Assessment of potential impacts

Flooding

All developed areas and buildings are above the PMF and flood lines, with the exception of roads crossing the waterways. These roads may potentially affect flood levels immediately upstream and downstream of the road crossing. At detailed design stage, these potential impacts will be modelled to ensure that localised increases in flood level do not affect developed areas. (Refer to Figures 8.11, 8.12 and 8.13).

Minor natural drainage channels are considered as overland flow paths. Development in the vicinity of these flow paths is to have floor levels with freeboard above the overland flow, to Shoalhaven City Council standards.

Surface hydrology impacts

The proposed development will increase the area of impervious surface within the catchment, which has the potential to increase the volume of runoff, the peak discharge rate and the frequency of peak discharge. For an increase of 10% in rainfall intensity over the entire catchment, the 100 year ARI flood levels in the Georges Creek's tributaries would rise by 20-90mm. The resultant increase in runoff of 0.4% amounts to less than 4mm, which would have minimal effect on flood levels upstream of the site as the creeks are relatively steep and backwater effects would not extend far up the creek.

Increases in flood levels at or downstream of the site are also minimal. On site detention is not required for attenuation of peak discharges.

Groundwater hydrology

The site would not provide significant potential for groundwater recharge as ground water was not noted in test pits. Accordingly, ground water inflow would be minimal.

Stormwater quality

The proposed development has the potential to generate pollutants which could contaminate surface runoff, with contaminants entering the natural streams with consequent negative impacts on their ecosystems.

8.11.3 Mitigation and management measures

The following Integrated Water Cycle Management Strategy addresses harvesting of rainwater and stormwater, implementation of WSUD strategies for stormwater filtration and bioretention:

A. Harvesting of rainwater and stormwater

Potable water usage will be minimised with use of non-potable water wherever possible from rainwater harvesting and collection of surface runoff from hard surfaces.

Site stormwater runoff is proposed to be retained for reuse as follows:

A1. Roof water

Roof water will be collected for reuse from all buildings, with beneath buildings or in surface rainwater tanks.

In Residential Precincts, rainwater will be collected in individual tanks. Roof water will be filtered and primarily used for toilet flushing. Overflow from these tanks will be directed through inter-allotment drainage to communal storage ponds for use as irrigation to communal gardens and soft landscaped area.

A2. Surface water

Surface water will be collected in basins/ water bodies located above the 100 year ARI flood line. Harvested water collected will be used primarily for irrigation purposes (for golf course, landscaped and agricultural areas). (Refer to Figures 8.8). The proposed basin locations will be refined and integrated with the landscape design at the detailed design of each site precinct.

Figure 8.11: Northern portion of site – Location of 10 & 100 year ARI and PMF levels overlaid by the proposed development and detention/ bioretention basins (source: Brown Consulting)

Figure 8.12: Middle portion of site – Location of 10 & 100 year ARI and PMF levels overlaid by the proposed development and detention/ bioretention basins (source: Brown Consulting)

Figure 8.13: South-western portion of site – Location of 10 & 100 year ARI and PMF levels overlaid by the proposed development and detention/ bioretention basins (source: Brown Consulting)

Figure 8.14: South-eastern portion of site – Location of 10 & 100 year ARI and PMF levels overlaid by the proposed development and detention/ bioretention basins (source: Brown Consulting)

B. Water sensitive urban design (WSUD) strategies

The quality of stormwater runoff from paved areas will be improved by screening, filtration, sedimentation and bioretention to achieve target standards for removal and retention of both suspended and dissolved pollutants.

Stormwater quality is maintained via 3 stages:

- **Primary stage** of stormwater screening – to remove transported solids such as paper, plastics, etc. in gross pollutant traps provided at the point of discharge from hard landscaped areas and car parks;
- **Secondary stage** – whereby all stormwater discharging into natural waterways (except for roof water overflows) is to be filtered through with associated sedimentation tanks and oil separation devices attached to gross pollutant traps.
- **Tertiary stage** – comprising absorption of nutrients by vegetation, which is undertaken by:
  - Bioretention, via bioretention swales comprising trenches filled with filter medium draining to a subsoil drain. The filter medium includes nutrient and pollutant absorbing plants. Bioretention swales are to be located along both sides of the ring road and on the uphill side of all minor roads where road gradients are 3% or less;
  - Wet/ dry basins for longer retention of stormwater runoff and treatment by wetland vegetation (e.g. reeds and sedges). These are to be located in natural low points within the site landscape.

C. Golf course water quality controls

Golf courses are a source of potential pollution of nearby watercourses, with the main source of pollutants being pesticides and fertilisers used in the maintenance of the turfed fairways, tees and greens.

Pesticides and fertiliser use is to be limited to tees and greens, with selection of grasses that are pest resistant and thrive on low nutrient environments. Where pesticides and fertilisers are used, surface runoff is to be diverted into bioretention swales constructed at the edge of these areas.

A Golf Course Pollution Management Plan will be prepared in the detailed design of the course. The Management Plan will include:

- Procedures for identification, storage and safe use of pesticides and fertilisers;
- Recommendations to minimise the areas where pesticides and fertilisers are to be used;
- Procedures for recording the usage of pesticides and fertilisers by area and over time; and
- Procedures for maintenance of water quality control devices.

D. Integrated water cycle management

An Integrated Water Cycle Management Plan is to be prepared in the detailed design of the site to address the use and reuse of potable and non-potable water throughout the site. Such a plan would include detailed calculations of potable and non-potable usage with regard to building usage, number of occupants, water and sewer fixtures, etc.

E. Water harvesting and reuse

Final location of rainwater harvesting tanks and sizing will be undertaken at the detailed design of the development, based on a water balance analysis for the specific building use.

The size of surface water storage basins for irrigation would also be determined based on design parameters such as the area of upstream catchment, the space available for water storage and basin batters, integrated with the landscape design of the area.

F. Sediment and erosion control

Sedimentation and erosion control (during construction and post-construction) is essential due to the existence of natural water courses traversing the site. Controls during construction must be designed will be designed with consideration of the nature of soils and areas disturbed, with measures designed in accordance with Landcom's *Managing Urban Stormwater: Soils and Construction* (2004).

Controls during construction must be designed with consideration of the nature of the soils and the areas disturbed, with design of such controls at the detailed design of the development.

Controls post-construction will primarily involve the stabilisation of disturbed surfaces and control of concentrated discharges from the site, which will require coordinated landscaping and civil engineering design.

Detailed strategies and measures for sediment and erosion control will be undertaken at the detailed design of each precinct.

8.12 Traffic

Director-General's Requirements

Traffic and Access

Prepare a Traffic Impact Study in accordance with Table 2.1 of the RTA's *Guide to Traffic Generating Developments*, based on the maximum development potential for the site, which addresses the following matters:

- Access to and within the site, with consideration of one site access only (either Forest Road or Comberton Grange Road).
- Need for junction upgrades. Appropriate intersection analysis (for Princes Highway with Comberton Grange Road/ Forest Road) using SIDRA to determine projected traffic growth for the next 10 years with and without the development; AM and PM peak volumes and recreation peak volumes.
- Identify road infrastructure required to ameliorate the impacts of the development at the junctions of Princes Highway/ Comberton Grange Road, Princes Highway/ Forest Road, Princes Highway/ Parma Road and Princes Highway/ BTU Road. Provide a concept plan (notating property boundaries) of any proposed treatments. (Note: suitable agreement with affected property owners will be required where treatments are located outside of the road reserve).
- Capacity of the road network to safely and efficiently cater for additional traffic generated.
- Servicing and parking arrangements. Prepare a Parking Needs Study which investigates parking demand generated by each component of the proposed development.
- Connectivity to existing developments.
- Impact on public transport, including school bus routes.
- Provision of access for pedestrians and cyclists to, through and within the site.

The *Traffic Impact Assessment* (March 2012) was prepared by Lyle Marshall & Associates Pty Ltd to evaluate the traffic and transport impact of the proposed development – **Appendix 12**.

8.12.1 Existing environmental features

Road system

The existing traffic conditions on roads surrounding the site are as follows:

A. The Princes Highway

The Princes Highway is the major road servicing the NSW South Coast, linking Sydney and Melbourne and passes through Nowra and South Nowra.

The proposed development has no direct access from the Princes Highway but is accessible from Forest Road, which is a collector road that links the Highway to the coastal towns at Callala Bay, Currarong and Culburra Beach.

The Princes Highway has been upgraded, by 2008, to:

- a 4 lane dual carriageway between Forest Road and Jervis Bay Road;
- a full seagull intersection at Jervis Bay Road;

- partial seagull intersection improvements at Forest Road;
- channelization at Comberton Grange Road to provide for right turn entry from the Highway; and
- U-turn facility at Parma Road, Comberton Grange Road and Forest Road.

B. Forest Road

Forest Road is a 2 lane dual carriageway road which has been upgraded and sealed for its full length. The width of the road is 6.7m with 1m wide sealed shoulders on both sides.

C. Comberton Grange Road

Comberton Grange Road has been reconstructed to 6m in width and sealed for about 200m from its intersection with Princes Highway. From this point, the standard of the road deteriorates with deep potholes and is difficult to access by conventional vehicle.

Traffic conditions

There has been a significant growth in daily traffic in Princes Highway, Forest Road and Jervis Bay Road from 2008-2011. The busiest hours along the Princes Highway are 8-9am, 12-1pm and 4-5pm. Historically, traffic volumes in Comberton Grange Road, Falls Road and Parma Road are very small. Traffic volumes in the road system are significantly higher during the summer holiday period (December/ January).

The am, pm and midday traffic counts at the Jervis Bay Road intersection with the Princes Highway indicate that over 95% of traffic travel to and from Nowra and Bomaderry. Existing intersection performance indicates that the intersections of:

- BTU/ Princes Highway;
- Forest Road/ Princes Highway; and
- Jervis Bay Road/ Princes Highway;

perform at an "A" level of service, representing the best operational condition. The level of service for the critical right turn movement at BTU and Forest Road intersections with the Princes Highway are satisfactory.

The volumes of traffic travelling east along Forest Road to Callala Bay/ Carrawong/ Culburra Beach/ Greenwell Point will increase due to general traffic growth in the Shoalhaven region.

Public transport

There are no planned or committed improvements in rail services to Bomaderry and bus services in the Princes Highway to Jervis Bay.

8.12.2 Assessment of potential impacts

Traffic generation and distribution

The main vehicular access to the development is via the proposed northern access road from Forest Road, which is accessed from the Princes Highway. Comberton Grange Road will provide emergency access to the western boundary of the site from the Highway.

Travel pattern

Travel pattern within the development is as follows:

A. Temple Precinct

Visitors to the Temple and the tourist precinct will arrive by private cars as well as private coaches organised by the Shaolin Foundation through booked tours and accommodation.

For major events and festive days, anticipated visitors will be transported in coaches from regional areas or via a mini-bus from the rail station or key bus node at Nowra. International tourists will be transported by coaches. Those coming by private car are not anticipated to have a specific pattern of travel to the development.

B. Residential precincts

It is anticipated that the occupants of the **residential component** of the development will be of the following demographics:

- Chinese nationals middle class business people looking to live in a precinct with a strong Chinese cultural flavour;
- Chinese national retirees;
- Middle class to rich Australians, predominantly retirees seeking a tree/ sea-change community lifestyle.

These groups are anticipated not likely to have work commitments in Nowra or surrounding area to require a daily pattern of travel to work.

C. Education Precinct

For the educational component of the development, it is anticipated that 80% of students will board (at the minimum, weekly boarding). Thereby the facility will not generate the daily travel patterns of a normal school. The facility is anticipated to make its grounds and accommodation available for holiday programs.

D. Town Centre Precinct

It is anticipated that 50% of shop owners will be from outside the residential precincts. The precinct, whilst tourist orientated, will have the function of a neighbourhood centre with convenient retail outlets.

The serviced apartment will be occupied by overseas or regional visitors. It may also cater for an aged population who wish to visit from a week to several months.

E. Health + Wellness Precinct

This precinct is anticipated to be visited by Chinese and Asians, some in conjunction with the tourist experience, for naturopathic consultation. Additionally, treatment packages or programs may be implemented at 2 day or more duration, with accommodation within the hotel. It is anticipated that local tourists will constitute 80% and Chinese nationals 20% of usage.

F. Golf course

The golf course will be used by residents as well as outsiders from the local area, international and regional visitors on a weekend/ several day package.

Traffic impact

It is expected that the majority of traffic generated by the proposed development will be to and from Nowra/ Bombaderry. Impact at intersections is as follows:

A. Forest Road/ Princes Highway seagull intersection

Based on traffic growth to 2021, the delay for right turn from Forest Road into the Princes Highway will be at Level of Service "F" in the 4.00-5.00pm peak hour (284 seconds). This is much lower than the delay for the right turn from Jervis Bay Road into the Princes Highway (1158 seconds).

However, under Stage 1 tourist development future 2021 scenario, the delay on the right turn from Forest Road into the Princes Highway in the 4.00-5.00pm peak hour increases to 1240 seconds.

Under the ultimate tourist development future 2021 scenario, the delay on the right turn from Forest Road into the Princes Highway in the 4.00-5.00pm peak hour increases to 2099 seconds, which is **unacceptable**.

B. Jervis Bay Road/ Princes Highway intersection

The right turn movement from Jervis Bay Road into the Princes Highway at 12.00-1.00pm and 4.00-5.00pm peak hours is at the Level of Service of "F: with 7.27 seconds and 112.3 seconds delays respectively. Under the 2012 traffic scenario, delay for right hand turn from Jervis Bay Road will increase to 780 seconds and 1176 seconds respectively, which is **unacceptable**.

Traffic generated by the proposed tourist and residential development in Stage 1 and in the Ultimate Development has no impact on Jervis Bay Road/ Princes Highway intersection and delays.

C. BTU Road/ Princes Highway intersection

Right turn form the Princes Highway into BTU Road in 2021 in the 8.00-9.00am peak hour has the Level of Service of "F", with a delay of 237 seconds.

Right turn from BTU Road into the Princes Highway in 2021 during 12.00-1.00pm has the Level of Service of "E", with a delay of 69 seconds. Under the future 2021 scenario plus the Stage 1 development, the Level of Service increases to "F", with a delay of 168 seconds. Although there is no increase in traffic volume turning right due to the development, there is an increase in northbound traffic to Nowra causing the Level of Service to worsen, but the extent of delay can be tolerated.

D. Forest Road

Analysis of the future 2021 traffic volumes indicates Forest Road, between the northern access road to the development and Princes Highway, has adequate capacity to carry the increased traffic volumes.

E. Northern Access Road

Analysis of the future 2021 traffic volumes indicates that a minimum 6.7m wide dual lane sealed carriageway with 1m wide sealed shoulders and 1m wide gravel shoulders is a suitable standard for the road. Proposed speed limit on this road should be a maximum of 80km/ hour, which should be signposted.

This road has adequate capacity at Level of Service C to carry future 2021 peak and ultimate development traffic volumes.

F. Intersection of Northern Access Road and Forest Road
A well designed roundabout should be constructed as intersection control, with lighting.

G. Internal roads within the site
Internal road network is recommended to have a 50km/hour speed limit for safety reasons.

Parking provision
Car parking is provided within each precinct. However, for the large number of tourists who arrive by coach or bus, a mini-bus service that takes visitors to each tourist precinct would be essential as walking distances are too great. The service could be provided by a private operator or by the Temple Foundation.

The overall car parking demand within the development will not be the sum of the peak demands in each precinct, but will be much less as the parking demand at each facility will not peak at the same time.

It is anticipated that over 30% of tourists will arrive by coach, thereby reducing parking demand.

8.12.3 Mitigation and management measures

A. Forest Road/ Princes Highway seagull intersection
Delays are anticipated to incur as the result of the Stage 1 and Ultimate tourist development scenarios by 2021 to 1240 seconds and 2099 seconds respectively at the 4.00-5.00pm peak period.

Installation of traffic signals with dual right-turn lanes from Forest Road to the Princes Highway is proposed at this intersection. This would improve the Level of Service to "C" in the 12.00-1.00pm and 4.00-5.00pm peak hours and reduce the delay to 35.5 seconds and 39 seconds respectively. A left-turn slip lane that would be required in the Princes Highway forms part of the RMS road improvements currently under construction.

B. Jervis Bay Road/ Princes Highway intersection
Delays are anticipated to incur for right-turn from Jervis Bay Road into the Princes Highway by 2021 from 780 seconds at 12.00-1.00pm to 1176 seconds at 4.00-5.00pm.

Installation of traffic signals with dual right-turn lanes at this intersection would provide a comparable improvement in the Level of Service.

8.13 Noise

Director-General's Requirements

Noise

Address potential noise impacts (existing and proposed) on the development, particularly from road traffic, quarry operations and aircraft. Address appropriate mitigation measures to ameliorate noise impacts. Note: the site is located beneath the flight corridor between the HMAS Albatross and the Jervis Bay Training Area.

The following noise assessment reports were undertaken to address potential noise impacts on and mitigation measures for the proposed development:

- *Noise Assessment Report – Proposed Shaolin Temple Development Site near HMAS Albatross*, 17 October 2006, prepared by The Acoustic Group Pty Ltd for the Department of Defence; and
- *Noise Assessment Report – Shaolin Tourist & Residential Development, Comberton Grange, South Nowra*, (June 2012) prepared by Wilkinson Murray.

– **Appendix 13**.

8.13.1 Existing environmental features

Aircraft noise

A significant portion of the site is within the Nowra Military Control Zone under the 2 nautical mile wide helicopter flight corridor along Currambene Creek between HMAS Albatross and the Jervis Bay Training Area. The open terrain corridor has been used as a helicopter flight corridor for many years. Aircraft fly at a transit height of 1,000ft (305m) above ground level. Depending on weather conditions, the transit height may be reduced to 200ft (61m) above ground level.[27]

The transit lane for helicopters between HMAS Albatross and Jervis Bay training area is known as "Husky Lane" (Refer to Figure 8.15). Naval aircraft will most frequently fly over the site and create the most consistent noise footprint. The number of helicopter transits that utilise Husky Lane vary according to HMAS Albatross operational requirements. At times, the transit can be as low as 25 movements/ week and at other times exceed 100 per week,[28] with movements averaging 5 days/ week.[29]

The southern portion of the site is located within the 2 nautical mile wide transit corridor, varying from 70dBA along the southern portion of the site to 60dBA to 60dBA to the majority of the site.[30] (Refer to Figure 8.16)

[27] The Acoustic Group Pty Ltd, *Proposed Shaolin Temple Development Site near HMAS Albatross: Noise Assessment Report* (Oct 2006).
[28] The Acoustic Group Pty Ltd, *Proposed Shaolin Temple Development Site near HMAS Albatross: Noise Assessment Report* (Oct 2006).
[29] Australian Government Department of Defence, Letter to Conybeare Morrison International Pty Ltd (27 October 2008).
[30] The Acoustic Group Pty Ltd, *Proposed Shaolin Temple Development Site near HMAS Albatross: Noise Assessment Report* (Oct 2006).

Figure 8.15: Husky Lane flight path (Source: *Noise Assessment Report*, The Acoustic Group Pty Ltd, prepared for Department of Defence, October 2006)

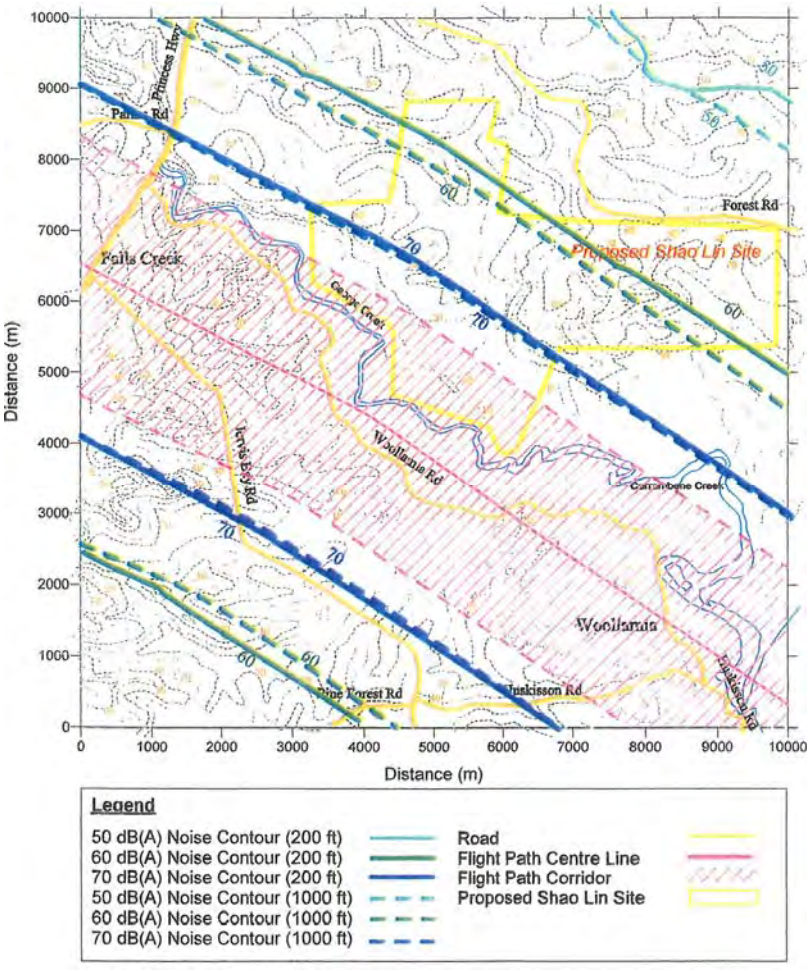

Figure 8.16: Maximum noise level (dBA) for Seaking Helicopter at 200ft and 1000ft above ground level (*Source: Noise Assessment Report, The Acoustic Group Pty Ltd*)

RAAF military fast jets will create the most severe noise impacts, but will not fly near the site as frequently as naval aircraft. Additionally, noise from general aviation aircraft transiting the Nowra Control Zone may also be heard from the site. The predominant helicopter using the flight corridor is the AS350 Squirrel single engine helicopter, with other helicopter types utilising the corridor less frequently.[31]

The site is, therefore is and will continue to be, affected by aircraft noise. The Department of Defence is of the opinion that the future use of Husky Lane, and therefore the extent of aircraft noise, may increase as a result of possible future increases in Defence operational training requirements. With the advent of the Australian Defence Force's joint helicopter school being established under the Helicopter Aircrew Training System, it is likely that there will be a significant increase in twin-engine helicopters based at Nowra.[32]

Measured aircraft noise levels on site

Noise levels were monitored by Wilkinson Murray, acoustic consultants, from 12 October to 22 October 2009 at a location directly north-east of the cleared pastureland and unformed road at the south-western portion of the site. Results indicate the Rating Background Levels (RBL) of:

- Daytime: RBL – 35dBA;
- Evening: RBL – 32dBA; and
- Night time: RBL – 30dBA.

Additionally, attenuated measurements were carried out during 2 site visits to set out and collect the noise loggers. The location of the attended monitoring was undertaken within the forested area directly south of the former Pine Plantation portion of land. The daytime noise level measured was 28-30dBA.

Noise levels from helicopters were measured during the site visit on 12 October 2006 at the location of the placed loggers. Noise levels measured fluctuated from 37-56dBA between the half hour period from 12.20-12.50pm, in an area where The Acoustic Group (commissioned by the Department of Defence) estimated the noise levels to be between 68-72dBA. The maximum noise levels are less than that predicted in the Department of Defence commissioned report. The extent of air traffic within and near the site is less than that anticipated by the Department of Defence.

Traffic noise

All roads at the proposed development and Comberton Grange Road would be considered as local roads. Forest Road would be considered a collector road. The Princes Highway would be considered an arterial road. These roads are located at least 1km from the proposed development.

Quarry noise

The quarry is located approximately 1km from the nearest development area. The quarry is not an active quarry and is not anticipated to be active during the occupation of the proposed development.

[31] The Acoustic Group Pty Ltd, *Proposed Shaolin Temple Development Site near HMAS Albatross: Noise Assessment Report*, Oct 2006.
[32] Australian Government Department of Defence, Letter to Conybeare Morrison International Pty Ltd, 27 October 2008.

8.13.2 Assessment of potential impacts

Aircraft noise impacts

The Department of Defence recommends that aircraft noise reduction level be required, based on the noise contours supplied by The Acoustic Group Pty Ltd for the predominant helicopter type flying over the corridor of the AS350 Squirrel single engine helicopter. The development should achieve the following optimum indoor design sound levels, in building envelope, and reduction in aircraft noise levels, of:

Building type	**Activity**	**Indoor design sound level** (dBA)	**Max. predicted helicopter noise** (dBA)	**Aircraft noise reduction required** (dBA)
Homes and multi-units	Sleeping areas	50	60(PP) + 70(FP)	10(PP) + 20(FP)*
	Other habitable spaces	55	60(PP) + 70(FP)	5(PP) + 15(FP)
	Bathrooms, laundries	60	60(PP) + 70(FP)	0(PP) + 10(FP)
Hotel	Sleeping, relaxing	55	70	15
	Social activities	70	70	0
	Service areas	75	70	0
Schools	Libraries, study areas	50	55	5
	Teaching & assembly areas	65	55	0
	Workshops, gymnasium	75	55	0
Hospital/ medical suites	Treatment, wards, theatres & consulting	50	60	10
	Service areas	75	60	0
Commercial & retail	Offices	55	60	5
	Shops & supermarkets	75	60	0
Public buildings	Theatres & cinemas	40	60	20
	Libraries & galleries	50	60	10
	Religious activities	50	60	10

(Source: Table 3.3, AS 2021(2000): *Acoustics – Aircraft noise intrusion – Building siting and construction*.

* (PP): Pine forest precinct
(FP): Farmland precinct

Traffic noise criteria

DECCW's Environmental Criteria for Road Traffic Noise provides the following guidance with respect to transportation noise and sleep disturbance of:

- Maximum internal noise levels below 50-55dBA are unlikely to cause sleep awakening reactions;
- One or two noise events per night, with maximum internal noise levels of 65-70 dBA are not likely to affect health and well-being significantly.

The criteria for **residences** (including the **Hotel**) are:

- Arterial roads (being Forest Road and the Princes Highway):
  - Day time: 60dBA
  - Night time: 55dBA
- Local roads (all roads within the development):
  - Day time: 55dBA;
  - Night time: 50dBA

For places of worship (**Temple**), the criterion is that the nose level should not exceed 40dBA when in use.

For **recreation areas**:
- Passive open spaces: 55dBA; and
- Active open spaces: 60dBA.

Traffic volumes
Vehicular traffic will enter from Forest Road north of the site. Most will connect to the Princes Highway approximately 3km west of the intersection with Forest Road.

The development is anticipated to generate the following daily movements in and out of the site for weekdays, Saturdays, Sundays and peak Sunday, as follows:

	Stage 1 development			**Ultimate development**		
	In	**Out**	**Total**	**In**	**Out**	**Total**
Weekday	661	727	1,598	1,339	1,344	3,084
Saturdays	1,031	944	2,243	1,661	1,520	3,750
Sundays	1,055	1,185	2,910	1,819	1,847	4,385
Peak Sunday	1,593	1,976	3,630	2,173	2,631	4,985

The predicted traffic external traffic generation for the ultimate use of the site is 3,084 movements (in and out) on weekdays, 3,750 movements on Saturdays and 4,385 on Sundays. The traffic would connect to the Princes Highway via Forest Road.

Traffic noise impact
Hotel:
The hotel is located approximately 500m from the main ring road at the south-western pastureland overlooking Currambene Creek, with anticipated maximum traffic to it is 25 vehicles/ hour on a Sunday afternoon.

No traffic noise impact is predicted at the hotel.

Temple:
Noise at the Temple is predicted to be between 40-50dBA. The internal noise level will be below the 40dBA guideline if doors and windows are closed. As the Temple is an area of tourist and religious visitation, the noise level is within the noise parameters for Temple activities.

Residences:
The proposed residences within the site are located in precincts to the north, north-western and south-eastern portions of the site,

Residential Precincts A and B located at the northern and western portions of the former Pine Plantation precinct are buffered from the main ring-road (60km/hour speed limit) by distance (minimum 40m), natural watercourses, forest and landscaping. Local roads within the northern residential precincts (A & B) will be limited to 50km/hr. It is not anticipated that noise from internal traffic be a significant issue to the residential amenity of the dwellings.

Residential Precinct C will be accessed by roads limited to 50km/hr. Additionally, the residences are clustered in small hamlets sited away from the main route to the Heritage Precinct and buffered by landscaping.

Noise is predicted to comply at all residences at all times.

Residential Precinct D, located within the Village Centre Precinct, may require higher attenuation measures to the building envelope, not specifically from traffic noise, but from its location at the heart of the retail and entertainment precinct.

Traffic noise to residences external to the development
Noise will be generated up to 4,985 daily vehicle movements to and from the site. Traffic will enter Forest Road, north of the site.

The only residences potentially impacted by noise from traffic generated from the proposed development are a group of approximately 6 residences near the intersection of Forest Road and the Princes Highway. Based on measurements of traffic noise taken from the Princes Highway, the typical existing day time traffic noise at this house is 55dBA. Assuming that all traffic to the site uses Forest Road, and that it occurs over a 15 hour period, the predicted maximum noise level at this dwelling is approximately 58dBA, which complies with the criterion. The development would increase traffic on Forest Road, but is not predicted to exceed the noise criterion at any residence.

Residences along Comberton Grange Road will not be impacted by the development as this route is likely to remain unsealed in the foreseeable future and will be only maintained for minor use and for emergency access to/ from the site.

The Princes Highway has a high traffic volume relative to the maximum flow proposed to be generated by the development. Noise from the increase in traffic entering this intersection would be insignificant and no noise impact is predicted on residences on the Princes Highway.

Quarry noise impact
Maximum noise level of a typical active quarry is 115dBA at standard operating hours of:
- 7.00am – 6.00pm Monday to Friday; and
- 7.00am – midday on Saturday.

The predicted noise level at the buildings of the development is 29-34dBA, depending on the location with respect to the quarry. This complies with the criteria for residential and non-residential area. It is unlikely that the quarry will be in operation during the full occupation of the development. It is unlikely that the quarry would operate at night.

8.13.3 Mitigation and management measures
Whilst the Department of Defence strongly recommends that planning conditions be imposed to ameliorate the impact of aircraft noise on the development, the level of aircraft traffic and noise anticipated has not been experienced on the site.

Should air traffic noise increases from its current detectable levels to become an issue at the time of detailed design of the development, habitable buildings should be

insulated against aircraft noise in accordance with the requirements of AS 2021 (2000): *Acoustics – Aircraft noise intrusion – Building siting and construction*. The use of appropriate building design and construction attenuation measures would mitigate aircraft noise impacts within buildings but may require at some locations the provision of mechanical ventilation or sound masking measures.

Mitigation measures designed in buildings to reduce indoor noise levels include the use of:

- Insulation to walls and roof to suit the attenuation measures required;
- Minimum 3mm thick glass; and
- Acoustic seals to external doors.

8.14 Views and Visual Amenity

Director-General's Requirements

Visual Impact

Address the visual impacts of the proposal in the context of surrounding development and relevant mitigation measures, particularly, foreshore amenity, overshadowing of and loss of views from public places, and cumulative impacts; with the use of visual aids such as scale models and photomontages. Address amelioration of visual impacts through design, use of appropriate colours and building materials, landscaping and buffer areas.

A detailed *Visual Impact Assessment* (July 2010) of the proposed development has been undertaken to assess the impact of the development against the sensitivity of the area by Conybeare Morrison – **Appendix 14**.

Significant vantage points or viewpoints were identified through site visits and analysis of the site. The visual impact study covered the site and views from surrounding areas. The qualities of these views are related to landform, topography, vegetation and the cultural landscape.

The visual impact assessment aimed to:

- Identify and describe the existing visual and landscape environment, and evaluate its current qualities;
- Determine the likely impacts the development will have on the visual and landscape quality of the area; and
- Recommend design principles to enhance the visual quality and minimise any potentially adverse impacts related to the proposed development.

8.14.1 Existing environmental features

The landscape character of the Comberton Grange site comprises three broad patterns of landscape:

- Native forest and woodland which covers the majority of the site in the central and northern portion;
- Cleared farmland above Currambene Creek which is covered in exotic grasses and introduced species; and
- Wetlands located adjacent to Currambene Creek.

Refer to Figure 5.9: Landscape character precincts.

Farmland precinct – view analysis

The Farmland precinct is in an exposed location, with views to this precinct from the south, south-east and south-west. The eastern portion of this precinct is particularly sensitive as it is the site of the former Comberton Grange Homestead. The precinct is assessed to have:

Visual sensitivity

The visual sensitivity of the **Farmland precinct** from vantage points from the south is assessed as **very high** visual sensitivity due to the precinct's:

- topographic setting;
- exposed nature;
- sparse vegetation;
- views to the Currambene Creek; and
- heritage significance of the Comberton Grange Homestead and its cultural landscape.

Visual effect
The visual effect of development within the Farmland precinct is **very high** due to the sparse nature of the vegetation in this precinct. The visual effect at the eastern portion of this precinct is particularly high due to its proximity to the former Comberton Grange Homestead.

Pine Forest precinct – view analysis
The Pine Forest/ Plantation precinct is sited in a sheltered location screened by existing forested areas of national parks. The precinct is assessed to have:

Visual sensitivity
The visual sensitivity of the Pine Forest and Forest precincts from vantage points from the south are assessed as **very low/ nil** due to the topographic setting and heavy vegetation screening of existing significant trees proposed to be retained within the site. (Refer to Figure 8.17)

The dense canopy of trees on the ridgeline at the interface of the Farmland precinct and Habitat corridor provides a significant visual barrier to the Pine Forest precinct.

Visual effect
The potential visual effect is assessed as low, with required retention of vegetation of the Habitat Corridor at the central portion of the site to maintain the visual effect of this location.

8.14.2 Assessment of potential impacts

Comberton Grange viewpoints
Important viewpoints were identified, which relate to the two specific precincts of:
- Farmland precinct
- Pine Plantation precinct

Views to the Farmland precinct and the Pine plantation precinct within and external of the site have been evaluated as:

	Visual sensitivity	**Visual effect**	**Potential visual impact**
To Farmland precinct:	Very high	Very high	Very high
To Pine Plantation precinct:	Low	Low	low

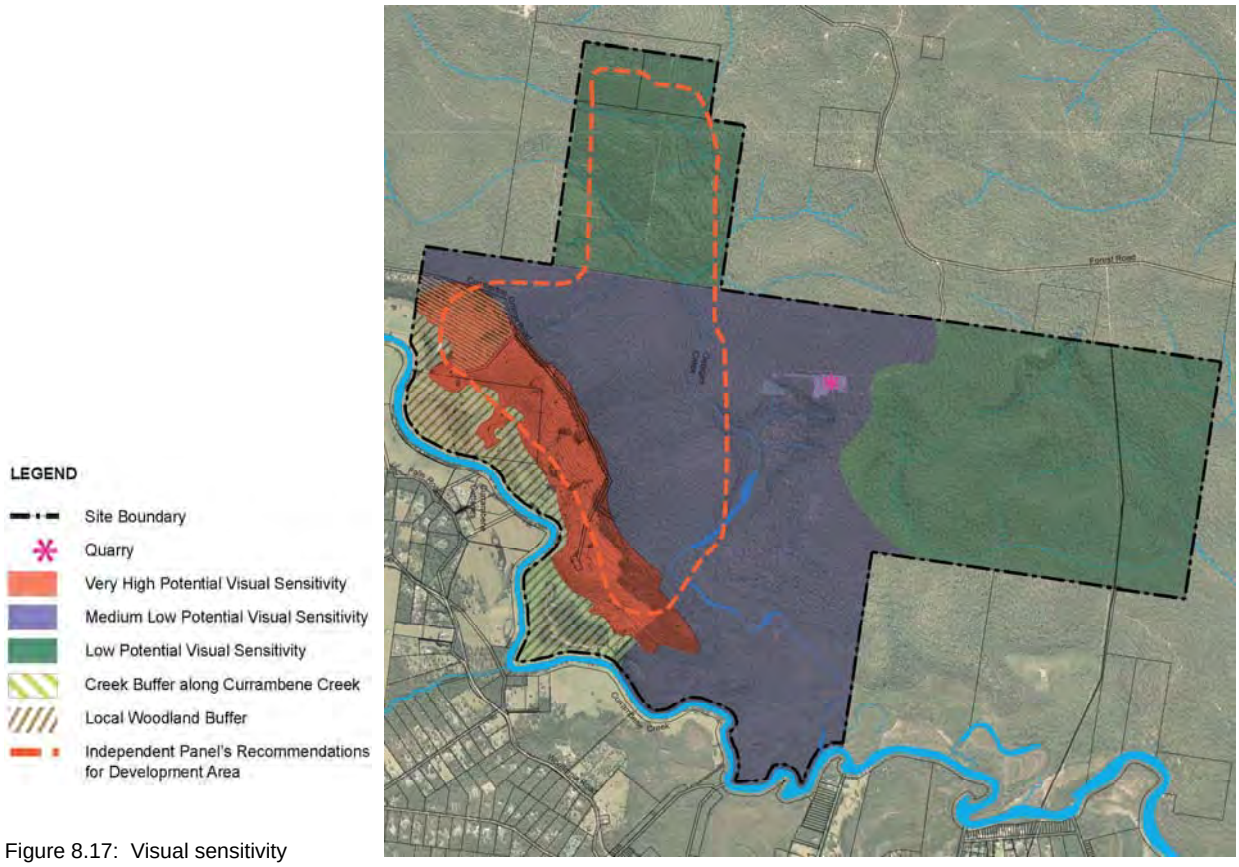

Figure 8.17: Visual sensitivity

A. Farmland Precinct

Potential visual impact

Any future development in the Farmland precinct is assessed as having **very high** visual impact.

Development potential of area

Development within the Farmland precinct is proposed for:

- A Hotel precinct at the western portion of the precinct; and
- Low density dwellings sited on large allotments at the central and eastern portions of the precinct.

B. Pine Forest Precinct

Potential visual impact

Any development in the Pine Forest precinct would be assessed as having low visual impact.

Development potential of the area

Development within the Pine Plantation is proposed for:

- Temple, town centre and educational development within the central portion of the precinct; and
- Low density residential development in the northern and western portion of the precinct.

Existing visual conditions

The former Comberton Grange Farm Complex, comprising the site of the former Homestead on top of the knoll overlooking the Currambene Creek valley (Heritage Precinct) and its rural setting at the south-western portion of the site, is the most visually sensitive area of the site.

Visual impacts – recommendations

The visual impacts of the site have been evaluated with the following overall recommendations:

- Any development within the heritage curtilage should be sensitively considered, assessed and controlled to mitigate the effects of surrounding development;
- All development within the heritage curtilage area should be considered for potential impacts on the rural landscape of the area;
- The existing vegetation within the Habitat Corridor (central portion of the site) should be protected and maintained, as the Habitat Corridor is an important visual buffer to development within the Pine Plantation; and
- Existing areas of native vegetation areas and forests should be protected.

The following are views and photomontages of the site's most visually sensitive areas:

Figure 8.18: Camera location for visualisation of the site's most visually sensitive areas

Figure 8.19A: View 1 – Existing view from Currambene Creek to the north-east towards the western forest and former pine plantation

Figure 8.19B: View 1 – Same view from Currambene Creek to the north-east of the proposed hotel (3 storeys) with cabins below sited within the cleared land

From the above view from Currambene Creek to the Hotel Precinct (Figure 8.19A) and photomontage of the proposed development (Figure 8.19B), the proposed hotel and associated cabins are sited below the tree line of the western forest, with the proposed height of the hotel (being maximum 3 storeys) able to integrate within the rural landscape of the site, with minimal visual impact.

The proposed Shaolin Temple and its 6 storey pagoda, within the northern portion of the site beyond, are not able to be seen as the height of the southern portion of the western forest is sited at a similar relative level as the Temple Precinct (at approximately RL 30). The height of the mature trees of the western forest obscures the tallest portion of the buildings within the Temple Precinct (the Pagoda) from view from the most visually sensitive area, being across the cleared land fronting Currambene Creek.

Figure 8.20A: View 2 – Existing view from Currambene Creek to the north-east towards the western forest

Figure 8.20B: Photo 2 – Same view from Currambene Creek to the north-east towards the western forest of proposed Residential Precinct C (2 storeys)

From the above view from Currambene Creek to Residential Precinct C (Figure 8.20A) and photomontage of the proposed development (Figure 8 8.20B), the dwellings of proposed Residential Precinct C are sited below the tree line of the western forest, with the height of the residential precinct able to integrate within the rural landscape of the site, with minimal visual impact.

8.14.3 Mitigation and management measures

A. Visual mitigation objectives

Mitigation of visual impact of development within this environmentally sensitive site is to be in accordance with these visual mitigation objectives:

1. Create contemporary, wooded tourist and residential precincts that respect the rural setting of the former Comberton Grange Farm complex and surrounding forested areas.
2. Mitigate development impacts on the visually sensitive Farmland precinct of the upper slopes of Currambene Creek.
3. Preserve existing trees, woodlands and endangered ecological communities.
4. Plant new trees to enhance the rural character of the site.
5. Development is to be appropriately controlled to improve the visual qualities of the site.

Assessment of compliance
The Development Masterplan has been designed to comply with the above visual mitigation objectives.

B. Mitigation measures

The following mitigation measures to be implemented are from the Visual Mitigation Strategies of the *Visual Impact Assessment of Comberton Grange* prepared by CM+:

Overall

1. All development within the site should **respect the environmental and cultural context of the site** in accordance to the visual sensitivity of the specific precinct, with the provision of:
   - Adequate road reserve widths to accommodate utility services, informal planting of groves and copses of trees and landscaping screening to visual impact of development;
   - Screen landscaping to buildings and parking areas;
   - Undergrounding of utility services to allow development of uninterrupted tree canopy;
   - Setbacks to street frontage, side and rear boundaries to enable planting of trees within properties;
   - The scale, mass and height of buildings sensitive to the visual sensitivity of the site;
   - Ensure roofs are below the surrounding and background tree canopy height, by limiting the height of buildings to below the overall tree canopy.
2. **Retain existing trees**, particularly the endangered ecological communities within the Farmland precinct, Currambene Creek corridor and local buffer zones.
3. **Provide landscape buffers** of endemic trees species to improve visual screening in the public domain and in private properties.
4. **Maximise landscape coverage and limit building footprint coverage** on sites by creating subdivisions and precincts of sufficient area, with allowances for deep soil planting. Residential subdivisions to have maximum 40% site coverage.
5. **Minimise building bulk**, maximise views and integrate with the topographical features of the site, buildings should step down to match the slope.
6. **Protect the visual curtilage of the former Comberton Grange Homestead site**.
7. **Implement design controls for external materials and colours** to buildings, with use of grey, recessive and non-reflective colours and tones.

Farmland Precinct
To minimise potential visual impacts on the views from rural properties to the south of Currambene Creek and to maintain and preserve the rural characteristics of the site, the following mitigation measures should be incorporated in the design of any future development within the Farmland precinct of the upper banks of Currambene Creek:

- All development should be **low scale and low density** with a greater proportion of soft landscape cover to building footprint.
- **Maintain existing woodland areas** as landscape buffer zones between developments and be integrated as part of the open space network.

- **Preserve and enhance the riparian vegetation along Currambene Creek** to provide a visual barrier and screen future development within the Farmland precinct, and to minimise potential impacts on views towards the site.
- **Maintain the topographic landform** of minor ridgelines and spurs particularly in the south-western and south-eastern portions of the site, with corresponding endemic vegetation, with the aim to preserve the rural nature of the site.
- **Provide adequate landscape buffers to development** to enhance the rural character and to screen the future development when viewed from the properties to the west and south.
- **Observe development controls** on building form, height, colour, material and finishes on development within this precinct.
- **Implement maximum building height** of 9m to roof ridges in any development and below the average tree canopy lines.

Pine Forest Precinct

To minimise potential visual impacts and in recognition of the environmental sensitivity of surrounding areas, the following mitigation measures should be incorporated in the design of future developments within the Pine Forest precinct:

- **Maintain existing mature and swamp forests** along the Georges River tributaries and enhance where required.
- **Ensure roofs are below the surrounding and background tree canopy height**, with apex of roofs not exceeding 9m from its natural ground level. The exception being the Temple Precinct which requires adherence to the form and height of its traditional architecture.
- **Observe development controls** on building height, colour, materials and finishes on development within this precinct.
- **Preserve the vegetation of the Habitat Corridor precinct** especially on the watershed ridgeline **should be preserved** as it screens this location when viewed from the south.

8.15 Socio-Economic Impacts

Director-General's Requirements

Socio-economic impacts

- Provide a Social Impact Assessment which addresses the social and economic context for the tourist and residential components in terms of infrastructure requirements, public transport, community services and facilities (including schools and medical services).
- Provision of affordable housing should be considered and included into the development, where appropriate.

The *Socio-Economic Report on the Shaolin Tourist and Residential Development, Comberton Grange, South Nowra* (June 2012) was prepared by Conybeare Morrison to address the socio-economic impacts of the proposed development on existing services and its contribution to the Shoalhaven local government area – **Appendix 15**.

8.15.1 Existing environmental features

Shoalhaven has the largest growth of any local government area in the Illawarra region with approximately 32% of the region's population growth occurring in the area.

Demographics

Demography in the Shoalhaven LGA indicates that:

- Shoalhaven has a low percent of population from 18-24 years, of 6.1%, far lower than for the Illawarra region and the State. This low proportion reflects the need for young people to move away for employment and training opportunities.
- Shoalhaven has a significantly low percent of its population between 15-54 years of age, of 47.1%, significantly lower than compared to the Illawarra at 53.1% and NSW at 57%.
- Shoalhaven has the highest population of residents aged 55+ years of age, of approximately 31.3%, compared to regional and State averages, significantly higher than the Illawarra region (25.2%) or the State (22.6%).
- The most significant growth is in the 75+ year age group at 6.4% with the second largest growth in the 55-64 year age bracket at 4%, followed by the 40-54 year age group at 3.8%.

The majority of households in the Shoalhaven LGA are family households.

Household incomes within Shoalhaven are markedly lower than the rest of the Illawarra region and the State, with youth unemployment generally very high. Shoalhaven has the largest proportion of part-time employment compared to the Illawarra and NSW.

Economic development

Economically, Shoalhaven is a key regional centre, with business, commercial, education and health services comparable with those offered in metropolitan areas.

Manufacturing, building and construction, education, agriculture, defence and tourism represent the core income generating economic activities for Shoalhaven. The LGA

has strong population growth and economic development, as well as a wide range of retail and business services. Its agricultural sector remains an important economic activity supported by its dairy farming and nursery products.

Tourism within the region has a significant economic impact and potential for growth, as the Shoalhaven is endowed with spectacular natural environment of beaches, coastal areas and national parks, with attract both water and land recreational activities. Growth opportunities have been identified in ecotourism and international visitor markets.

Both the *Shoalhaven Economic Development Strategy* (2005) and the *Blueprint Shoalhaven Action Plan* (2006) promote an increase and provide growth in:

- Business and employment growth and capability, including agribusiness;
- Private and public investment in the Shoalhaven;
- Health and aging;
- Building and construction;
- Education and training; and
- Tourism.

Tourism

Shoalhaven generates an annual revenue of close to $65 million with corresponding population increase of some 225,000 people. In 2009, tourism contributed $629 million to the economy. Identified areas of tourism include:

- Indigenous tourism;
- Event tourism; and
- Tourism development, promotion and marketing.

Shoalhaven Tourism Master Plan 2007 and *Tourism in Shoalhaven 2009* encourage all forms of tourism, as the biggest social impact of tourism is its potential to generate employment. The objectives of the Tourism Master Plan is to achieve increased visitation to Shoalhaven and help broaden the appeal of Shoalhaven, highlighting its identity, character, diversity and experiences.

The Tourism Master Plan identifies specific opportunities to:

- Promote and develop nature based tourism and experiences;
- Develop and promote regional food and cultural products;
- Provide 5 star resort/ hotel accommodation and conference facilities;
- Develop and promote cultural and heritage tourism; and
- Promote greater involvement of Aboriginal people in tourism industry with integration of Aboriginal culture into mainstream tourism attractions

Additionally, the *Demand Study for Upmarket Visitor Accommodation in Shoalhaven City* (2002) identifies the requirements for:

- Conference hotel;
- Upmarket meeting and function facilities; and
- Boutique resort.

Key Findings

Key findings of the Social Assessment based on demographics and background reports are outlined as follows, for:

Families:

- Need for childcare and child support services for families with children;
- Need for broader community activities that offer affordable recreational activities and reinforce families and community networks;
- Need to provide opportunities for young people, particularly under the age of 18, to socialise and engage with each other in organised and safe activities that are affordable and accessible; develop positive image, leadership and citizenship skills; and
- Need to address the impact of the high rate of in-migration of older people on service provision to the existing population.

Aged:

- Need to offer broader socialisation and recreation opportunities that are affordable and accessible for older persons that promote the positive impacts of ageing;
- The need to provide independent housing for the ageing population of Shoalhaven to "age in place"; and
- Need to increase the level of services to meet the needs of older people, given the serious shortfall in many services in the LGA.

Indigenous:

- Need to raise general awareness of Indigenous issues and culture.

Tourism:

- Need to increase visitation to Shoalhaven and broaden appeal by highlighting the regional identity, character, diversity and experiences of Shoalhaven, as tourism is a major employment generator with significant economic impact and potential for growth;
- Need to encourage growth opportunities identified in ecotourism, nature based tourism and international visitor markets;
- Need to develop quality products and experiences that best motivate and meet customer demand and expectations of Shoalhaven;
- Need to develop cultural and heritage tourism and Promote greater involvement of Aboriginal people in tourism industry with integration of Aboriginal culture into mainstream tourism attractions; and
- Need to provide high quality resort/ hotel accommodation and conference facilities.

8.15.2 Assessment of potential impacts

The development will provide a significant branded tourist attraction to the Shoalhaven region. The Shaolin Temple and its associated defensive style martial arts/ Kung-Fu way of exercise and traditional Chinese medicine will be a place of dedication and teaching. The Shaolin culture will extend to all parts of the development. Many cultural activities will be held, bringing to the tourist facility the best musicians, acrobats and performers. Additionally, seminars and conferences on meditation, TCM and wellness will be conducted here. It will be the place where true spiritual experience, revitalizing of the soul and body can be realised.

The Temple complex and the Kung-Fu Academy will be the feature attraction of the development, as it will be the first Buddhist Temple of the Shaolin Order outside China of traditional design and construction method to be built. Whilst the Temple will be the feature attraction of the development, the site will have many activities such as golfing, eco-tourism, bird watching, spa resort, dining facilities, cultural activities, seminars and exhibitions, agriculture, market and herbal gardens, which will provide sources of food and education for visitors.

The development is anticipated to provide capital investment value of at least $370 million. It is anticipated that the construction of the development will be undertaken in stages to suit the needs of the development.

Population impact

The development will generate a permanent residential and employment population of approximately 1050-1250 people with the accommodation of approximately:

- 30-50 monks in-residence;
- 150-300 students within its educational academy as well as 15-30 staff in residence;
- 20 and potentially growing up to 50 practitioners and staff within the Wellness Precinct (Traditional Chinese Medicine facility);
- 34-63 staff within the tourism and hospitality facilities;
- 100 and potentially growing up to 400 staff within the Village Centre Precinct (cafes, retail, commercial and community facilities);
- 10 workers for maintenance of grounds and external areas; and
- 300 permanent dwellings of approximately 750 people (based on ABS statistics of an average of 2.5 people per household).

In addition to the growth in permanent residents, the development will generate a considerable tourist population. The hotel could attract from 350-400 overnight visitors daily, with over 90,000 overnight visitors per year, based on 75% room occupancy rate. Overall, the development could attract over 150,000 visitors per annum to its tourist attraction, conference and hotel facilities.

Housing impact

The development will provide a number of housing options for permanent and short-term occupancy which will benefit the region, with various housing typologies for families and potentially the aged. The dwellings will be designed and integrated within the tourist development, with its overall design and siting to reflect the aesthetic character of the development, supporting the religious and tourist uses of the site.

The residential component of the development has the capacity of providing age-friendly/ adaptive housing to cater for the needs of its more senior residents to age-in-place. The site is adaptable in its provision from large detached dwellings (for families) to smaller villa dwellings (for its ageing population). The residents could be supported by low level medical and community support services within the development (Health + Wellness Precinct).

The development may additionally provide self-contained independent or assisted living residences for older residents in the form of one, two and three bedroom serviced apartments near the Village Centre with medical and home care support.

A 250 room, 4 star hotel will provide accommodation for the visitors, with associated accommodation for its working staff. The *Shoalhaven Tourism Master Plan* identifies the need for an upmarket hotel and conference facilities in the region.

Community services impact (educational and medical)
The development provides the potential for an influx of children to the region, given the expected population growth; especially in families moving to the region (with the average family having 2 children – ABS data). The development will provide a primary to high school educational academy, focused on academic, religion and martial arts training. External to the site, Falls Creek Public School is located approximately 3 km west of the site, and to the north are Shoalhaven High School, Nowra High School and St. John's Evangelist High School.

Along with a martial arts focused education facility, holistic and traditional Chinese medicines will be available within an integrated wellness centre which will promote a holistic/ Zen approach to overall health, healing and well-being.

Transport impact
The incoming population is likely to produce positive impacts on public transport by increasing the demand for existing bus and train services to Nowra and improving their viability. It is expected that as the community grows and develops, additional scheduled services will be introduced. This will provide more business for coach operators.

Economic impact
The development is expected to produce positive economic effects for Shoalhaven and surrounding regions by generating employment activity within the development and in the provision of goods and services from the region to the development. Expected operational employment generated by the overall project will be from 180 persons initially, to over 600 persons. This is expected to have positive flow-on effects for local businesses, and residents of Shoalhaven and surrounding communities are expected to benefit from increased employment opportunities.

The proposed tourist development will bring a major attraction to the Shoalhaven region, hence generate a considerable tourist population, augment Shoalhaven's tourist revenue of close to $65 million and provide a positive contribution to Shoalhaven's tourism market and economy, in terms of local employment and visitation to the overall region. The development is likely to produce positive economic effects for the local area of South Nowra by increasing the permanent residential numbers.

The development will attract tourism to the region by offering a range of recreational and cultural experiences (of its replicated Temple Complex, traditional Chinese garden and herbal gardens, its Town Centre of retail, commercial and community facilities, its martial arts academy and traditional Chinese medicine centre, hotel resort and dining facilities), adding to the natural appeal of the region. As the development will be the first Shaolin Buddhist temple in Australia, major events such as Kung-Fu demonstrations and religious events are anticipated to attract tourist to the region and help define it. Tourists will contribute to the economy of Shoalhaven by additionally visiting its many other attractions.

Facilities and activities within the development will promote indigenous and event tourism, with the ability to offer a dedicated venue to develop, present and integrate indigenous culture into its tourism attractions and events. Its festivals and cultural events will draw tourists into the Shoalhaven and contribute to developing signature events for the Shoalhaven. The site will showcase and enable visitors to experience its landscape of endangered ecological communities, environmental/ eco-tourism through its palette of accommodation, food and herbal agricultural activities, health and treatment practices, and its ability to offer quality dining experiences.

The development will offer a range of accommodation which will cater for students, and for low, middle and higher income groups. The hotel/ resort facilities and the attraction of the site will draw its own tourist appeal. Upmarket visitor accommodation and conference facilities have been identified as a need by Shoalhaven City Council.

It is anticipated that the incoming population will have a higher income level (or asset base) than the current population of Shoalhaven and this is expected to have positive flow-on effects for local businesses, drawing customers to the Nowra township for retail, commercial and service facilities.

The construction and post construction management facility will provide employment for the construction and hospitality indirectly. Jobs will be generated by the construction of the $300+ million facility and the servicing of the hotel and associated conference, restaurant and tourist facilities.

In addition to the growth in permanent residents of up to 1,100 people, the development will generate a considerable tourist population with anticipated overnight visitors of over 90,000 people per annum and annual daily tourists of over 150,000 people.

Social impact

The incoming population from the development is not likely to create additional demand for community facilities. Whilst holistic and traditional Chinese medicines will be offered within the development, with low level medical and community support services within the development particularly to senior citizens, existing health services at the Nowra Township will generally be utilised by the development.

The development will provide through its education and Traditional Chinese Medicine facilities, a focus on the practice of physical and inner health through its martial arts training and naturopathic healing methods. Pastoral direction of Buddhist philosophy, behaviour and discipline will be offered to all.

The development will provide a number of services which will socially benefit the region. The Town Centre will comprise a small commercial, retail, professional and community services centre, located at the heart of the development, to serve the local needs of its tourist and residential population and be a gathering place for the community.

The development will augment the recreational and cultural facilities in the local region. Development will complement visitation to the region as it will provide festival and cultural events as well as food events.

8.15.3 Mitigation and management measures

The proposed growth in residential population will not impact on the facilities and services of the Shoalhaven LGA. The quality and expected market value of the housing stock is expected to attract new population that has a higher income level, higher educational achievement and cultural diversity than the current population of Shoalhaven. The development could also attract more young people to the region to stay, create family homes, countering the trend of Shoalhaven's ageing population.

The development will host a number of significant cultural events and festivals that will help define the Shoalhaven region as a tourist destination as well as acknowledge the cultural diversity within the region.

The development will be eco-friendly and will preserve and promote the natural environment.

8.16 Mineral Resources

Director-General's Requirements

Mineral resources

Assess the viability of the site's existing dolerite and sandstone mineral resources. Ensure appropriate buffers between those resource areas and any proposed residential development.

8.16.1 Existing environmental features

In 1985, Shoalhaven City Council purchased the site of Comberton Grange "to gain access to a *rock resource which is required for the long term development of services for the rapidly growing Shoalhaven*." The quarry is located within the centre of the site and has an unsealed access from Forest Road. A sedimentation control dam is located downstream of the quarry.

Quarrying on the Comberton Grange site was in operation in the 1980s to 1990s for sandstone and dolerite, as road base material. The quarry currently has development consent for a maximum annual production of 55,000 tonnes, but production has been limited to 25,000 tonnes on average. Extraction of the material to date has consisted of low quality sandstone. The quarry is no longer in use.

The quarry has been identified by the Department of Primary Industries (DPI) as being regionally significant due to the importance of its in-ground resource. The dolerite is generally overlain by a substantial thickness of sandstone, with the dolerite a significant resource as sources of hard rock construction materials in the region are scarce. The resource is valuable to the region and access to the resource would be necessary. The Department of Primary Industry has advised that:

- The quarry is identified as being regionally significant due to the importance of the resource;
- There is a 117 Direction that DPI instrumented that requires Council to have regard for the resource in any rezoning; and
- Clause 35 of Shoalhaven LEP 1985 requires that Council must not grant consent for development that would lead to sterilisation of the quarry resource.

A buffer zone of approximately 1000m in diameter exists as a control in the Shoalhaven Local Environmental Plan.

Refer to Figure 8.21.

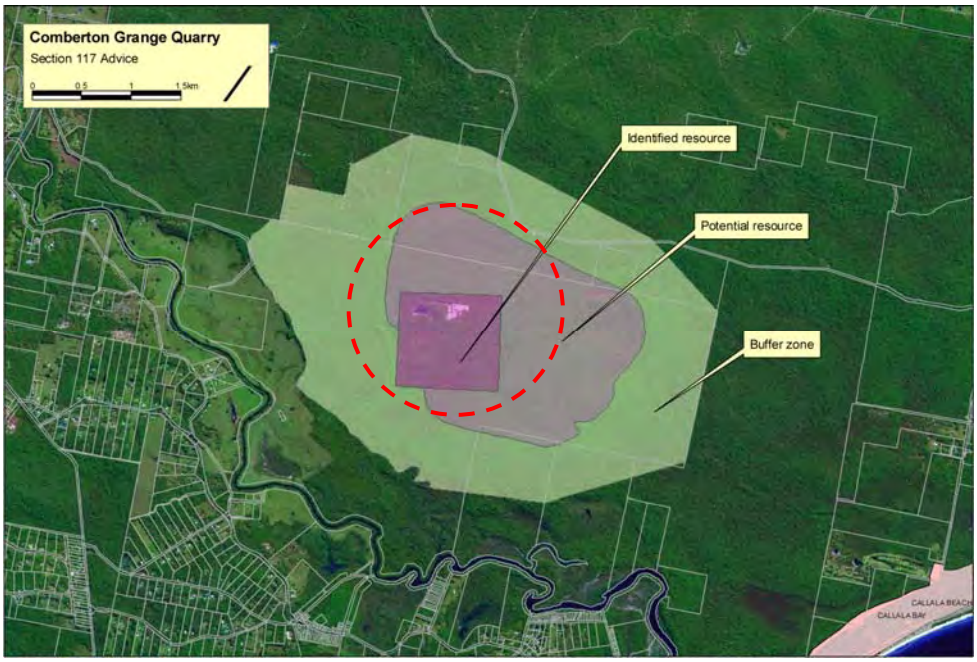

Figure 8.21: Area of resources on Comberton Grange site with 1000m buffer zone in "red "
(Source: Department of Primary Industry)

8.16.2 Assessment of potential impacts

It is anticipated that the quarry could resume operations for the extraction of road base material for the construction of new roads within the development.

Maximum noise level anticipated by Wilkinson Murray, Noise Consultant, of a typical active quarry is 115dBA at standard operating hours. The predicted noise level at the buildings of the development is 29-34dBA, depending on the location with respect to the quarry. This complies with the criteria for residential and non-residential area.

8.16.3 Mitigation and management measures

The proposed development is on land outside the 1000m buffer zone.

The extraction would be limited to the construction of the development and is likely to cease operation when the site reaches full occupation.

8.17 Agriculture

Director-General's Requirements

Agriculture

Assess the suitability of that portion of land classified "Class 3" Agricultural land (in the western portion to the north of Currambene Creek) to be maintained for agricultural purposes.

8.17.1 Existing environmental features

The cleared area along the slopes of Currambene Creek has been identified by Shoalhaven City Council as *Class 3* agricultural land. *Class 3* agricultural land is described by NSW Agriculture as grazing land or land suited to pasture improvement.

8.17.2 Assessment of potential impacts

Portions of the land along the slopes of Currambene Creek are subject to 1 in 100 year flooding and contain wetlands with high ecological value.

8.17.3 Mitigation and management measures

Some of the cleared land on the mid to lower slopes of Currambene Creek will be maintained as non-development land as these areas are of Aboriginal archaeological sensitivity. Surplus land within the former Pine Plantation will be explored for use for agricultural purposes, as community market and herbal gardens, to promote the self-sufficiency of the site for fresh produce. Consideration for use of land for agriculture must ensure and prevent high levels of nutrients entering Currambene Creek and the Georges Creek tributaries.

8.18 Native Vegetation

Director-General's Requirements

Native vegetation

Assess proposed clearing of native vegetation, including potential impacts and, if applicable, details of an offset strategy or other suitable mitigation measures to ensure no net loss of native vegetation values.

The *Biodiversity Assessment on the Proposed Shaolin Temple and Associated Developments, Comberton Grange* was undertaken by Kevin Mills & Associates to address the ecological and natural environmental issues of the site – **Appendix 4**.

8.18.1 Existing environmental features

The condition of the natural vegetation is generally good to excellent, although the Spotted Gum forest (No. 2 in Figure 8.22 below), at the interface between the Habitat Corridor and the cleared land at the south-western portion of the site, has been heavily logged. Disturbance to most of the land is slight, with occasional old vehicle tracks being the only disturbance in most places. Weeds are largely restricted to cleared land.

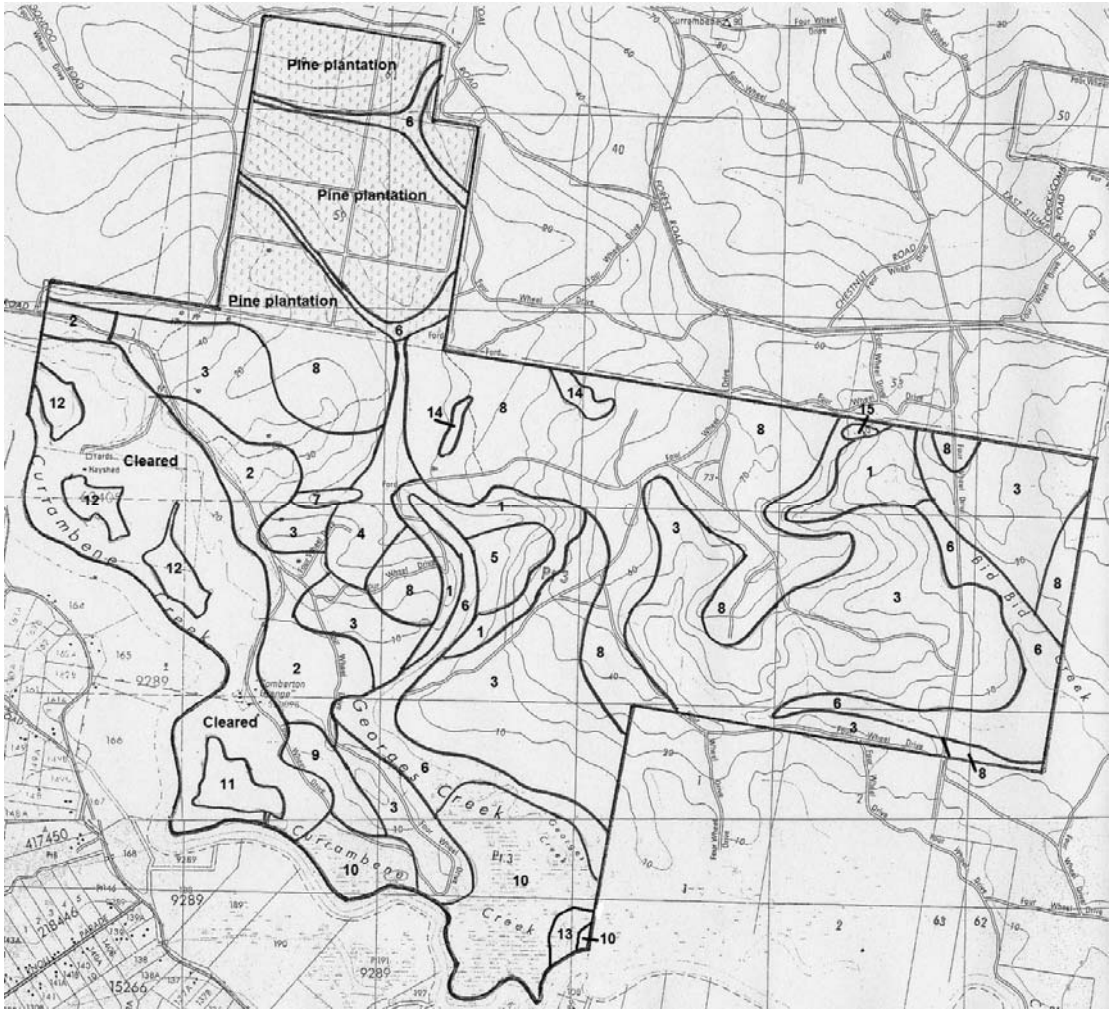

Figure 8.22: Distribution of plant communities on the site (*source: Kevin Mills & Associates*)

The key environmental constraints to development on the site are:

- Presence of habitat for several species of threatened forest fauna;
- Presence of several endangered ecological communities, all of which are associated with wetlands (Figure 8.22);
- Occurrence of major watercourses through the property;
- The identified habitat corridor of the Jervis Bay REP.

8.18.2 Assessment of potential impacts

The forest areas within the Jervis Bay REP Habitat Corridor will remain intact except for an incursion for a roadway and golf course at the north-western forest boundary with the former Pine Plantation site. The proposed development is primarily contained to previously cleared land, being the former Pine Plantation at the northern portion of the site and the former grazing and farmland at the south-western portion of the site. Impingement upon forested land is minimised in deference to the REP Habitat Corridor. The total area of forest that would be removed is not significant, and the type of forest involved is common and widespread in the region. The design of the development is such that almost all of the biodiversity values associated with the site are avoided.

8.18.3 Mitigation and management measures

In compensation for the removal of forest impinged by the development, a package of compensation measures is proposed that enhance the environment and habitats on the property as a whole, including wetlands. These measures and protection measures during and after construction shall be fully set out in a Plan of Management for the site.

The proposed Plan of Management would be prepared to guide the protection and enhancement of forested areas for conservation. The Plan will address matters such as interfacing with development areas, access and passive recreation, pest control and rehabilitation of disturbed areas. It is proposed to develop the Plan in consultation with the NSW Office of Environment and Heritage.

Eco-trails developed within the forested areas will aim to maintain and utilise existing trails. Ensure selective removal of native vegetation within Asset Protection Zones.

The rehabilitation and management of wetlands adjacent to Currambene Creek and the Georges Creek tributaries will be managed for their conservation and included within the Plan of Management.

8.19 Ecologically Sustainable Development (ESD)

Director-General's Requirements
Ecologically sustainable development (ESD)

Identify how the proposal will incorporate ESD principles in design, construction and on-going operation.

8.19.1 Existing environmental features

The site is located within a rural landscape, sited with 3 borders (north, east and west) adjacent to State forests with its south-western boarder adjoining a tidal estuary (Currambene Creek). The site is an environmentally sensitive area with 75% of the site covered by forest, woodland, watercourses and wetlands. Approximately 300 hectares are not within designated environmentally sensitive areas (for flora and fauna) or flood plains. These areas are the former Pine Plantation site (at the northern portion) and the grazing land above Currambene Creek (at the southern portion). Several creeklines traverse the northern development area. The site additionally has localised cultural and archaeologically sensitive areas.

Climatically, the site is located in temperate climate zone with cool to cold winters and mild to hot summers.

8.19.2 Assessment of potential impacts

The proposed development will be predominantly sited within the cleared and secondary growth areas of the site. The site is not well provided for in terms of authority infrastructure or is close to existing infrastructure. With lack of proximity of major service infrastructure, the site must explore the use of climate responsive design of buildings and ecologically sustainable strategies in its development.

For an ESD approach to the siting and design of the development, the site has been evaluated for its:

- environmental constraints – of its environmental, heritage and archaeologically sensitive areas;
- physical constraints – of its topographical features, drainage patterns of natural watercourses, flood prone areas, wetlands, geotechnical, soil and infrastructure servicing conditions;
- environmental attributes – of areas of environmental quality, topographic, landscape and water features, and natural habitats;
- climatic determinants – seasonal temperatures, prevailing winds and rainfall.

8.19.3 Mitigation and management measures

The following ESD strategies have been adopted for development of the site:

(A) Sustainable masterplanning approach
(B) Precinct location and site planning
(C) Energy efficiency and conservation
(D) Water conservation and management
(E) Solid and waste management
(F) Resource conservation (materials)

(G) Chemical use
(H) Waste water and stormwater management
(I) Social commitment
(J) Economic commitment

(A) Sustainable masterplan approach/ strategy

The development will be guided by an ESD approach – from the masterplanning of the site, the design of individual precincts and buildings, selection of building materials and finishes, construction methods, to the management of the facilities. This whole-of-life approach will be implemented from the client, consultant team, construction contractors to the site's end user.

(B) Precinct location and site planning

Site considerations and infrastructure

The siting, layout and design of the development has considered the site's constraints and opportunities, its environmental attributes, climatic determinants and availability of service infrastructure.

As the authorities' infrastructure mains are sited well beyond the site's development area, climate response design and ESD strategies are explored to increase the thermal performance of buildings and reduce reliance on external energy and water sources.

Site planning and design measures

The following ESD parameters are undertaken in the design of the development:

- Respect the site and impact of the development on the environment;
- Retain significant trees and areas of ecological value. Minimise the destruction of biodiversity and retain as much habitat as practicable;
- Avoid disturbance to and minimise site impact on the natural features of the site and its environmental and ecological values;
- Minimise site impact of cut and fill;
- Building siting – consider topographical features and drainage patterns in road and subdivision layout. Design for allotments which enable orientation of buildings for optimum solar access in winter and for natural ventilation;
- Augment the site's ecological values with new landscape planting to attract wildlife and new habitats.

Development areas are limited to existing cleared sites and areas with secondary vegetation or low vegetation value. Residential allotments and local roads are sited along the contours of the site to minimise cut and fill and to enable view sharing by dwellings. Natural topographical features are generally maintained. Development is sited to allow for the retention of natural flow paths and drainage corridors.

Allotments are on sufficient site area to enable a balance between building/ site and landscape coverage to enable the planting of trees within the site for microclimate control. Development controls will be implemented to limit building coverage.

Response to climate

A climate responsive design approach has been implemented in the siting and design of buildings and dwellings, with development designed to optimise the use of:

- Passive design strategies in the design of the buildings;
- Microclimate control of the external environment; and
- Active systems that conserve energy and minimise operational energy and CO_2 production. Power consumption demand will be reduced through appropriate building design and management.

(C) Energy efficiency and conservation

The combination of active and passive design strategies are to be implemented. These should comprise optimum measures for passive design in the siting and design of the development, and the implementation of active design strategies to augment the internal environmental comfort of the development. These strategies will contribute to energy saving on the operational running of the development.

Passive design

The use of passive design strategies will be optimised in the building design and in the energy efficiency and performance of the building envelope, to reduce the need for active cooling and heating. Passive design measures include:

- Siting and building orientation; and
- Building design.

Active design

Implementation of active systems that reduce power consumption demand, minimise operational energy and CO_2 production to complement the building design and its management. The advantages of sustainable active systems are the environmental and cost benefits of reducing demand on the power authority's supply and the cost of provision for total reliance of external sources of power.

Transport

Public transport accessibility and reduction in reliance on private cars are key factors in the transport sustainability of a site as well as incentives for users to use sustainable modes of transport.

Whilst the site is located within a rural landscape with lack of proximity and regularity of public transport, management initiatives will be implemented to provide for shuttle bus services at frequent intervals to railway station. The provision a local neighbourhood centre in proximity to residential precincts, cycle paths within all internal roadways, promotion of electric golf carts for commuting within the site and quality universally accessible paths, all contribute to encouraging sustainable modes of transport.

The development will accommodate all modes of sustainable transport in its internal road network with the promotion of use of electric golf carts, bicycles and walking.

(D) Water conservation and management

The environmental goal is to implementation of water-efficient strategies to minimise potable water use, its supply to the site and its discharge onto the site and its natural waterways. The environmental and economic benefits are:

- Using less water resources and thereby lower water extraction from the environment;
- Reduce water bills; and
- Save on new infrastructure for water provision.

To reduce water usage, the implementation of water efficient strategies includes:

- Rainwater harvesting to reduce potable water usage;
- Use of water efficient appliances; and
- Monitoring of water uses via a water management system.

(E) Solid and waste management

The post-construction management of the development will contribute to the long-term environmental sustainable operation of the development. The aim is for approximately 80% of solid waste recycled, with waste management strategies to include:

- Encouraging recycling of materials;
- Reduction in waste generation;
- Use of on-site waste disposal; and
- Control of disposal of waste.

(F) Resource conservation (materials)

The design and selection of materials are to contribute to the sustainability of the development.

(G) Chemical use

A commitment to minimise or avoid the use of toxic chemicals in building materials and finishes, and the toxic effects of salinity, pesticides and pollutants on the site flowing into the natural environment will be undertaken and implemented.

(H) Waste water and stormwater management

Water Sensitive Urban Design (WSUD) strategies are to be implemented in designing for waste water and stormwater management.

(I) Social commitment

The social commitment of this development is that of educational value – to enhance the users' understanding of the site and its development, with the experience of a development within a natural landscape, agricultural production within the site and the implementation of ESD strategies in the siting, design, use of materials, construction method and in the operational management of the facility.

The development will provide a focal educational and recreational precinct for the health and enjoyment of local, regional and overseas visitors. Organisation of community awareness programs and events, such as nature trails, ecological studies and agricultural exhibitions are proposed to be implemented.

(J) Economic commitment

The economic commitment of the project is to contribute to the business base, agricultural and tourism values of the area, as well as to create employment, teaching and training opportunities for the local community in the utilisation of local labour and, where possible, materials for construction of the development. It is envisaged that the tourist and ancillary cultural, education, wellness, agricultural and residential development will attract tourists into the region. The development will showcase Its ESD approach and sustainable practices to the design, construction and management of the facility.

8.20 Adjoining Land Uses – Forests NSW

Forests NSW has expressed concern that the project has the potential to significantly impact on forest management activities in Currambene State Forest and Nowra State Forest adjoining the site. Forests NSW maintains that the proposed development is not compatible with forest management activities, which include:

- timber harvesting and loss of sustainable timber production which will have a notable impact on Southern Region's ability to meet Wood Supply Agreements and commitments under the Forest Agreement (RFA);
- road construction and maintenance;
- hazard reduction burning;
- hunting; and
- recreation (e.g. trail bikes, 4 wheel drives and mountain bikes).

8.20.1 Existing environmental features

Nowra State Forest and Currambene State Forest adjoins 3 borders of the site. Ecologically, 75% of the site is covered by forest, woodland and wetlands, in a fairly natural condition, contiguous with the adjoining forests and woodlands. The ecological study undertaken on the site recommends areas not suitable for development being the eastern portion of the site (east of the quarry), as this area support habitat for numerous threatened species, ecological endangered communities and has important habitat corridor functions. Areas suitable for development are the:[33]

- Northern portion of the site, being the former Pine Plantation, which supports secondary growth species; and
- Southern portion of the site, being the cleared and elevated grazing land on the upper slopes of Currambene Creek.

8.20.2 Assessment of potential impacts

The proposed development, being a tourist and residential development, is compatible with forest management activities. The proposed development area is on land **not within** the Habitat Corridor identified in the *Jervis Bay Regional Environmental Plan* (Figure 8.23) The development itself, will require clearing of the northern portion of the site of its heavily forested areas. The timber harvested, depending on quality of species, can be used for secondary construction works, or mulched for future landscape topping. The development will include road construction within the development area. Within the developed areas, vehicular traffic, bike riding, etc. will occur.

Areas adjoining the site, of Nowra State Forest and Currambene State Forest, are within the Habitat Corridor. Jervis Bay REP states that habitat corridors are to:

- Be designed to minimise disturbance to existing native vegetation communities;
- Allow native fauna and flora to colonise or migrate;
- Retain natural vegetation.

[33] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple, Comberton Grange*.

Figure 8.23: Jervis Bay REP Habitat Corridor (in hatched green)

8.20.3 Mitigation and management measures

Development on the site is restricted to land outside the Habitat Corridor, in accordance with the aims of the REP (as outlined in Section 9.4 of this report). Activities proposed by Forests NSW on their land adjoining the proposed development area are contrary to the aims and outcomes of the REP.

8.21 Environmental Benefits of the Development

8.21.1 Existing environmental features

More than 75% of the site is classified as environmentally sensitive containing native old growth forests, mature trees and associated fauna habitats, with a habitat corridor.

Areas with endangered ecological communities (EECs) not suitable for development comprise the:

- Eastern portion of the site, east of the existing quarry;
- Extensive areas of wetlands (both salt and fresh water) in the vicinity of Currambene Creek and the lower section of Georges Creek (SEPP 14 – *Coastal wetlands* and SEPP 71 – *Coastal protection*);
- Riparian areas at the tributaries of Georges Creek at the northern portion of the site containing swamp forests of Mahogany, Paperbark and Woollybutt.

8.21.2 Assessment of potential impacts

The proposed development is limited to the areas identified in the *South Coast Sensitive Urban Lands Review* (2006), being the:

- Northern portion of the site (formerly used as a pine plantation); and
- Upper slopes of the cleared pastureland above Currambene Creek (formerly used as agricultural and grazing land).

The forest areas within the Jervis Bay REP Habitat Corridor will remain intact except for an incursion for roadways and golf course at the north-western forest boundary with the former Pine Plantation site. The area of forest that would be removed is not significant, with areas of removal limited to only areas of development and golf course fairways. The type of forest involved is common and widespread in the region. The design of the development is such that almost all of the biodiversity values associated with the site are avoided.

8.21.3 Mitigation and management measures

Within the northern portion of the site in the former pine plantation land:

- **Riparian corridors** are to be maintained along the main tributaries of Georges Creek, with development kept 40m clear of each side of these tributaries as an environmental corridor with additional 10m buffer to development boundaries.

  Riparian areas are recognised as having high value for biodiversity, and the provision of development curtilages along these watercourses are in accordance with the *South Coast Regional Conservation Plan* (2010). The *South Coast Regional Conservation Plan* additionally recommends a Category 1 – *Environmental Corridor*, with the maintenance of a minimum core riparian zone (CRZ) of 100m (2 x 40m fully vegetated, 2 x 10m buffer) to provide biodiversity linkages by maintaining connectivity for the movement of aquatic and terrestrial species.

- At least 20m clear of each side of **minor creeklines** of the Georges River tributaries to prevent accelerated rates of soil erosion and to enhance water quality.

  The *South Coast Regional Conservation Plan* recommends a CRZ of 20m (2 x 10m, with no additional buffer) from each side of the watercourse.

- Development will be kept clear of the **SEPP 14 wetlands and flood plains** along Currambene Creek. All stormwater discharge will be treated prior to entering the CRZ and creek lines.
- The **eastern and western forest areas** of the Jervis Bay REP will remain intact except for a slight incursion for a roadway and adjoining golf course in the far north-western corner near the former Pine Plantation site.

Management of the Eastern and Western Forests

These areas will be the focus of a proposed Plan of Management that would guide the protection and enhancement of forests for conservation. The Plan will address matters such as interfacing with development areas, access and passive recreation, pest control and rehabilitation of disturbed areas. It is proposed to develop the Plan in consultation with the NSW Office of Environment and Heritage.

Rehabilitation and management of Currambene Creek, wetlands, and minor riparian zones

The wetland areas near Currambene Creek and creeklines throughout the site will be managed for their conservation and subject to a sub-plan of the proposed Plan of Management. Issues to be addressed include protection during construction activities, stormwater management following completion of development, water quality control and rehabilitation of floodplain wetlands for their conservation.

In compensation for the removal of forest impinged by the development, a package of compensation measures is proposed that enhance the environment and habitats on the property as a whole, including wetlands. These measures and protection measures during and after construction shall be fully set out in a Plan of Management for the site.

The proposed Plan of Management would be prepared to guide the protection and enhancement of forested areas for conservation. The Plan will address matters such as interfacing with development areas, access and passive recreation, pest control and rehabilitation of disturbed areas. It is proposed to develop the Plan in consultation with the NSW Office of Environment and Heritage.

Eco-trails developed within the forested areas will aim to maintain and utilise existing trails. Ensure selective removal of native vegetation within Asset Protection Zones.

Land dedication

It is not the intention of the Shaolin Foundation to dedicated the eastern portion of the site (east of the quarry and including the SEPP 14 wetlands in the southern corner of the site) to be added to the Jervis Bay National Park (South Coast Regional Strategy – recommendations for Comberton Grange).

However, these portions of land will be preserved as environmentally sensitive area with no development undertaken on the land except for minor recreational trails and structures (e.g. rest shelters).

Currently, this portion of the site is zoned 1(d) – General Rural under Shoalhaven LEP 1985 and is anticipated to be similarly zoned RU2 Rural Landscape under Draft Shoalhaven LEP 2009.

9.0 PLANNING FRAMEWORK

9.1 Background Studies

Studies that form the planning background for the Comberton Grange site and informed the *South Coast Regional Strategy* comprise:

- *Environmental Study and Planning Report* prepared by David Kettle Consulting Services (October 2001); and
- *South Coast Sensitive Urban Lands Review* prepared by an Independent Review Panel (October 2006).

9.1.1 Environmental Study and Planning Report in respect of the Development Potential of Comberton Grange Property – Lot 4 DP63405, Lot 1 DP550098 & Lot 1 DP725955, Currambene (Oct 2001)

David Kettle Consulting Services, in association with Morse McVey and Associates, Navin Officer Heritage Consultants and Kevin Mills & Associates, were commissioned by Shoalhaven City Council to prepare this environmental study for the southern portion of the Comberton Grange site.

The allotments reviewed in the environmental study comprise approximately 1084 hectares and included:

- Lot 4 DP 63405 47 ha
- Lot 1 DP 550098 0.4 ha
- Lot 1 DP 725955 1036 ha

The study did not include the former Pine Plantation land to the north of the site.

The study evaluated the environmental values of the site and the development potential for the use of the site for more intensive land uses.

Assessment conclusions

The Environmental Report concludes that around 79 hectares (excluding the northern portion of the site which was not part of the subject report) is suitable for some form of tourist/ residential development. The cleared grazing land (above the 1 in 100 year flood level) is capable of accommodating around 200-300 dwellings, based on all stormwater and waste water being treated and disposed of on site. A larger number of dwellings can potentially be developed on the land if all domestic sewage waste water is to be disposed of off-site or connected to the REMS Scheme.[34]

The report recommends the minimum of a 20m wide fuel free zone and a 20m wide fuel reduced zone for buildings adjacent to the forest.[35]

9.1.2 The South Coast Sensitive Urban Lands Review (October 2006)

The *South Coast Sensitive Urban Lands Review*, prepared by an Independent Review Panel in October 2006, evaluated the suitability of development on sites zoned for urban expansion in the South Coast region, which was identified in the draft *South Coast Regional Strategy*.

[34] David Kettle Consulting Services, *Environmental Study and Planning Report for Comberton Grange* (October 2001), p.6.
[35] Ibid, p.111.

Planning issues

The *Sensitive Urban Lands Review* identified the following the key planning issues associated with development on the Comberton Grange site as being:

- Its consistency with the draft South Coast Strategy which seeks to discourage new communities, preferring to encourage growth by extension of existing settlements;
- Its distance from established urban areas and the issues associated with the provision of essential physical and human services to meet the needs of any potential community; and
- The ability to address the environmental values of the site, including water quality in Currambene Creek, vegetation communities and watercourses/ riparian areas within the site.

The *Sensitive Urban Lands Review* evaluated that, in planning terms, part of the site is suitable for urban development, and an integrated tourism and residential development could be supported on the grounds that it has the potential to generate significant tourism and related jobs for Shoalhaven. Support for development is predicted on the achievement of the tourism outcomes. Without the tourism element, development of the site (for a residential settlement) could not be supported.

Recommendations

The Panel endorsed the findings of the Kettle *Environmental Study and Planning Report* (2001) of a residential development with 200-300 dwellings, provided it is fully integrated with the tourist facility, and the development area remains in single ownership. Upon reaching this size, further extensions could be considered, but only if fully integrated.

The *South Coast Sensitive Urban Lands Review* recommended that any proposal for development must ensure that: [36]

- The development is not a stand-alone residential settlement on the grounds that it conflicts with the key principles of the *Draft South Coast Strategy*;
- It comprises a fully integrated tourist facility with associated residential development, on the grounds of potential employment benefits to the Shoalhaven;
- The amount of residential development should be limited to 200-300 dwellings, which could be reviewed upon reaching this level;
- The density of the residential component should be planned to achieve a higher dwelling yield per hectare than traditionally achieved;
- The amount of residential development in the first (and subsequent stages) should be limited, with the tourism component being the predominant use;
- Site planning must include best practice water sensitive urban design to minimise impacts on Currambene Creek, with riparian and wildlife corridors provided (greater than 50m buffer on either side) of Currambene Creek;
- The floodplain of Currambene Creek should be revegetated early with locally indigenous plant species to restore the riparian ecology;
- The land developed for tourism and residential purposes should be retained in one ownership; and
- Permanent occupancy of dwellings can be developed under the arrangements above.

[36] Independent Review Panel, *South Coast Sensitive Urban Lands Review* (October 2006), p. 41.

Recommended development areas

Areas identified as **suitable for development** (Figure 9.1) include the:[37]

- Cleared and elevated land outside the floodplain of Currambene Creek;
- Area occupied by the former pine plantation;
- Plateau lands; and
- Portions of the western forest areas that are not on the floodplain of Currambene Creek.

Areas identified **not suitable for development** include the:[38]

- Floodplain (with 1:100 year flood);
- Eastern vegetated portion of the site (east of the quarry and the SEPP 14 Wetland in the southern portion of the site); and
- Areas where Endangered Ecological Communities (EECs) occur.

The area of land identified in the *South Coast Sensitive Urban Land Review* as the Panel's recommendations for development in Comberton Grange (outlined in red) in Figure 9.1, encircles an area setback from the site's boundaries to allow for an Asset Protection Zone for bushfire protection. The encircled land additionally includes the central portion of bushland/ forest between the northern (former Pine Plantation) and southern portion of the site, which is part of the designated "Habitat Corridor" of the *Jervis Bay Regional Environmental Plan* and referred to as the Western Forests area in the Biodiversity Assessment of the site (Figure 8.6). Development has generally been limited to retaining the integrity of the designated Habitat Corridor.

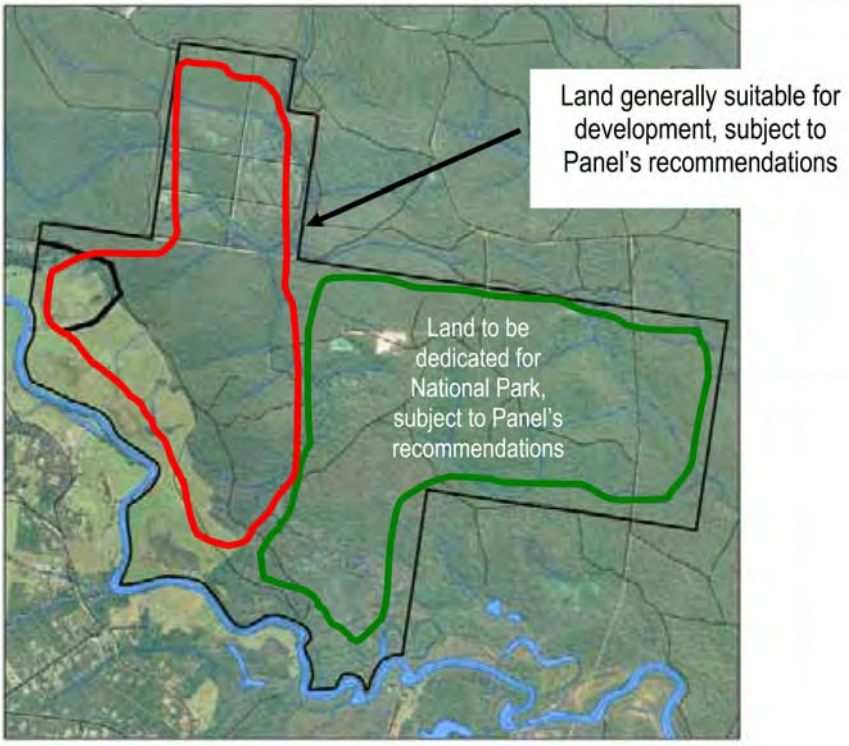

Figure 9.1: Independent Panel's recommendations for development in Comberton Grange (Source: *South Coast Sensitive Lands Review, p.42*)

[37] South Coast Independent Review Panel, *South Coast Sensitive Urban Lands Review* (October 2006), p.39 & 41.
[38] Ibid, p.39 & 41.

The encircled area (red outline) is interpreted as providing an indicative area for development, as with other diagrams in the Panel's recommendations for other sensitive sites within the Urban Land Review.

The recommended Development Area on the northern portion of the site (within the former pine plantation) enables an Asset Protection Zone to be provided at the boundaries of the site to surrounding State Forests. A setback of up to 50m is provided at the boundaries of the site.

The *South Coast Sensitive Urban Lands Review* additionally states that the approximate Development Area comprises 450 hectares.[39] The proposed Development Area comprises approximately 280 hectares, which is approximately 62% of the Development Area identified in the Urban Lands Review.

Recommended development measures

The *South Coast Sensitive Urban Lands Review* advised that development is considered acceptable if adequate measures are taken.[40] The proposed development is assessed for compliance with these measures as follows:

Environmental Measures	Assessment of Compliance
Riparian vegetation is rehabilitated and protected.	Riparian vegetation along the creek lines will be retained and rehabilitated.
There is no significant disturbance to saltmarshes and mangroves along the banks of Currambene Creek.	No development is proposed to be sited within a *sensitive coastal location*, being 100m: ▪ Above the mean high water mark of Currambene Creek; or ▪ Within No. 333 SEPP 14 wetland. (Refer to *Environmental Constraints* and *Masterplan* layouts).
There is no significant disturbance to other EECs on the site.	No development is proposed within: ▪ Land of Ecological Sensitivity (as identified in the Shoalhaven LEP); ▪ Areas of declared critical habitats under the *Threatened Species Conservation Act 1995* or Part 7A of the *Fisheries Management Act 1994*; or ▪ Areas of EECs. The development will ensure that the water quality of Currambene Creek is maintained.
Water quality of Currambene Creek is maintained.	The development will ensure that the water quality of Currambene Creek is maintained. Due to the soil and biophysical constraints on the site, a high level of effluent treatment is required to minimise the threat to downstream waters. This includes:

[39] South Coast Independent Review Panel, *South Coast Sensitive Urban Lands Review* (October 2006), p.ES14.
[40] Ibid, p. 39.

Environmental Measures	Assessment of Compliance
	▪ Secondary treatment of waste water to reduce the pollutants and pathogens contained in effluent; ▪ Minimising runoff and maximising infiltration after development.
There is no significant disturbance to areas with high cultural heritage values.	Development will not be within land identified in an environmental planning instrument as being of high Aboriginal cultural significance. The development is sited to preserve identified Aboriginal archaeological sites. Development avoids areas of Aboriginal and archaeological sensitivity above the flood plains of Currambene Creek. Refer to Figure 8.2. Comberton Grange Homestead as a statutory listing is on the Shoalhaven City Council's LEP. However, the homestead was destroyed by fire in 1990. Development within the homestead precinct will respect and maintain its former cultural/ social heritage as an early homestead site. The Currambene Creek Estuary is included as a component of the Jervis Bay Landscape Conservation Area 1998 (National Trust NSW). Development does not intrude into the Creek and its immediate surrounds.
Sufficient natural vegetation is retained within habitat corridors on the site to maintain the integrity of these corridors.	The ecological integrity of habitat corridors has generally been maintained, whilst ensuring that connections between the northern and southern development areas can occur.

9.2 Statutory and Local Planning Controls

9.2.1 State planning instruments and strategies

The following State and Regional statutory planning instruments relevant to the site and the proposed development include:

- NSW Environmental Planning and Assessment Act 1979 (EP&A Act)
- The South Coast Regional Strategy
- The Jervis Bay Regional Environmental Plan (REP) 1996
- SEPP 14 – Coastal Wetlands
- SEPP 71 – Coastal Protection
- NSW Coastal Policy 1997
- Jervis Bay Settlement Strategy 2003
- SEPP Major Projects 2005
- SEPP 44 – Koala Habitat Protection
- SEPP 55 – Remediation of Land
- SEPP (Housing for Seniors and People with a Disability) 2004
- SEPP 65 (Design Quality of Residential Flat Development)

9.2.2 Local planning instruments and controls

Local planning instruments and controls that currently relate to the project area and its surrounds comprise:

- Shoalhaven Local Environmental Plan (LEP) 1985
- Draft Shoalhaven Local Environmental Plan 2009
- SCC Single Dwellings & Ancillary Structures: Minimum Building Requirements – DCP 91
- SCC Subdivision Code – DCP 100
- SCC Residential Development in Foreshore Areas – DCP 62
- Tourist Development in Rural Areas – DCP 63
- SCC Car Parking Code – DCP 18
- SCC On Site Sewage Management – DCP 78

9.3 South Coast Regional Strategy

9.3.1 Outline of the Strategy

The *South Coast Regional Strategy* provides a 25 year planning framework for the South Coast region and applies to the local government areas of Shoalhaven, Eurobodalla and Bega Valley, and guides the preparation of all new local environmental plans.

The *South Coast Regional Strategy* will guide the sustainable employment and residential growth whilst protecting valuable agricultural and natural assets. The Strategy caters for a population increase of 60,000 by the year 2031, and the accommodation of an additional 45,600 dwellings and 25,800 new jobs.

9.3.2 Key regional challenges

The key challenges outlined for the region are targeted to:

- **Environment** – Protecting the highly significant diverse natural assets and associated biodiversity is a key challenge for the Strategy.
- **Population and Housing** – Encouraging a more appropriate mix of new dwellings to accommodate population increase, particularly for the aging generation.
- **Economic** – To provide capacity for new jobs in the Region to support the projected population growth, and to support and strengthen tourism opportunities.

Environmental challenge

The proposed development is within a highly environmentally and ecologically sensitive site.

A key challenge of the Strategy is to protect the highly significant diverse natural assets and associated biodiversity with proper consideration and improved management of areas high biodiversity and of scenic, resource or cultural value. Environmental challenges for the development include:

- Improved protection and enhancement of natural environments, including biodiversity, coastal lakes and estuaries and landscape values;
- Improved understanding of Aboriginal cultural heritage values and incorporating this information within land use planning and natural resource management processes;

- Ensuring sustainable management and access to natural resources and protection of rural landscapes from increased settlement;
- Better understanding and management of natural hazards, namely flooding, coastal erosion and inundation (including the impacts of climate change on these), land instability, bushfire hazard and acid sulphate soil.

Population and housing challenge
An additional 26,300 dwellings will be required in Shoalhaven over the next 25 years, of which 15,800 can potentially be accommodated within existing vacant urban land and existing investigation areas. Challenges for residential development include:

- Managing the urban development to minimise the impact on sensitive environments and maximise growth around existing well serviced centres and towns; and
- Encouraging appropriate mix of new dwellings.

Economic challenge
An economic challenge for developments is to support and strengthen tourism opportunities by identifying key tourism sites and precincts, and targeting the focus areas identified in the *South Coast Regional Tourism Plan 2003-2006*.

Tourism is a key growth and opportunity sector (over $1.2 billion was spent by visitors to the Region in 2003), particularly in nature-based accommodation. The economic value of natural resources and natural environments in the South Coast should be recognised as an employment generator.

The *South Coast Regional Strategy* encourages the identification and conservation of cultural heritage as it contributes to community identity and wellbeing, a sense of history, local and regional visual character and reinforces the economic base for tourism. The cultural heritage of the site will be recognised and interpreted within the tourist development.

A key principle of the *South Coast Regional Strategy* is to discourage new communities and for new residential development to be focused in and around existing towns and settlement and away from environmentally sensitive areas. Any new urban development not identified in the Strategy will only be considered if the development can satisfy the requirements of Sustainability Criteria contained in the Strategy and be consistent with Neighbourhood Planning Principles.

Assessment of compliance:
The proposed development will be limited to secondary growth and cleared land and protects areas of environmental, ecological and cultural heritage sensitivity. The development will provide additional housing, augmented by new commercial, retail, tourist and educational precincts. The development will additionally provide a new tourist magnet to the South Coast region.

9.3.3 Sensitive Urban Land
The *South Coast Regional Strategy* identifies the Comberton Grange site, along with 16 other sites located in environmentally sensitive locations, as “Sensitive Urban Land”, and provides recommendations from the *South Coast Sensitive Urban Lands Revie*w in terms of suitability of the site to development, scale and development type.

The *South Coastal Sensitive Urban Lands Review* of the Comberton Grange site states that part of the site is suitable for urban development, and an integrated tourism and residential development could be supported on the grounds that it has the potential to generate significant tourism and related jobs for the region. Support for residential component of the development is predicated on achievement of the tourism outcomes. Any proposal for development must ensure that:[41]

- The development is integrated in terms of the timing of development – the initial residential component of the development should be limited, with the tourism component being the predominant element of any development stage;
- The design of the development must be physically integrated so that it is not possible to sever the residential component from the tourism component;
- The residential component must remain in single ownership;
- The development should contain adequate human services to meet the needs of the future community of tourists, temporary and permanent residents; and
- The residential component of the development can be for permanent occupation.

Assessment of compliance:
The proposed development is an integrated tourist and residential development under the ownership of the Shaolin Temple Foundation (Australia) Limited. The development will have facilities of town centre, educational, health, community, tourist and hospitality facilities to meet the social needs of its tourism community, workers and residents.

9.3.4 Recommendations for development at Comberton Grange

The *South Coast Regional Strategy* outlines recommendations to guide the future development of Comberton Grange, as follows:[42]

1a) Suitability of the site

The site is unsuitable for development:

- in areas characterised as floodplain (1 in 100 year flood);
- in the eastern vegetated portion of the site (east of the existing quarry and including the SEPP 14 wetland in the southern corner of the site); and
- where endangered ecological communities occur.

The site is suitable for limited development in the:

- cleared land outside the floodplain;
- area occupied by the former pine plantation; and
- plateau land and portions of the western forest areas that are not in the Currambene Creek floodplain.

Assessment of compliance:
Development is not proposed within areas identified as unsuitable. No development will be undertaken on the Currambene Creek floodplain within the 1:100 year flood zone, within riparian or drainage corridors. Development is generally within the cleared grazing land at the south-western portion of the site above the floodplains of Currambene Creek and within the former Pine Plantation area at the northern portion of the site.

[41] Independent Review Panel, *South Coast Sensitive Urban Lands Review*, October 2006, p. 39-40.
[42] NSW Government Department of Planning, *South Coast Regional Strategy*, Appendix 2.

The majority of the site will remain in its natural state as native forest and woodland. Retention of native vegetation and other conservation and protection measures to mitigate the impact of development within the Habitat Corridor will be undertaken. There will be a proactive management approach taken to all native vegetation and particularly areas of ecological importance on the site particularly the wetlands and the riparian vegetation along the bank of Currambene Creek.

1b) Scale and type of land release

Development of land is supported only if it comprises a fully integrated tourist facility with associated residential development, with the following requirements:

- The amount of residential development should be limited, with the tourism component being the predominant use. Residential development is to be limited to 200-300 dwellings, which could be reviewed upon reaching this level.
- Site planning to include best practice water sensitive urban design (WSUD) to minimise impacts on Currambene Creek.
- Riparian and wildlife corridors are to be provided along Currambene Creek of greater than Category 1: 50m buffer on either side of the stream bank.
- The floodplain of Currambene Creek should be the subject of early revegetation with locally indigenous plant species to restore riparian ecology.
- The density of the residential component, to utilise land resource more efficiently, should be planned to achieve a higher dwelling yield per hectare.
- The land developed for tourism and residential purposes should be retained under one ownership.

Assessment of compliance:

The tourist facility and residential development will be integrated with approximately 300 dwellings, under one ownership, in a community title arrangement.

Ecologically sustainable development and water sensitive urban design measures will be implemented in the design of the Masterplan, landscape treatment and in the passive and active design of individual buildings and sites. An ecological buffer of 100m has been implemented along Currambene Creek and 50m of each side of the Georges Creek major tributaries.

The development will be a major tourism and employment generator for the Region. It has the potential to generate very substantial social and economic benefits for the Shoalhaven Region. Expected operational employment generated by the project within the development will be in the order of 360 persons initially to more than 900 persons in the ultimate development. The development will create full-time positions in the Shoalhaven and surrounding regions for the provision of goods and services.

2. Priority and timing

Development could occur according to market demand, following adequate environmental, social and economic assessment.

Assessment of compliance:

The construction of the development is anticipated to be over a 5-20 year period with the staging of the development subject to demand, availability of site services and infrastructure, and cash flow.

3. Alternative land uses

The eastern portion of the site (east of the quarry, including the SEPP 14 wetland in the southern corner of the site) should be added to the Jervis Bay National Park.

Assessment of compliance:

These portions of land will be preserved as environmentally sensitive areas.

9.3.5 Sustainability criteria for development sites

Comberton Grange is identified as "sensitive urban land" and is outside the designated areas in the *South Coast Regional Strategy*. The Threshold Sustainability Criteria is to be applied for any development site outside the designated areas. The Sustainability Criteria are as follows: [43]

Sustainability Criteria	Assessment of development compliance
1. Infrastructure Provision: Mechanisms in place to ensure utilities, transport, open space and communication are provided in a timely and efficient way.	Infrastructure services of electricity, gas, communication, water supply and sewerage, etc. will be provided to the development, augmented by ESD measures. Refer to Section 7.13 – *Infrastructure Services* of this report.
2. Access: Accessible transport options for efficient and sustainable travel between homes, jobs, services and recreation to be provided.	There is currently no viable direct rail service near the site with closest rail station being Bomaderry Station at Nowra CBD. Bus services along the Princes Highway are located approximately 4km from the site. The site will require public transport servicing with additional bus routes. The site has the potential for easy access by bus to/ from Bomaderry Station. The development aims to encourage internal walking, cycling and use of golf carts for internal access.
3. Housing Diversity: Provide a range of housing choices to ensure a broad population can be housed.	The proposed development provides an ESD development with opportunities for a variety of housing typologies, designed and sited and designed to be sensitive to the environmental and ecological qualities of the site. Dwellings are to be designed as age-friendly/ adaptive housing to cater for ageing-in-place.
4. Employment Lands: Provide regional/local employment opportunities to support the South Coast's expanding role in the wider regional and NSW economies.	The development will be a major tourism and employment generator for the region and is expected to generate high employment activity and economic and tourism benefits for the local and broader community, with flow onto surrounding regions for the provision of goods & services. The development could attract over 90,000 overnight visitors per annum and over 150,000 annual daily tourists per annum. The economic value of this level of visitation is significant.

[43] NSW Government Department of Planning, *South Coast Regional Strategy*, Appendix 1.

Sustainability Criteria	Assessment of development compliance
	The development will deliver approximately 180 persons initially, to over 550 persons in its ultimate development. The development could additionally deliver 500 jobs during the construction phases of project, which will provide significant local and regional employment opportunities.
5. Avoidance of Risk: Land use conflicts, and risk to human health and life, avoided.	The development will not be located within areas of ecological sensitivity of flood plains, riparian corridors and within significant portions of forested areas. The development will observe bushfire requirements of providing asset protection zones around the development.
6. Natural Resources: Natural resource limits not exceeded/ environmental footprint minimised.	The development has been designed to be sensitive to its environmental resources. ESD, water sensitive design measures will be used to minimise external energy transport into the site, to reduce transport of water and to reduce impact of stormwater on existing waterways, Its natural quarry could be harvested for the construction of the development.
7. Environmental Protection: Protect and enhance biodiversity, air quality, heritage, and waterway health.	The development maintains ecological corridors, areas of heritage and archaeological sensitivity and an environmental curtilage to its natural waterway. Water sensitive urban design and bushland management measures will be implemented to preserve the natural waterways and ecology of the site.
8. Quality and Equity in Services: Quality health, education, legal recreational, cultural and community development and other government services are accessible.	The Shaolin Village Centre, comprising a small commercial, retail, professional and community services centre, is located at the heart of the development to serve the local needs of the tourist and residential complex. The site is located approximately 8km from the retail and service facilities of Nowra.

9.3.6 Neighbourhood Planning Principles

The *South Coast Regional Strategy* highlights the urban design considerations for settlement in the region as:

- Protecting the distinctive rural and coastal character of the urban settlement areas of the region; and
- Ensuring that new neighbourhoods are sustainable with reduced car dependency.

New urban development is to be consistent with the Neighbourhood Planning Principles outlined in the Strategy of: [44]

[44] NSW Government Department of Planning, *South Coast Regional Strategy*, p. 24.

- Sustainability principles – walkable neighbourhoods, compact centres, water and energy efficiency, and transit-oriented development;
- Promoting community development and well-being – through the provision of adaptable housing, accessibility, safety and crime prevention, and quality public domain areas and facilities that provide opportunities for social interaction;
- Quality architecture and character – coastal design, streetscape and heritage; and
- Promoting community health and well-being through a clean and healthy environment and a built form that affords people a variety of recreation options, and transport alternatives.

Assessment of development compliance

The proposed development is designed on ESD principles and will implement ESD strategies and measures in the design, construction and servicing of the development, with quality of architecture and design.

Implementation of the Neighbourhood Planning Principles is to ensure that the following urban design matters are considered:

Urban design matters	Development response
Water and energy efficiency: The design of residential subdivisions must address energy saving principles such as solar and thermal design through appropriate landscaping and lot size and orientation controls. Other measures may include site planning, drainage design, rain water tanks, infiltration systems, paving, landscaping, waste water reuse, encourage features such as bio-swales (grass swales with bio-filters) and permeable surface treatments.	These measures will be implemented within site planning and design of the development. Refer to Sections 7.14, 7.15 and 8.11 of this report.
Accessibility: Urban design must to enable all people to move around and participate fully within the community.	Universal access to public areas will be designed into the development. Refer to Section 7.12 of this report.
Crime prevention The objective of Crime Prevention through Environmental Design (CPTED) is to design, manage or manipulate the environment to reduce the opportunity for committing crime. The 4 main design and management principles of CPTED are: ▪ Surveillance (encouraging community use and the ability for people to view spaces); ▪ Accessibility (restrict access to certain areas); ▪ Reinforcing territory (fostering a community sense of ownership); and ▪ Defensible space (areas appear well cared for & protected).	These measures will be implemented in the design of dwellings and to public buildings and precincts. Refer to Section 7.16 on the Urban Design Guidelines for Precinct and Building Design.
Community development (social capital): Social capital describes the social structures that encourage community relationships and involvement. The built environment should encourage community development through: ▪ An appropriate mix of households; ▪ Relationship between public and private spaces; ▪ Discouraging gated communities;	Whilst the development consists predominantly of detached dwellings, a range of housing typologies, including aged housing, can be developed within the site, with apartments sited within the Village Centre.

Urban design matters	Development response
▪ Accessibility to community facilities and open space; ▪ Creating places that provide a focus for community interaction; ▪ Providing appropriate facilities in public places to encourage various groups to interact in a positive way; and ▪ Safety.	The Masterplan proposes quality relationships between public and private spaces, creation of a Village Centre and Wellness Precincts at the central portion of the site, focused on high quality public domain and pedestrian amenity.
Adaptable housing: Housing is to be adaptable so it can be used by everybody, irrespective of their age, level of mobility, health or lifestyle, with a flexible floor plan that enables inexpensive modifications or extensions to suit the changing needs of residents.	Housing will be aimed at the changing lifestyle and ages of its occupants. Refer to Section 7.16 on the Urban Design Guidelines for Precinct and Building Design.
Coastal character: Implementation of *The Coastal Design Guidelines for NSW* which provide a framework for land use through understanding of the functions and relationships between settlements and design principles for defining development footprints, connecting open spaces, protecting natural edges, reinforcing street patterns and appropriate buildings in a coastal context.	The development will be implemented in accordance with good urban design principles for place making and urban form.
Neighbourhood character: Design to provide for neighbourhood character, which is formed by the relationship of building groupings, streets, landscape features and public places to each other.	The development will create a new neighbourhood integrated within a tourist facility with sense of place and community interaction.
Sustainable development: Design for sustainable urban development with the objective is to develop safe, attractive, energy efficient and liveable neighbourhoods that foster a sense of community and that promote better social, economic and environmental sustainability. Measures include the provision of: ▪ Mixed use neighbourhoods that support a variety of higher densities which service the daily needs of most residents within a safe walking distance; ▪ Interconnected streets that cater for all road users including, pedestrians, cyclists, cars and buses; ▪ Urban design that responds to the site context and local character and includes well defined public spaces which promote community activity and safety; ▪ Local employment opportunities; and ▪ Adaptable housing.	The development will be implemented in accordance of urban design principles of: ▪ Creating places for people; ▪ An urban structure that builds on and respects existing site features; ▪ Compact neighbourhoods; ▪ Richness of place and quality of public domain; ▪ Legible development with land use precincts and hierarchy of streets; ▪ Connectivity and permeability; ▪ Diversity and variety; ▪ Adaptable land uses and housing typology; ▪ Provision of local employment opportunities in the tourism industry; and ▪ ESD measures.

Urban design matters	Development response
Biodiversity: The *South Coast Regional Strategy* identifies a number of actions that will influence the location, scale and design of new residential or rural residential development. These include: ▪ No new urban development on high conservation value lands; ▪ No new rural residential zones, and the review of existing planning controls, within the catchment of identified coastal lakes; ▪ Protection of regionally significant habitat corridors; ▪ Use of Strategic Assessments of Riparian Corridors methodology when planning new urban areas; ▪ Recognition of high hazard areas in zoning; and ▪ Maximising the achievement of principles and outcomes from existing natural resource management policies.	Development will avoid areas of high conservation value, protecting the ecological values of the site and its habitat and riparian corridors.

9.4 Jervis Bay Regional Environmental Plan 1996

9.4.1 Outline of the REP

Jervis Bay REP aims to ensure developments protect and contribute to the natural and cultural values of Jervis Bay. The Comberton Grange site is located within the boundary of the Jervis Bay REP. The site is identified in the State Government/ Shoalhaven City Council *Jervis Bay Settlement Strategy 2003* as a potential location for a special purpose tourism and residential use. The Strategy outlines a number of issues to be considered, which include effluent disposal, road access, impacts on water quality, threatened species/ native vegetation and the impact on the Comberton Grange quarry.

A major portion of the site, except for the flood plain and cleared land near Currambene Creek and the former Pine Plantation site, are within the habitat corridor indicated below:

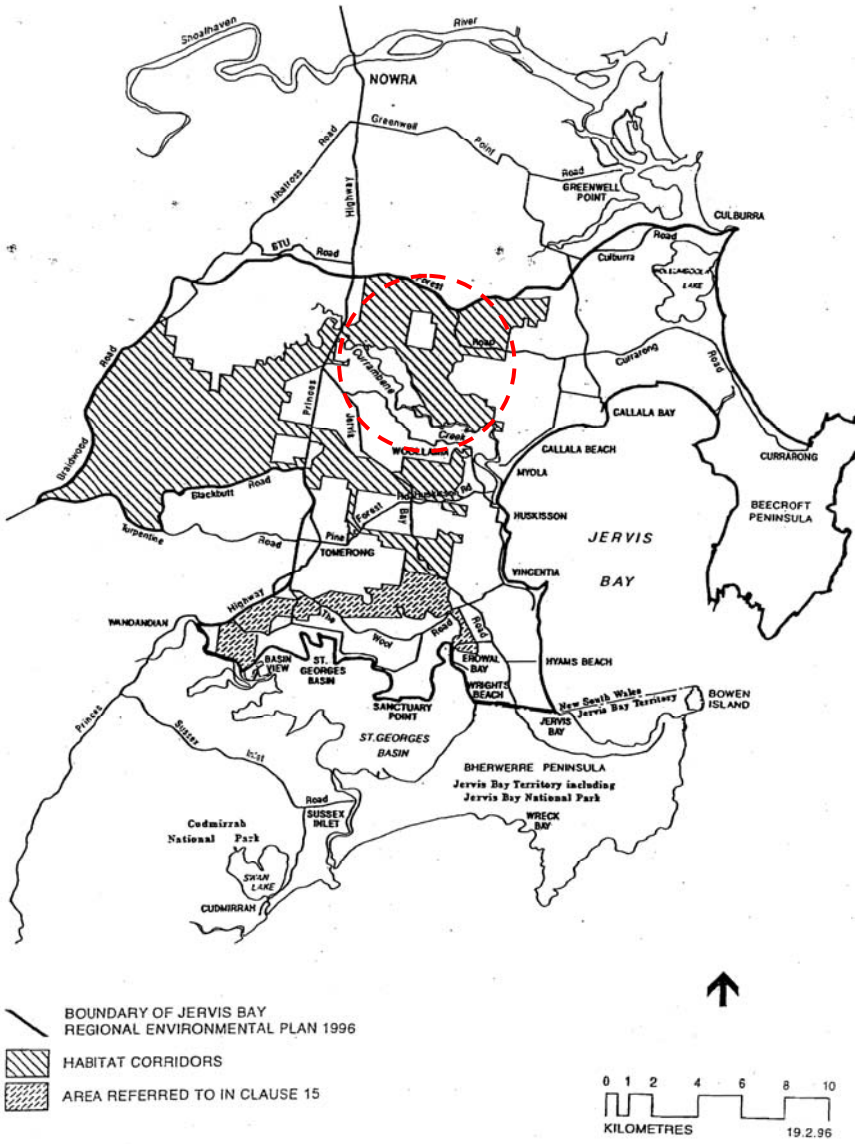

Figure 9.2: Map of Habitat Corridors (*source: Jervis Bay REP 1996*)

9.4.2 Aims and Outcomes of the REP

The aims of the Plan are:

(b) to protect the natural and cultural values of Jervis Bay;

(c) to allow proposals that contribute to the natural and cultural values of the area.

The proposed development must achieve the aims and outcomes listed for:

Aims and Outcomes	Assessment of Compliance
Catchment Protection to: ▪ Maintain or improve water quality of water bodies; ▪ Provide sewerage for all new development (unless the development is within an existing unsewered area); ▪ Protect ecosystems and natural habitats, including waterbodies, from degradation.	The development ensures that the catchment protection measures are undertaken.

Aims and Outcomes	Assessment of Compliance
Landscape quality to: ▪ Maintain the visual quality of a waterbody or a wetland; ▪ Maintain distinct urban communities that have an individual identity; ▪ Let the landscape, not the structures, be the dominant feature outside the settlements; ▪ Allow the existing tree canopy, on or around the site, to dominate.	The development is sensitively sited within its surrounding natural environment. The landscape is a dominant feature of the environment.
Cultural heritage: ▪ Development not to disturb or destroy any Aboriginal archaeological site unless it has the consent of the Director-General of National Parks and Wildlife; ▪ Consult the Director-General if the development is within a well-drained area along a major creekline.	Development is not within land identified in an EPI as being of high Aboriginal cultural significance. Comberton Grange Homestead is listed as an item of local heritage significance. No development is proposed in areas of heritage sensitivity.
Habitat corridors, with a proposal on land such land to: ▪ Be designed to minimise disturbance to the existing structure and species composition of native vegetation communities; ▪ Allow native fauna and flora to feed, breed, disperse, colonise or migrate; ▪ Regenerate and revegetate degraded lands and landscape with local native species; ▪ Retain natural vegetation; ▪ Cluster development; ▪ Design fences so that fauna movement is not restricted; ▪ Minimise the use of herbicides and pesticides; ▪ Provide for bushfire protection.	The development is sensitive to the ecological constraints and habitat corridors of the site.
Tourism development, with a proposal to achieve the outcomes of: ▪ Contributing to the variety of activities for visitors; ▪ Contributing to the variety of accommodation for visitors; ▪ Contributing to the visitor appreciation of the natural and cultural values of Jervis Bay.	The development will provide a number of tourist and recreational facilities of Buddhist Temple, hotel accommodation, dining facilities and golf course, as well as areas for bushwalking. The proposed development aims to create a unique tourist attraction with an international appeal, situated within a tranquil setting that will contribute to the visitor appreciation of the natural and cultural values of Jervis Bay.

9.5 SEPP 14: Coastal Wetlands

9.5.1 Outline of SEPP 14

SEPP 14 – *Coastal Wetland* No. 333 occurs in the south-eastern corner of the site and borders Currambene Creek and Georges Creek (Figure 9.3). The wetlands include both fresh and saltwater bodies, with freshwater wetlands occurring on the floodplains and saltwater wetlands occurring along the creek.

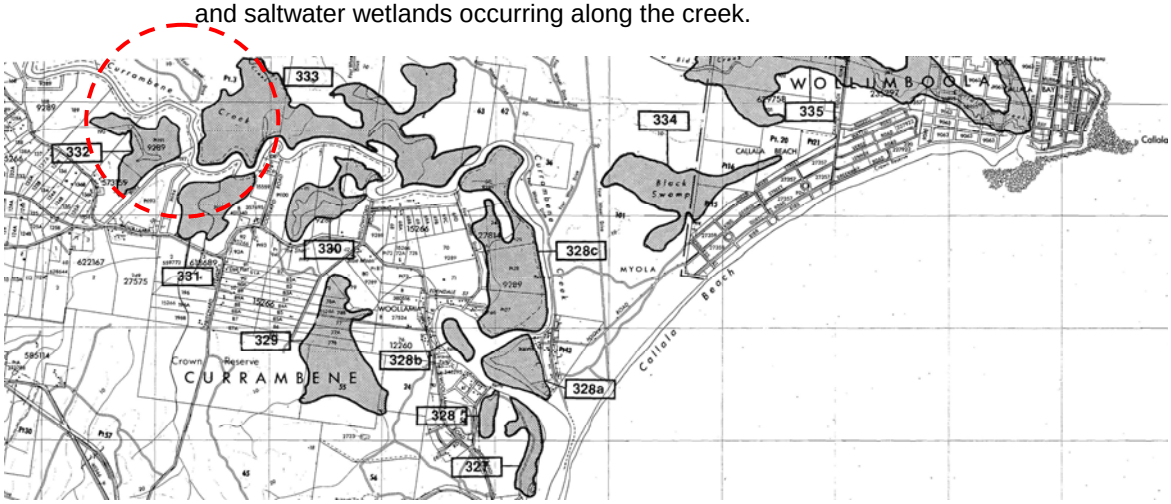

Figure 9.3: SEPP 14: Coastal Wetlands map indicating wetland No. 333 located on the south-eastern portion of the site. (*Source: DoP, SEPP 14 map*)

3.4.2 Assessment of Compliance

No development is proposed on areas designated as coastal wetlands under SEPP 14.

9.6 SEPP 71: Coastal Protection

9.6.1 Outline of SEPP 71

The policy applies to land within the *coastal zone* and *sensitive coastal locations*.

The "coastal zone" (applicable to this development) is defined as:

(a) the area within coastal waters of the State as defined in Part 10 of the *Interpretation Act 1987* (including any land within those waters), and

(b) the area of land and the waters that lie between the western boundary of the coastal zone (as shown on the maps outlining the coastal zone) and the landward boundary of the coastal waters of the State (*Coastal Protection Act 1979*).

Refer to Figure 9.4.

Clause 3 of SEPP 71 defines *sensitive coastal location* to mean any of the following:

"(a) Land within 100m above mean high water mark of the sea, a bay or an estuary;

(b) A coastal lake;

(c) A declared Ramsar wetland within the meaning of the *Environmental Protection and Biodiversity Conservation Act 1999* of the Commonwealth;

(d) A declared World Heritage property within the meaning of the *Environmental Protection and Biodiversity Conservation Act 1999* of the Commonwealth;

(e) Land declared as an aquatic reserve under the *Fisheries Management Act 1994*;

(f) Land declared as a marine park under the *Marine Parks Act 1997*;

(g) Land within 100m of any of the following:
  (i) the water's edge of a coastal lake;
  (ii) land to which paragraph (c), (d), (e) or (f) applies;
  (iii) land reserved under the *National Parks and Wildlife Act 1974*;
  (iv) land to which SEPP 14 – *Coastal Wetlands applies.*"

SEPP 71 additionally defines *significant coastal development*, under clause 9(1)(c) of the SEPP, to be "development within 100m below mean high water mark of the sea, bay or an estuary".

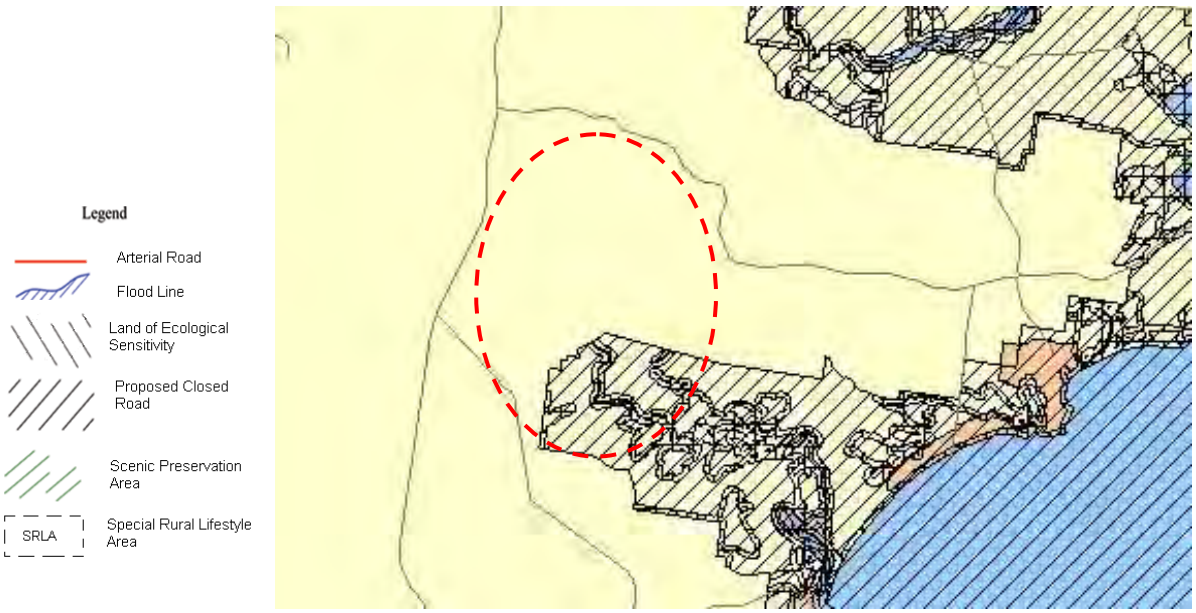

Figure 9.4: Coastal zone (hatched) (source: Shoalhaven City Council)

9.6.2 Land within SEPP 71

The southern portion of the Comberton Grange site is located within the SEPP 71 – *Coastal Protection* zone – within a coastal zone, a sensitive coastal location and within significant coastal development area. This portion of the site comprises:

- **Currambene Creek**, which adjoins the southern boundary of the site, is a major estuary as listed in the Department of the Environment, Water, Heritage and the Arts, referred to in (a) of the above definition. It is one of the major waterways flowing into Jervis Bay. The creek, which adjoins the southern boundary of the site, is tidal and much of the lower part of the estuary is relatively undisturbed. The creek has been declared a Sanctuary Zone within the Jervis Bay Marine Park, is listed on the Commonwealth Directory of Important Wetlands in Australia, and falls in the area covered by the Southern Rivers Catchment Management.

  A public reserve (Crown Land, created in 1956) adjoins both sides of the creek. The width of the reserve is defined as being 100 feet/ 30.5m from High Water Mark. The 100m curtilage of the Mean High Water Mark of Currambene Creek is referenced from the edge of the reserve + 69.5m.

- **SEPP 14 – *Coastal Wetlands* No. 333** is located at the south-eastern portion of the site, referred to in (g)(iv) of the above definition.

Refer to Figure 9.5.

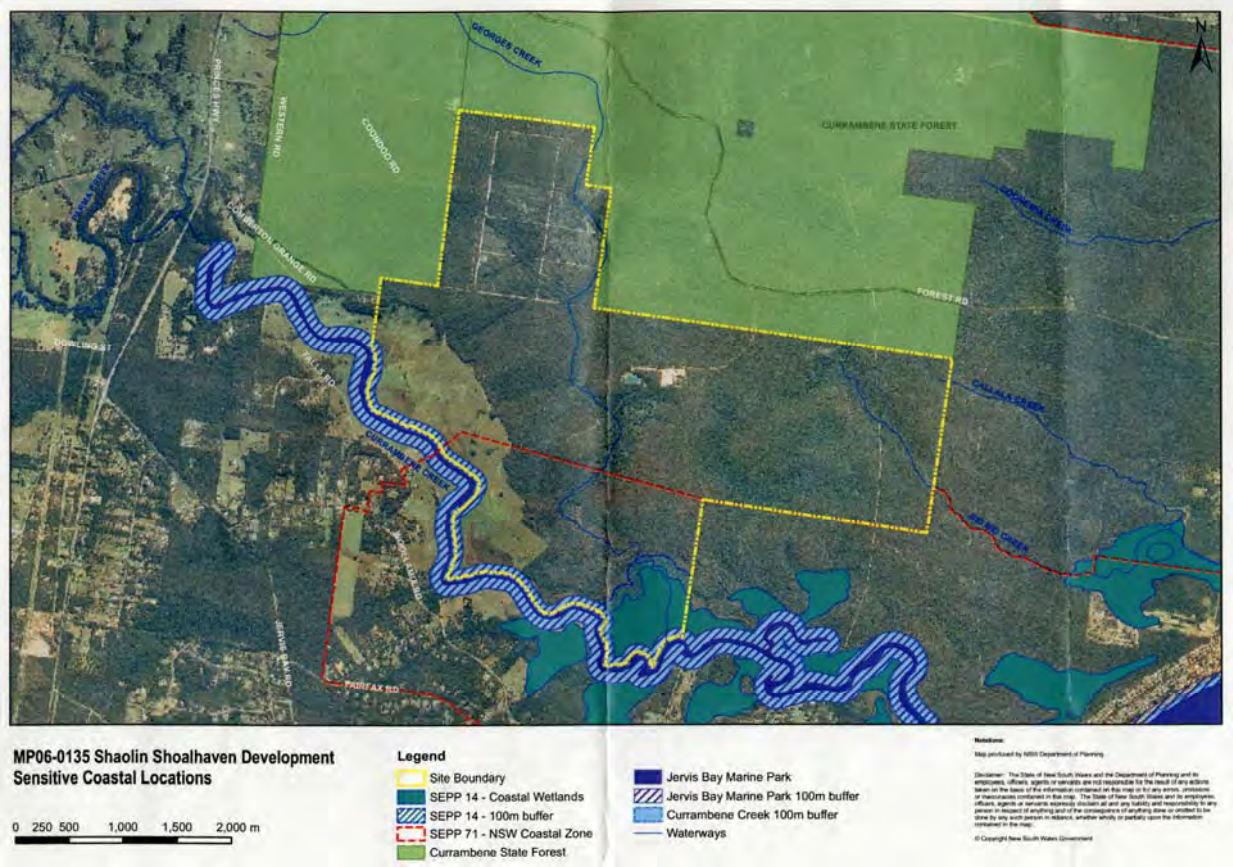

Figure 9.5: Sensitive coastal locations (*DoP*)

9.6.3 Assessment of compliance

No development is proposed to be sited within:

- a *sensitive coastal location*, being 100m above the mean high water mark of Currambene Creek (a); and
- within No. 333 SEPP 14 wetlands (g)(iv).

Development on the south-eastern portion of the site, within the Coastal Zone, must take into consideration the Matters of Consideration outlined in SEPP 71 (Part 2, Item 8). Assessment of compliance of the development with these matters is as follows:

Aims and Matters for Consideration		Assessment of Compliance
(2)	**Aims of Policy**	
(a)	To protect and manage the natural, cultural, recreational and economic attributes of the NSW coast;	The development will comply with the aim of this policy.
(c)	To ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore;	Public access to and along coastal foreshores will be allowed.

Aims and Matters for Consideration		Assessment of Compliance
(d)	To protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge;	Aboriginal places of cultural heritage will be preserved and not be disturbed by the development.
(g)	To protect and preserve native coastal vegetation;	Native coastal vegetation will be protected by the development.
(h)	To protect and preserve the marine environment of NSW;	The marine environment will be protected by the development.
(j)	To manage the coastal zone in accordance with the principles of ecologically sustainable development;	The development will be developed and managed in accordance with ESD principles. Refer to Section 8.18 of this report).
(k)	To ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area.	Development within areas of high visual sensitivity is designed to respect the scenic quality of the area with low development footprint and high landscape coverage.
(8) Matters for consideration Matters of consideration to be taken into account by a consent authority in determining the carrying out of development on land to which SEPP 71 applies:		
(b)	Existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained, and where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved.	Access is available to the banks of Currambene Creek, but no formal paths. Access will be retained to the creek.
(c)	Opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability.	Universal pedestrian access can be provided along the creek from proposed roads and publically used facilities within the development.
(d)	The suitability of development given its type, location and design and its relationship with the surrounding area.	The development is sited within the area identified as suitable for development in the *South Coast Sensitive Lands Review* (Oct 2006) and *South Coast Regional Strategy*. Developments within visually sensitive areas are sensitively located on the site, within landscaped areas.
(f)	The scenic qualities of the NSW coast, and means to protect and improve these qualities.	The development is sensitively sited such that the scenic qualities along Currambene Creek are not compromised.
(g)	Measures to conserve animals and plants and their habitats.	No development is proposed within Land of Ecological Sensitivity (as identified in SLEP), in areas of declared critical habitats under the *Threatened Species Conservation Act 1995* or within Part 7A of the *Fisheries Management Act 1994*, or in areas of EECs.

Aims and Matters for Consideration		Assessment of Compliance
(h)	Measures to conserve fish and marine vegetation and their habitats.	The development will mitigate any runoff into creeklines and water courses so as not to impact on their habitat.
(i)	Existing wildlife corridors and the impact of development on these corridors.	The development is sited to minimise impact on ecological corridors of *Jervis Bay REP 1996*.
(j)	Likely impacts of development on coastal processes and coastal hazards.	The development will have minimal impact on coastal processes.
(k)	Measures to reduce the potential for conflict between land-based and water-based coastal activities.	The development presents no conflict between these activities.
(l)	Measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals.	Development will not occur on land identified in an EPI as being of high Aboriginal cultural significance.
(m)	Likely impacts of development on the water quality of coastal water bodies.	The development will: ▪ Provide secondary treatment of waste water to reduce the pollutants and pathogens contained in effluent; ▪ Minimise runoff and maximising infiltration after development and runoff into natural water bodies.
(n)	The conservation and preservation of items of heritage, archaeological or historic significance.	The site of the Comberton Grange Homestead is on a knoll overlooking Currambene Creek. The homestead no longer exists. Development in proximity of and within the visual curtilage of the former homestead will respect the rural characteristics of the site. An Interpretation Strategy will be undertaken to enhance the experience and cultural significance of the former homestead.
(p)	(i) The cumulative impacts of the proposed development on the environment.	The development is not sited on areas of ecological sensitivity. The development will respect and encourage the maintenance of existing mature forests and site ecology.
(p)	(ii) Measures to ensure that water and energy usage by the proposed development is efficient.	ESD measures and water sensitive urban design strategies will be adopted for this development and occupancy of the site.

9.7 NSW Coastal Policy 1997

9.7.1 Outline of the NSW Coastal Policy

The *NSW Coastal Policy 1997* sets a new direction for coastal zone management, planning and conservation in NSW. The Policy is designed to guide management and planning of the coastal zone, builds on the previous coastal policies, and is the product of an extensive process of review and community participation.

The policy applies to both urban and non-urban areas along the NSW coast outside the Greater Metropolitan Region.

The coastal zone defined in the Coastal Policy applies to areas within:

- nautical miles seaward of the mainland and offshore islands;
- 1km landward of the open coast high water mark;
- a distance of 1km around:
  - all bays, estuaries, coastal lakes, lagoons and islands;
  - tidal waters of coastal rivers to the limit of mangroves, as defined by NSW Fisheries (1985) maps or the tidal limit whichever is closer to the sea

Currambene Creek is listed as a major estuary by the Department of the Environment, Water, Heritage and the Arts.

Figure 9.6: Coastal Zone (s*ource: NSW Coastal Policy 1997*)

The Policy is based on the four principles of ESD contained in the Inter-governmental Agreement on the Environment (IGAE) signed in 1992. These principles are:

- Conservation of biological diversity and ecological integrity;
- Inter-generational equity;
- Improved valuation, pricing and incentive mechanisms; and
- The precautionary principle.

9.7.2 The Policy's goals

The vision of the *NSW Coastal Policy 1997* is the ecologically sustainability of the NSW Coast. Nine goals have been adopted for this vision. The south- eastern portion of the site is within the coastal zone. Assessments of compliance of the development to these goals are as follows:

Goals of the NSW Coastal Policy	Assessment of Compliance
Protecting, rehabilitating and improving the natural environment of the coastal zone.	Development within the coastal zone is sensitively sited to minimize environmental impact. No development sited within a *sensitive coastal location*, being 100m: ▪ above the mean high water mark of Currambene Creek; or ▪ within No. 333 SEPP 14 wetland.
Recognising and accommodating the natural processes of the coastal zone.	The development adopts ecologically sensitive design measures in its design.
Protecting and enhancing the aesthetic qualities of the coastal zone.	These will be maintained.
Protecting and conserving the cultural heritage of the coastal zone.	Development maintains the Aboriginal & European heritage and archaeological values of the site.
Providing for ecologically sustainable development and use of resources.	The development adopts ESD measures in its design and implementation.
Providing for ecologically sustainable human settlement in the coastal zone.	The development adopts ESD measures in its design and implementation.
Providing for appropriate public access and use.	Whilst public access is available to coastal zones, no development is proposed within these areas.
Providing information to enable effective management of the coastal zone.	Not applicable.
Providing for integrated planning and management of the coastal zone.	Measures will be adopted to protect the coastal zone.

9.7.3 The Policy's key actions

Key Actions of the *NSW Coastal Policy 1997* are:

- Water quality in coastal waters, estuaries and rivers will be maintained;
- *SEPP 14 Coastal Wetlands* and *SEPP 26 Littoral Rainforests* will be rigorously enforced;
- Coastal lands and aquatic environments will be protected;
- Coastal lands with high conservation values will continue to be acquired and dedicated or reserved for a public purpose;
- All efforts will be made to avoid disturbances to potential acid sulphate soils;
- Cultural heritage will be protected and conserved;
- Investigations and monitoring of climate change for coastal areas will continue and sea level rise scenarios will be incorporated;

- The rights and needs of indigenous people will be considered;
- Potential opportunities for the sustainable use and development of coastal resources will be identified and facilitated; and
- Future expansion of urban and residential areas will provide for choices in both housing and lifestyle.

Assessment of Compliance:
The Key Actions are complied with in the development.

9.8 Jervis Bay Settlement Strategy 2003

The *Jervis Bay Settlement Strategy 2003* represents a major policy initiative between Council and the State Government. The broad aim of the Settlement Strategy is to manage future growth and settlement in the region for the next 15-20 years. The Strategy identifies broad areas for potential future development and sets principles to guide the planning outcomes for these areas if they are to be rezoned or development. The site is within the Jervis Bay Settlement Strategy area.

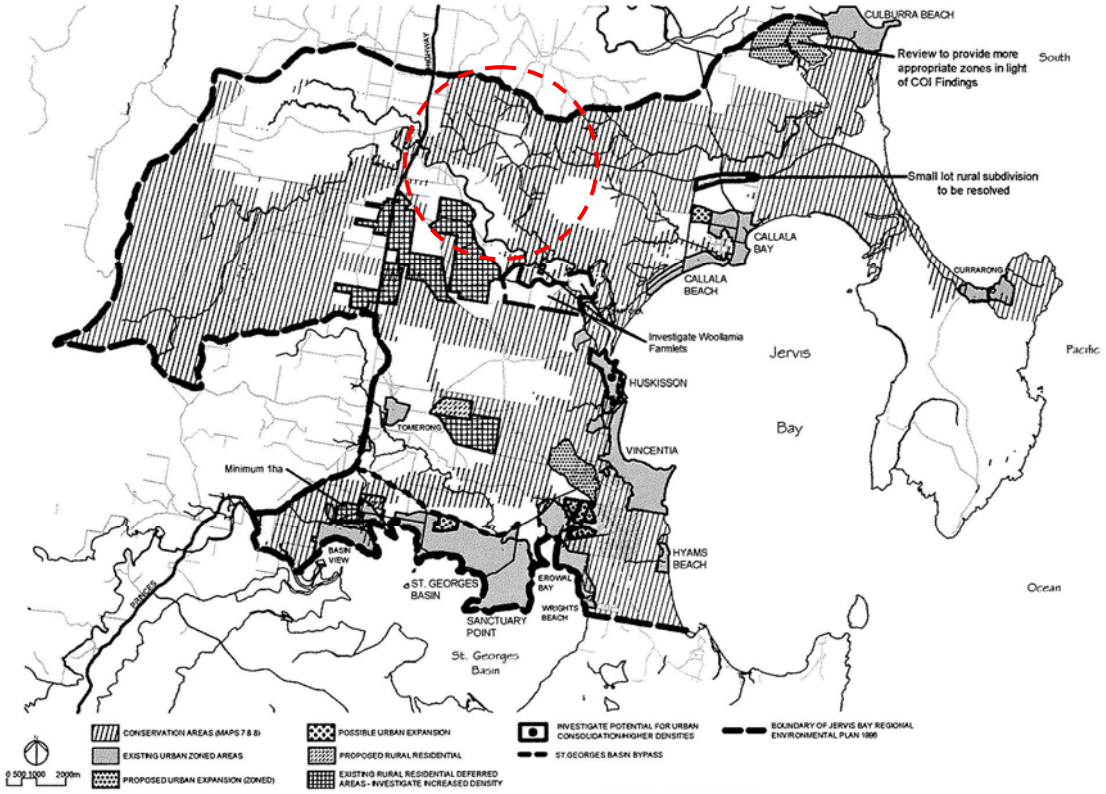

Figure 9.7: Area and constraints of the Jervis Bay Settlement Strategy (*source: Jervis Bay Settlement Strategy*)

The vision for the Settlement Strategy is:
To maintain and enhance the marine, estuarine and natural resources by providing balanced future living and visiting opportunities which are environmentally, socially and economically sustainable.

9.8.1 Principles for development

The future settlement of the Jervis Bay Region is guided by a number of development principles. These are:

- Conservation of the Regions environmental qualities.
- Sustainable future population growth, with the environmental, social and economic constraints to development assessed to determine how much growth can be accommodated in new areas. Issues to be assessed include:
  - Native vegetation
  - Threatened species
  - Proximity to water courses and bodies- identify buffers
  - Water quality controls
  - Flood liability
  - Bush fire risk/protection
  - Cultural heritage
  - Acid sulphate soils
  - Slope of the land
  - Provision of infrastructure
- Future land use decisions to be supported by documentation which demonstrates a high level of scientific certainty.
- Development to generally augment existing settlements and avoid the creation of new settlements.
- Development to provide a choice of living opportunities and types of settlement.
- No new rural residential areas to be established outside of areas identified for investigation in the Strategy.
- Identify and investigate opportunities for infill development, urban renewal and consolidation within existing urban areas in the longer term, given the environmental and social limits to growth in the Region.
- Provide for the continued and improved social and economic well-being of the whole community.
- Protection of water quality in Jervis Bay, St Georges Basin and Lake Wollumboola.

Assessment of Compliance:
The development ensures that a sustainable outcome is achieved.

9.8.2 Environmental considerations

Environmental considerations identified in the Settlement Strategy to be addressed. Assessment of compliance of the development is as follows:

Environmental Considerations	Assessment of Compliance
Water quality and flow: ***Objective:*** To ensure that the water quality and flow of waterways and their aquatic, marine and estuarine ecosystems is not detrimentally affected as a result of new settlement in the region. ***Requirements/ actions:*** ▪ All development will meet the statutory requirements of the *Jervis Bay REP 1996* in respect to Clause 11- Catchment Protection. ▪ New development will be located and designed so as to avoid detrimental impacts on waterbodies and watercourses, including groundwater. Where there are manageable impacts, erosion and sediment control measures and means to mitigate nutrient and	The proposed infrastructure and services to the development will comply with those requirements. Refer to Section 8.11 – *Water cycle management and water quality* of this report.

Environmental Considerations	Assessment of Compliance
▪ other pollutants should be provided on the development site and be excluded from areas set aside for the protection of natural or cultural attributes. New development will be designed so that domestic effluent management does not have a detrimental impact on water quality and flow, meets the Interim Environmental Objectives for the Jervis Bay Catchment (EPA, 1999), and is consistent with relevant State government guidelines. ▪ New development, including infrastructure, will be located, designed and constructed in a manner that does not degrade land based or aquatic ecosystems or processes. ▪ A set of catchment health indicators will be established, to supplement the Interim Environmental Objectives for the Jervis Bay Catchment (EPA 1999) and to assist monitoring and assessment of cumulative impacts of development on water quality and flow. ▪ Infrastructure works will not have a detrimental impact on the water quality of receiving waters in the region. In order to achieve this outcome, best practice soil and water management will be implemented when constructing various infrastructures and the number of artificial barriers to flow and impediments to movements of aquatic biota will be minimised.	
Freshwater, marine and estuarine biodiversity: ***Objective:*** To ensure that the potential impacts/hazards associated with new settlement are recognised, avoided and managed to prevent detrimental impacts on freshwater, marine and estuarine biodiversity values of the region.	The maintenance of the water quality of Currambene Creek is of primary concern. The development will comply with preserving the biodiversity of surrounding waterways.
Land based biodiversity: ***Objective:*** To ensure that significant areas of land-based biodiversity, ecosystems and the function of natural processes are conserved and sustainability managed as a major contribution to the achievement of ecologically sustainable development. ***Requirements:*** ▪ New settlement in the region will meet the statutory requirements of the *Jervis Bay REP 1996* in respect of clause 14 (Habitat Corridors) and 15 (Disturbed Habitat and Vegetation). ▪ New settlement will be located and designed so as to avoid detrimental impacts on land-based biodiversity. Disturbance to flora and fauna habitats by new or existing development will, as far as possible, be minimised. ▪ Decisions regarding the location and design of new development in the region will recognise that the conservation of biodiversity is dependent on maintaining landscape connectivity through a native vegetation system of National Parks, habitat corridors established by the *Jervis Bay REP*, environment protection zones under the *Shoalhaven LEP*, and bushland on private land.	The site has vegetation communities of high conservation significance including Endangered Ecological Communities (EECs). No development is proposed within Land of Ecological Sensitivity (as identified in the Shoalhaven LEP), in areas of declared critical habitats under the *Threatened Species Conservation Act 1995*, within Part 7A of the *Fisheries Management Act 1994*, or in areas of EECs. Refer to Section 8.3 – *Ecology* of this report.

Environmental Considerations	Assessment of Compliance
▪ Significant populations of, and habitats for, threatened species, populations and ecological communities listed in Schedules 1 and 2 of the *Threatened Species Conservation Act 1995* (TSCA 1995) will be conserved and managed under proposed planning instruments associated with new development. A range of policy options to conserve biodiversity on private land will also be explored, including restrictive covenants, voluntary conservation agreements and so on. ▪ New settlement in the region will seek to minimise and manage activities that can be defined as, or contribute to, key threatening processes listed in Schedule 3 of the TSCA 1995. ▪ Policy options to offset unavoidable impacts of new development on land-based biodiversity in the region will be explored. These options may include strategies for mitigation and compensatory habitat, and will be investigated at all levels of the planning system. ▪ New settlement in the region will consider and, where-ever possible, seek to implement the recommendations arising from any relevant approved Regional Vegetation Management Plan prepared under the *Native Vegetation Conservation Act 1997*; and any relevant approved Recovery Plan or Threat Abatement Plan prepared under the TSCA 1995. ▪ The habitat values, ecological & hydrological processes of wetlands will be conserved and managed so that the impact of development in the catchment of wetlands (SEPP 14 and others) is minimised. ▪ Littoral rainforests in the region will be conserved and managed in accordance with SEPP 26. ▪ Remnant vegetation particularly that which occurs outside protected areas will be conserved and protected where-ever possible to maintain and increase natural species diversity. Decisions regarding new settlement in the region should therefore aim to improve the condition of existing native vegetation and encourage the revegetation and rehabilitation of land with appropriate vegetation management. ▪ New settlement in the region will be encouraged to provide for biodiversity enhancements, by incorporating requirements for, amongst others, weed control, habitat rehabilitation, and the use of local native species in landscaping. ▪ Locally significant habitat corridors not identified by the *Jervis Bay REP* will be addressed at all levels of the planning system, to protect locally significant biodiversity values.	
Soils: ***Objective:*** To ensure that soil characteristics, including potential acid sulphate soils, are identified and addressed in assessing the sustainability of new settlement in the region.	The site has a low level of soil and landscape constraints. Low-lying floodplain areas adjacent to Currambene Creek have moderate to very high soil and landscape constraints and are most susceptible to acid sulphate soils.

Environmental Considerations	Assessment of Compliance
Requirements: ▪ Areas of potential acid sulphate soils will be identified and excluded from new development areas in the region. Assessment and management of acid sulphate soils issues will be undertaken in accordance with the *NSW Acid Sulphate Soils Manual*. ▪ Areas of potential acid sulphate soils will be identified and excluded, where possible, when considering the location and construction of infrastructure to serve settlements. ▪ Ameliorative measures will be undertaken for minor disturbances of potential acid sulphate soils in association with existing development/subdivision patterns.	Land adjacent to the banks of Currambene Creek is not developed due to potential flooding. Refer to Section 8.5 – *Acid sulphate soils* in this report.
Landscape: ***Objective:*** To ensure that the significant landscape character of the region is recognised and conserved, and that new settlement does not have a detrimental impact on natural areas or processes. ***Requirements:*** ▪ New settlement in the region will meet the statutory requirements of the Jervis Bay REP 1996 in respect of Clause 12 – *Landscape Quality* and whereever possible, landscape values should not be compromised by new development in the region. ▪ Important visual aspects of the landscape will be identified and conserved, including the aesthetic quality of the coastal landscape. ▪ New settlement in the region should seek to avoid land liable to be unstable or prone to high or extreme erosion.	The site is characterised by low undulating hills with moderate slopes that fall to the south to the flatter floodplains adjoining Currambene Creek. Development respects and maintains significant landscape character of the site. The landscape characteristics of the ecologically sensitive areas are maintained. Development within visually sensitive areas is sited and landscaped to maintain the rural characteristics of the site. Refer to Section 8.14 – *Views & visual amenity* of this report.
Cultural heritage: ***Objective:*** To ensure that significant natural and cultural heritage values of the region are recognised, conserved and managed. ***Requirements:*** ▪ All development will meet the statutory requirements of the Jervis Bay REP 1996 in respect of Clause 13 – *Cultural Heritage*. ▪ The Aboriginal and European heritage significance of the landscape will be recognised and assessed prior to new development proposals in the region. In particular, Aboriginal cultural heritage will be recognised as a living culture, with Aboriginal people having strong interests in the management of the land and waters of the Jervis Bay region. Archaeological assessment and survey, and the input of the Aboriginal people of Jervis Bay will be essential as part of investigations into new settlement in the region.	Comberton Grange Homestead is listed as an item of local heritage significance in the Shoalhaven Heritage Inventory. Development proposed within the Homestead precinct is sensitively sited and respects the heritage value of this area. An Interpretation Strategy is proposed to be developed to acknowledge the historical and cultural background of the site.

Environmental Considerations	Assessment of Compliance
▪ Significant cultural heritage places, items and landscapes will be conserved and managed, and not detrimentally affected by new development in the region. Consultation with the Aboriginal people of the Jervis Bay region will be undertaken early in the planning of new settlement in the region. This consultation is particularly important in relation to the traditional significance of landscape features, as these are often not reflected in site registers and databases. ▪ New settlement in the region will be carried out in sympathy with the landscape and heritage character of the region.	Development will avoid areas with Aboriginal archaeology. Refers to Sections 8.1 – *Indigenous heritage* and 8.2 – *European heritage* of this report.
Bushfire: ***Objective:*** To ensure that settlements are protected from bushfire risk. ***Requirements:*** ▪ Appropriate Asset Protection Zones (APZ), will be incorporated into planning instruments associated with new settlement in the Region, in accordance with the requirements of Section 117 (2) Direction G20 – *Planning for Bushfire Protection*. ▪ APZ associated with new development will be contained within the developable area, and will be excluded from areas set aside for the protection of natural or cultural attributes. ▪ New settlement will be planned to include bushfire risk management measures that are relative to the associated fire risk in the locality. The implementation of bushfire risk management measures associated with new settlement will comply with relevant assessment requirements and policies such as the *EP&A Act*, *Rural Fires Act* and *Planning for Bushfire Protection* (2001).	The majority of the site, except for the floodplain area adjoining Currambene Creek, is within a Vegetation Category 1 bushfire zone. Construction must have regard to AS 3959: *Construction of Buildings in Bushfire Prone Areas* and *Planning for Bushfire Protection*. A minimum of 20m wide fuel free zone and a 20m wide fuel reduced zone for buildings adjacent to the forest has been recommended in the Kettle Report 2001 (p.111). The development is designed to comply with bushfire codes and requirements. Refer to Section 8.7 – *Bushfire* of this report.
Flooding: ***Objective:*** To identify and acknowledge flooding of land as a constraint to future development. ***Requirements:*** ▪ Floodplain Management Studies and/or Plans will be prepared and implemented in accordance with the NSW Floodplain Management Manual (2001) for areas that are likely to be affected by flooding. ▪ Land within the Flood Planning Area (1% AEP) will not be rezoned to provide for residential development.	Currambene Creek (along the southern boundary of the site) is affected by the 1 in 100 year ARI flood event. No development is proposed in flood prone areas with 100m clearance from Currambene Creek and 50m clearance from Georges Creek tributaries within the former Pine Plantation. Refer to Section 8.10 – *Flooding* of this report.

Environmental Considerations	Assessment of Compliance
Urban stormwater management: ***Objective:*** To ensure the protection of life and property and water quality, by providing best practice stormwater management in new and existing development in the region. ***Requirements:*** ▪ A hierarchy of sizes and types of stormwater infrastructure will be provided. This infrastructure should, as far as practicable, be contained within the developable area and excluded from areas set aside for the protection of environmental and cultural attributes. ▪ Stormwater infrastructure associated with new development in the region should be designed and constructed in a manner that does not degrade existing natural land-based or aquatic ecosystems or processes. Wherever possible, stormwater should be treated as close to the source as possible prior to any proposed discharges to natural systems. ▪ Monitoring programs to investigate and assess the effectiveness of stormwater controls will be considered and, where appropriate, implemented in association with new development in the region. A community education campaign targeted at improving attitudes and practices in relation to stormwater will also be developed and implemented as per the *Shoalhaven Urban Stormwater Management Plan*.	The development will be designed with water sensitive urban design measures. Refer to Section 8.11 – *Water cycle management and water quality* of this report.
Riparian Areas: ***Objective:*** To ensure that riparian areas are conserved and sustainability managed, in order to provide for natural ecological and hydrological processes and to avoid detrimental impacts on habitat values and water bodies immediately adjoining and downstream. ***Requirements:*** ▪ The design and location of new development in the region will seek to protect riparian habitat values and their ecological and hydrological function in the landscape. ▪ Riparian areas will be identified in future planning instruments affecting Jervis Bay, St Georges Basin and their associated watercourses to provide a degree of certainty for future development and landuse changes in the region. ▪ Riparian areas will be protected from ancillary detrimental uses that undermine habitat values and their ecological and hydrological function in the landscape. Planning instruments should seek to encourage the rehabilitation and repair of areas subject to detrimental impacts caused by past land use practices.	Riparian and creek line areas are preserved from development. Refer to Sections 8.3 – *Ecology* and 8.10 – *Flooding* of this report.
Economic resources: ***Objective:*** To ensure that natural resources are sustainability managed in a manner that provides for long term viability and remediation.	Natural resources have generally been retained from development.

Environmental Considerations	Assessment of Compliance
Requirements: ▪ Incompatible development will be excluded from areas established for extractive resources, including buffers, in the region.	
Settlement hierarchy: ***Objective:*** To establish a settlement hierarchy for the Region that relates to the size and function of each settlement, and clarifies community expectations with regard to the provision of infrastructure & services. ***Requirement:*** ▪ The provision of community and recreation facilities/ services will reflect the settlement hierarchy as outlined.	The development is predominantly for tourist and recreational facilities. Residential settlement is approximately 300 dwellings.
Residential development: ***Objective:*** To ensure that a range of living opportunities for future and existing residents of the Region is provided and that growth of selected settlements is managed sustainably. ***Requirements:*** ▪ The supply of housing opportunities for future residential development will be provided within the environmental and servicing limits of the region. ▪ Areas of new settlement in the region will be located and designed in accordance with the guiding principles and policy actions identified in this Strategy. ▪ A range of lot and household sizes will be encouraged in new residential areas to allow for housing choice and affordability, and the varying demands of a changing society.	Permanent dwellings providing a range of housing typologies of detached houses and medium density developments. The dwellings are to be designed and integrated within the tourist development with its overall design and siting to reflect the spiritual and aesthetic character of the development. The dwellings are to support the religious and tourist uses of the site and will be developed for permanent occupancy.
Infrastructure requirements: To ensure that settlement areas are provided with adequate and efficient infrastructure and services. ***Requirements:*** ▪ A level of infrastructure for the region will be provided in line with the settlement hierarchy outlined in this Strategy. ▪ Existing strategies for the provision of community and recreation facilities, and infrastructure will be implemented in consultation with responsible service agencies. ▪ All new urban development identified in this Strategy will be provided with reticulated water and sewerage systems. ▪ All new rural residential development will be provided with reticulated water only if reticulated sewerage is available. ▪ All new urban development identified in this Strategy will be provided with reticulated water and sewerage systems. ▪ All new rural residential development will be provided with reticulated water only if reticulated sewerage is available.	The development will be serviced by conventional infrastructure and augmented by sustainable infrastructure strategies. Refer to Section 8.8 & 8.9 – *Infrastructure services* of this report.

Environmental Considerations	Assessment of Compliance
▪ On site effluent management for rural residential development will be implemented in accordance with: DCP 78 – *On Site Sewerage Management*; the NSW Environment & Health Protection Guidelines for On- Site Sewerage Management for Single Households; and the guiding principle and policy actions identified in this Strategy. ▪ Waste management and recycling services will be implemented in accordance with Council's existing policy. The provision of regular roadside garbage services for rural residential areas will be investigated and appropriate measures for the management of waste determined.	
Access: ***Objective:*** To ensure that settlements are permeable and accessible to pedestrians, cyclists and public transport, and that adequate access is provided from within and outside of the region. ***Requirements:*** ▪ New development will be designed to provide for permeability and accessibility by pedestrians and cyclists within the local services network. ▪ To ensure that the integrity of the State Road Network, and in particular the Princes Highway, is maintained the cumulative impacts of future development within the Region will be addressed at the rezoning investigation stage. ▪ Public transport within the region will be encouraged and promoted through the implementation of the Shoalhaven Integrated Transport Strategy. In particular, public transport will be encouraged between existing and new settlements and the District Centre. ▪ New development will attempt to minimise the need for car usage within the region, and be designed to maximise opportunities for alternative transport usage. Relevant policy principles arising from the *NSW Transport Package Integrating Landuse and Transport* (2001) will be investigated and explored in assessing new development in the region. ▪ New roads and traffic generating developments will be designed and implemented in accordance with State Government policies and environmental criteria for road traffic noise. ▪ The existing road network will be maintained with the following road hierarchy for the road hierarchy for the Region: Regional Roads, Collector Roads, and Local Roads.	Access from the site from Nowra is via two rural standard roads, off the Princes Highway: ▪ **Forest Road** – which is a collector road located to the north of the site. The road has just been sealed as an all-weather road by Shoalhaven City Council; & ▪ **Comberton Grange Road** – which is located to the west of the site. The road provides direct, unsealed access to the site as well as to a number of rural properties near the Princes Highway. A right turning lane for traffic from the south is currently available at the intersection of the Pacific Highway with Comberton Grange Road. This road will be used for emergency access/ egress. There is excellent access to Nowra, Jervis Bay and the beaches of Culburra. Refer to Section 8.12 – *Traffic* of this report.

Environmental Considerations	Assessment of Compliance
Community services and facilities: ***Objective:*** To ensure that adequate community services and facilities are provided for each settlement. ***Requirements:*** ▪ An assessment to identify the current and likely future level of service for each settlement will be conducted in light of the settlement hierarchy adopted by this Strategy and the proposals contained within existing Council strategies and plans. ▪ Services and facilities that require upgrading or provision will be identified and, where appropriate, will be provided in Councils Section 94 Plan and relevant State Government programs. ▪ The provision of services and facilities will be monitored, and the Community Plan regularly reviewed to ensure it is meeting the changing needs of the community.	The Village Centre Precinct comprises a small commercial, retail, professional and community services located at the heart of the development to serve the local needs of the tourist and residential complex.
Economic development and tourism: ***Objective:*** To ensure the local economy complements and is responsive to the region's cultural and natural environment. ***Requirement:*** ▪ Funding opportunities for the preparation of an economic development strategy for the region will be explored. Such a strategy would seek to identify and examine: existing economic activity in the region; strategic issues and locations; key opportunities and shortfalls for future economic activity; and measures to implement actions that are consistent with the guiding principles and policy actions of this Strategy.	The proposed development is expected to generate high employment activity and economic and tourism benefits for the local and broader community.
Timing, staging and monitoring: ***Objective:*** To ensure that development achieves performance benchmarks identified in the Strategy, and that an adaptive management approach can be implemented for new settlement in the region.	Construction of the development will be over a 5-20 year period. The staging of the development will be subject to demand and availability of site services and infrastructure, as well as the required cash flow.

9.9 Jervis Bay Marine Park

9.9.1 Outline of the Strategy

Jervis Bay Marine Park covers an area of approximately 22,000 hectares and spans over 100km of coastline and adjacent ocean, extending from Kinghorn Point in the north to Sussex Inlet in the south and including most of Jervis Bay. Part of the area is classified as a sanctuary zone. This zone type provides for the highest level of environmental protection and prohibits all fishing and collecting activities or activities that damage habitat.

The Upper Currambene Creek is a Sanctuary Zone (Figure 9.8) which incorporates the tidal waters and tidal lands of the upper reaches of Currambene Creek upstream from a point west of Goodland Road, to the mean high water mark and to the tidal limit.

9.9.2 Assessment of compliance

The proposed development maintains clearance from Curambene Creek, preserving the creek surrounds as a sanctuary zone.

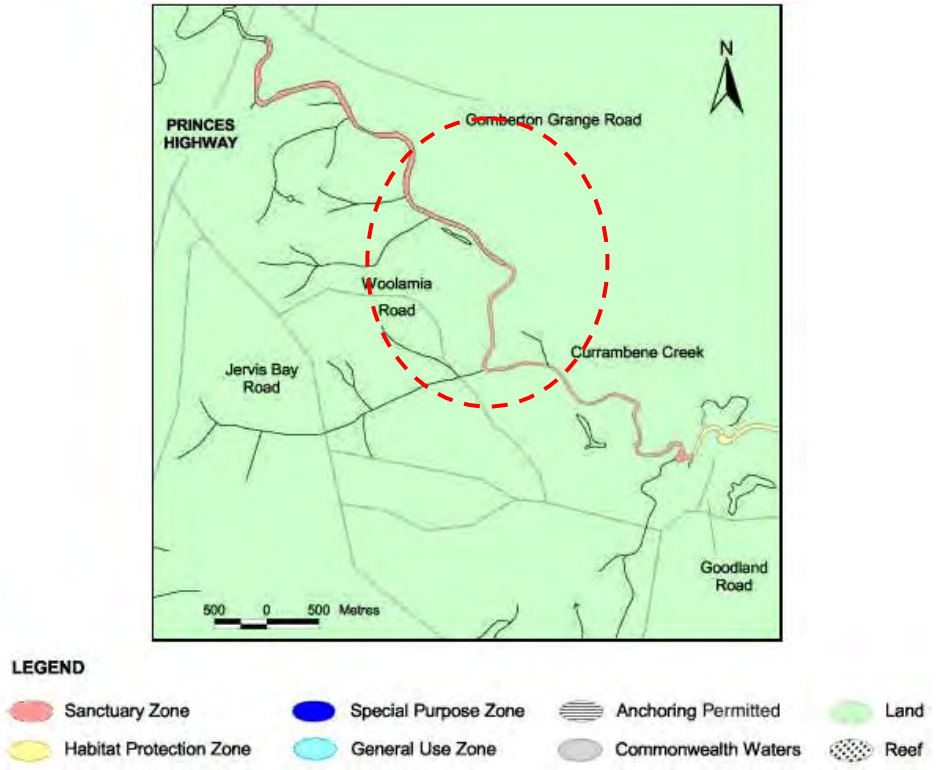

Figure 9.8: Currambene Creek Sanctuary Zone (*source: Jervis Bay Marine Park*)

9.10 SEPP 44: Koala Habitat Protection

9.10.1 Outline of SEPP 44

The Shoalhaven Local Government Area has been identified as koala habitats.

9.10.2 Assessment of compliance

The Flora and Fauna consultant (Kevin Mills and Associates) has not identified any koala habitats within the site.

9.11 SEPP 55: Remediation of Land

9.11.1 Outline of SEPP 55

The purpose of this SEPP is to establish best practice for managing land contamination through the planning and development control process. The key principles of the SEPP are to:

- Ensure that changes of land use will not increase the risk to health or the environment;
- Avoid inappropriate restrictions on land use
- Provide information to support decision making and to inform the community

9.11.2 Assessment of compliance

The preliminary Contamination Assessment Report (2009) undertaken by Douglas Partners concludes that, based on site history, site inspection and laboratory analysis the overall potential for contamination at the site is considered to be low.

9.12 SEPP (Major Development) 2005

According to the SEPP Major Projects 2005, the site is located in an *environmentally sensitive area of State significance.*

Environmentally sensitive area of State significance as defined in SEPP (Major Development) 2005 means:	**Assessment of Compliance**
(a) Coastal waters of the State; or	Development not within this zone.
(b) Land to which SEPP 14 – *Coastal Wetlands* or SEPP No. 26 – *Littoral Rainforests* applies; or	Development not within littoral rainforests and land within 100m of SEPP 14 land.
(c) Land reserve as a aquatic reserve under the *Fisheries Management Act 1994* or as a marine park under the *Marine Parks Act 1997*; or	Currambene Creek is a Sanctuary Zone with the Jervis Bay Marine Park. Development is not within this zone.
(d) Land within a wetland of international significance declared under the Ramsar Convention on Wetlands or within a World heritage area declared under the World Heritage Convention; or	Development not within these zones.
(e) Land identified in an environmental planning instrument as being of high Aboriginal cultural significance or high biodiversity significance; or	Development not within these zones.
(f) Land reserve as a State conservation area under the *National Parks and Wildlife Act 1974*; or	Development not within this area.
(g) Land, places, buildings or structures listed on the State Heritage Register; or	Comberton Grange Homestead is classified on the Register of the State Heritage Inventory (NSW) and on the Register of the National Trust (NSW). No development is proposed within this area or buildings.

Environmentally sensitive area of State significance as defined in SEPP (Major Development) 2005 means:	**Assessment of Compliance**
(h) Land reserved or dedicated under the *Crowns Lands Act 1989* for the preservation of flora, fauna, geological formations or for other environmental protection purposes; or	Crown land, for the purpose of a public reserve, is located 30.5m on both sides of Currembene Creek. Development is not within this area.
(i) Land identified as being critical habitat under the *Threatened Species Conservation Act 1995* or Part 7A of the *Fisheries Management Act 1994*.	The site has vegetation communities of high conservation significance including Endangered Ecological Communities (EECs).
Critical habitat means habitat declared to be critical habitat under Part 3 of TSCA. Part 3 clause 37 – *Habitat eligible to be declared to be critical habitat,* states that: (1) The whole or any part or parts of the area or areas of land comprising the habitat of an endangered species, population or ecological community or critically endangered species or ecological community that is critical to the survival of the species, population or ecological community, is eligible to be declared under this Part to be the critical habitat of the species, population or ecological community. (2) The regulations may provide that a specified habitat, or habitat of a specified kind, may, or may not, be declared to be critical habitat for the purposes of this Part.	No development is proposed within Land of Ecological Sensitivity (as identified in the Shoal-haven LEP), in areas of declared critical habitats under the *Threatened Species Conservation Act 1995* or within Part 7A of the *Fisheries Management Act 1994*, or in areas of EECs. There are no areas of declared critical habitats on the site as advised by Kevin Mills, Ecological and Environmental Consultant. To date, only 2 areas in NSW have been declared critical habitats under the Act (EDO NSW (Ltd) Fact Sheets, updated 21 April 2008).

In summary, no development is proposed within Environmentally Sensitive Areas of State Significance.

9.13 SEPP (Housing for Seniors and People with a Disability) 2004

The site may accommodate seniors housing in the development. Seniors housing is defined in the SEPP as:

> *"residential accommodation that is, or is intended to be, used permanently for seniors or people with a disability."*

Seniors are defined in the SEPP as "*people aged 55 or more years*".

The Shoalhaven local government area has a high aging population from an already high base and from sea-change seeking retirees. The study, *A place for Aging – An Assessment of the Social Impacts of an Aging Population in Shoalhaven: Implications for Housing, Services and the Community (2004)*, undertaken by Shoalhaven City Council identifies that appropriate housing to ensure that aging-in-place and purpose built retirement developments are needed in the local government area.

With a traditional Chinese medical facility and the promotion of facilities and activities for the overall physical health and mental well-being of people in the development, the

provision of housing typologies for quality seniors' living will be integrated into the development. Seniors housing to be provided within the development will be in the form of self-contained dwellings. A **self-contained dwelling** is defined in the SEPP as:

> *"a dwelling or part of a building, whether attached to another dwelling or not, housing seniors or people with a disability, where private facilities for significant cooking, sleeping and washing are included in the dwelling or part of the building, but where clothes washing facilities or other facilities for use in connection with the dwelling or part of the building may be provided on a shared basis."*

Development for seniors housing must be in accordance with the aims of *SEPP (Housing for Seniors or People with a Disability) 2004*, which aims:

> *"to encourage the provision of housing (including residential care facilities) that will:*
> *a. increase the supply and diversity of residences that meet the need of seniors of people with a disability; and*
> *b. make efficient use of existing infrastructure and services; and*
> *c. be of good design.*

Design for seniors living must be undertaken in accordance with the Design Principles outlined in the SEPP which relate to:

- neighbourhood amenity and streetscape;
- visual and acoustic privacy;
- solar access and design for climate;
- stormwater;
- crime prevention;
- accessibility; and
- waste management.

9.14 SEPP 65 – Design Quality of Residential Flat Development

A residential flat development to accommodate service apartments is proposed within the Town Centre Precinct. The development must comply with *SEPP 65 – Design Quality of Residential Flat Development*. The aim of the SEPP is to improve the design quality of residential flat development in NSW and applies to residential flat buildings within the State.

Residential flat building is defined in the SEPP as:

> *"a building that comprises or includes:*
> *(a) 3 or more storeys (not including levels below ground level provided for car parking or storage, or both, that protrude less than 1.2m above ground level); &*
> *(b) 4 or more self-contained dwellings (whether or not the building includes uses for other purposes, such as shops).*

This does not include a Class 1a building or a Class 1b building under the *Building Code of Australia*, which are town houses or villas where dwellings units are side by side.

Proposed residential flat development must comply with the Design Quality Principles outlined in the SEPP, which aims at achieving good design by means of evaluating the merit of the proposed solution. These principles cover the development's:

- Context
- Scale

- Built form
- Density
- Resource, energy and water efficiency
- Landscape
- Amenity
- Safety and security
- Social dimensions and housing affordability and
- Aesthetics.

Separate Development Applications will be submitted for the detailed design of each precinct and its development.

9.15 Shoalhaven Local Environmental Plan 1985 (2009)

Shoalhaven Local Environmental Plan 1985 (SLEP 1985) is the local legislative instrument that currently relates to the project area and its surrounds.

9.15.1 Aims of the LEP

The aims of the LEP (clause 2) are:

(a) To provide guidelines in accordance with the objects of the EP&A Act for orderly and timely development and management of land use in the City;

(b) To enhance individual and community well-being and welfare by following a path of economic development that does not impair the welfare of future generations; &

(c) To work towards an ecologically sustainable future through the proper management, development, protection, restoration, enhancement, enhancement and conservation of the environment of the City.

9.15.2 Objectives of the LEP

The objectives of the LEP and assessment of compliance of the proposed development with these objectives are assessed as follows.

Objectives of the Plan		Assessment of Compliance
(a)	To provide for a variety of residential life styles.	About 300 permanent dwellings are provided with a range of housing typologies comprising detached houses and medium density multi-unit developments. The dwellings are designed to be integrated within the tourist development, with its overall design and siting to reflect the spiritual and aesthetic character of the development. The dwellings are to support the religious and tourist uses of the site and are developed for permanent occupancy.
(b)	To ensure space is provided for community services and facilities as well as recreational activities.	The Town Centre Precinct comprises a small commercial, retail, professional and community services centre located at the heart of the development to serve the local needs of the tourist and residential complex. Within the development are an educational academy and a Traditional Chinese Medicine Centre. Recreational activities are provided by its tourist recreational facilities and walking trails.

Objectives of the Plan		Assessment of Compliance
(c)	To enable a variety of commercial uses while consolidating existing commercial centres.	Limited commercial and retail facilities are provided, only to specifically service the needs of the tourist and residential users and occupants.
(d)	To enable accommodation of industrial uses.	Not provided within the development.
(e)	To ensure that the Council gives due regard to the effect of natural hazards upon development are not applicable.	Not applicable.
(f)	To ensure that development and expansion of coastal villages are sympathetic to the coastal environment.	No development is proposed to be sited within a sensitive coastal location.
(g)	To maintain the agricultural use of prime crop and pasture land by minimising development which has an adverse and irreversible impact on the lands agricultural potential.	Herbal and domestic scale market gardens are provided within the development.
(h)	To protect heritage items.	Comberton Grange Homestead is listed as an item of local heritage significance. Development within this precinct is sensitively integrated with the heritage of the homestead. Development does not occur on land identified as having Aboriginal cultural and archaeological significance.
(i)	To provide a safe and efficient transport network connecting land use activities inside and outside the City.	A safe road network is provided from the development to existing urban centres.
(j)	To encourage the provision of adequate community facilities and services.	The Town Centre Precinct comprises a small commercial, retail, professional, and community services centre located at the heart of the development to serve the local needs of the tourist and residential complex.
(k)	To ensure the social amenity and well-being of the City.	The development will augment the social amenity of the Shoalhaven LGA.
(l)	To provide the most appropriate public utility services in the most effective manner.	Public utility services will be provided an effective manner.
(m)	To encourage appropriate forms of tourism which are sensitive to and compatible with the natural and cultural environments of the City.	The aim of the project is to develop a high quality tourist resort based on the religious philosophies and lifestyle of the Shaolin Buddhist order within a tranquil rural setting. The development is an integrated tourist and residential development with a community title under the ownership of the Shaolin Temple Foundation (Australia) Ltd. The development will create a unique tourist attraction with an international appeal, situated within a tranquil setting.

Objectives of the Plan		Assessment of Compliance
(n)	To maintain the rural character of non-urban areas.	The rural character of the site is maintained in environmentally sensitive areas.
(o)	To ensure the protection of important natural and cultural environments.	Important natural and cultural environments will be protected.
(q)	To ensure that the potential for mining extractive and mineral resources, where appropriate, is not compromised by other forms of development.	The mining potential of the quarry will not be compromised by the development.
(r)	To ensure that development achieves the water quality or river flow objectives of ground water, rivers, estuaries, wetlands and other water bodies.	The development will ensure that the water quality of natural water bodies is maintained through water sensitive urban design measures.
(s)	To avoid, mitigate or remedy the adverse effects of development on the environment.	No development is proposed within areas of Ecological Sensitivity (as identified in the Shoalhaven LEP), in areas of declared critical habitats under the *Threatened Species Conservation Act 1995*, within Part 7A of the *Fisheries Management Act 1994*, or in areas of EECs. The riparian corridors along creek lines will be maintained.
(t)	To minimise energy consumption and promote energy efficient design and appliance use.	The proposed development is designed with ESD measures.
(u)	To minimise potable water consumption and promote wastewater reuse as well as water saving designs and fittings.	The proposed development is designed with ESD measures.
(v)	To minimise waste generation and promote recycling & reuse of materials.	The proposed development is designed with ESD measures.
(w)	To minimise the clearing of native vegetation especially those local species which are poorly represented in conservation reserves.	The development is sensitive to ecological constraints of the site.

9.15.3 Land use zoning

Under Shoalhaven LEP 1985 (Figure 9.9), the subject land is zoned:

- **Rural 1(d) – General Rural** over the majority of the site, with:
  - the minimum lot size for land within this zone is 40 hectares; and
  - the zoning allowing for uses such as tourist facilities, educational establishments, institutions and dwellings.

- **Rural 1(e) – Extractive and mineral resources** on the quarry site, with:
  - permissible uses to include agriculture, dwellings and buildings incidental to or subsidiary to agriculture, extractive industries, forestry, generating works, home activities, animal husbandry, mines, roads, roads, turf farming and utility installation.

- **Environmental Protection 7(a) – Ecology**, with
  - permissible uses to include: agriculture, aquaculture, bed and breakfast accommodation, dwelling houses, roads, structures for educational and recreational purposes, utility installations.

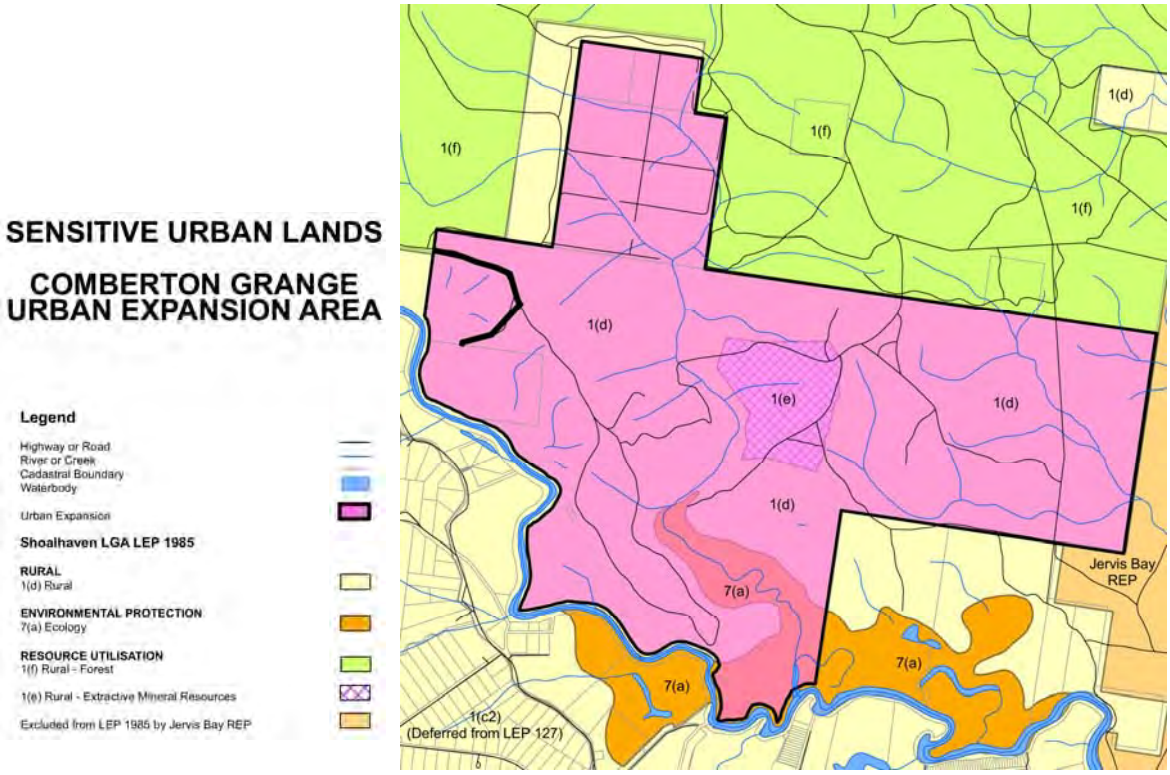

Figure 9.9: Zoning map for Comberton Grange indicating its classification as Sensitive Urban Land (*source: DoP*)

Assessment of permissibility of the land use for the subject development under the LEP is outlined as follows:

Land use zone	Zoning requirements	Assessment of Compliance
Rural 1(d) – General Rural over the majority of the site	**Objectives of the zone:** (d) to provide opportunities for a range of rural land uses and other development; (e) to recognise the potential for high intensity bushfire over wide areas of the zone and to ensure that development does not lead to significant risks of life or property from bush fire or to the implementation of bushfire mitigation measures which will have a significant environmental impact; (f) to ensure that wherever possible, the location, design and management of development is consistent with: (i) the protection of important natural and cultural environments; (ii) the conservation of renewable natural resources such as forests, prime crop and pasture land;	Whilst the proposed development complies with the objectives of the land use zone, rezoning of the land is required to enable the development of detached dwellings on less than 1 dwelling/ 40 hectares and to enable the development of multi-unit dwellings, residential flat buildings and retail facilities.

Land use zone	Zoning requirements	Assessment of Compliance
	(iii) the maintenance of opportunities for economic development of important extractive resources; (iv) minimising conflict between land uses; and (v) any plans for public infrastructure provision or management. **Permissible uses:** Minimum lot size for a dwelling house within this zone is 40 hectares. The zoning does not prohibit uses such as tourist facilities, educational establishments, institutions and detached dwellings. However, it does prohibit cluster/ multi-unit housing, residential flat buildings and shops. ▪ *Cluster housing* is defined by the LEP as "3 or more detached dwellings on a single allotment of land"; & ▪ *Residential flat building* is defined as "a building containing 3 or more dwellings".	
Rural 1(e) – Extractive and mineral resources on the quarry site	**Objectives of the zone:** To maintain the potential for economic extraction of hard rock, mineral, sand or gravel resources. **Permissible uses:** Permissible uses include agriculture, dwellings & buildings incidental or subsidiary to agriculture, extractive industries, forestry, generating works, home activities, animal husbandry, mines, roads turf farming and utility installation. The LEP identifies a discretionary buffer area around the quarry. Any development that would sterilise the resource that is extracted at the quarry is not permissible.	The proposed development complies with the objectives of the land use zone. Chinese garden pavilions are proposed within this area, encircling the existing dam. These structures are regarded as buildings subsidiary to agriculture (gardens), which complies with the provisions of the LEP. The development will not sterilise the quarry resource.
7(a) – Environmental Protection "A" (Ecology) on the SE portion of the site near Currambene Creek	**Objectives of the zone:** (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; & (e) to protect and enhance water quality in the catchment. **Permissible uses:** Permissible uses include agriculture, aquaculture, bed and breakfast accommodation, dwelling houses, roads, and structures for educational and recreational purposes, utility installations.	The proposed development complies with the objectives of the land use zone. This area is outside the Independent Panel's recommended development area. Refer to Figure 9.1 of this report. No development is proposed within this ecologically sensitive zone, except for potential roads, minor structures for educational and recreational purposes and utility installations.

In summary, tourist and commercial development and educational facilities are permissible under the controls of the LEP. However, the proposed development uses that are not permissible under the Plan within the **Rural 1(d) – General Rural *zone***, are:

- detached dwellings on less than 1 dwelling/ 40 hectares;
- multi-unit dwellings, such as cluster housing;
- residential flat buildings; and
- shops.

Rezoning of land zoned **Rural 1(d) – General Rural** zone is sought to enable detached dwellings on subdivisions of less than 40 hectares, multi-unit dwellings, residential flat buildings and shops.

9.15.4 Subdivision of land (Part 3, clause 11, SLEP)

Subdivision of the site is permissible within the LEP for zones which are applicable to the subject land 1(d), 1(e), and 7(a). Subdivision is limited to allotments of not less than 40 hectares.

However, consent for subdivision for the purpose of a tourist facility that will create more than one allotment of less than 40 hectares may be granted if:

- the subdivision is a subdivision of land under the *Community Land Development Act 1989*; and
- all lots created by the subdivision are in the same community, precinct or neighbourhood scheme within the meaning of the *Community Land Development Act 1989* (Part 3, clause 4).

Assessment of compliance:

Community title for subdivision is sought for this development, which will enable for smaller allotments to be created.

9.15.5 Dwelling houses (Part 3, clause 14, SLEP)

A dwelling house may, with consent, be erected on zone 1(d) land, on land of not less than 40 hectares (clause 14 (2). However, a dwelling house on the above zones may, with consent, be erected on an allotment created for the purpose of a tourism facility, for the purpose of a residence that is integrated to the operation of the tourist facility (clause 14 (2A)).

Assessment of compliance:

Rezoning is required to enable dwelling homes to be constructed on smaller allotments.

9.15.6 Heritage (Part 3, clause 20E, SLEP)

Development on land on which a heritage item is located, within the vicinity of a heritage item, or within a heritage conservation area, must be assessed on the acceptability of its impact on the heritage significance of the relevant heritage item or heritage conservation area. Aboriginal heritage, heritage conservation areas, and archaeological sites must also be taken into consideration.

Assessment of compliance:

Indigenous and non-indigenous (European) heritage assessments have been undertaken for the development on the site. Refer to Sections 8.1 – *Indigenous* H*eritage* and 8.2 – *European Heritage* of this report.

9.15.7 Land of ecological sensitivity (Part 3, clause 21, SLEP)

The Comberton Grange site contains land of ecological sensitivity (Figure 9.10). The objectives of clause 21 and *the adequacy of the measures proposed by the development to avoid, mitigate or remedy any adverse effects of the proposed development ton the ecological values of the land and other land in its vicinity* (clause 21(4)) must be addressed.

Objective of the clause (clause 21(2)) is:

- *to minimise adverse impacts of development on natural features, including flora, fauna, landforms and other physical features; and ecological processes.*

Figure 9.10: Ecologically sensitive land – SLEP 1985 (*source: Shoalhaven City Council*)

Assessment of compliance:

Minimal development will occur on ecologically sensitive land, except for road linkages from development on the former pine plantation site to development along the upper slopes of land facing Currambene Creek. Refer to Section 8.3 – *Ecology* of this report.

9.15.8 Protection of streams (Part 3, clause 23, SLEP)

This clause applies to any perennial water course indicated as a continuous blue line on topographical maps, within rural zones, and for the portion of the site currently zoned Rural 1(d). The objectives of this clause are:

(a) to protect water quality;
(b) to protect aquatic habitats and riparian communities;
(c) to protect and enhance the function of perennial water courses and their associated vegetation communities; and
(d) to protect perennial water courses from erosion and sedimentation.

Assessment of Compliance:

Consent is required for any development within 50m from the centre line of a perennial water course or, where the perennial water course is greater than 20m in width, from the bank of the perennial water course.

Development is limited to 50m from the major water course of Currambene Creek and from minor tributaries of the Georges Creek within the former pine plantation, except for nominal crossings through Georges Creek's tributaries for connections through the site's development areas. Overall, the sites water sources are protected from development.

9.15.9 Steep lands (Part 3, clause 25, SLEP)
This clause applies to land within zone 1(d). The objectives of this clause are:
(a) to protect soils from erosion;
(b) to protect water quality of surface waters; and
(c) to protect the visual amenity.

Assessment of Compliance:
The development will implement erosion measures and water quality management measures to protect the water quality of the creeks.

The development is sensitively integrated within the landscape with minimisation of site coverage of built form on landscapes of visual sensitivity.

9.15.10 Soil, water and effluent management (Part 3, clause 26, SLEP)
This clause states that development for the habitation of land must not be carried out unless arrangements satisfactory to the Council have been made for the provision of water supply, facilities for the removal of sewerage, and for the drainage of stormwater and other surface water from the land. The clause requires that proposed infrastructure system meet the objectives of:
(a) economic feasibility and practicality in terms of design, installation and maintenance;
(b) protection of surface water;
(c) protection of public health;
(d) protection of ground water;
(e) encouragement of the utilisation of wastewaters as a resource rather than a waste for disposal;
(f) protection of community amenity.

Assessment of Compliance:
Proposed infrastructure systems will comply with the stated objectives. Refer to Section 8.8 – *Infrastructure Services* of this report.

9.15.11 Development on acid sulphate soils (Part 3, clause 27, SLEP)
This clause applies to land identified on Council's Acid Sulphate Soil Risk Map (Figure 9.11). Consent is required for development which involves or is likely to involve, through drainage, earthworks, or any other means, the exposure to the atmosphere of any part of soils which contains iron pyrites within land to which this clause applies.

Development must ensure that measures can and will be taken to avoid or mitigate the actual or potential contamination of waterways in the vicinity of the land concerned by acid from acid sulphate soils.

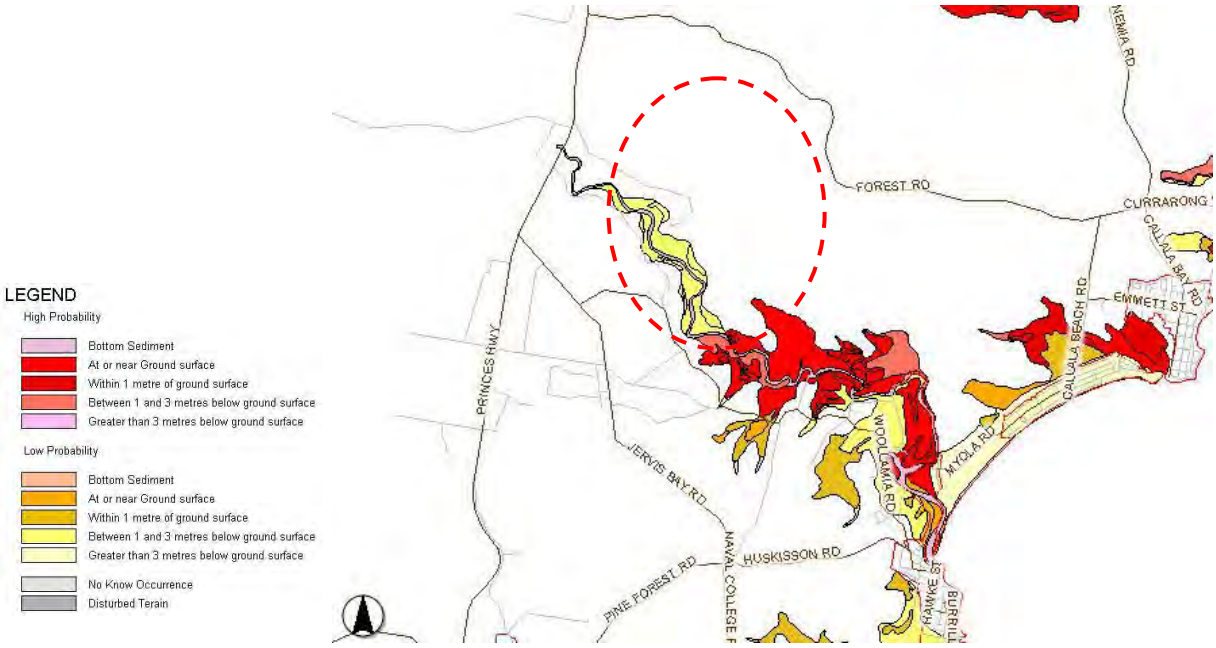

Figure 9.11: Acid sulphate soils – SLEP 1985 (*source: Shoalhaven City Council*)

Assessment of compliance:

Acid sulphate soils occur along the banks of Currambene Creek and within land zoned 7(a) – Environmental Protection "A" (Ecology). Development does not occur within land prone to acid sulphate soils. Refer to section 8.5 – *Acid sulphate soil* of this report.

9.15.12 Development on Bushfire Prone Land (Part 3, clause 28, SLEP)

The consent authority must not grant consent to the carrying out of development on bush fire prone land that:

(a) the development may have a significant adverse effect on the implementation of:
  (i) any strategies for bush fire hazard reduction or risk management adopted by the Council, or
  (ii) any relevant provisions of the *Act or the Rural Fires Act 1997*, and

(b) the development may constitute a significant threat to the lives of residents, visitors or emergency services personnel, and

(c) the development may give rise to an increased demand for emergency services during bush fire events that will result in a significant decrease in the ability of the emergency services to effectively control major bush fires.

The consent authority must be satisfied that adequate measures are proposed to avoid or mitigate the threat from bush fire, having regard to:

(a) the siting of the development, and

(b) the design of, and the material used in, any structures involved in the development, and

(c) the clearing of vegetation, and

(d) the provision of asset protection zones, landscaping and fire control aids.

Before deciding to grant consent to any development on bush fire prone land, the consent authority must have regard to the requirements set out in *Planning for Bushfire Protection*.

Assessment of Compliance:
The development takes into consideration the bushfire requirements for the site. Refer to Section 8.7 – *Bushfire* of this report

9.15.13 Development on Flood Liable Land (Part 3, clause 29, SLEP)
The consent authority must not consent to the carrying out of development on flood liable land. The authority in considering an application on such land must assess:

(a) the likely levels, velocity, sedimentation and debris carrying effects of flooding;
(b) the structural sufficiency of any building the subject of the application and its ability to withstand flooding;
(c) the effect which the development, if carried out, will or is likely to have on the flow characteristics of floodwaters;
(d) whether or not access to the site will be possible during a flood; and
(e) the likely increased demand for assistance from emergency services during a flood.

Assessment of Compliance:
No development is proposed on flood prone land. Refer to Section 8.9 – *Flooding* of this report

9.15.14 Height of buildings (Part 3, clause 29, SLEP)
A building must not be erected to a height greater than 2 storeys, including any parking space, above natural ground level, without the consent of the Council.

Assessment of Compliance:
The development seeks to vary this requirement of the SLEP.

9.15.15 Buffers (Part 3, clause 35A, SLEP)
Clause 35A of the LEP identifies a buffer area around the quarry (Figure 9.12), with the requirement that development on the land must not sterilise the resource that is extracted at the quarry. The buffer area is discretionary and development may occur within this area, but must not inhibit future mining of the quarry.

As the quarry comprises dolerite and sandstone resources, the Department of Primary Industry has advised that:

- The quarry is identified as being regionally significant due to the importance of the resource;
- There is a S117 Direction that DPI instrumented that requires Council to have regard for the resource in any rezoning;
- Clause 35 of Shoalhaven LEP 1985 requires that Council must not grant consent for development that would lead to sterilisation of the quarry resource;
- A buffer zone of approximately 1000m in diameter exists as a control in the LEP; and
- Most of the proposed development is to be on land outside the buffer.

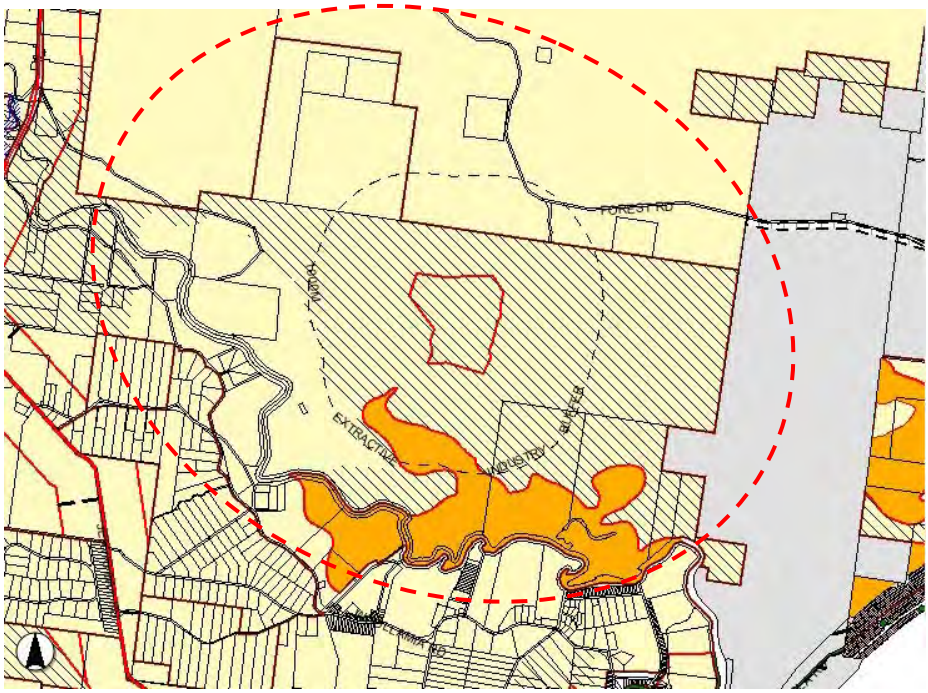

Figure 9.12: Buffer zone around quarry (*source: Shoalhaven City Council*)

Assessment of compliance:
Development proposed within the buffer zone will be limited and should not limit future mining of the quarry.

9.15.16 Rezoning application

The following proposed development uses are not permissible under the Shoalhaven LEP 1985, within the **Rural 1(d) – General Rural zone**, of:

- detached dwellings on less than 1 dwelling/ 40 hectares;
- multi-unit dwellings, such as cluster housing;
- residential flat buildings; and
- shops.

Furthermore, within the 1(d) zone, subdivision of land and erection of a dwelling house is not permitted on allotments of less than 40 hectares (Clause 11 and 14, SLEP). The proposed development additionally seeks to vary the height control of the LEP as contained in clause 29.

The Minister for Planning, under **Clause 75R(3A) – Application of other provisions of Act** of the EP&A Act 1979 can rezone the subject land under the Part 3A process to uses proposed by the development. Under the clause:

(3A) The Minister may, by order published in the Gazette, amend an environmental planning instrument to authorise the carrying out of any of the following development (or to remove or modify any provisions of the instrument that purport to prohibit or restrict the carrying out of any of the following development);

a) development that is an approved project;

b) development that is a project for which a concept plan has been approved (whether or not approval for carrying out the project or any part of the project is subject to this Part).

Shoalhaven City Council has additionally resolved and sought the Department of Planning's approval (30 October 2007) to prepare a Draft LEP for to rezone the subject site to accommodate the required (non-complying) land uses of the development in accordance with the recommendations of the *South Coast Regional Strategy*.

9.16 Draft Shoalhaven Local Environmental Plan 2009

A new draft LEP is being prepared for the Shoalhaven local government area which will replace the existing Shoalhaven LEP 1985.

9.16.1 Land use zoning

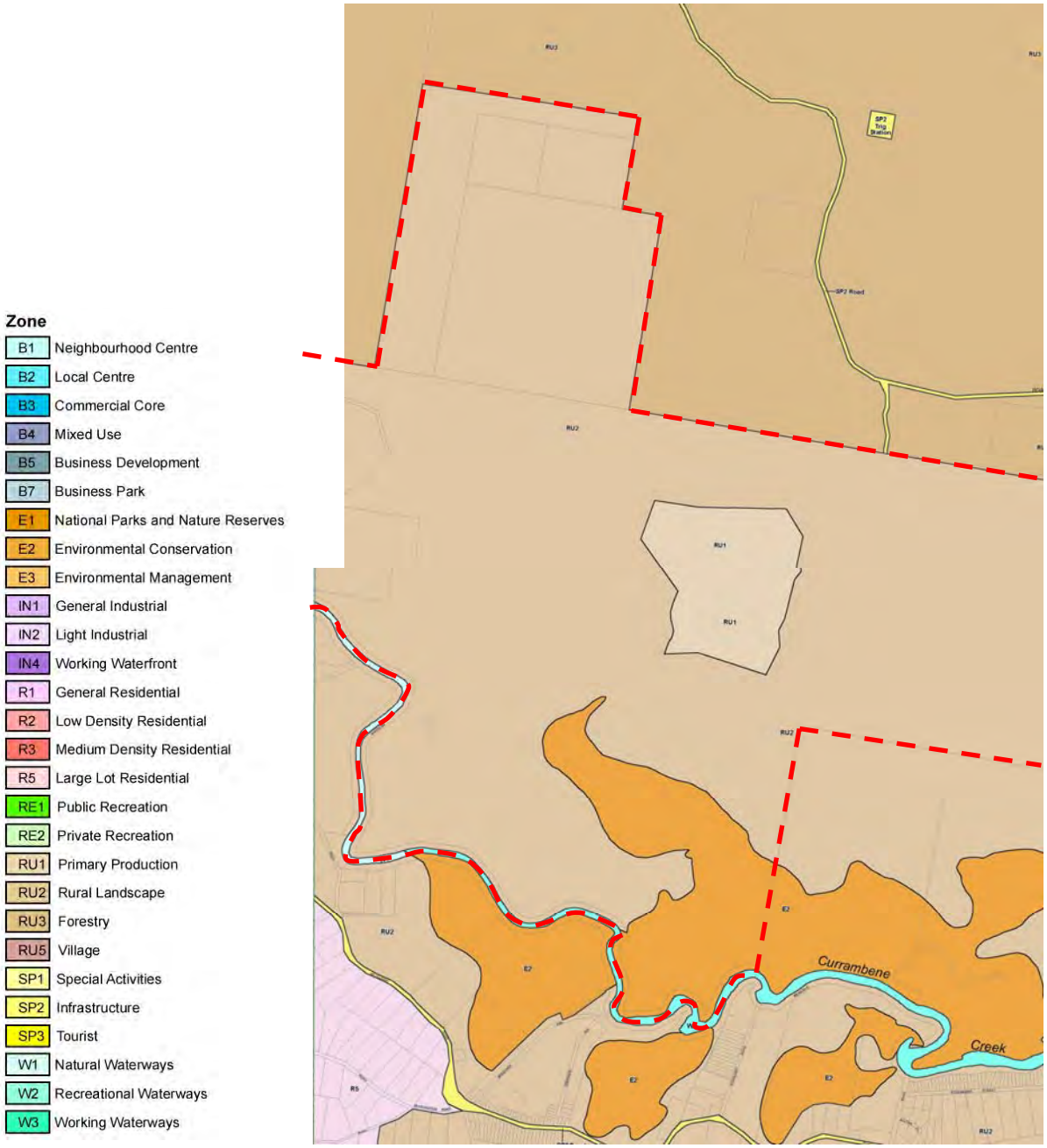

Figure 9.13: Land Use Zoning Map – Draft SLEP 2009 (*source: Shoalhaven City Council*)

Under Draft Shoalhaven LEP 2009, the proposed land uses for the site (Figure 9.13) are as follows:

- **RU2 Rural Landscape** over the majority of the site (currently zoned Rural 1(d) – General Rural under SLEP 1985;
- **RU1 Primary Production** over the quarry site (currently zoned Rural 9(e) – Extractive and mineral resources under SLEP 1985); and
- **E2 Environmental Conservation** over the SEPP 14 – *Coastal wetlands* at the south-eastern portion of the site adjacent to Currambene Creek (currently zoned 7(a) Environmental Protection "A" (Ecology) under SLEP 1985).

RU2 Rural Landscape

Location:	Over the majority of the site.
Objectives:	The objectives of the zone are: ▪ To encourage sustainable primary industry production by maintaining and enhancing the natural resource base; ▪ To maintain the rural landscape character of the land; ▪ To provide for a range of compatible land uses, including extensive agriculture.
Permissible uses – permissible with consent:	Land uses applicable to the proposed development include: Community facilities, Dwelling houses, Entertainment facilities (in conjunction with tourist accommodation), Environmental facilities, Environmental protection works, Farm buildings, Food and drink premises, Information and educational facilities, Markets, Places of public worship, Recreational areas, Recreational facilities (indoor, outdoor & major), Roads, Tourist and visitor accommodation, Water recreation structures, Water supply systems.
Prohibited land uses:	To include: Hotel and motel accommodation, Pubs, Serviced apartments, and uses not identified as permissible, such as Educational establishments, Medical centres, Business, Retail and Office premises, Residential flat buildings, Residential care facilities and Shop top houses.
Allotment size:	▪ Minimum lot size per dwelling: 40 hectares. ▪ Does not apply to allotments in a strata plan or community title scheme.

RU1 Primary Production

Location:	Within the quarry precinct at the central-eastern portion of the site.
Objectives:	The objectives of the zone are: ▪ To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.

	▪ To maintain the rural landscape character of the land. ▪ To provide for a range of compatible land uses, including extensive agriculture.
Permissible uses with consent:	Land uses applicable to the proposed development include: Community facilities, Dwelling houses, Educational establishments Extensive agriculture and home occupation, dwelling houses, extractive industries and open cut mining, environmental protection works, farm buildings and roads
Prohibited land uses:	To include: Hotel and motel accommodation, Pubs, Serviced apartments.

E2 Environmental Conservation

Location:	At the south-eastern portion of the site adjacent to Currambene Creek.
Objectives:	The objectives of the zone are: ▪ 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 these values.
Permissible uses with consent:	To include: Bed and breakfast accommodation, Dwelling houses, Environmental facilities, Environmental protection works, Recreation areas, Sewerage systems, Water recreation structures, Water supply systems.
Prohibited uses:	To include: Business premises, hotel and motel accommodation, industries, multi dwelling housing, recreation facilities (major), residential flat buildings, restricted premises, retail premises, senior housing, service stations, warehouse or distribution centres.

Educational establishments (permissible in RU1), Medical centres, Business premises, Retail premises, Office premises, Neighbourhood shops, Residential flat buildings, Residential care facilities, Shop top housing are not permissible in the RU2 Rural Landscape zone which covers the proposed development area of the site.

Concurrence by the Director-General will be required (under clause 4.6 of Draft SLEP 2009 – section 9.16.7 of this report) to enable the above uses to be permitted within the RU2 zone.

9.16.2 Minimum subdivision lot size (clause 4.1 of Draft SLEP 2009)

The objectives of the subdivision clause are:

(a) to ensure that subdivision is compatible with and reinforces the predominant or historic subdivision pattern and character of an areas;

(b) to minimise any likely impact of subdivision and development on the amenity of neighbouring properties;

(c) to ensure that lot sizes and dimensions are able to accommodate development consistent with relevant development controls.

The clause states that allotments resulting from a subdivision of land should not be less than the minimum size shown on the Lot Size Map (which is minimum 40 hectares per allotment (Figure 9.14). However, **the minimum allotment size does not apply to subdivision of individual lots in a strata plan or community title scheme**.

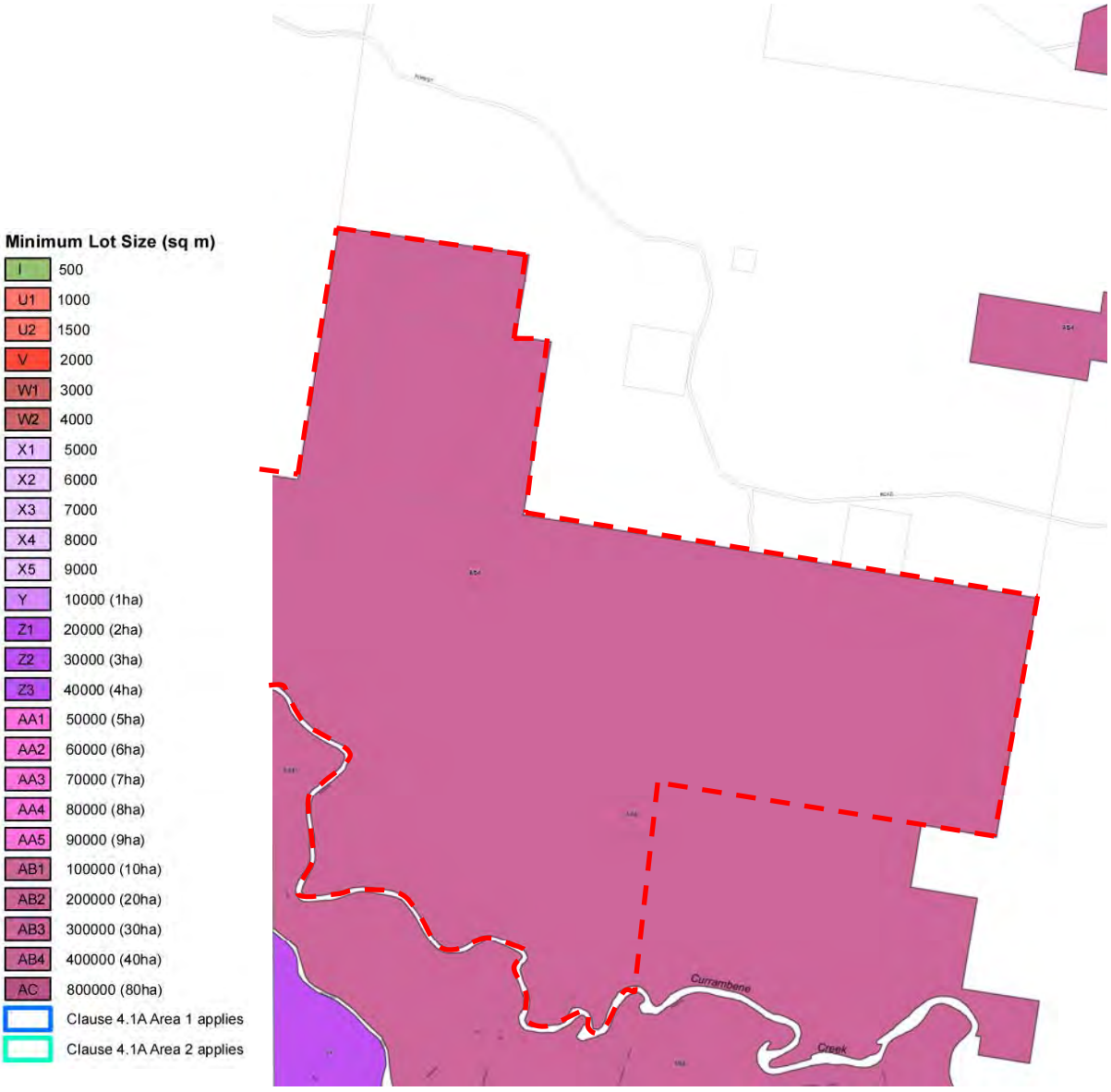

Figure 9.14: Lot Size Map – Draft SLEP 2009 (*source: Shoalhaven City Council*)

9.16.3 Subdivision of land zoned RU1, RU2 or E3 (clause 4.2A of the Draft SLEP 2009)

This clause in the Draft LEP states that consent for a subdivision may be granted for the **purpose of a tourist and visitor accommodation** that will create more than one allotment of less than 40 hectares if:

(a) the subdivision is a subdivision of land under the Community Land Development Act 1989; and

(b) all lots created by the subdivision are in the same community, precinct or neighbourhood scheme within the meaning of the Community Land Development Act 1989.

However, this does not apply to the erection of dwelling houses on the allotments.

9.16.4 Erection of dwelling houses on land in certain zones (clause 4.2C of Draft SLEP 2009)

This clause applies to the zones that apply to the site of RU2 Rural Landscape, RU1 Primary Production and E2 Environmental Conservation.

The clause states that the erection of a dwelling house on a lot in the above zones on which no dwelling house has been erected unless the lot is of the minimum lot size specified in the Lot Size Map (being 1 dwelling/ 40 hectares). The ability of the allotment (for a dwelling) to be less than the required area is if a lot on which a dwelling house is permissible was created before the commencement of the LEP; or if the subdivision obtained development consent (or equivalent) was granted and on which the erection of a dwelling house would have been permitted before the commencement of the LEP.

9.16.5 Height of buildings (clause 4.3 of Draft SLEP 2009)

The objectives of the height of buildings clause are:

(a) to ensure that buildings are compatible with the height, bulk and scale of the existing and desired future character of a locality;

(b) to minimise visual impact, disruption of views, loss of privacy and loss of solar access to existing development; and

(c) to ensure that the height of buildings on or in the vicinity of a heritage item or within a heritage conservation area respect heritage significance.

Under Draft SLEP 2009, the height of a building on the site is not to exceed 11m.

The Illawarra Regional Environmental Plan states that any development over 11m requires the concurrence of the State Government. The Illawarra REP applies to all land in the Shoalhaven LGA other than land to which Jervis Bay REP applies. The subject site is located within the boundary of the Jervis Bay REP (refer to section 9.4 of this report). There is no State Government concurrence for any height of proposed buildings under the Jervis Bay REP.

9.16.6 Floor Space Ratio (clause 4.4 of Draft SLEP 2009)

The objective of the FSR clause is:

(a) to ensure that buildings are compatible with the bulk and scale of the existing and desired future character of the locality.

The maximum FSR for a building on the site is not to exceed the FSR on the Floor Space Ratio Map. The site is not within the Floor Space Ratio Map and therefore no FSR applies to the site.

9.16.7 Exceptions to development standards (clause 4.6 of Draft SLEP 2009)
Concurrence by the Director-General is to be obtained for development that contravenes the development standards of this LEP.

9.16.8 Biodiversity (clause 7.5 of Draft SLEP 2009)
The clause applies to land identified under the Draft LEP as Natural Resource Sensitivity – Biodiversity Map (Figure 9.15).

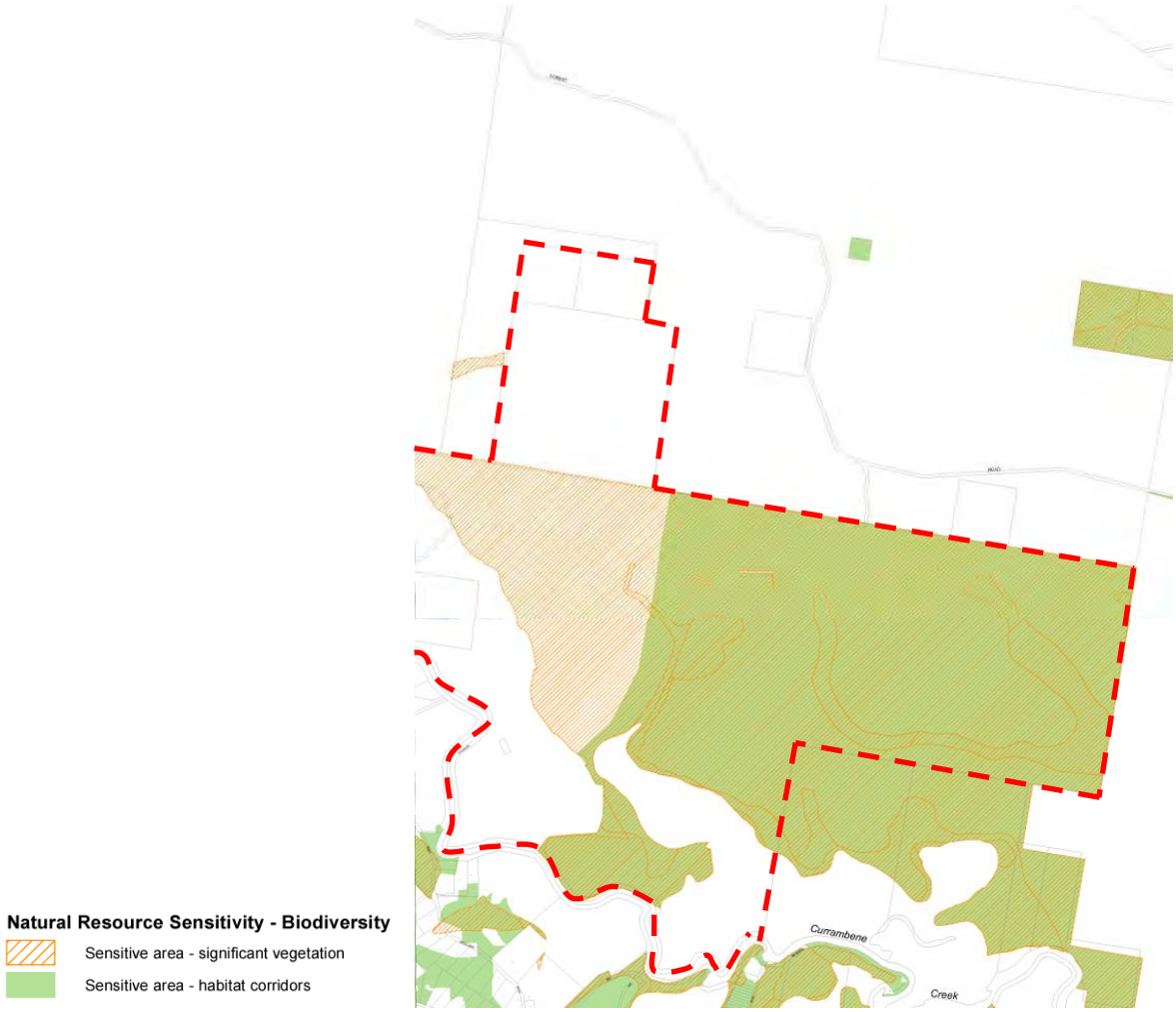

Figure 9.15: Natural resource sensitivity – Biodiversity Map – Draft SLEP 2009 (*source: Shoalhaven City Council*)

The objectives of this clause are:
(a) Protecting native flora and fauna;
(b) Protecting the ecological processes necessary for their continued existence; &
(c) Encouraging the recovery of native flora and fauna, and their habitats.

Development on sensitive land must consider any potential adverse impact of the proposed development on: (clause 7.5(3))

- a native ecological community;
- a regionally significant species of flora, fauna or habit; and
- habitat elements providing connectivity.

The proposed development must be: (clause 7.5(4))

- Sited, designed and managed to avoid any potential adverse environmental impact;
- Sited and designed to minimise that impact, where an impact cannot be avoided; &
- Managed to best minimise that impact, where an impact cannot be minimised.

Assessment of compliance

The proposed development is predominantly on land not identified as "sensitive areas", except internal connecting roads.

9.16.9 Water (clause 7.6 of Draft SLEP 2009)

The clause applies to land identified under the Draft LEP as Natural Resource Sensitivity – Water Map (Figure 9.16) and on land within 50m of the bank of a natural water body within the Sensitive Area of the map.

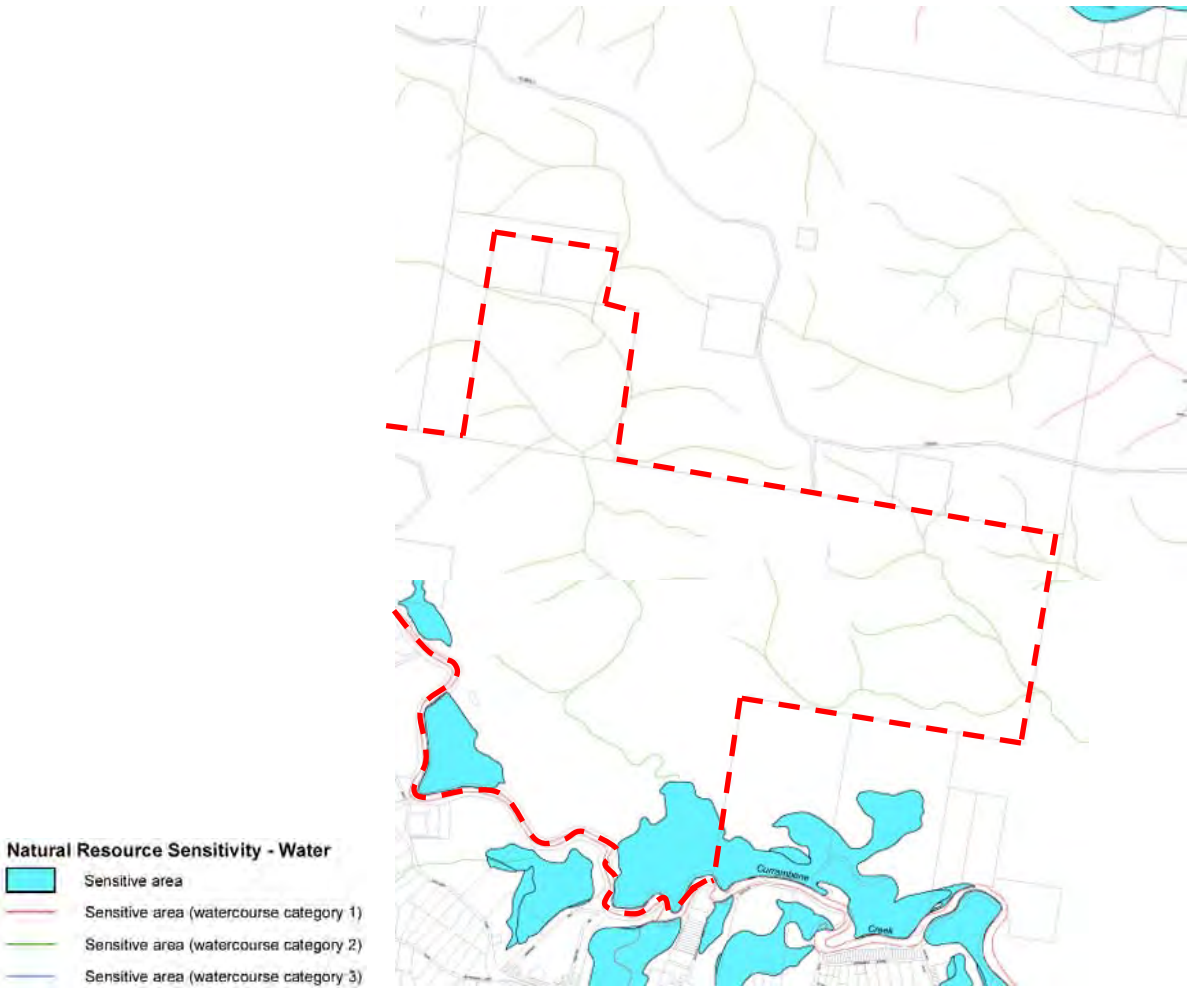

Figure 9.16: Natural resource sensitivity – Water Map – Draft SLEP 2009 (*source: Shoalhaven City Council*)

The objectives of this clause are to protect:
(a) water quality;
(b) natural water flows;
(c) stability of the bed and banks of waterways; and
(d) groundwater systems.

Development on sensitive land must consider any potential adverse impact of the proposed development on the: (clause 7.6(3) and (4))
- natural flow regime;
- water quality of receiving waters;
- waterway's natural flow paths; and
- stability of the waterway's bed, shore and/ or banks;
- characteristics of the groundwater present in the area;
- potential risk of groundwater contamination from the proposed development including potential contamination from on-site storage or disposal of solid or liquid waste and chemicals; and
- potential adverse cumulative impacts on groundwater, including the impacts on nearby groundwater extraction for potable water supply or stock water supply.

The proposed development must be: (clause 7.6(5))
- Sited, designed and managed to avoid any potential adverse environmental impact;
- Sited and designed to minimise that impact, where an impact cannot be avoided; &
- Managed to best minimise that impact, where an impact cannot be minimised.

Assessment of compliance
The proposed development does not intrude on the water sensitive areas with a development curtilage away from watercourses.

9.16.10 Scenic protection (clause 7.7 of Draft SLEP 2009)
The site is not within the natural Resource Sensitivity – Scenic Protection Map.

Local (Shoalhaven City Council) development controls currently relate to the project area, its surrounds and the Shoalhaven local government area. Whilst the proposed development is not required to comply with the development guidelines of this Development Control Plan as it is assessed as a Part 3A development, the relationship of the proposal to local planning controls and development guidelines should be considered for its contextual relationship to surrounding land. These are non-legal documents which support the LEP. Assessment of the proposed development for compliance with Shoalhaven's DCPs is as follows:

9.17 Shoalhaven Subdivision Code (DCP No. 100)
DCP No. 100 applies to land subdivisions within the City of Shoalhaven.

9.17.1 Aims of the Plan
The aims of the Plan are to:
- Encourage high quality urban design and residential amenity;
- Set appropriate environmental criteria for subdivision development;
- Provide a comprehensive design approach for all land use subdivisions;
- Provide for the ecologically sustainable subdivision of land.

9.17.2 Design Elements

DCP No. 100 sets out Design Elements for the subdivision of land. The objectives of the specific design elements are as follows:

1. Site analysis urban

Objectives:

- To provide a site layout that provides a pleasant, attractive, manageable and resource efficient living environment;
- To provide for the ecologically sustainable subdivision of land.

Compliance of the development:

The development is sited to consider the natural landscape and topographical features of the site and its drainage patterns, with development sited to optimise orientation for ESD design.

2. Residential neighbourhood design

Objectives:

- To provide safe and interesting residential environment that meets the diverse and changing needs of the community and offer a wide choice in good quality housing;
- To provide good internal and external access for residents and minimise the impact of through traffic;
- To provide quality public assets requiring minimum maintenance cost;
- To encourage walking and cycling; and
- To minimise energy consumption.

Performance criteria:

Performance criteria to be considered in the design of the site include:

- Subdivision layout responding to site characteristics, settings, landmarks, views and open space network;
- Creation of neighbourhood identity;
- Street networks that provide a high level of internal accessibility and good external connections for all modes of transport;
- Street layouts and lot density for ESD considerations with variety of housing typologies;
- Layout retains significant vegetation and habitat areas, incorporates natural features, minimises soil erosion and avoids development on flood prone land;
- Retention of a riparian buffer zone along waterways of minimum width of 20m from the edge of the waterway banks or 20m from the centre line where banks are not defined;
- Layout enhances personal safety and minimises potential for crime through passive surveillance, with safe and attractive pedestrian network.

Compliance of the development:

The development observes the above performance criteria with a neighbourhood identity created within the Town Centre Precinct and individual residential precincts to create smaller neighbourhood communities. The development is sited the minimum of 20m from watercourses and up to 50m from more major watercourses where mature woodland is to be retained.

3. Major and local street networks

Objectives:

- To provide major street networks for vehicles, public transport, pedestrians and cyclists that:
  - are integrated;
  - are cost effective; and
  - minimise the impact of traffic on the residential environment.
- To create street networks in which the function of each street is clearly defined, providing acceptable levels of access, safety and convenience for all users and minimise environmental impact.

Performance criteria:

Performance criteria include:

Mode choice:

- Provision for various modes of public and private transport.
- Street network facilitates walking and cycling.

Urban design character:

- Street network takes account of topography, vegetation, site assets, views, orientation for efficient solar access for dwellings, natural drainage and open space systems.

Safety and amenity:

- Traffic generated by a development is within the acceptable capacity of the roads.

Cost effectiveness

- Streets widths and lengths optimise the cost effectiveness of the street network.
- Network provides for the cost effective provision of public utilities.

Compliance of the development:

The development is designed to comply with the above requirements and responds to the topographical and natural features of the site, with retention of areas of environmental sensitivity. Streets comply with the minimum widths.

4. Pedestrian and cyclist facilities

Objective:

- The design of the street network should encourage walking and cycling.

Compliance of the development:

The design of street network accommodates vehicle, pedestrian and cyclist use. In local streets, vehicular and cyclist use is integrated, whilst in collector streets, these facilities are separated. The use of small buggies is promoted in this development to reduce traffic speed and to encourage a greater ESD mode of travel.

5. Public transport

Objective:

- To increase opportunities for choice in mode of transport and provide cost effective and energy efficient public transport services that are accessible and convenient to the community.

Compliance of the development:
Whilst the density will not generate the demand for public transport, the use of coaches to transport tourists and small golf carts within the site are promoted.

6. Public open space

Objective:

- To provide, where appropriate, public open space that meets user requirements for outdoor recreational social activities and for landscaping that contributes to the identity and environmental health of the community.

Compliance of the development:
Public open space are provided within the development and integrated within the design of each precinct.

7. Street design

Objective:
To provide for streets that:

- fulfil their designated functions within the street network;
- accommodate public utility services;
- accommodate drainage systems; and
- create a safe and attractive environment.

Performance criteria:
Residential streets and road types design widths:

	Carriageway width	Verge width	Street reserve width
Access street	6m	4m	16m
Local street	7-9m	4.5m (with footpath of 1.2m within verge)	18m
Laneway	3.5-5	1m	7m
Collector street	7-9m	4.5m (with footpath of 1.2m within verge)	20m

Compliance of the development:
The development complies with the above requirements with cycleways integrated within collector ring road.

8. Utility services

Objective:

- To ensure that residential areas are adequately serviced with sewerage, water, fire fighting, electricity, street lighting and communication services, in a timely, cost effective, coordinated and efficient manner that supports sustainable development practices.

Compliance of the development:
The development will be designed to high ESD standards to reduce the capacity of infrastructure services into the site.

9. Stormwater drainage

Objectives:

- To provide a system that takes into account the whole of life-cycle costs and minimise nuisance flooding;
- To reduce localised flooding to a level which adequately protects the community;
- To minimise the risk of traffic accidents by reducing the contributing factor of water on roads in a minor storm event;
- To have regard to the principles of Water Sensitive Urban Design.

Performance criteria:

Performance criteria to be considered are:

- Subdivision design and layout provides for adequate site drainage.
- **Floor levels**: Habitable floor levels shall be 300mm above the 1 in 100 year ARI in flood storage areas and 500mm in floodways. This shall include roads where they are used as overflow paths.
- **Bridges**: All bridges are to be designed for a 1 in 100 year ARI and checked for effect of probable maximum flood level. An approach road to the bridge may have a lower standard of level.
- **Detention basins**: Should be based on the 1 in 100 ARI storm.
- **Inter-allotment drainage**: to be at least 0.5m from the lot boundary and contained within a drainage easement of minimum 1m wide. Drainage pits are to be located at all changes of direction and at a maximum spacing of 60m.

Compliance of the development:

The development will be designed to the above performance criteria avoid flood prone areas.

10. Stormwater quality management

Objectives:

- To ensure that existing downstream systems are not adversely affected and ensure no net increase in pollution levels discharging from the development;
- The interception and treatment of pollutants through the use of appropriate water quality control measures prior to discharge to receiving waters, including wetlands, lakes and ponds;
- The drainage system optimises control of any accumulation of silts and controls blockages by debris of inlet structures and pipes;
- The design and construction of water quality control facilities will be undertaken to the requirements of Council and relevant authorities;
- To have regard to the principles of Water Sensitive Urban Design.

Compliance of the development:

The proposed development will adopt Water Sensitive Urban Design strategies and implement measures to ensure downstream systems and natural waterways are not adversely affected by the impact of the development.

11. Streetscapes

Objectives:

To provide attractive streetscapes that:

- reinforce the functions of a street;
- enhance the amenity of buildings; and
- are sensitive to the built form, landscape & environmental conditions of the locality.

Compliance of the development:

Streetscapes will be landscaped, lit and accommodate various modes of transport with high quality pedestrian amenity.

12. Allotment layout

Objectives:

- To provide a range of mix of lot sizes to suit a variety of dwellings and household types, with areas and dimensions to meet user requirements;
- To provide lots that are oriented where practicable to enable the application of energy conservation principles;
- To provide lots of sufficient size to protect environmental features and take into account site principles;
- To provide for smaller lots in locations adjacent to neighbourhood centres, public transport stops and adjacent to higher amenity areas.

Performance criteria:

- Standard residential allotment: Minimum 500m^2 of minimum width of 16m and corner lots of minimum 20m width.

Compliance of the development:

The development will predominantly provide for detached dwellings with the ability for smaller lot developments such as townhouses, should the need arise. Medium density dwellings in the form of apartments (serviced) will be provided within the Village Centre.

13. Bushfire mitigation

Objectives:

- To prevent the risk of fire in the immediate vicinity of habitable dwellings by adopting suitable protection measures relating to siting, layout, design and construction techniques, and landscaping;
- To coordinate and establish a system of fire breaks to protect life and property.

Compliance of the development:

The development has been designed in accordance with bush fire prevention measures, setback with Asset Protection Zones between development and bushland.

14. Geotechnical

Objective:

- To ensure efficient and economic subdivision design which will have minimal impact on adjoining properties and provide safe building conditions for development.

Compliance of the development:

The development will be designed to suit the geotechnical requirements of the site.

9.18 Shoalhaven Single Dwellings and Ancillary Structures – Minimum Building Requirements (DCP No. 91)

DCP No. 91 for Single Dwellings and Ancillary Structures applies to all land situated within the City of Shoalhaven.

9.18.1 Aims of the Plan

The key aims of the Plan are to:

- Ensure a high standard of residential development and ancillary structures is achieved throughout the city;
- Ensure that development is sympathetic to the physical constraints encountered on the site;
- Encourage innovative design in residential development which reflects the need to preserve the amenity of the area, whilst having due regard to the physical constraints encountered in these areas;
- Encourage residential development that is ecologically sustainable;
- Ensure that appropriate levels of amenity are achieved, including privacy, over-shadowing and access to sunlight, noise and open space; and
- Set appropriate environmental criteria for energy efficiency, passive solar design, privacy and vehicular access.

9.18.2 Design Elements

DCP No. 91 sets out Design Elements for the design of single dwelling and ancillary structures. The objectives of the specific design elements are as follows:

1. Compatibility with neighbourhood character

Objectives:

- To ensure dwellings and ancillary structures and generally compatible with the scale and bulk of the existing and likely future residential development on adjacent lands;
- To provide their occupants with adequate levels of comfort and amenity;
- To encourage design that ensures the amenity of surrounding properties is properly considered.

Acceptable solutions:

▪ Site coverage:	FSR to not exceed 0.5:1.
▪ Building envelope:	Maximum overall height of 8.5m above natural ground level.
▪ Design and appearance:	Width of garage addressing the street to not exceed 9m or 50% of the length of the frontage, whichever is the lesser; External colours blending in with the surrounding environment; Minimise reflectivity of external metallic surfaces when viewed from a public place or a dwelling.

2. Consideration of impacts of views and visual privacy

***Objectives*:**

- To ensure that impacts on views of residents of existing dwellings are minimised.

3. Energy efficiency and solar access

Objectives:

- To maximise the potential for energy efficiency and conservation in building design;
- To minimise overshadowing impacts of a development on adjoining dwellings;
- To preserve solar access to north facing solar collectors serving adjoining dwellings; e.g. solar hot water panels, photovoltaic cells.

4. Car parking, driveways and site access

Objectives:

- To provide for convenient and accessible on-site car parking for proposed and future residents;
- To provide for accessible driveways and access from the public street to the property;
- To ensure the safety of pedestrians and bicycle riders in proximity to the driveway area.

5. Ancillary structures (garages, carports, sheds, pools, tennis courts, etc.)

Objectives:

- To minimise the impacts of ancillary structures upon the surrounding properties;
- To ensure that residents have access to ancillary buildings and structures that is consistent with domestic needs.

6. Stormwater management

Objectives:

- To ensure stormwater is controlled in a way that minimise nuisance to adjoining properties;
- To set a minimum standard for the collection and management of stormwater on sites;
- To encourage rainwater harvesting of roof water and the incorporation of pervious areas into development proposals to assist deep soil landscaping;
- To prevent litter and sediment from building sites entering waterways.

7. Site stability and excavation

Objectives:

- To ensure that development reflects the physical constraints prevalent on the site;
- To ensure that site disturbance is minimised.

8. Bush fire

Objectives:

- To minimise impacts of bush fire on dwellings and ancillary structures on land designated as Bush Fire Prone;
- To ensure fire fighters and emergency personnel can undertake their responsibilities in a relatively safe environment.

9. Flooding

Objectives:

- To minimise the impact of flooding on building structures;
- To provide standards for building floor levels to prevent the intrusion of flood and stormwater;
- To minimise the impacts of dwellings and structures on the behaviour of flood waters.

10. Heritage

Objectives:

- To ensure the preservation of the distinctive character of a building, feature or area that is identified as being of heritage significance;
- To ensure the development is compatible with the heritage characteristics of buildings and features on the site and on adjoining sites.

Compliance of the development:

Residences within the site will be developed in accordance with the aims and objectives of the Design Elements of the DCP.

9.19 Shoalhaven Tourist Development in Rural Areas (DCP No. 63)

DCP No. 63 for Tourist Development in Rural Areas applies to all land situated within the City of Shoalhaven.

9.19.1 Aims of the Plan

The aims of the Plan are to:

- Foster economic growth through the promotion of tourism;
- Promote forms of tourist accommodation for short term visitor occupation compatible with the scenic quality, natural environment and relaxed lifestyle of Shoalhaven;
- Maximise opportunities for tourist development, whilst conserving and protecting the natural environment and character of the Shoalhaven, upon which the tourism economy depends.

9.19.2 Development Standards

The key Development Standards to guide such developments are as follows:

1. Building design and site layout

Performance criteria:

- Visual impact on scenic, natural landscape and adjoining properties is minimised.
- Visual impact is not excessively exaggerated by the scale or built form of the development.
- Larger, residential or urban-style buildings are avoided (recommended floor area to not exceed 120m^2 with maximum building height to not exceed 7.5m).
- Areas with identified environmental attributes are conserved and protected.
- Innovative design and incorporation of the use of appropriate local materials.
- Items and places of heritage or landscape conservation value are conserved and protected.
- Natural habitat and threatened species are conserved and protected.

- A high level of guest amenity is provided with permanent residential occupation discouraged.
- The development meets the minimum accessibility standards.
- Energy and water conservation principles are incorporated into the design of the tourist development.

Compliance of the development:
The tourist component of the development, particularly the tourist cabins located above Currambene Creek are designed and sited to comply.

2. Access and car parking
Performance criteria:

- Development has safe, legal and practical access from a public road.
- The owners and users of private roads are not disadvantaged by tourist development on land without public road frontage.
- A satisfactory level of off-street car parking is available to a development.
- Car accommodation is designed to discourage permanent occupancy.
- Vehicle access is convenient and suitable for two-wheel drive conventional vehicles.
- Adverse environmental impacts caused by the construction of access driveways are minimised.
- Traffic safety on local and main roads is protected.
- Ensure satisfactory access for disabled persons.

Compliance of the development:
Car parking is discouraged to the tourist cabins with access only by small buggies. Car parking for visitors is located within the adjacent hotel associated with the cabins.

3. Environmental considerations
Performance criteria:

- Water quality in local watercourses and designated water catchment areas is protected and conserved.
- Effluent disposal is in accordance with best available technology to industry standards.
- The sewerage management system will be operated and maintained in a manner that will minimise impact on the environment and adjoining neighbours.
- Construction impacts on the environment particularly landslip are minimised.
- Erosion, sedimentation and stability problems are minimised and excessive cut and fill is avoided.
- Sensitive environments, such as wetlands, rainforest areas, endangered ecological communities and threatened species habitats are protected and conserved.
- Impacts on native flora and fauna, particularly threatened species, are minimised.
- The removal of native vegetation is minimised.
- Consideration given to the provisions of SEPP 44 – *Koala Habitat Protection*.
- Exposure to the atmosphere of acid sulphate soils is avoided.

Compliance of the development:
The tourist development is sited to avoid watercourses and areas of environmental and ecological sensitivity. The development is sited within an existing cleared area of the site. The development's services infrastructure will comply with environmental considerations.

4. Natural hazards

Performance criteria:

Bushfire

- The risk to human life and damage to property from bushfire is minimised by controlling development on bushfire prone land.
- Development on bushfire prone land will not result in an increased demand for emergency services during bush fire events.
- Development on bush fire prone land including arrangements for access to and from the development will not constitute a significant threat to the lives of residents, visitors or emergency services personnel.

Flooding

- The risk to human life and damage to property is minimised and local flooding is taken into consideration in the design and location of tourist development.

Steep or unstable land

- Avoidance of steep and unstable land.

Compliance of the development:
The tourist development is designed to comply with bushfire requirements and is sited outside flood prone areas.

5. Amenity of area

Performance criteria:

- To conserve the rural character of a locality and the amenity enjoyed by local rural residents by ensuring that development is separated from adjoining development.
- To minimise noise nuisance and loss of privacy to adjoining residents, as well as for guests of the proposed tourist development.

Compliance of the development:
The tourist development conserves the rural character of the site and is well separated from neighbouring residents and residential areas of the site.

6. Services

Performance criteria:

- Water and electricity supplies are satisfactory.
- The augmentation of reticulated services will not adversely affect the environment.
- The development is resource efficient.

Compliance of the development:
The development will be designed to ensure that services infrastructure is provided with the maximum ESD considerations and will not adversely affect the environment.

9.20 Shoalhaven Residential Development in Foreshore Areas (DCP No. 62)

DCP No. 62 for Residential Development in Foreshore Areas applies to development within foreshore areas. The provisions of this plan apply to the first residential lot back from the waterfront. Waterfront refers to "the sea, bays, rivers and lakes". Whilst the development has frontage to Currambene Creek which is not strictly defined as "waterfront", the provisions of this DCP should be considered in the design of development fronting this Creek as this portion of the site has high visual exposure to surrounding areas.

9.20.1 Aims of the Plan

The aims of the Plan are to:

- Preserve the appearance and amenity of the foreshore by limiting the height and bulk of development.
- Ensure that development is sympathetic to the physical constraints encountered along foreshore areas.
- Encourage innovative design in residential development which reflects the need to preserve the amenity of these areas, whilst having due regard to the physical constraints encountered in these areas.
- Set appropriate environmental criteria for residential development in foreshore areas.

9.20.2 Design Elements

DCP No. 62 sets out Design Elements for the design of residences in foreshore areas. The objectives of the specific design elements are as follows:

1. Site planning

Objectives:

- To encourage development that considers the characteristics of adjacent sites at the outset of the design process.
- To ensure that site attributes and constraints are carefully considered and reflected in the design of residential development in foreshore areas.

2. Site planning and layout

Objectives:

- To achieve a site layout that provides a pleasant, attractive, manageable and resource efficient living environment.
- To encourage development that considers the environmental attributes of the site.

3. Siting and design

Objectives:

- To enable flexibility and innovation in the siting and design of buildings while protecting reasonable neighbour amenity expectations, maintaining appropriate residential character and visual bulk, as well as protecting the visual amenity of foreshore areas. (Performance criteria include consideration view sharing from public areas, residential amenity of privacy and solar access).

4. Building materials

Objectives:

- To ensure that development integrates with the landscape.
- To encourage the use of building materials and colours that complements the natural landscape.
- To ensure that materials are suitable to withstand coastal weather conditions.

5. Trees and vegetation

Objectives:

- To preserve, where possible, trees and vegetation along foreshore areas.
- To minimise excessive clearing of vegetation along foreshore areas.

6. Landscaping

Objectives:

- To minimise the use of exotic species and maximise the use of indigenous native species.
- Provide essential stability and ground cover to highly erodible and unstable soils.
- To improve the appearance of development in foreshore areas.

7. Site stability, excavation and soil and water management

Objectives:

- To ensure that development reflects the physical constraints prevalent in coastal areas.
- To ensure that site disturbance is minimised.
- To ensure that appropriate measures are incorporated to minimise adverse impact on water quality of foreshore areas.

Compliance of the development:

The residential component of the development fronting Currambene Creek is sited on large allotments with design of dwellings to comply with the above objectives.

9.21 Shoalhaven Car Parking Code (DCP No. 18)

The car parking DCP provides guidelines for the provision of car parking for development within the Shoalhaven, based upon those recommended by the RTA.

9.21.1 Objectives of the Plan

The objectives of the DCP are:

- To ensure that adequate off street car parking is provided in conjunction with development throughout the City.
- To discourage the use of streets for the parking of vehicles associated with traffic generated by new development. However, where there are site constraints which make it difficult for on-site parking, formalised parking in the road reserve may be considered.
- To ensure that car parking areas are functional and operate efficiently.
- To ensure that car parking areas are visually attractive.
- To ensure that car parking facilities are safe and meet the needs of users.

- To ensure that all vehicles enter and leave a site in a forward direction and that the manoeuvring of vehicles does not take place within the road reserve, but within the subject site.
- To address the principles of ESD.

9.21.2 Development and design requirements

Specific development and design requirements of the DCP are as follows:

1. Car parking requirements schedule

Land use type	Requirements	Compliance
Town Centre Precinct		
Medium density residential flat buildings	As per Councils medium density residential requirements, being: ▪ 1 space/ small dwelling (under 55m^2); ▪ 1.5 spaces/ medium dwelling (55-85m^2); and ▪ 2 spaces/ large dwelling (85-120m^2).	Car parking provisions for residential flat building within the Town Centre Precinct will comply with the stated requirements. It is anticipated that parking will be provided under the building (basement).
Serviced apartments	▪ 1 space per 1-2 bedrooms; ▪ 1.5 spaces per 3+ bedrooms.	Alternative use for residential flat building. Parking will be provided under the building.
Housing for aged and disabled persons	As per the requirements of SEPP (Housing for Seniors and People with a Disability) 2004.	Any seniors housing provided in the future will comply with SEPP (Housing for Seniors and People with a Disability).
Commercial premises	1 space per 40m^2 gross floor area (GFA)	Estimated 1000m^2 commercial facilities at the initial development stage: 25 parking spaces required.
Dining areas	▪ 1 space per 5m^2 of licensed floor area. ▪ 1 space per 6.5m^2 of gross dining area.	Estimated 2000m^2 GFA of dining facilities, comprising 1200m^2 gross dining area (2/3 GFA): 185 parking spaces required.
Retail: ▪ Shops ▪ Supermarkets ▪ Storage area ▪ Markets	▪ 1 space per 24m^2 of gross leasable floor area. ▪ 1 space per 19m^2 of gross leasable floor area. ▪ 1 space per 50m^2. ▪ 2.5 spaces per stall.	Estimated 2000m^2 GFA of shops, comprising 1600m^2 gross leasable area (80%): 67 parking spaces required.
Convention Centre (300 people – Stage 1)	1 space per 10 seats	30 parking spaces (initial stage) required.
		This precinct provides approximately 344 surface car parking spaces with parking for apartments to be located at basement levels (307 required at initial development stage).

Land use type	Requirements	Compliance
Wellness Precinct		
Medical centre	▪ 1 space per 24m^2 GFA or ▪ 3 spaces per practitioner or surgery.	Maximum 5,600m^2 GFA: 234 parking spaces required. This precinct provides 28 parking spaces. Additional parking can be shared with adjacent parking areas or provided under the buildings.
Educational Precinct		
Educational facilities	▪ 1 space per 10 students in year 12; and ▪ 1 space per employee	15-30 spaces required. This precinct provides approx. 126 parking spaces (to additionally cater for sports events)
Buddhist Temple Precinct		
Temple hall (300 people) and tourist attraction	▪ 1 space per 10 seats; or ▪ 1 space per 10m^2 of GFA of worship area.	30 seats required. This precinct provides 176 parking spaces and 6 coach parking spaces.
Information Precinct		
Administration Centre	▪ 1 space per 40m^2 GFA.	Approx. 1000m^2 with 4-6 staff: 25 parking spaces required. This precinct provides approx. 130 parking spaces.
Hotel Precinct		
Bed and Breakfast/ Motel accommodation:	▪ 1 space per guest room	100-250 rooms: 100-250 car spaces required. This precinct provides approx. 130 surface parking spaces with additional parking under the building.
Heritage Precinct		
Café & Lookout	▪ 1 space per 6.5m^2 of gross dining area.	Approx. 150m^2: 23 parking spaces required. This precinct will provide approx. 38 parking spaces.
Residential precincts		
Detached residences		Each residence will be provided with 2 car parking spaces.

Compliance of the development:
The development will provide approx. 1,082 car parking spaces and 6 coach spaces. Approx. 900 spaces are required for the development in accordance with the DCP.

2. Parking layout and dimensions

Objectives:

- To provide safe and efficient circulation, manoeuvring and parking of vehicles.
- To minimise potential for pedestrian conflict.
- To ensure that a vehicle can enter and leave the parking spaces in no more than 2 manoeuvres.

Compliance of the development:
Design of the development will ensure that parking dimensions comply with AS 2890.1: *Off-street parking facilities*.

3. Access

Objectives:

- To ensure that driveways relates to-
  - Type of land use
  - Frontage road type
  - Size of parking facility
  - Type of vehicle likely to enter the development
- To ensure that traffic safety is preserved both on-site and within the local road network.

Compliance of the development:

Driveways will comply with the requirements of AS 2890.1.

4. Manoeuvrability

Objectives:

- To ensure that adequate space is provided for the manoeuvring of vehicles- particularly rigid and articulated heavy vehicles
- The minimum turning path for vehicles, acceptable to Council for car park servicing and driveway design is that adopted by the RTA *Guidelines for Traffic Generating Developments*.

Compliance of the development:

Design of specific buildings will comply with turning and manoeuvring requirements suitable for their building purposes.

5. Service areas

Objectives:

- To provide adequate areas for the safe and efficient loading and unloading of goods.
- To ensure all servicing occurs on-site.

Compliance of the development:

Service areas will be provided to operate independently of parking areas with vehicles entering and leaving the site in a safe and forward direction.

6. Landscape design

Objectives:

- To lessen the visual impact of car park areas.
- Provide shade areas for cars and pedestrians.
- To ensure that the landscaping is an integral part of the car park design.
- To ensure that landscaping does not interfere with the proper functioning of the car park.

Compliance of the development:

Surface parking areas provided are screened with landscaping for minimisation of visual impact with shade trees integrated into the design of these areas.

7. Drivers with a disability

Objectives:

- To ensure an adequate provision is made for disabled drivers.

Compliance of the development:

Disabled spaces will be provided, to exceed BCA requirements with dimensions in accordance with AS 2890.6: *Off-street parking for people with disabilities*.

8. Construction requirements

Objectives:

- To ensure that the construction of car parks is of a suitable standard for traffic this will utilise them, as well as to minimise the visual impact of car park areas.
- Engineering plans of the car park will be required to be submitted to Council for approval with the building application. The plans are required to detail dimensions of the car park, spaces, manoeuvring areas, access, levels and drainage.

Compliance of the development:

Surface car parking areas and parking areas within specific developments will be constructed in accordance with best practice standards and AS 2980.1: *Off-street parking facilities*.

9. Driveway types

Objective:

- To ensure that driveways are designed in a manner that reflects the nature of development that they serve.

Compliance of the development:

Width of driveways will be suitable for vehicular type using the parking areas.

10. Signage

Objective:

- To ensure the efficient operation of parking areas.

Compliance of the development:

Vehicle entry and exit pints to car parking areas will be clearly marked.

11. Lighting

Objective:

- To secure the safety of persons using and vehicles parked within car park areas.

Compliance of the development:

Lighting to parking and service areas will be designed to comply with AS 1158.1.

12. Bicycles

Objective:

- To encourage the use of bicycles.

Compliance of the development:

Bicycle parking will be provided in accordance with the BCA and designed to AS 2890.3: *Bicycle parking facilities*.

9.22 Shoalhaven On-Site Sewage Management (DCP No. 78)

9.22.1 Objectives of the Plan

The objectives of this DCP are to:

- Prevent public health risk in the implementation of sewage within a site;
- Protect lands in the implementation of on-site sewage management systems, to ensure systems not cause deterioration of land or vegetation quality through soil structure degradation, salinisation, waterlogging, chemical contamination or soil erosion;
- Protect surface waters and to ensure that surface waters are not contaminated by flow from treatment systems and land application areas;
- Protect ground waters from contamination by flow from treatment systems and land application areas;
- Conserve and reuse of resources, with the practice of water conservation methods and minimisation of wastewater production;
- Protect community amenity in the selection, siting, design, construction, operation and maintenance of on-site sewage management systems.

Compliance of the development:

Design and construction of on-site sewage systems are to be in accordance with this document.

This page is left blank intentionally

10.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application outlined in s79C(1) of the EP&A Act, which is as follows:

(a) Statutory Planning considerations:

(i) any environmental planning instrument, and

(ii) any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority (unless the Director-General has notified the consent authority that the making of the draft instrument has been deferred indefinitely or has not been approved), and

(i) any development control plan, and

(ii) any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F, and

(iii) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), that apply to the land to which the development application relates,

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,

(c) the suitability of the site for the development,

(d) any submissions made in accordance with this Act or the regulations,

(e) the public interest.

10.1 Section 79C(1)(a) – Environmental Planning Considerations

10.1.1 State planning instruments

The site is subject to the following State government planning instruments of:

- NSW Environmental Planning and Assessment Act 1979 (EP&A Act)
- The South Coast Regional Strategy
- The Jervis Bay Regional Environmental Plan (REP) 1996
- SEPP 14 – Coastal Wetlands
- SEPP 71 – Coastal Protection
- NSW Coastal Policy 1997
- Jervis Bay Settlement Strategy 2003
- SEPP (Major Development) 2005
- SEPP 44 – Koala Habitat Protection
- SEPP 55 – Remediation of Land
- SEPP (Housing for Seniors and People with a Disability) 2004
- SEPP 65 (Design Quality of Residential Flat Development)

The proposed development generally complies with the aims and objectives of the State planning strategies as outlined in this planning report.

The site is identified as "Sensitive Urban Land" under the *South Coast Sensitive Urban Lands Review* whose recommendations are incorporated into the ***South Coast Regional Strategy***. The proposed development will be developed within areas identified in the above documents, avoiding areas of environmental sensitivity. Riparian and wildlife corridors will be maintained. The development will be an integrated tourist development with approximately 300 dwellings.

The proposed development is located within the boundary of the ***Jervis Bay Regional Environmental Plan 1996*** and complies with the aims of the REP, which are to ensure developments protect and contribute to the natural and cultural values of Jervis Bay. Development on the site preserves generally the habitat corridor identified in the Plan by limiting development within the corridor. Issues of effluent disposal, impacts on water quality and threatened species have been considered and addressed by the development.

The development does not intrude upon the Coastal Wetlands identified in **SEPP 14: *Coastal Wetlands***.

The south-eastern portion of the site is within the Coastal Zone of **SEPP 71: *Coastal Protection***. Development within this area is sensitively sited to comply with the aims of the SEPP, preserving its visual amenity and scenic values, its native vegetation, marine environment and cultural heritage values. No development will occur within these areas of aboriginal or archaeological value. The sanctuary zone of Currembene Creek will be preserved with no development within 100m of the creek.

The key actions of the ***NSW Coastal Policy 1997*** of protection of water quality in estuaries and rivers, aquatic environments, coastal wetlands and littoral rainforests, cultural heritage areas will be maintained, with the implementation of sustainable land use and development, with provision of housing and lifestyle choices within the development.

The environmental considerations of the ***Jervis Bay Settlement Strategy 2003*** that manages the future growth and settlement in the Jervis Bay region have been addressed by the proposed development, with assurance that a sustainable outcome will be achieved.

10.1.2 Local planning instruments

The local planning instrument that currently relate to the project area and its surrounds is *Shoalhaven Local Environmental Plan (LEP) 1985*. The majority of the site is zoned **Rural 1(d) – General Rural**. Whilst tourist and educational facilities are permissible under the Plan, detached dwellings on regular allotments, multi-unit dwellings, residential flat buildings, commercial and retail uses are not permitted under this zone.

The land use zone proposed under Draft Shoalhaven Local Environmental Plan 2009 for the majority of the site or **RU2 Rural Landscape** only permits dwelling houses on minimum 40 hectare allotments to occur on the site. The zone does not permit other uses of tourist, educational, health, commercial and retail to occur on the site.

Change of zoning is proposed for the site in line with the *South Coast Regional Strategy* recommendations for Comberton Grange.

10.2 Section 79C(1)(b) – Environmental Impacts

The proposal is a major development on the rural site of Comberton Grange in South Nowra. The proposed development is bounded by State forests to its north, east and west, and the Currambene Creek valley to its south. The development has been sited to avoid sites of high ecological and environmental value and is sited on areas with secondary growth vegetation of the former Pine Plantation at the northern portion of the site and the grazing valley on the higher banks of Currambene Creek. The siting of development avoids areas of local archaeological and cultural significance and will not cause adverse impact to the natural environment and ecology of the site. The development, as a predominantly tourist facility, will contribute to the economic and social vitality of the locality.

10.2.1 Visual amenity

The southern portion of the development overlooking Currambene Creek will be located in an area of high visibility from surrounding neighbourhoods and will be visually prominent from residences and vantage points on the southern side of the creek. Residences on large allotments (approximately 1500m^2 in area) are proposed along the higher areas of the cleared valley, sited against the backdrop of tall native forest located at the central portion of the site. These allotments have generous widths and depths (30m x 50m) to provide for the implementation of the Visual Mitigation Strategies identified in the above report, with planting of trees and vegetation, sensitive design of building forms and roof pitches, control of heights to be below tree canopies, etc., to maintain the rural ambience of the site. The residences, of maximum 2 storeys in height, will be sited amongst copses of tree planting complying with bushfire control guidelines and vegetation. Dwellings will be sensitively designed with built form and roof lines to minimise their visual impact.

The proposed hotel within the southern precinct will be stepped to integrate with the topography of the site, screened by copses of trees, with small single storey tourist cabins sited below. The hotel will be viewed against the backdrop of State forest.

The site of the former homestead at the small hillside overlooking the Currambene Creek valley will contain a small café lookout of single storey in height. The siting of the facility is to the east of the former homestead and respects the homestead precinct.

The northern portion of the development within the former Pine Plantation, surrounded by the mature vegetation of the surrounding State forests, will not be seen from surrounding neighbourhoods. Whilst these areas are not visible from external areas, they will be designed with regard to the Visual Mitigation Objectives and Strategies recommended in the *Visual Impact Assessment* Report.

The development has been designed in accordance with the Visual Mitigation Objectives of the Visual Impact Assessment Report prepared for the site. The objectives are to:

- Create contemporary, wooded residential suburbs, temple precinct, employment areas and town centre that respect the rural setting of the former Comberton Grange Farm Complex and surrounding areas.
- Preserve the farm atmosphere and mitigate development impacts on the visually sensitive Farmland sub-precinct.
- Preserve existing trees, woodlands and endangered ecological communities; plant new trees to enhance the rural character of the site.

- Create landscaped and linked open space corridors throughout the site.
- Control development to improve the visual qualities of the site.
- Employ environmentally sustainable landscape practices.

10.2.2 Solar access and overshadowing

The proposed development is sited with residential allotments of adequate proportion to respect solar access to individual residences and minimise overshadowing of adjacent properties. Future design of dwellings will ensure that solar access is provided to majority of living areas with adequate setback from each dwelling to minimise overshadowing of adjacent residences.

Proposed siting of non-residential footprints ensures that rooms are oriented to receive solar access to majority of spaces.

10.2.3 Noise and acoustic privacy

Allotments are of adequate size with future dwellings to be designed to ensure optimum acoustic privacy between dwellings. Medium density residential developments will comply with the acoustic requirements of the BCA.

Whilst external air noises from external sources (being a training flight path for the HMAS Albatross base), noise has not be detected during various tests on site undertaken to be a serious issue as to warrant the use of acoustic glazing. However, should the need for attenuation be required, suitable glazing methods will be explored and implemented.

Internal and external traffic noise does not impact on the residential amenity of the Hotel or residential precincts. Within the Temple Precinct, noise level from these sources is within the noise parameters for temple activities.

10.2.4 Impacts on the European and cultural heritage of the site

The proposed use of Comberton Grange provides for the managed conservation of the majority of the site. The design avoids the portions of the site that have natural and cultural heritage significance. The heritage remains of the former Homestead site are to be retained and conserved. The remains of the Comberton Grange farm complex can be retained and conserved. The precinct will be retained as a viewing area/ lookout for visitors of the pastoral landscape and will incorporate an Interpretation Strategy for the archaeological remains of these pastoral uses.

The Homestead and agricultural remains will be seen against a backdrop of low-rise residential development. The residences will be designed with use of recessive external colours, domestic building forms sited against landscape screens of indigenous trees and vegetation.

10.2.5 Impacts on Aboriginal and archaeological heritage of the site

The development, whilst close to various areas of Aboriginal archaeological significance, will avoid these identified areas. The Aboriginal Cultural Heritage consultant considers it unlikely that any archaeological resource encountered during archaeological testing programs would prevent construction, provided that recommended mitigation actions are followed. These include:

- Avoiding impacts at the Aboriginal cultural heritage recordings within the Comberton Grange study area;
- If impacts are anticipated, the locations of Aboriginal recordings are to be inspected by a qualified archaeologist and representatives from the registered Aboriginal organisation immediately after initial clearance and ground disturbance works. Any artefacts visible at that time should be collected or moved from the area of impact.

10.2.6 Ecology

The site is a high environmental valued site with old growth forests and native vegetation located on the central portion of the site. The development is proposed to be sited on secondary growth forest of the former Pine Plantation and on existing grazing land on the upper banks of Currambene Creek. The development respects and predominantly maintains the habitat corridor of the Jervis Bay REP and will minimise disturbance on existing forested areas.

No critically endangered species or ecological communities occur on the area of development or on its vicinity. The proposed development is not likely to have a significant impact on listed migratory species. There is no important habitat for such species within the development area and the habitat in that area is not likely to support an ecologically important proportion of a population of such species. The proposed development is not likely to have a significant impact on matters of natural environmental significance listed under the *Environmental Protection and Biodiversity Conservation Act*.

Within the former Pine Plantation, development will be kept the minimum of 40m clear of each side of the main tributaries of Georges Creek, and a 20m buffer is kept from minor creeklines of Georges Creek. Development will be kept 100m from Currambene Creek and SEPP 14 wetlands and flood plains along the creek. All stormwater discharge will be treated prior to entering the core riparian zones and creeklines.

Landscaping of the site, post development, will ensure that compatible native and exotic trees and vegetation are planted to suit the habitat of the site and surrounds.

10.2.7 Environmental

Acid sulphate

The proposed development is located above RL 5, above the level in which acid sulphate soils occur. These results are consistent with the broad scale mapping and as such, acid sulphate soils are not expected to be encountered within the proposed development area.

Geotechnical

Preliminary geotechnical assessment of the site indicates that the site will be geotechnically suitably for the proposed development. More detailed investigation will be carried out when individual development parcels are implemented.

Contamination

Preliminary contamination assessment on the northern and southern development areas indicates that the overall potential for contamination at the site is considered to be low. Mitigation measures are recommended for attendance of existing material on the site.

10.2.8 Mineral resources

The mineral resource within the existing quarry at the central portion of the site could resume operations for the extraction of materials such as road base for the construction of roads. The extraction is anticipated to be limited to the construction of the development and is likely to cease operation when the site reaches full completion.

10.2.9 Bushfire

The provision of clear separation of buildings and bushfire hazards of surrounding forested areas are implemented in the form of asset protection zones (APZ) and in the proposed design and construction of the buildings to comply with AS 3959 (2009) – *Construction of buildings in bushfire prone areas*. Additionally, adequate water supply will be provided.

Access roads within the development will comply with the requirements of *Planning for Bushfire Protection* (RFA 2006) as stated in this report.

10.2.10 Water quality

Stormwater will be collected in basins located above the 100 year ARI flood level and will be used for irrigation of landscaped and agricultural areas. Stormwater from the proposed development will be treated for pollutant contamination in three stages prior to discharging into basins, surrounding landscape or watercourses, with:

- Primary treatment – via gross pollutant traps located in hard landscaped and car parking areas to remove transported solids;
- Secondary treatment – to remove solids and separation of oils via sedimentation chambers in gross pollutant traps;
- Tertiary treatment – via bioretention swales using planting as filter medium.

10.2.11 Erosion and sedimentation

Controls will be implemented during construction and post-construction of the project, with:

- Controls during construction will be designed with consideration of the nature of the soils and areas disturbed.
- Controls post-construction will involve stabilisation of disturbed surfaces and control of concentrated discharge from the site with coordinated landscaping and civil engineering design.

10.2.12 Traffic and access

The site will be accessed from Forest Road to the north-east with the provision of a new access road from Forest Road, through the adjoining State forest, into the site. The existing partially formed road access of Comberton Grange Road, via the Princes Highway, will be maintained as a secondary and emergency access to and from the site.

10.2.13 Socio-economic impacts

The proposed development will provide a significant tourist attraction to the Shoalhaven region. The development will also provide a number of services which will socially and economically benefit the region. The development will have positive social and economic impacts on the region by generating employment for the development, attracting revenue from tourism, providing a range of residential housing opportunities, contributing to the cultural diversity of the region, maintaining the natural environmental aesthetic quality of the region and introducing unique cultural events which will help define the Shoalhaven region and augment its tourist industry.

The educational and wellness facilities with its strong philosophical and lifestyle emphasis will benefit the region and attract users to the site.

10.3 Section 79C(1)(c) – Suitability of the Site for Development

The site is suitable for the proposed uses. Redevelopment of the site in accordance with the proposed Masterplan will boost the tourism industry of the Shoalhaven region, create employment opportunities as well as provide new housing opportunities to the region. The ecology of the site will be conserved and development will assist in the maintenance of the overall site and the education of the public on its ecology as well as the sustainable practices introduced into the development.

10.4 Section 79C(1)(d) – Submissions

The Consent Authority will consider under Section 75H of the EP&A Act all submissions received within the specified time period of at least 30 days against planning criteria in State legislation, planning instruments and controls before determining the Project Application.

10.5 Section 79C(1)(e) – Public Interest

The proposed development will make a positive contribution to the Shoalhaven region. All environmental impacts have been addressed within this submission.

This page is left blank intentionally

11.0 COMPLIANCE WITH THE DIRECTOR-GENERAL'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The proposed development has been assessed for compliance with the Director-General's Environmental Assessment Requirements as follows:

Key Issues		Compliance	
1.	**Strategic Planning**		
	▪ Justify the proposal with reference to relevant local, regional and State planning strategies, including the proposed *Draft Shoalhaven Comprehensive Local Environmental Plan,* and the *South Coast Regional Strategy.* Provide justification for any inconsistencies with the strategies.	Refer to Section 9.0 of the Environmental Assessment (EA) Report.	√
	▪ Demonstrate consistency with the recommendations of the Independent Review Panel *South Sensitive Urban Lands Review* (outlined in Appendix 2 of the *South Coast Regional Strategy).*		
	▪ Demonstrate consistency with the *South Coast Regional Strategy* Sustainability Criteria (Appendix A1).		
2.	**Urban Design, Layout and Future Character**		
	▪ Demonstrate the suitability of the proposal with the surrounding area regarding bulk, scale, amenity (including noise), visual amenity, aesthetics, energy and water efficiency, and safety.	Refer to Section 8.0 of the EA Report.	√
	▪ Discuss the desired future urban form including: public domain/built form interface, building envelopes, building heights, floor space ratios and other design controls.	Refer to Section 7.16 of the EA Report.	√
	▪ Demonstrate consistency with the *Coastal Design Guidelines of NSW 2003, NSW Coastal Policy 1997,* and *State Environmental Planning Policy 71 - Coastal Protection.*	Refer to Sections 9.6 and 9.7 of the EA Report.	√
	▪ Outline the long-term management and maintenance of open space areas, including ownership and control, management and maintenance funding, public access, revegetation and rehabilitation works.	Refer to Section 7.19 of the EA Report.	√
	▪ Demonstrate capacity for future residential buildings to comply with *State Environmental Planning Policy 65 - Design Quality of Residential Flat Development* and *State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.*	Refer to Section 9.14 for SEPP 65, and Sections 7.14 & 8.19 for ESD.	√
	▪ Demonstrate whether the proposal complies with the objectives of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* for the self-contained independent living/adaptable housing for the aged component.	Refer to Section 9.13 of the EA Report.	√
	▪ Provide details of orderly and co-ordinated staging, with the tourist component being the dominant use.	Refer to Section 7.20 of the Report.	√
3.	**Visual Impact**		
	▪ Address the visual impacts of the proposal in the context of surrounding development and relevant mitigation measures, particularly, foreshore amenity, overshadowing of and loss of views from public places, and cumulative impacts; with the use of visual aids such as scale models and photomontages. Address amelioration of visual impacts through design, use of appropriate colours and building materials, landscaping and buffer areas.	Refer to Section 8.14 of the EA Report and Appendix 14.	√

Key Issues		Compliance	
4.	**Ownership of the Project** ▪ Identify proposed ownership/ tilting arrangements, for example, leasehold, with regard to the *South Coast Regional Strategy.*	Refer to Section 9.3 of the Report.	√
5.	**Infrastructure Provision** ▪ Address existing capacity and proposed requirements for water and sewerage (including effluent and wastewater reuse/recycling, alternatives to town water supply, and use of farm dams), electricity, waste disposal, telecommunications and gas in consultation with relevant agencies. Identify and describe any staging of infrastructure works. ▪ Address and provide the likely scope of any planning agreements and/or development contributions with Council/Government agencies (including relevant community/state infrastructure contributions).	Refer to Sections 5.14, 7.13, 8.8, and 8.9 of the EA Report and Appendix 9.	√
6.	**Socio-economic Impacts** ▪ Provide a social impact assessment which addresses the social and economic context for the tourist and residential components in terms of infrastructure requirements, public transport, community services and facilities (including schools and medical services). ▪ Provision of affordable housing should be considered and included into the development, where appropriate.	Refer to Section 8.15 of the EA Report and Appendix 15. Refer to Section 7.6.8 of the Report.	√ √
7.	**Traffic and Access** ▪ Prepare a traffic impact study in accordance with Table 2.1 of the RTA's *Guide to Traffic Generating Developments,* based on the maximum development potential for the site, which addresses the following matters: – Access to and within the site, with consideration of one site access only (either Forest Road or Comberton Grange Road); – Need for junction upgrades. Appropriate intersection analysis (for Princes Highway with Comberton Grange Road/Forest Road) using SIDRA to determine projected traffic growth for the next 10 years with and without the development; AM and PM peak volumes and recreation peak volumes. – Identify road infrastructure required to ameliorate the impacts of the development at the junctions of Princes Highway/Comberton Grange Road, Princes Highway/Forest Road, Princes Highway/Parma Road, and Princes Highway/BTU Road. Provide a concept plan (notating property boundaries) of any proposed treatments. (Note: suitable agreement with affected property owners will be required where treatments are located outside of the road reserve). – Capacity of the road network to safely and efficiently cater for the additional traffic generated; – Servicing and parking arrangements. Prepare a parking needs study which investigates parking demand generated by each component of the proposed development;	Refer to Sections 5.1, 7.7 and 8.12 of the EA Report and Appendix 12.	√

Key Issues		Compliance	
	– Connectivity to existing developments; – Impact on public transport, including school bus routines; and – Provision of access for pedestrians and cyclists to, through and within the site.		
8.	**Hazard Management and Mitigation** ***Contamination*** ▪ Provide a Preliminary Contamination Assessment, identifying any contamination on site and appropriate mitigation measures in accordance with the provisions of *SEPP 55 - Remediation of Land.*	Refer to Section 8.4 of the EA Report and Appendix 5.	√
	Acid Sulphate Soils ▪ Identify the presence and extent of acid sulphate soils on the site and, where relevant, appropriate mitigation measures. Identify the need for an Acid Sulphate Management Plan (prepared in accordance with ASSMAC Guidelines).	Refer to Section 8.5 of the EA Report and Appendix 6.	√
	Bushfire ▪ Address the requirements of *Planning for Bush Fire Protection* 2006 (RFS).	Refer to Section 8.7 of the Report and Appendix 8.	√
	Geotechnical ▪ Provide a detailed assessment of any geotechnical limitations that may occur on the site and, if necessary, appropriate design considerations addressing the limitations.	Refer to Section 8.6 of the EA Report and Appendix 7	√
	Flooding ▪ Prepare a site specific flood study in accordance with Shoalhaven City Council's Flood Risk Management Policy, and Development Control Plan No. 106 - Floodplain Management, and any relevant provisions of the *NSW Floodplain Development Manual 2005.* The study should include, but not be limited to, the identification of the 10 year Annual Recurrence Interval (ARI), 100 year ARI, and Probable Maximum Flood (PMF) extent associated with the Currambene Creek and Georges Creek. The study is to include the identification of floodways, flood storage and flood fringe areas along with a determination of high and low hazards areas as defined by the NSW Floodplain Development Manual 2005. The study should reference flood levels outlined in Council's Currambene Creek and Moona Moona Creek Flood Studies. ▪ Assess the potential impacts of sea level rise and an increase in rainfall intensity on the flood regime of the site and adjacent lands with consideration of *Practical Consideration of Climate Change - Floodplain Risk Management Guideline (DECC, October 2007);* NSW Government Sea Level Rise Policy Statement, (DECCW, October 2009); Draft Coastal Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments (DECCW, 2009); and NSW Coastal Planning Guideline: Adapting To Sea Level Rise (DoP, Aug 2010).	Refer to Section 8.10 of the EA Report and Appendix 10.	√

Key Issues		Compliance	
9.	**Water Cycle Management and Water Quality** ▪ Prepare an Integrated Water Cycle Management Strategy which considers water supply, sewage, stormwater and catchment management interactions of the urban water cycle issues. ▪ Address stormwater management based on Water Sensitive Urban Design principles, including impacts on the surrounding environment, drainage/on-site detention and water quality controls for the catchment, and erosion and sedimentation controls at construction and operational stages. ▪ Assess the impacts on surface and groundwater hydrology and quality during construction and occupation. Demonstrate adequate protection of receiving waters, including SEPP 14 Wetlands and groundwater aquifers.	Refer to Section 8.11 of the EA Report and Appendix 11.	√
10.	**Flora and Fauna** ▪ Assess the potential direct and indirect impacts of the development on flora and fauna, including impacts on any threatened species, populations, ecological communities and/or critical habitat, groundwater dependent ecosystems, and any relevant recovery plan, in accordance with the *Draft Guidelines for Threatened Species Assessment* (DECC and DPI 2005), *Threatened Biodiversity Survey and Assessment Guidelines Working Draft (DEC, 2004), and Threatened Species Assessment Guidelines: The Assessment of Significance (DECC, 2007).* Provide measures for the conservation of flora and fauna, where relevant. ▪ Outline measures for the conservation and long term management of existing wildlife corridors and the connective importance of any vegetation on the site. Explore the potential for the re-establishment of corridors along drainage lines to wetlands and Currambene Creek. ▪ Demonstrate suitable riparian corridor management and appropriate corridor widths/buffering between the development and adjacent waterways/drainage lines or SEPP 14 wetlands, in accordance with DECCW's stream classification system. ▪ Investigate the opportunity to permanently conserve the eastern portion of the site (east of the existing quarry and including the SEPP14 wetland in the southern portion of the site).	Refer to Sections 8.3 and 8.18 of the EA Report and Appendix 4.	√
11.	**Heritage and Archaeology** ▪ Identify whether the site has significance to Aboriginal cultural heritage and identify appropriate measures to preserve any significance. The assessment must address the information and consultation requirements of the draft *Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DEC 2005). The cultural heritage assessment should include areas not previously surveyed including the former pine plantation. Note, that the personal/contact details of any individual should not be publicly disclosed without first making it known to those concerned that their details may be publicly disclosed in the EA.	Refer to ▪ Section 8.1 and Appendix 2 for Aboriginal Heritage and Archaeology; & ▪ Section 8.2 and Appendix 3 for European Heritage of the EA Report.	√

Key Issues		Compliance	
	▪ Identify any items of non-indigenous heritage significance and, where relevant, provide measures for the conservation of such items. Submit a Heritage Assessment of the non-indigenous heritage values of the site, including any built, archaeological, landscape and moveable items of potential significance. Submit a draft Statement of Heritage Impact detailing and evaluating any likely impacts from the proposal on the site's non-indigenous heritage significance.		
12.	**Noise** ▪ Address potential noise impacts (existing and proposed) on the development particularly from road traffic, quarry operations and aircraft. Address appropriate mitigation measures to ameliorate noise impacts. Note: the site is located beneath the flight corridor between the HMAS Albatross and the Jervis Bay Training Area.	Refer to Section 8.13 of the EA Report and Appendix 13.	√
13.	**Mineral Resources** ▪ Address the viability of the site's existing dolerite and sandstone mineral resources. Ensure appropriate buffers between those resource areas and any proposed residential development.	Refer to Section 8.16 of the EA Report.	√
14.	**Agriculture** ▪ Address the suitability for that portion of the site classified, "Class 3" Agricultural land (in the western portion to the north of Currambene Creek) to be maintained for agricultural purposes.	Refer to Section 8.17 of the EA Report.	√
15.	**Native Vegetation** ▪ Assess proposed clearing of native vegetation, including potential impacts and, if applicable, details of an offset strategy or other suitable mitigation measures to ensure no net loss of native vegetation values.	Refer to Section 8.18 of the EA Report and Appendix 4.	√
16.	**Ecologically Sustainable Development (ESD)** ▪ Identify how the proposal will incorporate ESD principles in design, construction and ongoing operation.	Refer to Sections 7.14 and 8.19 of the EA Report.	√
	Consultation You should undertake an appropriate and justified level of consultation with the following agencies during preparation of the EA: **(a) *Agencies or other authorities:*** ▪ Shoalhaven City Council; ▪ Department of Environment, Climate Change and Water; ▪ Land and Property Management Authority; ▪ Industry and Investment; ▪ Office of Water; ▪ Roads and Traffic Authority; ▪ NSW Rural Fire Service; ▪ Southern Rivers Catchment Management Authority; ▪ Heritage Council of NSW; ▪ Jervis Bay Marine Park Authority; ▪ Commonwealth Department of Defence;	Refer to Appendix 16.	√

Key Issues		Compliance	
	▪ Department of Education and Training; ▪ NSW Health; ▪ NSW Police Service; ▪ Shoalhaven Water; ▪ Integral Energy; ▪ State Emergency Service; ▪ Department of State and Regional Development; ▪ Tourism NSW; and ▪ Relevant Local Aboriginal Land Council/s and other Aboriginal community groups. **(b) *Public*** Document all community consultation undertaken to date or discuss the proposed strategy for undertaking community consultation. This should include any contingencies for addressing any issues arising from the community, and an effective communications strategy. The consultation process and the issues raised should be described in the EA.		

12.0 STATEMENT OF COMMITMENTS

In accordance with the former Part 3A of the Environmental Planning and Assessment Act 1979, the following are commitments to be made by the Shaolin Temple Foundation (Australia) Limited for environmental management and mitigation measures on the site arising from the development proposal.

Commitment	Timeframe	Responsibility for action
12.1 Indigenous Heritage Where development intrudes on Aboriginal recorded sites of archaeological sensitivity identified in the *Aboriginal Cultural Heritage Assessment* and referred to in Section 8.1 of the E-A report, the following mitigation actions are to be followed, of: ▪ Mitigation measures recommended for each recorded site as outlined in the Aboriginal Heritage Assessment to include: – Inspection by qualified archaeologist with potential archaeological subsurface investigations undertaken, depending on the level of significance of the find; – Collection and removal of the artefact(s) from the area of impact by the qualified archaeologist; – Subsurface investigations of the area. ▪ The protocols for the unanticipated discovery of archaeological material and suspected human remains are to be adopted and complied with during construction activities involving ground surface disturbance and excavation. ▪ Artefacts are to be recorded and collected as prescribed in the Aboriginal Heritage Assessment Report, prepared by Navin Officer Heritage Consultants, with any recovered Aboriginal objects managed according to a long term management strategy determined in consultation with the Jerrinja Local Aboriginal Land Council (JLALC) and other registered Aboriginal stakeholders.	At development application for development approval	Development proponent
12.2 European Heritage **12.2.1 Heritage Precinct** Development within visual catchment of the former Homestead site are to undertake the following ameliorative measures to: ▪ Maintain a heritage curtilage of at least 50m form the Homestead site to development as illustrated in the Concept Masterplan; ▪ Consider height, form and scale of the development, in accordance with the *Urban Design Guidelines for Precinct and Building Design* (Section 7.16) of the EA Report; ▪ Retain existing significant vegetation; and ▪ Provide landscape buffers with screening of development through planting, in accordance with the *Urban Design Guidelines for Precinct and Building Design* (Section 7.16) and *Landscape Design* (Section 7.18) of the EA Report.	At submission of development application for detailed design of Residential Precinct C	Development proponent

Commitment	Timeframe	Responsibility for action
12.2.2 Pastoral landscape Development within Residential Precinct C, above the floodplains of Currambene Creek, are to undertake the following heritage conservation practices to: ▪ Retain intact contiguous bays of 19th century post and rail fencing of the Cooriang Estate paddock within the pastoral landscape; ▪ Relocate sections of fencing, where such items are located within the proposed allotments areas, and housed within the proposed Cultural Museum in the Information Building, or in a location where the remnant fencing can be displayed; and ▪ Photographically archive fencing to be removed prior to removal.	At submission of development application for detailed design of Residential Precinct C	Development proponent
12.2.3 Archival recording Implement a photographic archival recording of all heritage elements affected by the proposed development in accordance with the NSW Heritage Council's *How to Prepare Archival Records of Heritage Items* (1998) and *Photographic Recordings of Heritage Items Using Film or Digital Capture* (2006).	Prior to development consent for detailed design of Residential Precinct C	Development proponent
12.2.4 Interpretation Strategy Prepare an Interpretation Strategy on the former Homestead site and farm complex, based on the archaeological remains of the buildings.	Prior to development application for the Homestead site	Development proponent
12.2.5 Conservation Management Strategy ▪ Prepare a Conservation Management Strategy to guide the management and conservation of heritage fabric; ▪ Prepare a Maintenance Plan to ensure that: – Remnant structures are maintained and not deteriorate in an uncontrolled manner; and – Pastoral lands and significant remnants of early agriculture are not covered in thick vegetation.	Prior to development application for the Homestead site	Development proponent
12.3 Ecology and Native Vegetation Riparian corridors along the main tributaries of Georges Creek, within the northern portion of the site and along Currambene Creek, at the southern portion of the site are to be maintained.		Development proponent

Commitment	Timeframe	Responsibility for action
12.3.1 Plan of Management Prepare a Plan of Management, in consultation with the NSW Office of Environment and Heritage, and in accordance with Shoalhaven City Council's *Generic Community Land Plan of Management – Natural Areas* (2001), that will guide the protection and enhancement of forests for conservation. The Plan will address matters such as: ▪ Conservation and protection of endangered ecologically communities and forests; ▪ Interfacing with development areas; ▪ Access and wayfinding; ▪ Passive recreation; ▪ Pest control; ▪ Regeneration and rehabilitation of disturbed areas; ▪ Management of wetland and riparian zones along Currambene Creek and Georges Creek tributaries, with revegetation to increase the extent of existing ecological endangered vegetation communities of Swamp Oak Floodplain Forest and Floodplain Swamp Forest. The Plan is to be prepared with due consideration of other Plans of Management for woodlands in the surrounding area/ adjoining forests. The Plan is to be in accordance with the overall landscape framework for the site in terms of its landscape design and character, and plant selection for climate, sustainability and bushfire considerations.	At submission of development application for detailed design of the development	Development proponent
12.4 Remedial Plan for Site Contamination Whilst the overall potential for site contamination has been identified to be low, the following management measures for site preparation are to be undertaken: ▪ Existing buildings and other structures identified in the Southern Development Area are to be inspected by an occupational hygienist, with any asbestos containing material to be removed off site by a licensed contractor and the underlying soils and surrounding area be validated by an occupational hygienist using visual and laboratory analytical validation methods. ▪ Material that has been coated with lead paint is to either be sealed or removed off the site to prevent lead contamination of soils. ▪ Any stockpiled material currently identified on site is to be assessed for its suitability to be reused on site or be disposed off-site with appropriate classification prior to development. ▪ Land filling located adjacent to Currambene Creek consisting of bottles, ceramics, fabric, corrugated iron, terracotta pipes,	Prior to construction works	Development proponent

Commitment	Timeframe	Responsibility for action
old washing machine drum and corrugated iron tank observed in the creek, are to be removed off site following appropriate classification. If signs of contamination such as staining, odours or asbestos containing materials are encountered, the underlying soils are to be validated. Following clearing, areas inaccessible at the time of this assessment are to be inspected by a qualified consultant to assess for potential signs of contamination. ▪ For verification purposes, low density sampling is to be undertaken across the site, particularly in future areas, following site clearing and an inspection. Low density sampling are to be undertaken at a nominal rate of 1 sample per 10 ha and samples are to be analysed for heavy metals, TRH, BTEX, PAH, OCP, OPP, PCB and asbestos.		
12.5 Bushfire Protection The site is located within a Category 1 Vegetation of Shoalhaven City Council's fire area with the following bushfire protection measures to be implemented: ▪ Provide clear separation of buildings and bushfire hazards in the form of fuel reduced APZ, of inner and outer protection areas and defendable space; ▪ Maintain the recommended APZ widths for the various development precincts; ▪ Construction standards and design of buildings are to be in accordance with *Planning for Bushfire Protection* (NSW RFS 2006) and AS 3959 (2009) – *Construction of buildings in bushfire prone areas*; ▪ Compliance of access roads with the above standards; ▪ Provide adequate water supply and pressure; ▪ Provide suitable landscaping to limit the spread of fire; and ▪ Implement emergency management, arrangements for fire protection and/ or evacuation.	At submission of development application for detailed design of the development	Development proponent
12.6 Infrastructure – Electrical Services Implement the use of renewable energy systems within the services design to reduce the energy demand of the proposed development from the supply authority.	At submission of development application for detailed design of the development	Development proponent

Commitment	Timeframe	Responsibility for action
12.7 Infrastructure – Water Supply and Reuse Implement water efficient strategies to minimise water supply from authority mains and potable water use, to include: ▪ Rainwater harvesting from roofs with storage via water tanks for non-potable water usage for toilet flushing, domestic clothes washing, mechanical cooling, landscape irrigation and external water usage (grey water strategy); ▪ Explore black water recycling measures and the economy of implementation; ▪ Use of water efficient appliances; and ▪ Monitoring of water use via a water management system.	At submission of development application for detailed design of the development	Development proponent
12.8 Flood Prevention Whilst all the proposed development areas are above the Probable Maximum Flood (PMF) level with the exception of roads crossing the creeklines, the proposed development is to ensure that: ▪ All residential allotments located above the 100 year ARI flood line; ▪ Additional clearance provided at the upstream side of all road crossings of major creeks (Georges Creek and its two tributaries) to allow for possible backwater from bridges or culverts; ▪ Floor levels for all buildings to be at least 500mm above the 100 year ARI flood levels; ▪ The golf course possibly extending within the 100 year ARI flood extents but no associated structures to be located within this zone; and ▪ Any structures within the PMF flood extents designed to withstand Probable Maximum Flows.	At submission of development application for detailed design of the development	Development proponent
12.9 Water Cycle Management An Integrated Water Cycle Management Plan for the detailed design of the site and to augment the Integrated Water Cycle Management Strategy is to be implemented, to address: ▪ Rainwater harvesting; ▪ Centralised capturing of stormwater from dwellings and buildings for site landscape irrigation and golf course watering (greywater strategy); ▪ Water harvesting and reuse, with: – Detailed design and final location of rainwater harvesting tanks and ponds, sizing, based on a water balancing analysis for the specific building use, areas of upstream catchment, integrated with the landscape design of the area;	At submission of development application for detailed design of the development	Development proponent

Commitment	Timeframe	Responsibility for action
– Detailed methods and calculations for Water Sensitive Urban Design Strategies in terms of stormwater screening (primary), stormwater filtering (secondary) and bioretention (tertiary); ▪ Golf Course Pollution Management Plan, with the design of the golf course to limit pesticide and fertiliser use (to turfed tees and greens), selection of pest resistant and low nutrient grasses, and surface runoff diverted into bioretention swales at the edge of these areas; and ▪ Sedimentation and erosion control for the protection of the site's natural water courses for construction and post-construction, with detailed strategies and measures, at the detailed design of each precinct.		
12.10 Visual Mitigation Mitigate the visual impact of development on this environmentally sensitive site in accordance with the visual mitigation objectives to: ▪ Create contemporary, wooded tourist and residential precincts that respect the rural setting of the Comberton Grange complex and surrounding forested areas; ▪ Mitigate development impacts on the visually sensitive former Homestead precinct and its rural character; ▪ Preserve existing trees, woodlands and endangered ecological communities; ▪ Plant new trees, indigenous to the site, and enhance the rural character of the site; and ▪ Appropriately control development to improve the visual qualities of the site. Implementation of mitigation measures is to be in accordance with the Mitigation and Management Measures of this report (Section 8.14.3) for the overall site and its development precincts.	At submission of development application for detailed design of the development	Development proponent
12.11 Ecologically Sustainable Development **12.11.1 Sustainable approach** The development is to be guided by a "whole-of-life" ESD approach – from the masterplanning of the site, the design of individual precincts and buildings, selection of building materials and finishes, construction methods, to the management of the facilities, implemented by all parties involved from the design, construction to the management of the development.	At submission of development application for detailed design of the development	Development proponent

Commitment	Timeframe	Responsibility for action
12.11.2 Site planning and design measures The following ESD parameters are undertaken in the design of the development: ▪ Retain significant trees and areas of ecological value. Minimise the destruction of biodiversity and retain as much habitat as practicable with limiting development areas to existing cleared sites and areas of secondary vegetation or low vegetation value. ▪ Avoid disturbance to and minimise site impact on the natural features of the site and its environmental and ecological values; ▪ Minimise site impact of cut and fill by siting residential allotments and road along the contours of the site; ▪ Building siting – consider topographical features and drainage patterns in road and subdivision layout. Design for allotments which enable orientation of buildings for optimum solar access in winter and for natural ventilation; ▪ Augment the site's ecological values with new landscape planting to attract wildlife and new habitats. Implement a climate responsive design in the siting and design of buildings and dwellings, with development designed to optimise the use of: ▪ Passive design strategies in the design of the buildings; ▪ Microclimate control of the external environment; ▪ Active systems that conserve energy and minimise operational energy and CO_2 production. Power consumption demand will be reduced through appropriate building design and management; ▪ Design and selection of materials to contribute to the sustainability of the development; and ▪ Minimise or avoid the use of toxic chemicals in building materials and finishes.	At submission of development application for detailed design of the development	Development proponent
12.11.3 Water conservation and management Implement water-efficient strategies to minimise potable water use, its supply to the site and its discharge onto the site and its natural waterways, with strategies to include: ▪ Rainwater harvesting to reduce potable water usage; ▪ Use of water efficient appliances; and ▪ Monitoring of water uses via a water management system.	At submission of development application for detailed design of the development	Development proponent

Commitment	Timeframe	Responsibility for action
12.11.4 Water reuse and stormwater management Implement Integrated Water Cycle Management and Water Sensitive Urban Design Strategies for the proposed development comprising: ▪ Harvesting of rainwater – from roofs for storage and reuse primarily for toilet flushing, with overflow from these tanks directed through inter-allotment drainage to communal storage ponds for use as irrigation to communal gardens and soft landscaped areas; ▪ Harvesting of surface water– for use for golf course, landscape and agricultural irrigation with water collected in water bodies around the site and reused; ▪ Maintenance of surface water quality by screening, filtration, sedimentation and bioretention to remove and retain suspended and dissolved pollutions; and ▪ Sediment and erosion control measures during construction and post-construction.	At submission of development application for detailed design of the development	Development proponent
12.11.5 Solid and waste management Implement solid and waste management measures to include: ▪ Encouraging recycling of materials; ▪ Reduction in waste generation; ▪ Use of on-site waste disposal; and ▪ Control of disposal of waste.	At submission of development application for detailed design of the development	Development proponent
12.11.6 Social commitment Implement ESD strategies in the operational management of the facilities.	At submission of development application for detailed design of the development	Development proponent