Conybeare Morrison

Shaolin Tourist & Residential Development

Comberton Grange, South Nowra NSW

Environmental Assessment Report

October 2012

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Prepared for: Shaolin Temple Foundation (Australia) Ltd.

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Revision	Date	Description	By	Chk	App
01	Mar 12	Draft Report	AT	WM	AT
02	Oct 12	Final Report	AT	DC	AKT

EXECUTIVE SUMMARY

A. Concept Application

This Environmental Assessment report has been prepared by Conybeare Morrison International Pty Limited (CM^+) to address the Director General's Requirements (D-GRs) under the former Section 75H (Environmental Assessment and Consultation) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The project received Project Application approval (MPO6-0135) on 11 September 2008. The application was extended and the D-GRs were reissued on 20 October 2010.

The Concept Application requests the Minister, under the former Section 75R (relating to Part 3A applications) of the EP&A Act, to enable the proposed development be permissible under the Shoalhaven Local Environmental Plan.

The report provides a thorough analysis of the site, key issues of the site as identified in the Director-General's Environmental Assessment requirements under the former Section 75F of the EP&A Act, site constraints, the suitability of the site for development, description of the proposed development, and consideration of environmental impacts of development on the site. The report outlines environmental management, mitigation and monitoring measures to be implemented to minimize any potential impacts of the project.

B. Existing Site

The Comberton Grange site comprises approximately 1,284 hectares. The site has its southern boundary to Currambene Creek, which drains east to Jervis Bay, and its northern, eastern and western boundaries to the Currambene and Nowra State Forests. The site is accessed from the west, from the rural standard road of Comberton Grange Road, and has the potential to be accessed from Forest Road located to the north-east.

The northern portion of the site was formerly a pine plantation (approximately 170 hectares), with the south and south-western portion of land located adjacent to Currambene Creek used as grazing land (approximately 110 hectares). A homestead (of local heritage significance) overlooked the valley of Currrambene Creek. A quarry and man-made lake are located at the central portion of the site.

C. Planning Context

The *South Coast Sensitive Urban Lands Review* (October 2006), commissioned by the NSW Minister for Planning and prepared by an Independent Review Panel in October 2006, evaluated the suitability of development on sites zoned for urban expansion, identified in the *Draft South Coast Regional Strategy*. This included the Comberton Grange site. The *Sensitive Urban Land Review* evaluated that part of the site is suitable for urban development and an integrated tourism-residential development could be supported on the grounds of its potential to generate tourism and related jobs for Shoalhaven.

The *South Coast Regional Strategy* (2006-2031) identifies the Comberton Grange site as "Sensitive Urban Land" and 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.

Areas suitable for development

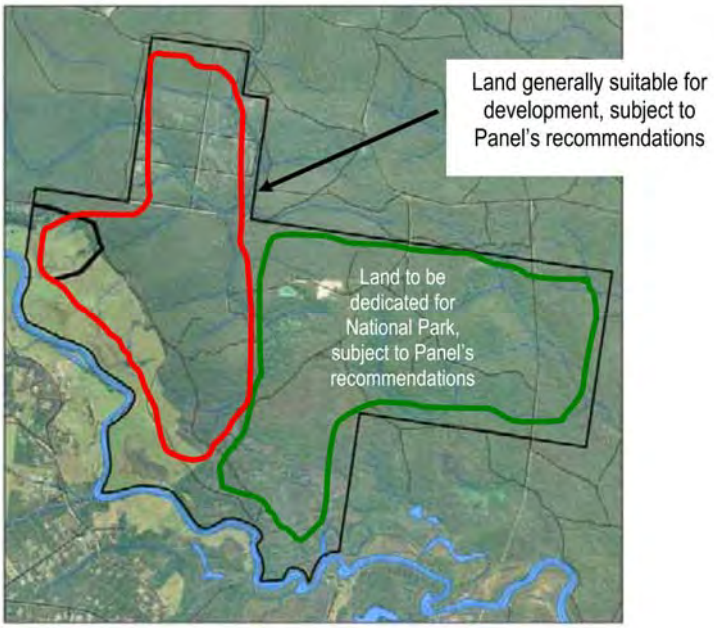
The *South Coast Regional Strategy* reinforces the recommendations of the *South Coast Sensitive Urban Lands Review* that **portions of the site suitable for limited development**. These portions include the:[1]

- Cleared land outside the flood plain;
- 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 not suitable for development

The *South Coast Sensitive Urban Lands Review* identified **areas unsuitable for development** as being:[2]

- Areas characterised as floodplain (1:100 year flood);
- 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);
- Where EECs (ecologically endangered communities) occur.



Recommendations of the South Coast Sensitive Urban Lands Review's for development in Comberton Grange (source: SCSULR, p.42)

The encircled area (red outline) is interpreted as providing an indicative area for development. The *Environmental Study and Planning Report in Respect of the Development Potential of Comberton Grange Property, Comberton Grange Road, Currambene* (October 2001), prepared by David Kettle Consulting Services, which informed the *South Coast Sensitive Urban Lands Review*, recommended **a minimum of 20m wide fuel free zone and a 20m wide fuel reduced zone for building adjacent to the forest**.[3]

[1] South Coast Independent Review Panel, *South Coast Sensitive Urban Lands Review* (October 2006), p.39 & 41.
[2] Ibid, p. 39 & 41.
[3] David Kettle Consulting Services, *Environmental Study and Planning Report in Respect of the Development Potential of Comberton Grange Property, Comberton Grange Road, Currambene* (October 2001), p.111.

The outline of the "land suitable for development" depicts the 40m setback requirement recommended by the Kettle Environmental Study. Additionally, an asset protection zone of up to 50m to surrounding State Forests is to be provided at the boundaries of the site.

The 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 to the State forests.

The *South Coast Sensitive Urban Lands Review* additionally states that the approximate Development Area comprises 450 hectares.[4] The proposed Development Area comprises approximately 280 hectares, which is approximately 62% of the Development Area identified in the SCSULR.

Development of the land is supported only if it comprises a fully integrated tourist facility with associated residential development, limited to 200-300 dwellings, which could be reviewed upon reaching this level. The tourist component is to be the predominant use, with the residential development to be limited. Site planning is to minimise impacts on Currambene Creek with provision of a 50mm wide buffer on either side of the creek as a riparian and wildlife corridor. The development must be retained under one ownership.

Moreover, substantial parts of the site are designated as land of ecological sensitivity with a habitat corridor identified on the *Jervis Bay Regional Environmental Plan*.

D. Project Description

The Development Proposal is for an integrated tourist and residential development for the Shaolin religious order on a landholding of approximately 1,248 hectares, comprising Lot 1 DP 725955, Lot 1 DP 550098, Lot 4 DP 63405, Lots 59, 60 and 61 DP 755928, known as Comberton Grange.

The site is located approximately 12km south of Nowra. The site has its northern, eastern and western boundaries to Currambene and Nowra State Forests, and its southern boundary to Currambene Creek, which flows into Jervis Bay and is classified as a sanctuary zone within the Jervis Bay Marine Park.

A sandstone and dolerite quarry is located at the central part of the site. The quarry has been identified by the Department of Primary Industries (DPI) as regionally significant due to its in-ground resources. Under *Shoalhaven Local Environmental Plan 1985* and *Draft Shoalhaven LEP 2009*, a 1000m buffer zone protects the extractive resource. A sedimentation control dam is located downstream of the quarry.

Approximately 280 hectares of the site is considered as developable. The proposed development will be sited within the developable areas of the site. Developable areas comprise:

- The northern portion of the site previously cultivated as a pine plantation – of approximately 170 hectares; and

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

- The south-western portion of the site overlooking Currambene Creek, formerly used for grazing and agriculture – of approximately 110 hectares.

The aim of the development is to achieve a high quality environmentally sustainable development that conveys the Shaolin philosophy and approach to life within a tranquil setting. The development is sited within development precincts bounded by creeks and forests to preserve the natural attributes and qualities of the site.

Tourist development

The tourist component of the site comprises the tourist precincts of:

- The **Buddhist Temple Sanctuary Precinct** comprising a walled complex of religious buildings with residential accommodation for its resident monks, surrounded by woodland of trees. The precinct is located within the central portion of the site in an elevated position along a natural ridgeline. Its arrival court is to the south-east, with the end of the temple complex marked by a Pagoda located to the north-west. The Temple axis is orientated towards the mountains to the north-west and Jervis Bay to the south-east. The Temple axis is reinforced by the location of a sculptural element to the north-west and the Pagoda lookout tower within the Chinese Garden Precinct to the south-east.
- The **Education Precinct** for a martial arts/ kung-fu academy comprising educational facilities, outdoor recreational spaces and student housing. The precinct is located west of the Temple Precinct.
- The **Village Centre Precinct** which is a neighbourhood centre with retail, commercial and dining facilities to serve the local needs of the tourist and residential community. The buildings, with active frontages, will encircle a central landscaped urban plaza with pedestrian streets. A convention centre and multi-unit residential building are proposed within this precinct. The precinct is located south-west of the Temple Precinct.
- The **Health and Wellness Precinct** comprising a Traditional Chinese Medicine Centre for the practice of traditional Chinese medicine, naturopathy and herbal practices and acupuncture procedures, as well as a fitness centre. The precinct is located west of the Temple Precinct.
- The **Hotel Precinct** providing rooms and self-contained cabins for up to 500 guests. The precinct is located at the south-western portion of the site overlooking the Currambene Creek valley. Associated facilities include restaurant, café and conference rooms.
- The **Information Precinct** comprising a Visitor Information Centre, tourist amenities and administration offices, located at the entrance to the site. There is potential for a small museum for cultural information and displays to be located within the centre. A large parking area is sited within this precinct for guests to transfer to golf carts or buggies for use within the site.
- The **Heritage Precinct** located at the site of the former Comberton Grange homestead on a hilltop at the south-eastern portion of the site. The homestead was burnt down but its archaeological remains exist. An interpretation strategy for the homestead remnants and its pastoral landscape will be implemented.
- The **Chinese Garden Precinct** comprising a traditional Chinese garden encircling the existing man-made lake/ sedimentation dam located near the quarry. Around the lake will be pavilions, walkways and gardens with a Chinese pagoda viewing tower sited along the central axis of the Buddhist Temple complex.

An 18 hole **golf course** is proposed to encircle the northern portion of the site, located predominantly within the bushfire setback zone. A clubhouse, driving range and putting greens are located at the western portion of the site, north of the Hotel Precinct.

Agricultural and herbal farms will be located within the open space corridors of the site as community gardens to be tendered by the monks, hired gardeners and residents.

Residential development

The residential component of the site comprises residential precincts located at the northern and western portion of the former pine plantation site (Residential Precincts A & B), the south-western portion of the site above Currambene Creek (Residential Precinct C), and within the Village Centre Precinct (Residential Precinct D). The residential precincts comprise:

- **Residential Precincts A and B** – located at the northern portion of the site comprises allotments of approximately 760m^2 for predominantly detached dwellings. The allotments are sited to overlook natural creeklines or the golf course.
- **Residential Precinct C** – sited on the higher slopes of the cleared land overlooking Currambene Creek. Being located in a highly visible area, the allotments are approximately 1,500m^2 to accommodate detached dwellings and to enable clusters of trees to be dispersed within each allotment and to allow for greater privacy between dwellings.
- **Residential Precinct D** – comprising a multi-unit residential apartment within the Village Centre Precinct accommodating one, two and three bedroom serviced apartments for weekly and monthly accommodation for families and those whishing to stay for retreat, tourist or health purposes.

E. Site access and movement

Access to the development will be from Forest Road to the north-east of the site, via a new sealed road. The existing unformed road of Comberton Grange Road will be retained, upgraded and used as a secondary access.

The new internal approach road to the development is aligned with the location of the Temple Pagoda. The approach road intersects the ring road that encircles the tourist portion of the development. A hierarchy of roads will be established within the development. Parking, service and loading areas are located within each precinct.

Dedicated pedestrian access is provided along each side of roads and streets within footpaths. Dedicated pedestrian access is provided with the Temple, Village Centre, Education and Health & Wellness Precincts.

The use of sustainable modes of transport – of coaches for tourist delivery, electric golf carts, bicycle and walking are encouraged within the site.

F. Potential environmental impacts, management and mitigation measures

The site has been evaluated on the potential impacts of the proposed development on its site environment and infrastructure, with environmental management, mitigation and monitoring measures to minimize any potential impacts of the project. These include:

F1. Indigenous heritage and archaeology

There are 25 Aboriginal cultural heritage recordings including 4 archeologically sensitive areas within the site. The majority of these sites will not be impacted by the proposed development. However, 4 recordings (CGIF3, CGIF6, Comberton Grange 1 and Isolated Find 1 are situated partially or wholly within the development footprint. These recordings have been assessed to be of low archaeological significance.

Comberton Grange 1 and Isolated Find 1, previously discovered at the northern portion of the site of the former Pine Plantation, could not be relocated during field survey for this project. It is unlikely that these previously recorded artefacts could effectively be salvaged prior to any ground disturbance work that may occur in this area. Prior to the commencement of ground disturbance works, the artefacts should be collected and moved from the area by a qualified archaeologist together with representatives from registered Aboriginal organisations.

Two of these recordings (CGIF3 and CGIF6), located near the existing unsealed road above the proposed Residential Precinct C, are considered to be of low significance within a local context. These sites have low archaeological research potential. With regard to Aboriginal cultural heritage values at these sites, no specific concerns were raised by the Aboriginal representatives who participated in the field survey. The location of each site should be inspected by a qualified archaeologist, together with selected representatives from the registered Aboriginal stakeholders immediately after initial clearance and ground disturbance works. Any visible artefacts should be collected and moved from the area of impact.

The Aboriginal Cultural Heritage consultant (Navin Officer Heritage Consultants Pty Ltd) concludes that there are no absolute constraints on the proposed development by Aboriginal cultural heritage findings.

Protocols for 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 as described in the Aboriginal Cultural Assessment Report (July 2012).

F2. European heritage

The Comberton Grange homestead is classified as an item of local heritage significance (Item 1160) under Shoalhaven Local Environmental Plan (LEP) 1985 and draft Shoalhaven LEP 2009. The colonial homestead was burnt down with only archaeological remains present. The site retains its local significance as a pastoral landscape.

The design avoids the portions of the site that have considerable natural and cultural heritage significance. To maintain the pastoral landscape, which is of local heritage significance and additionally of Aboriginal heritage significance, the lower portion of the pastoral land is retained and managed for passive recreation and agriculture. The

heritage archaeology of the former Homestead and the remains of the original 19th century post and rail fencing are retained (the latter, insitu or relocated) and conserved.

Ameliorative measures for development within the visual catchment of the Homestead site include:

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

F3. Ecology

More than 75% of the site is classified as environmentally sensitive containing native old growth forests, mature trees and associated fauna habitats, and within a habitat corridor under the provisions of the *Jervis Bay Regional Environmental Plan*. Areas with endangered ecological communities (EECs), SEPP 14 wetlands and SEPP 71 coastal protection areas not suitable for development comprise the:

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

The proposed development is not likely to have a significant impact on matters of national environmental significance listed under the *Environmental Protection and Biodiversity Conservation Act*.

Within the northern portion of the site (the former pine plantation), mitigation measures in development of the site include development kept:

- At least 50m clear of each side of the Georges River tributaries as an environmental corridor (40m fully vegetated and 10m buffer);
- 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;
- Clear of the SEPP 14 wetlands and flood plains along Currambene Creek; and
- Minimal intrusion into the eastern forested areas except for roadway and golf course.

Management measures include preparation of a Plan of Management for the protection and enhancement of forests for conservation, and for the management of Currambene Creek, wetlands and riparian corridors. The Plan of Management would address matters such as interfacing with development area, access and passive recreation, pest control, protection during construction activities, stormwater management following completion of development, water quality control and rehabilitation of disturbed areas and floodplain wetlands. The Plan will be developed in accordance with Shoalhaven City Council's *Generic Community Land Plan of Management – Natural Areas* (July 2001)

F4. Contamination

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

Mitigation and management measures include:

- Inspection of existing buildings, structures and underlying soils by an occupational hygienist and removal of any asbestos containing material;
- Removal of materials with lead content or finishes, stockpiled material and rubbish;
- Following clearing, inspection of areas previously inaccessible by suitably qualified consultant for potential signs of contamination; and
- Following site clearing and inspection, low density sampling should be undertaken across the site for heavy metals analysis.

F5. Acid sulphate soil

The proposed development is located above RL10, above the level in which acid sulphate soils are generally situated. Acid sulphate soils are not expected to be encountered within the proposed development area.

F6. Geotechnical

Preliminary geotechnical assessment indicates that the site will be geotechnically suitable for the proposed development and feasible with respect to slope stability. Detailed geotechnical investigation and assessment will be required as the design of the development proceeds.

F7. Bushfire

The site is located within an area mapped as containing *Category 1 Vegetation* under Shoalhaven City Council's fire area. Development must comply with the relevant bushfire codes and guidelines.

Bushfire protection measures implemented in the Development Masterplan and in the detailed design of precincts and buildings include:

- Provision of Asset Protection Zones (APZ) of inner and outer protection areas;
- Implementation of construction standards in the detailed design of the development to the required Bushfire Attack Levels (BAL), with dwellings constructed to BAL 12.5, BAL 19 and BAL 29, depending on the width of the APZ;
- Construction in accordance with *Planning for Bushfire Protection* (2006), AS 3959 (2009) – *Construction of buildings in bushfire prone areas* and the BCA;
- Appropriate access standards for public roads, private access and fire trails for residents, emergency services and fire fighters;
- Adequate water supply and pressure;
- Suitable landscaping to limit the spread of fire; and
- Emergency management and arrangements for fire protection and/ or evacuation.

F8. Infrastructure services

Authority water supply, sewerage, gas, electrical services are located from 4-6km from the site. The development will need to connect to these authority services.

The development will implement energy and water efficient strategies to minimise electrical and water supply from the authorities' electrical and water mains for environmental and cost benefits.

The implementation of water efficient strategies includes:

- Rainwater harvesting from roofs and stormwater to reduce potable water use;
- Use of water efficient appliances;
- Explore grey water recycling measures; and
- Monitoring of water use with a water management system.

Implementation of energy efficient strategies includes:

- Use of photovoltaic systems for energy generation;
- Use of solar hot water heating systems;
- Use of hybrid or mixed mode mechanical/ air conditioning systems for comfort control;
- Selection and installation of energy efficient fittings and appliances; and
- Implementation of energy management systems in buildings.

F9. Flooding

In the assessment of flood hazards, there are no bank overflows that would cause floodways outside the Georges Creek tributaries.

Whilst the proposed development will increase the area of impervious surface, volume of runoff and peak discharge, an increase in 10% of rainfall intensity over the entire catchment will only increase the 100 year ARI flood levels in the Georges Creek tributaries by 20-90mm. This would have minimal effect on flood levels of the creek.

Development is sited away from the creek zones and located above the 100 year ARI (Average Recurrence Interval) flood line. The floor levels of all buildings must be at least 500mm above the 100 year ARI flood levels. All structures within the Probable Maximum Flood (PMF) are to be designed to withstand Probable Maximum Flows. The golf course may extend within the 100 year ARI flood extents but no associated structures are to be located within this zone.

F10. Water cycle management and water quality

Site stormwater will be retained for reuse from roof water and surface water. Rainwater will be collected in tanks either under buildings or surface sited. Roof water will be filtered, stored and reused for toilet flushing and irrigation of landscape and agriculture.

Surface water will be collected and used for water harvesting. The increase in area of impervious surface due to development will 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 minimal with on-site detention not required for attenuation of peak discharges.

Stormwater quality will be improved by screening, filtration, sedimentation and bioretention for removal of suspended and dissolved pollutants prior to surface storage in dams for irrigation or entering the natural ecosystem.

Water sensitive urban design strategies will be implemented with bioretention swales comprising trenches filled with filter medium draining to subsoil drains. All stormwater discharging into natural waterways will be filtered through gross pollutant traps.

For the golf courses, the use of pesticides and fertilisers, selection of low nutrient grasses to tees and greens, and diversion of surface runoff to surrounding bioretention swales will be implemented.

F11. Traffic

Visitors to the tourist development will arrive by private car as well as private coaches through booked tours and accommodation. It is anticipated that the residential component of the development will comprise mainly Chinese nationals and retirees, with these groups anticipated not likely to generate a daily pattern of travel to work.

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.

Forest Road has adequate capacity to carry the increased traffic volumes of the proposed development.

However, the intersection at Forest Road/ Princes Highway will be strained by the development with delay in the right turn from Forest road into the Princes Highway in the 4.00-5.00pm peak hour:

- Under the Stage 1 development scenario – increasing to 1240 seconds; and
- Under the Ultimate development scenario – increasing to 2099 seconds.

Traffic generated by the Stage 1 and Ultimate development scenarios will have no impact on Jervis Bay Road/ Princes Highway intersection and delays.

Mitigation measures proposed by the traffic consultant include the installation at:

- ***Forest Road/ Princes Highway intersection***:
  - Traffic signals with dual right-turn lanes from Forest Road to the Princes Highway to improve the level of service; and
  - A left-turn slip lane in the Princes Highway as part of the RMS road improvements currently under construction.
- ***Jervis Bay Road/ Princes Highway intersection***:
  - Traffic signals with dual right-turn lanes to provide a comparable improvement in the level of service.

F12. Noise

A significant portion of the site is within the Nowra Military Control Zone with Currambene Creek under the 2 nautical mile wide helicopter flight corridor between HMAS Albatross and the Jervis Bay Training Area.

Noise levels measured on site (37-56dBA) indicate much lower levels than that predicted by the Department of Defence (68-72dBA, and the extent of air traffic within and near the site is less than that anticipated by the Department. Noise from surrounding roads will be negligible from the proposed development.

Department of Defence's anticipated air traffic should be updated at the time of detailed design of the development. Should air traffic noise continue to be an amenity issue for the development; the development should aim at achieving the recommended optimum indoor design sound levels.

The residential precincts are buffered from the main ring road by watercourses, forest and landscaping. It is not anticipated that noise from internal traffic will be a significant issue to the residential amenity of the dwellings.

Should air traffic noise increases from its current detectable levels to become an issue at the time of detailed design of the development, habitable building should be insulated against aircraft noise in accordance with the requirements of AS 2021 (2000): *Acoustics – Aircraft noise intrusion – Building siting and construction*.

F13. Views and visual amenity

The Farmland precinct, at the south-western portion of the site, is assessed to have very high visual sensitivity and potential visual impact due to the precinct's topographic setting, exposed nature, sparse vegetation and heritage significance.

The Pine Forest precinct, at the northern portion of the site, has low visual sensitivity and low potential visual impact due to its topographic setting and heavy vegetation screening.

Visual mitigation measures to be implemented are for development to:

Overall:

- Respect the environmental and cultural context of the site;
- Retain existing trees;
- Provide landscape buffers;
- Maximise landscape coverage and limit building footprint coverage;
- Minimise building bulk;
- Protect the visual curtilage of the former Comberton Grange Homestead site;
- Implement design controls for external materials and colours to buildings.

Farmland precinct:

- Be of low scale and low density;
- Maintain existing woodland areas;
- Preserve and enhance the riparian vegetation along Currambene Creek;
- Maintain the topographic landform;
- Provide adequate landscape buffers to development;

- Implement development controls on building form, height, colour, material and finishes to enhance the precinct's rural character;
- Implement maximum building height of 9m.

Pine forest precinct:

- Protect the swamp forest along tributaries;
- Ensure roofs are below the surrounding and background tree canopy (9m);
- Implement development controls;
- Vegetation of the Habitat Corridor precinct to be preserved.

F14. Socio-economic impacts

The development will provide:

- a significant branded tourist attraction to the Shoalhaven region;
- 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;
- a primary to high school educational academy focused on academic, religion and martial arts training;
- a Traditional Chinese Medicine centre for the holistic approach to health, healing and well-being; and
- a hotel that offers upmarket visitor accommodation and conference facilities, as well as accommodation within the site that will cater for students and families.

The development, with its branding and facilities, will attract visitors and residents into the region. The development will provide a number of services (educational, religious and lifestyle) and a neighbourhood tourist centre which will socially benefit the region.

The development will generate a permanent residential and considerable tourist population to its tourist attractions, conference and hotel facilities. The development will provide a number of housing options for permanent and short-term occupancy for families and potential the aged, with provision of age-friendly/ adaptable dwellings within its housing typologies. Residents could be supported by low level medical and community support services within the development.

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

The proposed tourist development will be a major attraction to the Shoalhaven and generate a considerable tourist population which will augment Shoalhaven's tourist market and economy. The development will produce positive economic effects for the 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. This will have positive flow-on effects for local businesses, with local residents and surrounding communities benefiting from increased employment opportunities.

Facilities and activities within the development will promote indigenous and cultural event tourism. The site will showcase and enable visitors to experience its landscape,

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.

F15. Mineral resources

A sandstone and dolerite quarry exists on the site. The quarry is identified as regionally significant due to the importance of the resource.

The quarry could resume operations for the extraction of materials for the construction of roads within the development.

An approximate 1000m diameter buffer zone exists around to quarry under *Shoalhaven Local Environmental Plan*. The proposed development is on land outside the 1000m buffer zone.

F16. Agriculture

The cleared land along the slopes of Currambene Creek has been identified by Shoalhaven City Council as Class 3 agricultural land. Class 3 land is grazing land or land suited for pasture improvement. However, the land along the slopes of Currambene Creek is of Aboriginal and archaeological sensitivity.

Agricultural cultivation will be avoided along the archaeological sensitive slopes of Currambene Creek. The open space corridors within Residential Precincts A and B will be used for herbal and vegetable agriculture, as community gardens, to promote the self-sufficiency of the site for fresh produce. Agricultural land must ensure and prevent higher levels of nutrients entering natural watercourses.

F17. Native vegetation

The condition of the natural vegetation is generally good to excellent.

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 total area of forest that would be removed is very small 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.

A package of compensation measures is proposed that will enhance the environment, wetlands and habitats on the property. A proposed Plan of Management would be prepared to guide the protection and enhancement of forested areas for conservation.

F18. Ecologically sustainable development

The site is not well provided for in terms of authority infrastructure or proximity to existing infrastructure. The site must explore the use of climate responsive design of buildings and ecologically sustainable strategies in its development.

The following ESD strategies will guide the 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
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Appendix 7:	*Report on Preliminary Geotechnical Investigation - Proposed Tourist and Residential Development, Comberton Grange* (September 2009) – prepared by Douglas Partners.
Appendix 8:	*Bushfire Assessment Report - Shaolin Tourist and Residential Development, Comberton Grange, South Nowra* (August 2012) – prepared by Conacher Environmental Group.
Appendix 9:	*Electrical Services Infrastructure Concept Report on the Shaolin Tourist & Residential Development, Comberton Grange* (Feb 2012) – prepared by Umow Lai. *Hydraulic Services Infrastructure Concept Report on the Shaolin Tourist & Residential Development, Comberton Grange* (Feb 2012) – prepared by Umow Lai; and
Appendix 10:	*Site Specific Flood Study – Proposed Shaolin Temple Project, Comberton Grange, South Nowra* (May 2012) – prepared by Brown Smart Consulting.
Appendix 11:	*Water Management Study, Comberton Grange, South Nowra* (May 2012) – prepared by Brown Smart Consulting.
Appendix 12:	*Traffic Impact Assessment – Proposed Shaolin Tourist and Residential Development, Comberton Grange, South Nowra* (March 2012) – prepared by Lyle Marshall & Associates Pty Ltd.

Appendix 13: *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 14: *Visual Impact Assessment – Shaolin Development, Comberton Grange, South Nowra, NSW* (July 2012) – prepared by Conybeare Morrison.

Appendix 15: *Socio-Economic Report on the Shaolin Tourist and Residential Development, Comberton Grange, South Nowra, NSW* (June 2012) – prepared by Conybeare Morrison.

Appendix 16: Consultations with Authorities

- Shoalhaven City Council – in regard to Primary Access Road from Forest Road to the site;
- Shoalhaven Water – in regard to water supply and sewerage infrastructure

1.0 INTRODUCTION

This Environmental Assessment report is prepared for the Shaolin Temple Foundation (Australia) Ltd for a Development Masterplan for a tourist and residential development at the site of Comberton Grange, located approximately 12km south of Nowra CBD and 2km east of the Princes Highway, the main north-south route from Sydney to Melbourne which traverses Nowra.

The Comberton Grange site comprises approximately 1,284 hectares. The site has its southern boundary to Currambene Creek, which drains east to Jervis Bay, and its northern, eastern and western boundaries to the Currambene and Nowra State Forests. The site is accessed from the west, from the rural standard road of Comberton Grange Road, and has the potential to be accessed from Forest Road located to the north-east.

The northern portion of the site was formerly a pine plantation (approximately 170 hectares), with the south and south-western portion of land located adjacent to Currambene Creek used as grazing land (approximately 110 hectares). A homestead (of local heritage significance) was located overlooking the valley of Currrambene Creek. A quarry and man-made lake are located at the central portion of the site. Substantial parts of the site are designated as land of ecological sensitivity with a habitat corridor identified on the *Jervis Bay Regional Environmental Plan*.

The suitability of the land for development was subject to independent panel review commissioned by the NSW Minister for Planning, which was completed in October 2006. The *South Coast Regional Strategy* (2006-31) reinforces the recommendations of the *South Coast Sensitive Urban Lands Review* (October 2006) that the portions of the site suitable for development include “the cleared land outside the floodplain, the area occupied by the former pine plantation, the plateau land and portions of the western forest areas that are not on the floodplain of Currambene Creek.” Development of the land is supported only if it comprises a fully integrated tourist facility with associated residential development, limited to 200-300 dwellings.

The proposed Masterplan is for an integrated tourist development, the centre piece of which is the Shaolin Temple Sanctuary, augmented by a neighbourhood town centre, hotel, a martial arts training centre, traditional Chinese medicine centre, herbal and agricultural farms, Chinese garden; and supported by up to 300 dwellings within the areas of the site suitable for development.

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2.0 THE SITE

2.1 Site Location

The site for the proposed Shaolin tourism and residential development proposed at Comberton Grange, South Nowra NSW is located approximately:

- 12km south of Nowra CBD;
- 6km south of South Nowra;
- 6km west of Jervis Bay; and
- 2km east of the Princes Highway.

The site is located within the Shoalhaven local government area. (Refer to Figure 2.1)

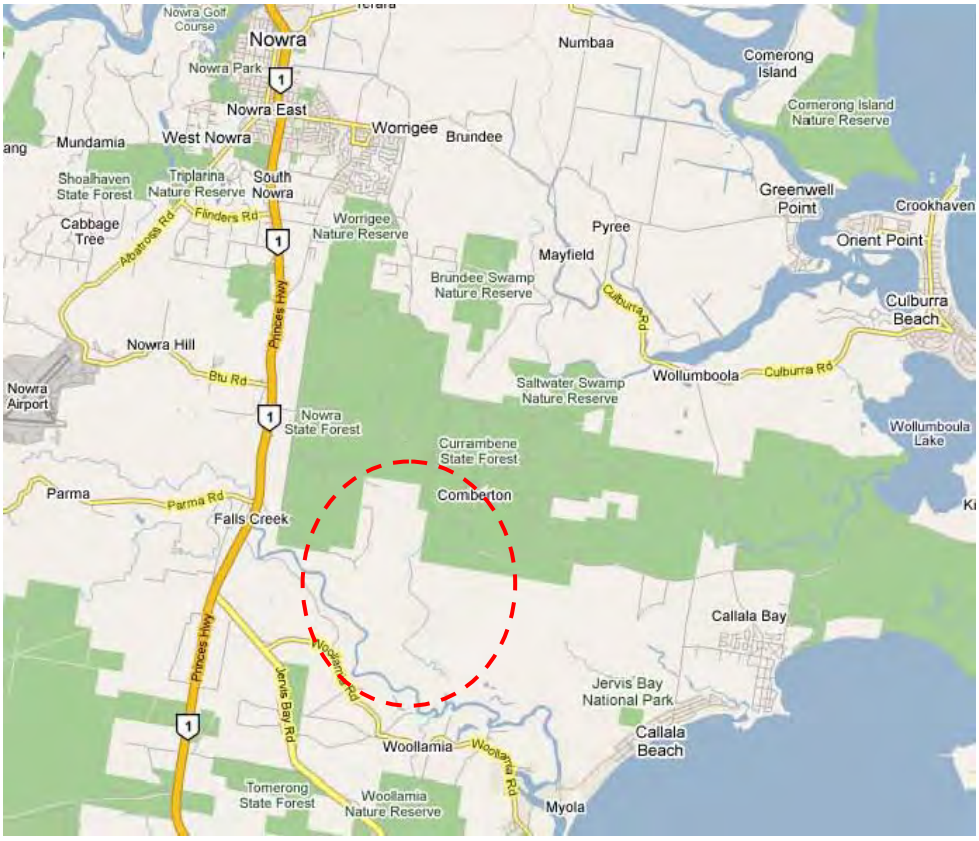


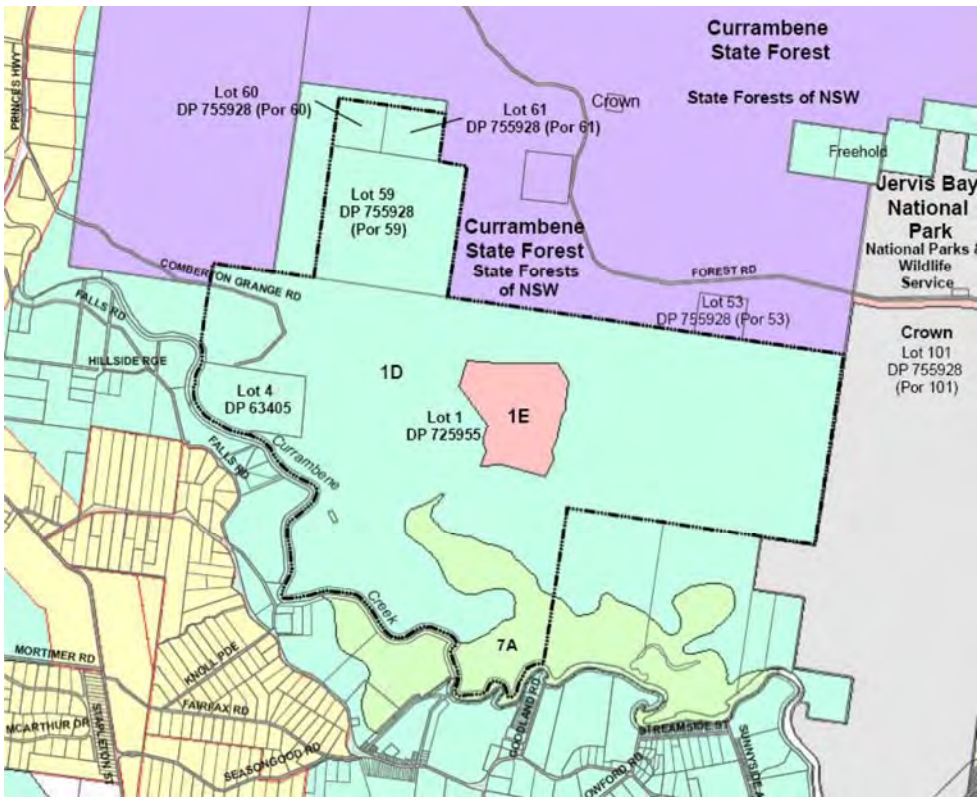
Figure 2.1: Location map

2.2 Legal Description

The site consists of 7 allotments, being:

- Lot 1 DP 725955;
- Lot 1 DP 550098;
- Lot 4 DP 63405;
- Lot 59 DP 755928;
- Lot 60 DP 755928; and
- Lot 61 DP 755928.

(Refer to Figure 2.2)



Zoning legend under Shoalhaven LEP 1985:

1D General Rural

1E Extractive and Mineral Resources

7A Ecology

Figure 2.2: Property titles and existing land use zoning

2.3 Site Area

The site comprises approximately 1,284 hectares, of which approximately:

- 170 hectares is within the former pine plantation; and
- 110 hectares is along the cleared slopes overlooking Currambene Creek.

2.4 Site Ownership

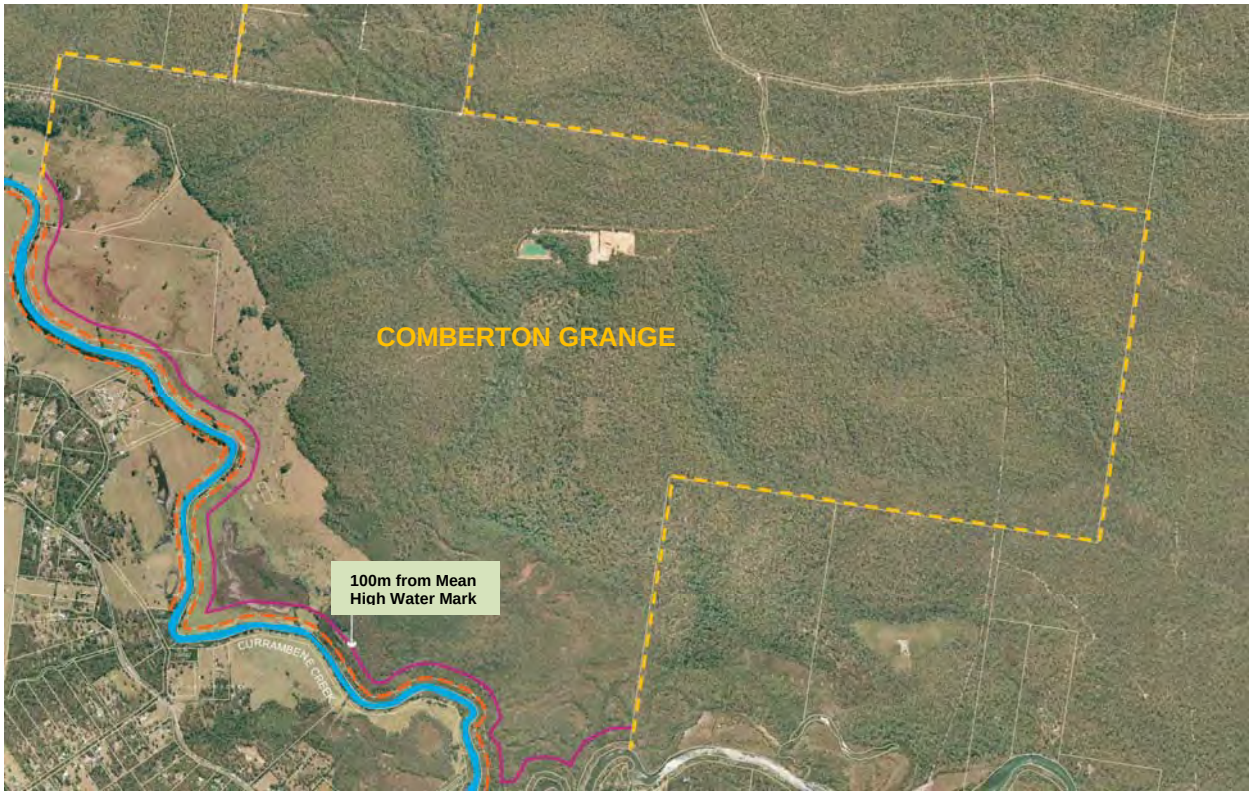
The land is owned by Shaolin Temple Foundation (Australia) Limited.

2.5 Site Description

The site comprises the disused farmland of the former Comberton Grange landholding at the south-western portion of the site, the former Pine Plantation at the northern portion, and the heavily vegetated forest at the central and eastern portion of the site. (Refer to Figure 2.3)

The site has its southern and western boundaries to Currambene Creek which drains to the east to Jervis Bay. Currambene Creek is classified as a Sanctuary Zone within the Jervis Bay Marine Park and is defined as an estuary by the former Department of Water Resources.

A public (Crown Land) reserve was created in 1956 along Currambene Creek (Figure 2.3). The width of the reserve is defined as 30.48m (100ft) from the creek's high water mark. A zone, 100m of the high water mark, is defined as being in a "sensitive coastal location".



Legend

Crown Reserve – 30.48m(100ft) from High Water Mark (created 1956)

100m from High Water Mark (Sensitive Coastal Location)

Currambene Creek

Figure 2.3: Crown Reserve and Sensitive Coastal Location at Currambene Creek

The northern boundary of the site adjoins the Currambene State Forest. To the east of the site is Crown land and freehold land. To the west is Nowra State Forest (Figure 2.4).

About 75% of the site is covered by forest, woodland and wetlands. The bushland is in a fairly natural condition with a few bush tracks and evidence of previously logging undertaken. The bushland is contiguous with the forests and woodlands to the north and east of Currambene State Forest and Jervis Bay National Park. The central portion of the site has been classified as a habitat corridor under Jervis Bay Regional Environmental Plan. The eastern portion of the site, although not classified as habitat corridor, comprises mature forestation and is an ecological habitat.

The tributaries of Georges Creek extend north-south, from the former pine plantation, through the centre of the site to Currambene Creek. The tributaries of Bid Bid Creek traverse the eastern portion of the site.

Figure 2.4: Local context

Northern portion

The former pine plantation, located at the northern portion of the site, measuring approximately 166ha, was logged and abandoned many years ago, supports a regrowth vegetation of mainly native plants, trees and wildling pines.[5]

Central and Eastern portion

A sandstone and dolerite quarry is located in the central part of the site formerly used by Shoalhaven City Council for the harvesting of road base material with an unsealed access from Forest Road. 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 DPI has advised that the dolerite is generally overlain by a substantial thickness of sandstone, with the dolerite being a more significant hard rock

[5] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments*, Comberton Grange (2012).

construction resource. A 1000m buffer zone protects this extractive resource. A sedimentation control dam is located downstream of the quarry.

South-western and southern portion

Cleared grazing land/ open pasture are located in the south of the site adjacent to Currambene Creek. Beyond the open pasture is the creek corridor of Currambene Creek. Along the northern side of the creek are freshwater wetlands.

The former Comberton Grange homestead, located in the south-east corner of the site, was destroyed by fire in 1990. Some farming structures remain including sheds, water tanks and fencing.

Development Areas

The **Northern Development Area** (NDA) is located within the former pine plantation portion in the northern of the site. The NDA comprises Lots 59- 61 DP 755928 and a minor amount of Lot 1 DP 725955 and has a total area of approximately 170 hectares.

The **Southern Development Area** (SDA) is located in the southern and south-western portion of the site, adjacent to Currambene Creek. The SDA is located within Lot DP 725955 and has a total area of 110 hectares.

2.6 Climatic Conditions

2.6.1 Seasonal temperatures

The site is located in temperate climate zone with cool to cold winters and mild to hot summers. Recorded mean seasonal temperatures are:

- Spring: September – November: 10.8^0 – 21.5^0C
- Summer: December – February: 17^0 – 26.7^0C
- Autumn: March – May: 11.8^0 – 21.4^0C
- Winter: June – August: 7.6^0 – 21.5^0C

The highest summer temperature recorded is 40.5^0C (in February), with mean highest temperature at 37^0C. The lowest winter temperature recorded is 2.2^0C (in July), with mean lowest temperature at 3.76^0C.

The design of buildings and dwellings, and selection of materials, must consider the specific climatic conditions of the location.

2.6.2 Rainfall

Mean annual rainfall: 1112mm.

2.6.3 Wind conditions

Wind conditions during all seasons at:

- 9am is predominantly from the west and north-west in spring and winter, with summer from the south and north-west and autumn from the north-west and west.
- 3pm is predominantly from the east, with some winds from the north-east and north-west (in spring, summer & autumn), with winds predominantly from the west and some from the south (in winter).

The southern portion of the site, overlooking a rural valley, is exposed to cold winds from the south. The design of dwellings must consider capturing the favourable winds from the east, north-east and north-west and increase protection from winter southerlies.

2.7 Historical Uses

Historical uses on the southern portion of the site of the Comberton Grange homestead are pastoral, for cattle grazing and dairying until 1999. In 1972, Comberton Grange was sold to a company called Armco. In 1985, Shoalhaven City Council purchased Comberton Grange from Armco, to gain access to its mineral resources. The homestead was leased and lived in until 1989. In early 1990, the homestead destroyed by fire. Some farming structures remain, including sheds, water tanks and fencing.

The northern portion of the site was a former pine plantation.

Quarrying on the Comberton Grange site was in operation in the 1980s for sandstone and dolerite, as road base material.

2.8 Existing Uses

Existing uses of the site is currently rural, with grazing along the cleared slopes of Currambene Creek.

The quarry, whilst currently having development consent for a maximum annual production of 55,000 tonnes, it is no longer in use. Extraction of the material to date has consisted of low quality sandstone.

Shoalhaven City Council resolved in May 2006 to sell the subject land to enable the establishment of a Shaolin Temple development on the site.

3.0 REGIONAL CONTEXT

3.1 Regional Context

The Shoalhaven Local Government Area (LGA) comprises an area of 4660 km^2 and stretches from north of the rural township of Berry to a point south of the harbourside township of Ulladulla. The region is bounded by the Illawarra escarpment to the west and the Pacific Ocean to the east. Its topography combines mountainous terrain, flat coastal plain, bays, inlets, lakes and rivers. The LGA also comprises 49 towns and villages. Early established towns include Nowra, Berry, Milton and Kangaroo Valley.

Figure 3.1: Regional context

3.2 Population Statistics

In 2002, the estimated resident population was 91,000, which have grown by over 29% since 1991. Forecasts based on medium level growth indicate that the population of Shoalhaven will reach 113,000 by 2016.

Shoalhaven continues to have the largest growth of any LGA in the Illawarra region with approximately 32% of the region's population growth occurring in the area. Shoalhaven now has 22% of the region's population.

3.2.1 Age profile

The Shoalhaven LGA has the following statistical profile:

- Children (0-12 years) in Shoalhaven has declined as a proportion of the overall population profile reflecting a significant reduction in the 25-39 year old age group as a result of out migration;

- Shoalhaven has a significantly lower than average proportion of young people; and
- Shoalhaven has a significantly higher than average proportion of residents aged 55 years+ when compared to regional and state averages.

3.2.2 Family and household types

Family and household types in the Shoalhaven LGA statistically comprise:

- The majority of households in Shoalhaven are family households; and
- Single parent families have increased in Shoalhaven since 1996.

3.2.3 Income

The income levels in Shoalhaven are low, with household incomes markedly lower than the rest of the Illawarra region and the State.

3.2.4 Housing and accommodation

The Shoalhaven LGA has a high level of dwellings as separate houses (88%) with high home ownership rate of 50% and low level of public housing. The LGA has low occupancy rates, with an average of 2.44 people per dwelling.

These factors, plus a higher proportion of residents in the LGA aged 55+ years, suggests that the region is an attraction for the sea change demographic.

3.2.5 Unemployment statistics

Unemployment statistics in the LGA indicate that Shoalhaven has very high youth unemployment, with a large proportion of part-time employment when compared to the Illawarra region and NSW.

3.2.6 Household structure

The household structure of the LGA indicates that almost 40% of persons over the age of 75 years live on their own.

3.2.7 Cultural background and diversity

Statistically, the cultural background of the LGA indicates that only a relatively small percentage of Shoalhaven residents were born outside of Australia when compared to regional and State averages, with a low percentage of Shoalhaven residents born in non-English speaking countries.

3.2.8 Indigenous people

The indigenous profile of the Shoalhaven LGA indicates that the LGA has a significant number of Indigenous residents, mostly living in northern Shoalhaven.

The local Indigenous population has a younger age profile, less secondary school qualifications, with under half as many Indigenous persons have completed Year 12, when compared to non- Indigenous persons.

Their unemployment rate is 2.8 times greater than for Shoalhaven as a whole.

3.3 Economic Development

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

Manufacturing, defence, building and construction, education, tourism and agriculture represent the core income generating economic activities for Shoalhaven. Shoalhaven's expansion in population makes this region an increasingly popular choice for investors and business, both nationally and internationally.

Shoalhaven has a wide range of retail and business service options. There are over 4,000 businesses in operation within Shoalhaven. This number has traditionally increased by approximately 100 per annum. This healthy growth in new business is due to the strong population growth and economic development. Key contributors to economic development are tourism and housing.

3.3.1 Tourism

The spectacular natural environment and its role in quality of life is the major attraction of Shoalhaven. The region possesses a coastline of pristine beaches and scenic features such as the Jervis Bay Marine Park, Shoalhaven River, Morton and Budawang National Parks, the Budawang Ranges, Kangaroo Valley.

The area's strong tourism sector has significant economic impact and potential for growth. Key attractions include beaches, coastal and aquatic activities of beaches and marine life (dolphin and whale watching at Jervis Bay), national parks and wildlife, horse riding, the rural hinterland of vineyards and markets, golf courses, and the heritage aspects of the region. In recent years, considerable investment has been made in hotel/ motel accommodation, upgrading of existing caravan parks and the introduction of new holiday accommodation of all types. Growth opportunities have been identified in the short term ecotourism, and international visitor markets.

3.3.2 Housing

Shoalhaven's affordable real estate offers a range of lifestyle options, which include suburban, rural or coastal lifestyles. The range of residential sites is diverse. These range from small acreages and larger farms to suburban blocks in the Nowra/ Bombaderry area.

The natural environment and a rural lifestyle are not far from any residential area. The region's rural villages, once primarily occupied by holiday workers, are now increasingly permanent dwellings for its local workforce or those who have retired into the area.

3.4 Regional Road Network

Shoalhaven is strategically located on the Princes Highway, 160kms south of Sydney, 160kms North West of Canberra and 800kms north of Melbourne. A link exists from the Princes Highway, between Nowra and Moss Vale through Kangaroo Valley, to the main Sydney/ Melbourne corridor of the Hume Highway. Road travel times to key centres from Nowra are as follows:

- Sydney: 2.5- 3 hours
- Canberra: 2.5 hours
- Melbourne: 12 hours

3.5 Existing Transportation Systems

3.5.1 Rail

Both passenger and freight transport are available at Bomaderry, north of the Shoalhaven River. This rail line connects through Wollongong to Sydney. Trains run seven days a week from Bomaderry and Berry Stations. Access to Sydney and Wollongong generally incurs, changing trains at Kiama. Services operate at roughly two hours apart from early in the morning, to late at night. Extra commuter services run during the week.

3.5.2 Bus and coach

There a number of bus routes that travel along the Princes Highway. These routes are:

- Route 732: Woollamia to Huskisson, Vincentia, Sanctuary Point, St Georges Basin, Basin View, Tomerong, Nowra and Bomaderry.
- Route 733: Erowal Bay Village to Hyams Beach, Jervis Bay Village, Wreck Bay, Nowra and Bomaderry.

Coach services provide access from the north and south of the site but not directly to the site.

3.5.3 Airport

There are several helipads in the Nowra district and the airport at HMAS Albatross is open to commercial operation.

3.6 Existing Services and Facilities

3.6.1 Educational facilities

Tertiary

Education facilities include a campus of the University of Wollongong in Nowra, Illawarra Institute of Technology Colleges at Nowra/ Bomaderry and Ulladulla.

Primary and secondary schools

The area operates five public secondary schools and 23 public primary schools in conjunction with seven private schools offering either secondary or primary education or both.

There are a number of schools located in reasonably close proximity to the site:

- Falls Creek Public School – is the closest school to the site and is located 3km directly west of the site; and
- Tomerong Public School – is located approximately 10kms south of the site along the Princes Highway.

There are also a number of schools in Huskisson and Vincentia, which include Vincentia High School and Huskisson Public School located south of the site. To the north of the site in South Nowra are Shoalhaven High School, Nowra High School, and St John the Evangelist High School.

3.6.2 Health facilities

Shoalhaven LGA is serviced by three hospitals, being:

- Shoalhaven District Memorial Hospital (public) on Shoalhaven Street, south of the Shoalhaven River, approximately 13km north of the site. The hospital has 104 beds and provides accident and emergency, primary care, obstetrics, paediatrics, and medical and surgical services;
- Nowra Private Hospital, located in Weenoona Place in southern Nowra, is approximately 10km from the site; and
- David Berry Hospital, in Berry, which is a community hospital for rehabilitation and palliative care.

A comprehensive range of specialist services are available in the area.

3.6.3 Recreational facilities

The South Coast is a focal destination for people looking for a relaxed lifestyle in pristine environments. Recreation and lifestyle are strong features in this growth area. Shoalhaven, a popular tourist destination, two hours drive from Sydney, offers a variety of coastal recreational and cultural activities.

The sea change phenomenon has taken over the country as retirees, professionals and young families relocate out of metropolitan areas to more affordable and pleasant surrounds.

3.6.4 Cultural facilities

An arts centre offering a program of art exhibitions and musical performances is located in Nowra. Cultural activities are also available at Arthur Boyd's Bundanon and Riversdale properties. Within the Nowra, are four public libraries and a cinema (Roxy Cinema Complex).

3.6.5 Retail facilities

The site is located approximately 8km from the retail and service facilities at Nowra.

3.6.6 Parklands

The LGA has regional and local parks and sporting fields. There are additionally 300,000 hectares of national parks and State forests.

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4.0 LOCAL CONTEXT

4.1 Surrounding Land Uses and Urban Form

The site is bounded by the heavily vegetated forests of Nowra State Forest to the north-west; Currambene State Forest to the north-east and by Jervis Bay National Park to its east. Low scale residences on rural allotments are sited to its west. These landholdings have access to Comberton Grange Road.

South of the site, beyond Currambene Creek, are detached residences on rural landholdings north of Falls Road. Residences are sited on large allotments to the precinct south of Falls Road.

A development, Currambene Cottages, is located directly south of the site and north of Falls Road. Currambene Cottages is a bed and breakfast development.

4.2 Surrounding Road Network[6]

Princes Highway

Princes Highway, a major north-south arterial road servicing the NSW South Coast, linking Sydney and Melbourne is located approximately 2.5km west of the site. The Highway passes through Nowra and South Nowra.

Under the RTA Princes Highway Safety Improvement Works, Princes Highway has been upgraded for its 4km length to a 4 lane dual carriageway between Forest Road (to the north) and Jervis Bay Road (to the south), with full seagull intersection improvements at Jervis Bay Road and partial seagull improvements at Forest Road, along with a 2-lane bridge duplication at the Highway over Currambene Creek. Additionally, channelization has been implemented at Comberton Grange Road to provide right turn from the Highway and a U-turn facilities at Parma Road, Comberton Grange Road and Forest Road to allow landowners directly fronting the Highway to have safe access in all directions.

From Princes Highway, the site is accessed from the west from Comberton Grange Road, which is formed gravel/ dirt road which requires upgrading. The intersection of Comberton Grange Road and Princes Highway has recently been upgraded by the RTA with left in/ left out at the Highway, and a right turn in to Comberton Grange Road from the south.

Forest Road

Princes Highway accesses Forest Road to the north and north-east of the site. Forest Road is a collector road that links Princes Highway to the coastal towns at Callala Bay, Currarong and Culburra Beach. Forest Road has a sealed carriageway of 6.7m wide with minimum 1m wide sealed shoulders. The intersection of Forest Road and Princes Highway has also been recently upgraded by the RTA.

There is currently no access to the site from Forest Road. Whilst a road (Charcoal Road) has been identified to the north-eastern of the site, it has not been formed.

[6] Lyle Marshall & Associates Pty Ltd, *Traffic Impact Assessment for Proposed Shaolin Tourist Residential Development at Comberton Grange, South Nowra, NSW* (2012).

Comberton Grange Road

Comberton Grange road is a local road that provides direct access from Princes Highway to the western part of the site. The road is sealed and reconstructed for about 200m from the intersection at Princes Highway. The standard of the road deteriorates beyond this point and is unsealed with deep potholes.

(Refer to Figure 4.1)

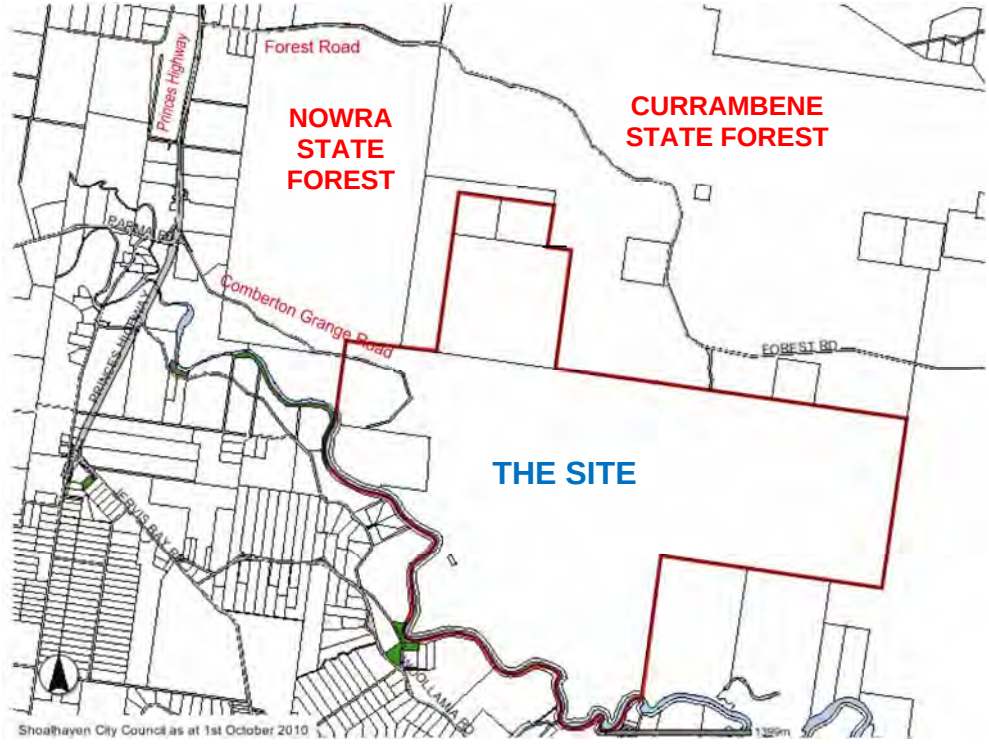

Figure 4.1: Surrounding road network and land use

4.3 Existing Transport Systems

The nearest railway station is at Bomaderry (Nowra), located north of Nowra town centre approximately 16 km from the site. Travel from Sydney Central station to Nowra is via the South Coast line, via Wollongong and Kiama.

Bus routes that run along the Princes Highway comprise:

- Route 732 – Bomaderry to Nowra, S. Nowra, Falls Creek, Tomerong, Woollamia, Huskisson, Vincentia, Old Erowral Bay, Sanctuary Point and Basin View; and
- Route 733 – Bomaderry to Hyams Beach, Erowal Bay, Jervis Bay and Wreck Bay.

4.4 Proposed Transport Infrastructure Upgrading

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

The Princes Highway is to be duplicated to provide 2 lanes in each direction between Kinghorn Street and Forest Road, South Nowra, and is anticipated to be completed by early March 2014.

5.0 SITE ANALYSIS

5.1 Site Access and Existing Road Network

The site can be accessed from two rural standard roads, off the Princes Highway, being:

- **Forest Road** – 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. There is currently no direct access to the site from Forest Road. Access to the quarry is available from Forest Road, on the northern boundary.
- **Comberton Grange Road** – 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.

Currambene Creek is navigable by small craft between Huskisson, on the shore of Jervis Bay, and the site.

5.2 Site Topography

The site is characterised by low undulating hills with moderate slopes that fall to the south, towards the flatter floodplains adjoining Currambene Creek. The site rises from less than 1m AHD along the banks of Currambene Creek to a maximum height of 76m AHD towards the eastern boundary. Slope gradients range form less than 2% to up to 8% in the western part of the site, with some isolated areas of up to 15% slope. Gradients of between 12-20% are located on slopes falling towards Currambene Creek.

The topography of the pine plantation is undulating with gradients ranging from 50m AHD at the north-western corner to below 10m AHD along the drainage lines. Gradients in this area are generally less than 10% and average approximately 4-5%. (Refer to Fig. 5.1)

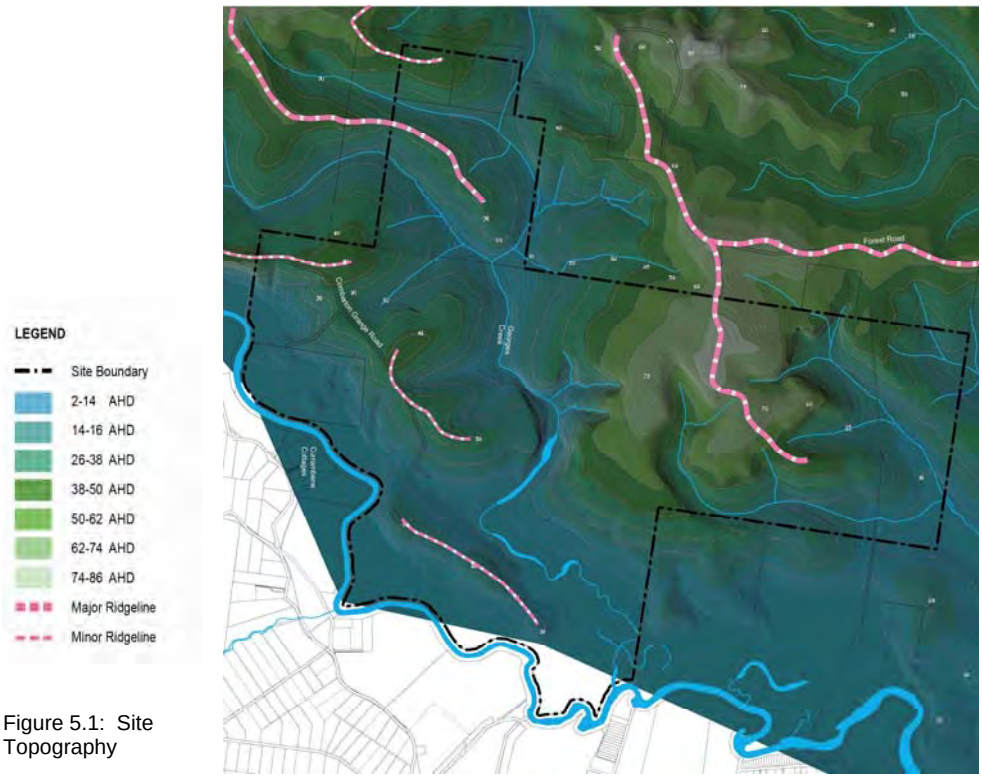

Figure 5.1: Site Topography

5.3 Site Vegetation

The land is substantially vegetated with native forests and woodlands which cover the majority of the site. The central and eastern portions of the site comprise "land of ecological sensitivity", with a habitat corridor identified in the Jervis Bay Regional Environmental Plan. Parts of the land also contain declared Endangered Ecological Communities (EEC's) under the Threatened Species Act – comprising Illawarra Lowlands Grass Woodland, Floodplain Swamp Forest, Swamp Oak Floodplain Forest and Coastal Sand Swamp Forest.

Cleared pasture areas of exotic grasses and introduced species are located in the southern portion of the site above Currambene Creek. Wetlands located along the northern banks of the creek are characterised by estuarine vegetation of native trees and open understorey of shrubs.

(Refer to Figure 5.2)

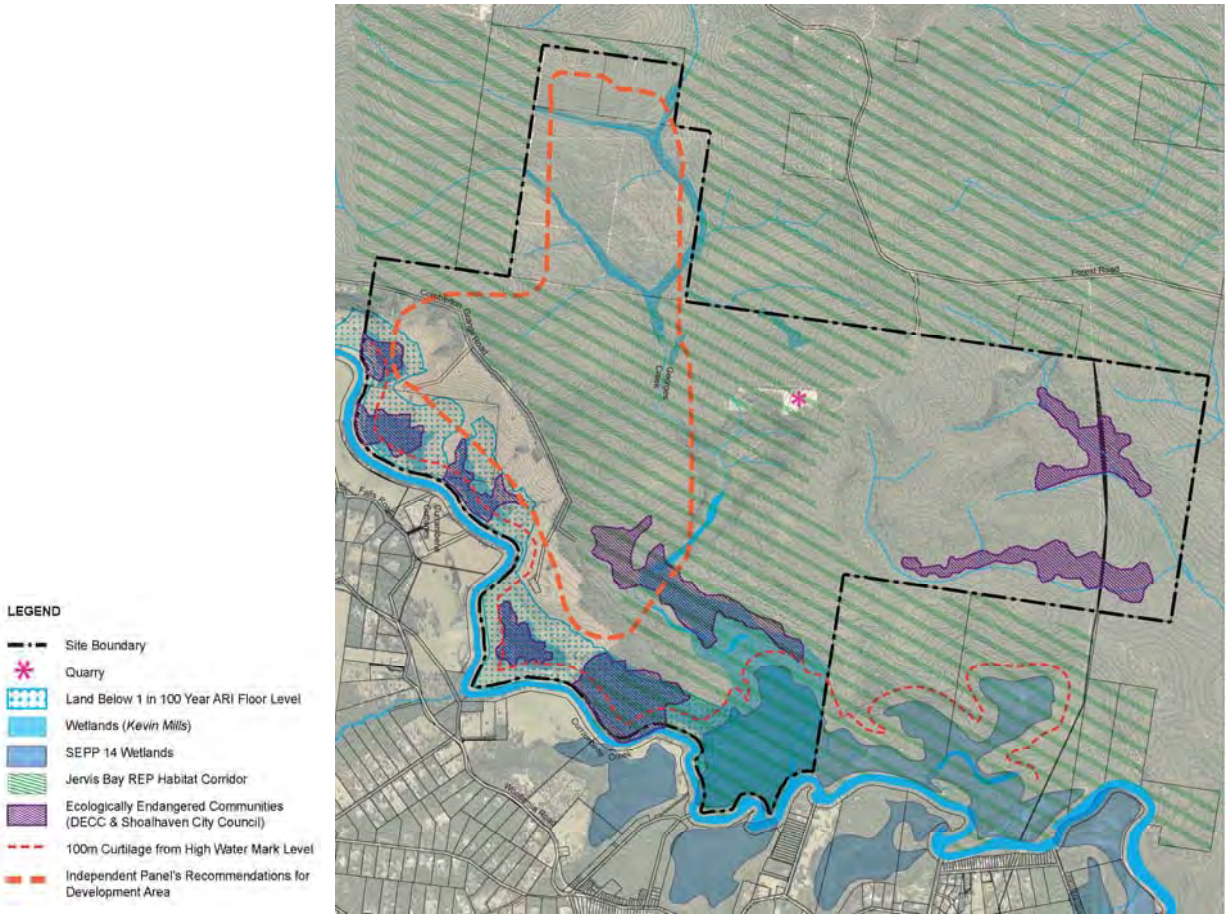

Figure 5.2: Natural systems map

5.4 Landscape Characteristics and Scenic Quality

Areas with very high visual sensitivity comprise the exposed cleared pastureland along the northern slopes of Currambene Creek and the site of the former Comberton Grange homestead located on a prominent knoll overlooking the creek. These areas are highly visible from settlements on the south-western side of the creek adjoining Falls Road. The following figures (Figures 5.4–5.8) illustrate the pastoral nature of the pastureland.

The habitat corridor of native forest and woodlands within the central portion of the site provides a landscape backdrop to this pastureland as well as a visual barrier to the northern portion of the site of the former Pine Plantation, when viewed from these settlements south of the creek. (Refer to Figure 5.3)

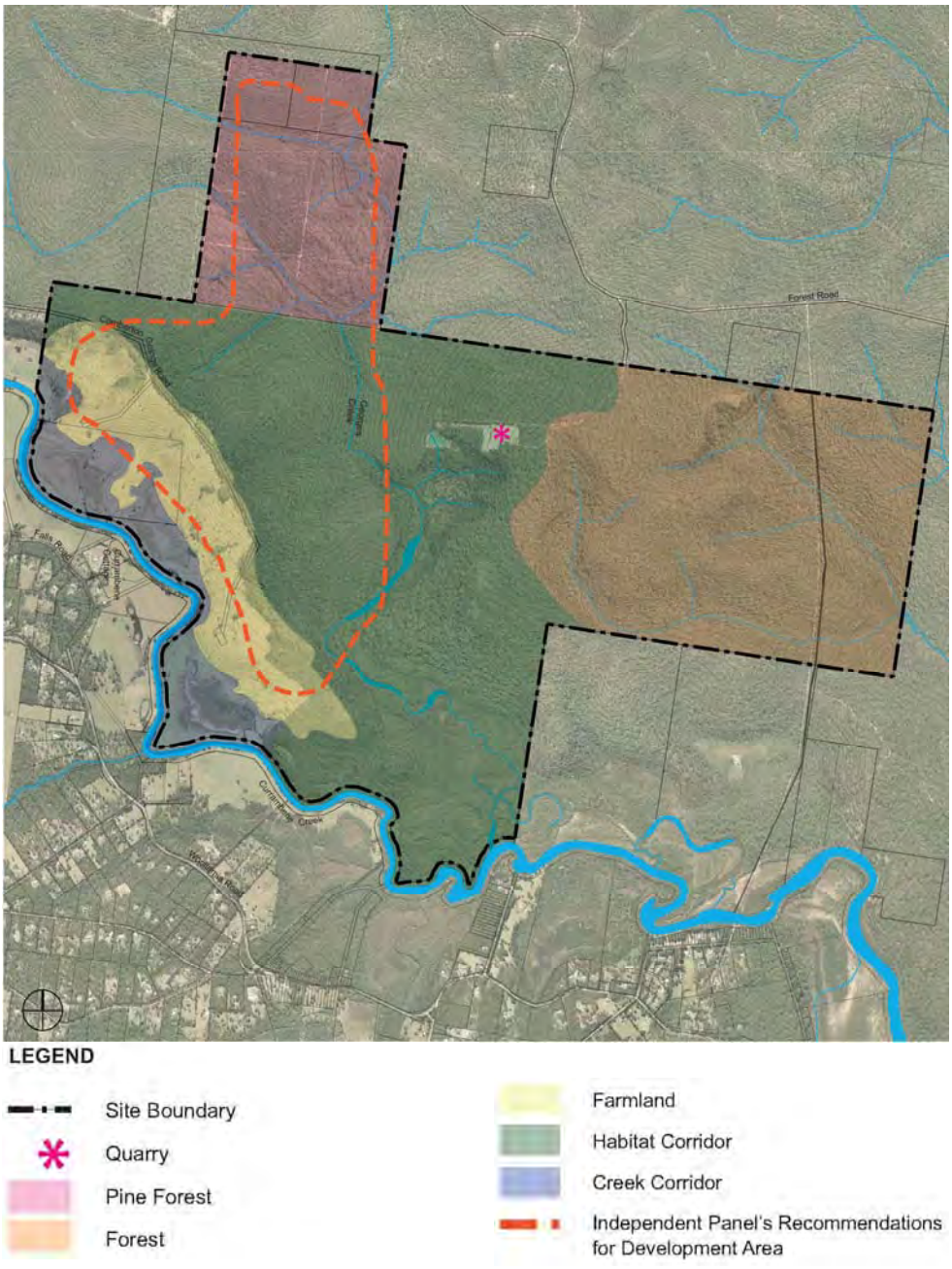

Fig. 5.3: Landscape character precincts

Figure 5.4: View northwards from the southern portion of the site

Figure 5.5: View north-east from south-western portion of the site

Figure 5.6: View south from existing internal road above pastureland

Figure 5.7: View south-west from existing road above pastureland

Figure 5.8: View east from south-western portion of the site

The dam at the central portion of the site, surrounded by woodland and forest, is a highly scenic area (Fig. 5.9).

Figure 5.9: View of dam near quarry, located at central portion of the site

5.5 Site Ecology

5.5.1 Wetlands

There are several wetlands identified by SEPP 14 – *Coastal Wetlands* within the site. These are located within the vicinity of Currambene Creek and the lower section of George Creek (Figure 5.10). This area supports a complex of freshwater and saltwater wetlands, ranging from very low-growing saltmarsh to dense forest. Nearly all of these wetlands are identified as endangered ecological communities of one type or another in NSW.[7]

[7] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments*, Comberton Grange (2012), p.17.

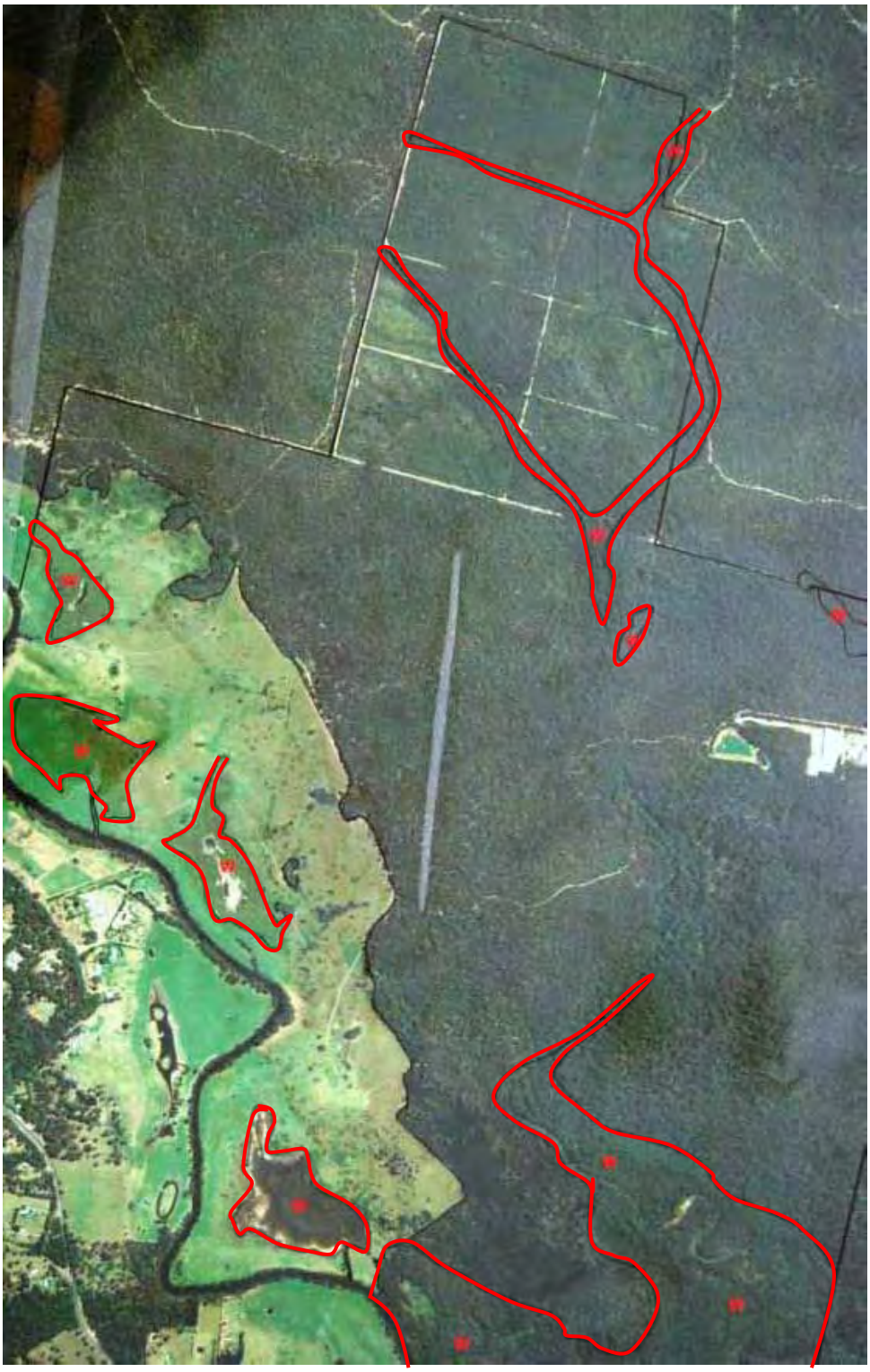

Figure 5.10: Distribution of wetlands on the site (source: Kevin Mills & Associates)

Freshwater wetlands

Natural freshwater wetlands are located at the floodplain flats and riparian corridors along creeklines. There are three separate freshwater wetlands on the cleared farmland, attached to Currambene Creek by small floodplain channels (Figs 5.11–

5.14). The floodplain wetlands are dominated by Tall Sedge (*Carex appressa*) and other less common wetland species. Floodplain wetland trees include:

- Prickly-leaved Paperbark (*Melaleuca styphelioides*);
- Swamp Oak (*Casuarina glauca*);
- Cabbage Gum (*Eucalyptus amplifora*); as well as
- Stands of Swamp Paperbark (*Melaleuca ericifolia*).

Figure 5.11: View across northern fresh wetland with tussocks of sedge *Carex appressa (source: K. Mills & Associates – F2)*

Figure 5.12: View across northern fresh wetland with stands of background shrubs of *Melaleuca ericifolia (source: K. Mills & Associates – F3)*

Figure 5.13: View across central fresh wetland with sedges of *Carex appressa (source: K. Mills & Assoc – F4)*

Figure 5.14 – View to southern portion of central wetland dominated by sedge *Carex appressa (source: KMA – F6)*

Saltwater wetlands

These are located at the southern portion of the site, is connected to Currambene Creek and inundated frequently to support estuarine vegetation (Figures 5.25 & 5.16). Estuarine vegetation comprises:[8]

- Swamp Oak (*Casuarina glauca*)
- Grey Mangrove (*Avicennia marina*),
- small wetland plants of Common Reed (*Phragmites australis*) and Sea Rush (*Juncus kraussii*);
- Beaded Glasswort (*Sarcocornia quinqueflora*);
- Saltmarsh species of Saltbush (*Atriplex Australasia*) and Salt Couch (*Sporobolus virginicus*).

[8] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments*, Comberton Grange (2012), p.17 & 20.

Figure 5.15: View to northern extremity of saltwater wetland at southern portion of the site, a listed EEC with saltmarsh vegetation (*source: K. Mills & Associates – F7*)

Figure 5.16: Southern saltwater wetland with *Sarcocornia quiquefaria* and *Sporobolus virginicus*. Background trees are *Casuarina glauca* and *Avicennia marina* (source: *KMA – F9*)

Georges Creek tributaries

The tributaries of Georges Creek in the old pine plantation support an understorey of Tall Saw-sedge (*Gahnia clarkei*) and wetland forest containing species of:

- Swamp Mahogany (*Eucalyptus robusta);*
- Narrow-leaved Paperback (*Melaleuca linariifolia)*; and
- Woollybutt (*Eucalyptus longifolia).*

(Figures 5.17-5.19)

Figure 5.17: Georges Creek south of the quarry – a shallow gully with sandstone outcrops and shallow soils (*source: Kevin Mills & Associates – W5*)

Figure 5.18: Swamp forest growing on creek flat at the NW part of the plantation, of *Eucalyptus robusta* and *Melaleuca linariifolia* (*source: K. Mills & Associates – P3*)

Figure 5.19: Swamp forest growing on creek flat at southern central part of the plantation, with EEC of Swamp Sclerophyll Forest (K. Mills & Associates – P8)

5.5.2 Forests and woodlands[9]

The natural vegetation at the Central and Eastern portion of the site is either forest or woodland. The main areas of forest are dominated by either Blackbutt *(Eucalyptus pilularis)* or Spotted Gum (*Corymbia aculate)* (Figures 5.20, 5.21 & 5.23). Within these groups are:

- White Stringybark (*Eucalyptus globoidea)*;
- Red Bloodwood *(Corymbia gummifera)*;
- Turpentine *(Syncarpia glomulifera);*
- Grey Ironbark *(Eucalyptus paniculate)*; and
- Stands of Black She-Oak *(Allocasuarina littoralis).*

The Georges Creek valley supports a tall forest of Blackbutt *(Eucalyptus pilularis)* and Southern Blue Gum *(Eucalyptus saligna/E. botryoides)*, often with some rainforest plants in the understorey.

Woodlands occur in the sandy well-drained soils of the site. These trees are well-spaced and mainly have a heathland understorey. The prominent trees here are:

- Hard-leaved Scribbly Gum *(Eucalyptus sclerophylla)* (Figure 5.22);
- Red Bloodwood *(Corymbia gummifera)*;
- Brown Stringybark *(Eucalyptus capitellata*); and
- Old Man Banksia *(Banksia serrata)*.

Figure 5.20: Spotted Gum forest *(source: KMA – W1)*

Figure 5.21: Blackbutt forest *(source: KMA – W2)*

Figure 5.22: Scribbly Gum woodland *(source: KMA – W3)*

Figure 5.23: Blue Gum & Blackbutt Forest *(source: KMA – W4)*

[9] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments*, Comberton Grange, p. 20.

5.5.3 Pine plantation[10]

Secondary regrowth vegetation ranging from shrubland to young forest occurs across most of the old pine plantation and on the edges of the farmland above Currambene Creek, particularly in the south. The former pine plantation is currently covered in White Kunzea *(Kunzea ambigua)* shrubland, with scattered young trees, including pines. (Figures 5.24 & 5.25)

Figure 5.24: Native regrowth at south-western portion of plantation with young eucalypts and dense growth of shrubs *(source: K. Mills & Associates – P4)*

Figure 5.25: Native regrowth at south-western portion of plantation with dense shrub growth and lack of trees *(source: K. Mills & Associates – P5)*

5.5.4 Currambene Creek

A large stand area of Swamp Oak Forest *(Casuarina glauca)* is located adjacent to Currambene Creek, with an understorey of saltwater and freshwater wetland plants. The band of trees along Currambene Creek is generally very narrow. The creek supports a narrow band of estuarine vegetation of Swamp Oak (*Casuarina glauca*) and Grey Mangrove (*Avicennia marina*), as well as wetland plants of Common Reed (*Phragmites australis*) and Sea Rush (*Juncus kraussii*).[11] (Figures 5.26 & 5.27)

Figure 5.26: Currambene Creek *(source: KMA – F1)*

Figure 5.27: Georges Creek *(source: KMA – F10)*

[10] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments*, *Comberton Grange*, p. 20.
[11] Ibid.

5.5.5 Farmland

The cleared farmland above Currambene Creek is covered in exotic grasses and other introduced species (Figure 5.28). Pasture weeds and other exotics are scattered throughout. Thickets of Blackberry *Rubus fruticosus* occur here and there. Various natives are colonising the paddocks, including some trees and shrubs.[12]

Figure 5.28: Farmland dominated by exotic pasture, mainly grasses, and is grazed (*source: KMA – F5*)

5.5.6 Plant species and communities

A total of 393 plant species have been recorded on the site which includes 327 indigenous and 66 introduced species. Floristic diversity is considered to be high, reflecting the presence of so many different vegetation communities which re associated with considerable variations in the geology and topography across the property.

The site supports 15 distinct types of forest, woodland, plant communities (each with a different structure and assemblage), and saltwater and freshwater wetlands (Figure 5.29).

Table of Vegetation Communities in Comberton Grange

Community		Species
1.	Blue Gum – Blackbutt Tail Forest	*Eucalyptus saligna/ E. botryoides, Eucalyptus pilularis*
2.	Spotted Gum – Ironbark Forest	*Corymbia maculate, Eucalyptus paniculata, E. globoidea, Syncarpia glomulifera*
3.	Blackbutt-Turpentine Forest	*Eucalyptus pilularis, Syncarpia glomulifera, Eucalyptus globoidea, Allocasuarina littoralis*
4.	Stringybark – Bloodwood Forest	*Eucalyptus globoidea, Corymbia gumífera*
5.	Red Gum – Angophora Forest	*Eucalyptus tereticornis, Angophora floribunda, Acacia irrorata, Acacia mearnsil*
6.	Swamp Mahogany Forest	*Eucalyptus robusta, Casuarina glauca, Melaleuca linarifolia, Melaleuca styphelioides*
7.	Woollybutt – Paperbark Forest/ Woodland	*Eucalyptus robusta, Casuarina glauca, Melaleuca linariifolia, Melaleuca styphelioides*

[12] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments, Comberton Grange*, p. 20.

Community		Species
8.	Scribbly Gum – Bloodwood Woodland	*Eucalyptus sclerophylla, Corymbia gumífera*
9.	Wattle Forest – Woodland	*Acacia mearnsii, Kunzea ambigua*
10.	Swamp Oak Forest	*Casuarina glauca*
11.	Saltwater Juncus Rushland/ Saltmarsh	*Juncus kraussii, Sarcornia quinqueflora, Selliera radicans*
12.	Fresh Juncus Rushland	*Juncus usitatus, Carex appressa, Paspalum distichum, Persicaria spp.*
13.	Mangrove Forest/ Woodland	*Avicennia marina, Aegiceras corniculatum*
14.	Sandstone Sedgeland/ Healthland	*Kunzea ambigua, Leptospermum spp., Sedges*
15.	Kunzea Shrubland	*Kunzes ambigua*

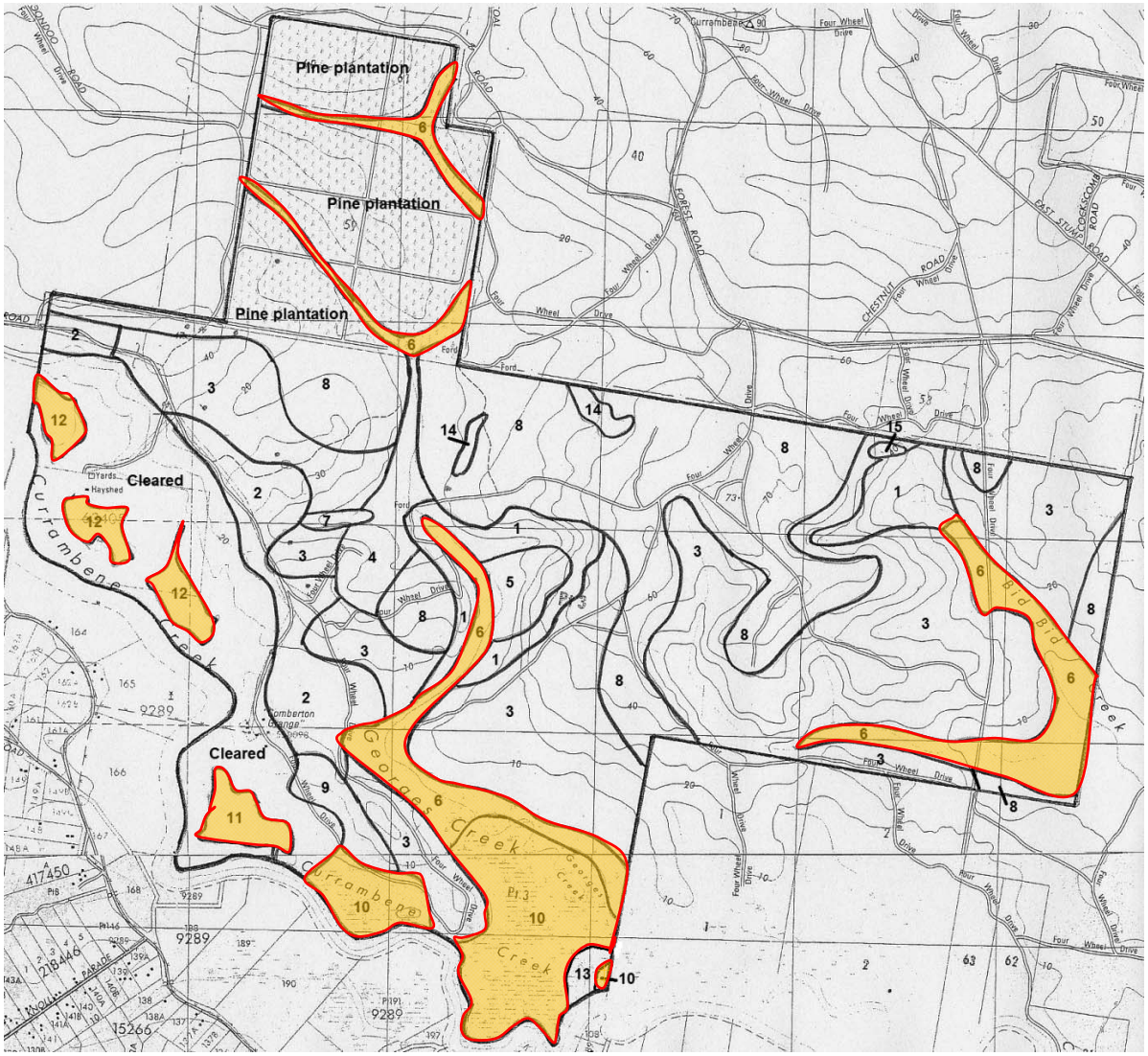

Figure 5.29: Diagram of plant communities on Comberton Grange (source: K. Mills & Associates, *Biodiversity Assessment*) Endangered ecological communities (EECs) shaded

5.5.7 Threatened plants

Threatened species fall into two groups. One group, containing the terrestrial orchids *(Galium australe)*, is very hard to detect and require considerable survey effort to locate. These orchids are also generally visible only seasonally and for a short period of time. The second group are trees and shrubs that are obvious and are able to be located all year round.

The critical determining factor for locating terrestrial orchids is their flowering times as they are generally not able to be found unless they are flowering.

Despite targeted surveys, no threatened plant species were found in the study area, and none have been found there in the several previous surveys of the land; which include species listed under NSW and Commonwealth legislation. Threatened orchids surveyed include:

- *Cryptostylis hunteriana* – This terrestrial orchid is scattered throughout the eastern parts of the Shoalhaven region. The most likely places where the orchid could be found were surveyed in this study; being sites on sandy soils with typical woodland/ heathland vegetation that is not too thick with shrubs. The orchid was not located in surveys during its flowering period. It is therefore concluded that the orchid probably does not occur on the land that was surveyed.
- *Caladenia tessellate* – This ground orchid is very rare in the Shoalhaven. The species inhabits low open forest with a healthy or sometimes grassy understorey. The probability of this orchid occurring on the study area, which is mostly forest, is slim. The orchid was not located during surveys during its flowering period.
- *Genoplesium baueri* – This is a tiny terrestrial orchid that has been found at few sites on the south coast. The probability of this orchid occurring on the study area, which is mostly forest, is slim. No species of *Genoplesium* were found during the various orchid surveys undertaken in late 2009, or on earlier surveys of this property.
- *Prasophyllum affine* – The habitat of this rare orchid is treeless heathland, with a high sedge component and low shrub cover, on clay soil. The habitat in the current study area is not suitable for this species.
- *Pterostylis gibbosa* – This small ground orchid occurs in a few places south-east of Nowra. The habitat is Spotted Gum Forest with a fairly open understorey, growing under a relatively low rainfall. Searches at the time of year that this species flowers failed to find any specimens.
- *Rhizanthera slateri* – There are two records of this orchid in the Shoalhaven. This orchid is seldom seen, as it grows underground, only the flowering parts emerging below organic litter where they are very difficult to locate. The trees of this species in woodland habitat south of the pine plantation were searched but no orchids were found.

No threatened species of trees and shrubs were found. One nationally rare plant species, the wattle (*Acacia subtilinervis)*, is located on the far eastern part of the site.

5.5.8 Endangered Ecological Communities (EECs)

ECCs occur on the site and are communities listed in Part 3 Schedule 1 of the NSW *Threatened Species Conservation Act 1995*. Endangered ecological communities occur on the lowlands and all are wetland communities or closely associated with wetlands.[13] These comprise:

Name	Location
Coastal Saltmarsh (11)	Broad flats with a muddy substrate near Currambene Creek and along the banks of the creek.
Swamp Oak Floodplain Forest (10)	On the lowlands around Currambene Creek where soils are alluvial and moist, and along its banks as a narrow band of trees.
Swamp Sclerophyll Forest (6)	On deep moist alluvial soils along Georges Creek and Bid Bid Creek and their tributaries.
River Flat Forest (5)	Small remnants occur on the cleared farmland. Near the lower part of Georges Creek are small stands in a natural condition.
Freshwater Wetland (12)	On 3 broad depressions on the farmland, mainly as sedgeland, with some stands of shrub paperbark.

Refer to Figure 5.29 (shaded areas) for reference to these vegetation communities.

5.5.9 Endangered populations

Endangered populations in NSW are listed under the TSC Act (Schedule 1, Part 2). No endangered populations have been declared on or near Comberton Grange.

5.5.10 Fauna habitats

There are several dominant fauna habitats at Comberton Grange: forests, wetlands, and cleared land covered by exotic grasses.

Forest

Spotted Gum *(Corymbia maculate),* Swamp Mahogany *(Eucalyptus robusta),* and Forest Red Gum *(Eucalyptus tereticornis)* are important sources of nectar and pollen when flowering. The Black She-Oak *(Allocasuarina littoralis*) is common in many places and is the main food plant for the threatened Glossy Black Cockatoo.

Woodland

Old Man Banksia *(Banksia serrata),* a tree species of the Scribbly-Gum-Bloodwood woodland, is an important winter nectar source.

Wetlands

The freshwater wetland forests along the upper and lower sections of Georges Creek and Bid Bid Creek are very important as habitat because of the presence of the key food tree Swamp Mahogany *(Eucalyptus robusta).*

[13] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments*, *Comberton Grange*, p. 32.

5.5.11 Threatened animals

The surveys recorded 14 threatened animals in the study area (Figure 5.30). These comprise:

- **Black Bittern –** The habitat of this wetland bird include the edges of Currambene Creek and the saline wetlands throughout the southern part of the property.
- **Gang-gang Cockatoo –** The Gang-gang Cockatoo is moderately common throughout the forests of the South Coast. Foraging habitat, stands of eucalyptus, breeding habitat and hollow-bearing trees are abundant in the site. This cockatoo was recorded in several locations during the study period.
- **Glossy Black-Cockatoo –** The Glossy Black-Cockatoo is relatively common in the Shoalhaven and is nearly always observed near stands of Black She-Oak *(Allocasuarina littoralis)* its primary food tree in this region. Evidence of their feeding was found in a few places.
- **Masked Owl –** The Masked Owl is widespread but apparently thinly distributed across the region. The owl lives in forests and woodlands. One observation of a Masked Owl was made just to the west of the old pine plantation.
- **Powerful Owl –** the Powerful Owl is widespread in the region, inhabiting most areas of tall forest. A pair has a very large territory and nest in very tall eucalypt with large hollows. The observation was made at the southern edge of the old pine plantation.
- **Square-tailed Kite –** The Square-tailed Kite is a regular summer breeding visitor to the Nowra-Jervis bay region. Birds range widely over a very large foraging territory, where they forage in forests and woodlands. The observation was made north of pine forest.
- **East-coast Freetail Bat –** This bat roosts in tree hollows and lives in forest and woodlands.
- **Eastern Bentwing-bat –** The bentwing-bat roosts in caves and cave-like artificial structures such as drains and buildings. This bat is commonly recorded during bat surveys.
- **Golden-tipped Bat –** This bat inhabits moist forests, including rainforest, and dry forests; the bats have been recorded roosting in the abandoned nests of Gerygones and Scrubwrens.
- **Greater Broad-nosed Bat –** This bat prefers moist gullies, mainly in the near-coastal regions and roost in tree hollows.
- **Yellow-bellied Glider –** This arboreal mammal is quite common in the region, usually associated with Spotted Gum (*Corymbia maculate*) and Grey Gum Forests.
- **Varied Sittella –** A small flock of six birds was observed in woodland just to the northeast of the quarry.
- **Eastern Falsistrelle –** This largish bat inhabits forests, usually moister types. This species roosts in tree hollows, although they have been found in caves and old buildings.
- **Large-footed Myotis –** This bat roosts in caves and may forage across long distances from its roost site at night; it is usually associated with water bodies, where it forages by skimming across the surface of the water. There is no roosting habitat in the study area.

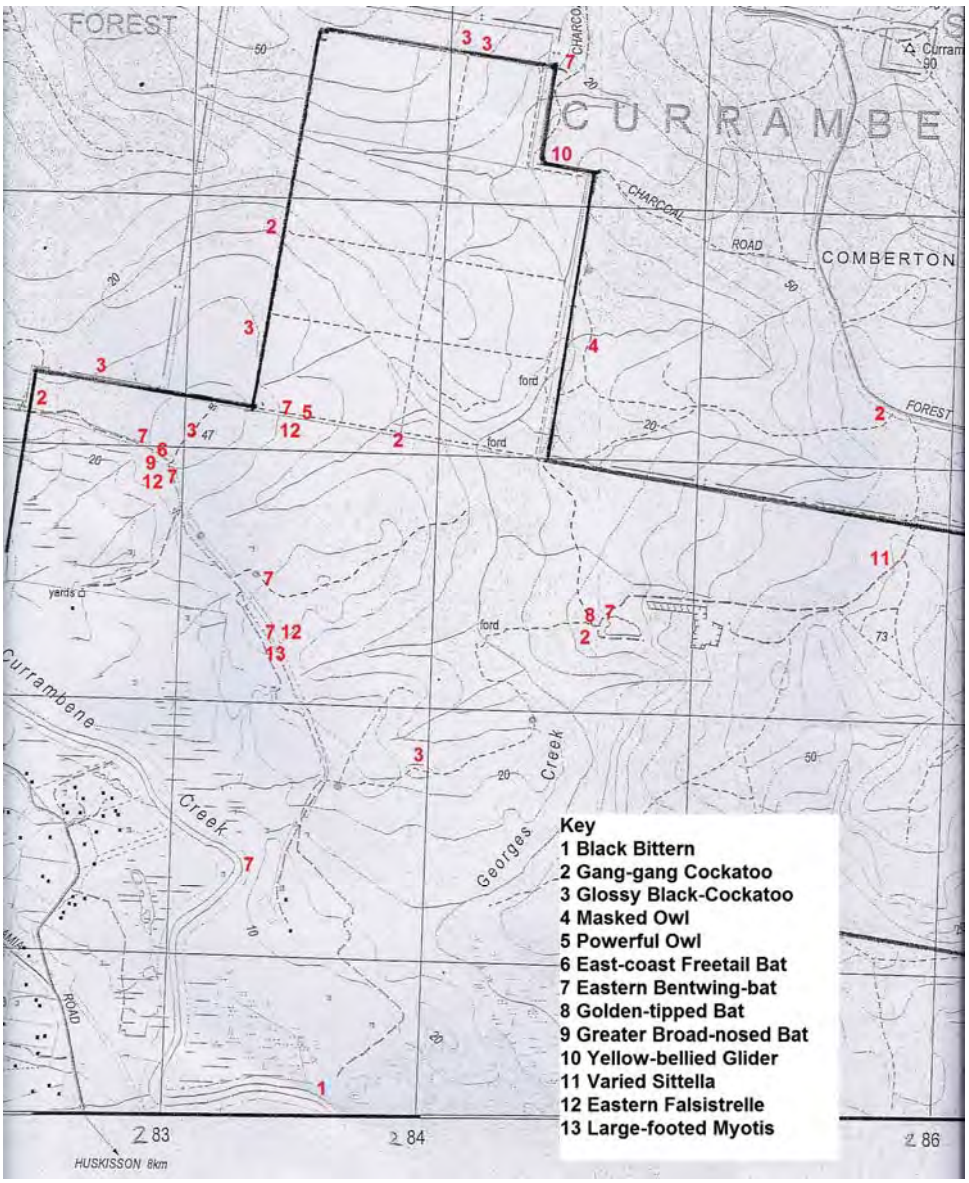

Figure 5.30: Location map of threatened fauna

5.5.12 Migratory species

The EPBC Act allows for the listing of internationally protected migratory species, of which many common Australian bird species have been listed. Several of the species recorded on or adjacent to Comberton Grange and internationally protected migratory species. These include diurnal birds of prey and ducts.

5.5.13 Critical habitat

Critical habitat refers only to those areas of land listed in the Registers of Critical Habitat, as established by the NSW *Threatened Species Conservation Act 1995.* No critical habitat has been declared on or in the vicinity of the study area.

(Refer additionally to *Biodiversity Assessment – Proposed Shaolin Temple & Associated Developments, Comberton Grange* (2010) prepared by Kevin Mills & Associates).

5.6 Geology and Soils

The site is underlain by the Permian Shoalhaven Group of Nowra Sandstone, Wandrawandian Siltstone, Snapper Point Formation (sandstone) and Berry Siltstone, with:

- Nowra Sandstone on the lower valley slopes;
- Berry Siltstone is within the Northern Development Area (pine plantation);
- Wandrawandian Siltstone within the central portion of the site;
- Snapper Point Formation is generally located within the eastern portion; and
- A small outcrop of Currambene dolerite underlies the eastern part of the site with extensive areas of Quaternary alluvium on low lying areas of Currambene Creek.[14]

Test pits indicate sandstone and siltstone in pits that intersected rock. The geomorphology of the study area can be characterised by three topographic units:

- The quaternary alluvium of the valley floor;
- The adjoining low gradient spurlines and slopes of the adjacent bedrock topographies; and
- The crest and upper slopes of the watershed ridgelines to the northeast.

The landforms of the valley floor have formed from Quaternary alluvium.

(Refer additionally to *Report on Preliminary Geotechnical Investigation – Proposed Tourist & Residential Development, Comberton Grange, Jervis Bay* (August 2009) prepared by Douglas Partners).

5.7 Site Contamination

Review of the site's S149 Planning Certificates by Douglas Partners in undertaking a Preliminary Contamination Assessment of the Comberton Grange site indicate that there were no matters listed under Section 59(2) of the *Contaminated Land Management Act 1977* specified in the certificates.

(Refer additionally to *Report on Preliminary Contamination Assessment– Proposed Tourist & Residential Development, Comberton Grange, Jervis Bay* (August 2009) prepared by Douglas Partners).

5.8 Acid Sulphate Soils

Mapping by Shoalhaven City Council indicates the likelihood of acid sulphate soils within the Currambene Creek flood plain (below approximately RL4) (Figure 5.31). The map additionally indicates that this flood plain area having low probability of occurrence of acid sulphate soils at 1-3m below ground surface.

Areas of high acid sulphate probability are located within land to the south-east zoned 7(a) (*Environmental Protection 'A' (Ecology)*) zone under Shoalhaven LEP 1985.

Areas with acid sulphate soils are areas with the highest flood risk and are not within the proposed development areas.

[14] Kevin Mills & Associates, *Biodiversity Assessment – Proposed Shaolin Temple and Associated Developments, Comberton Grange* (2012). Secondary source, Bembrick and Holmes, *An Interpretation of the Subsurface Geology of the Nowra-Jervis Bay Area* (1976).

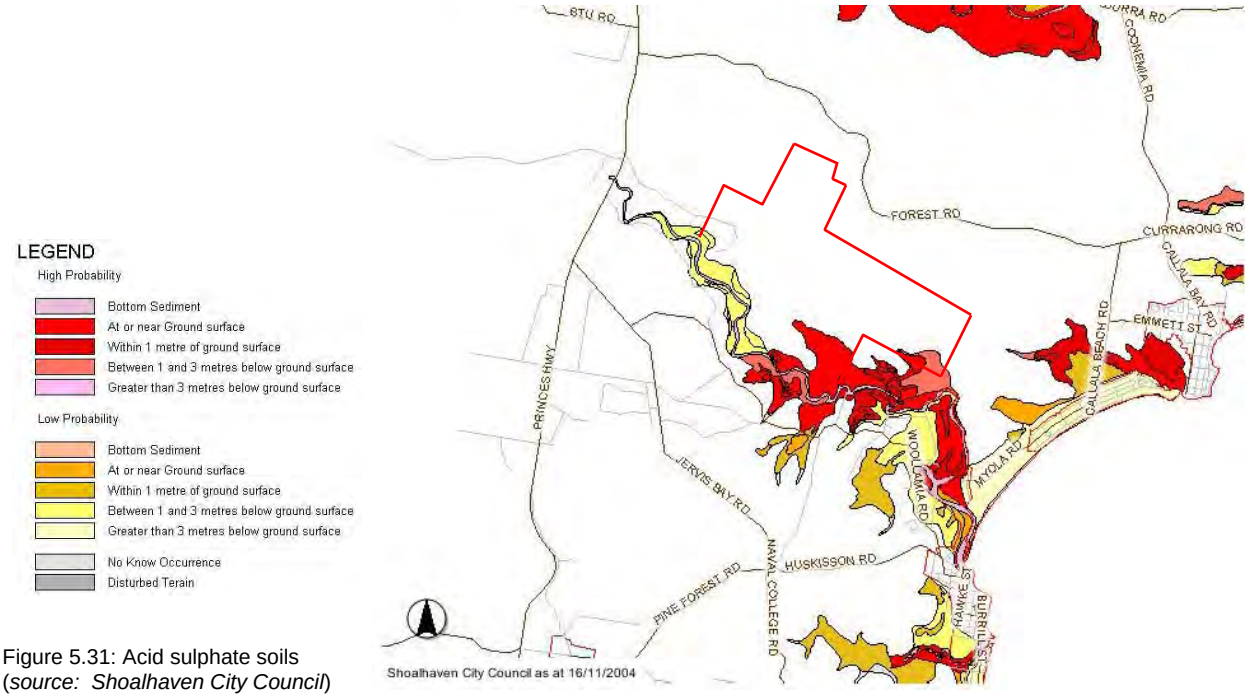

Figure 5.31: Acid sulphate soils
(*source: Shoalhaven City Council*)

((Refer additionally to *Report on Preliminary Acid Sulphate Soil Assessment – Proposed Tourist & Residential Development, Comberton Grange, Jervis Bay* (August 2009) prepared by Douglas Partners).

5.9 Agricultural Land Capability

The cleared area along the slopes of Currambene Creek has been identified by Shoalhaven City Council as Class 3 agricultural land (Figure 5.32).

Class 3 Agricultural land is described by NSW Agriculture as grazing land or land well suited to pasture improvement.[15]

The land along the slopes of Currambene Creek, identified as Class 3 land, exhibits a number of moderate to severe limitations including:

- The land is isolated from other lands of comparable or higher agricultural land suitability in the locality;
- A significant section of the land is liable to 1 in 100 year flooding;
- Sections of the land contain wetlands have high ecological value; and
- Concerns have been raised concerning the high levels of nutrients entering Currambene Creek as result of current grazing practices on the land.

While this land is currently within an area of "prime crop and pasture" agricultural land, its long term viability for agricultural production appears to be limited relative to other forms of land use.[16]

[15] NSW Agriculture, *Agricultural Land Classification, AfFactAC.25*.
[16] Kettle, D, *Environmental Study and Planning Report for Comberton Grange*, Shoalhaven City Council, p.58.

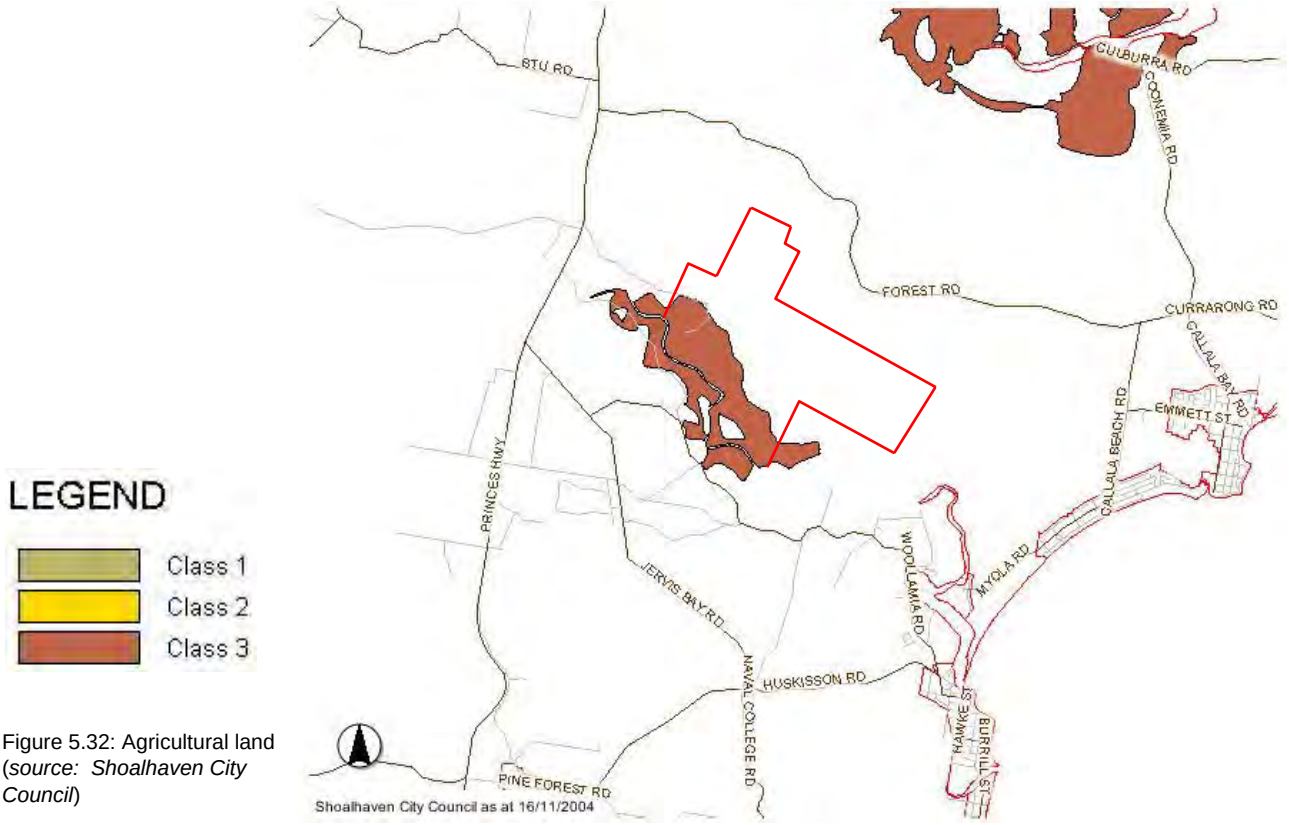

Figure 5.32: Agricultural land (*source: Shoalhaven City Council*)

5.10 Heritage Significance

5.10.1 Indigenous/ Aboriginal heritage

Aboriginal occupation of the Jervis Bay area dates back to at least 3000 years. According to documentary evidence, Currambene Creek and its immediate surroundings are associated with two traditional mythological stories – Tutawa, the hunter and the Wild Women. It is probable that the Wild Women are the Bipbip women who are remembered in the oral traditions of the Jerrinja community. Similarly, the name Bid Bid Creek is most likely to be an historical indication of the association of this tradition with the Currambene hinterland.

Comberton Grange has been identified as a place with significance to local Aboriginal communities, particularly for historical associations with Aboriginal workers on the farm.

Most of the areas of potential heritage sensitivity are located adjacent to Currambene Creek and along the flood plains. A reported burial location is located near Currambene Creek (CG7). There is as yet no evidence identifying specific sites or landscape features beyond the creek.

There are 25 Aboriginal cultural heritage recordings, including 4 archaeologically sensitive areas/ Potential Archaeological Deposits (PADs), within the Comberton Grange study area, as indicated in Figure 5.33. 16 of the sites were previously recorded sites and 5 new site recordings were identified.

The Jerrinja Local Aboriginal Land Council (JALC) owns a property adjacent to the north-western portion of the site.

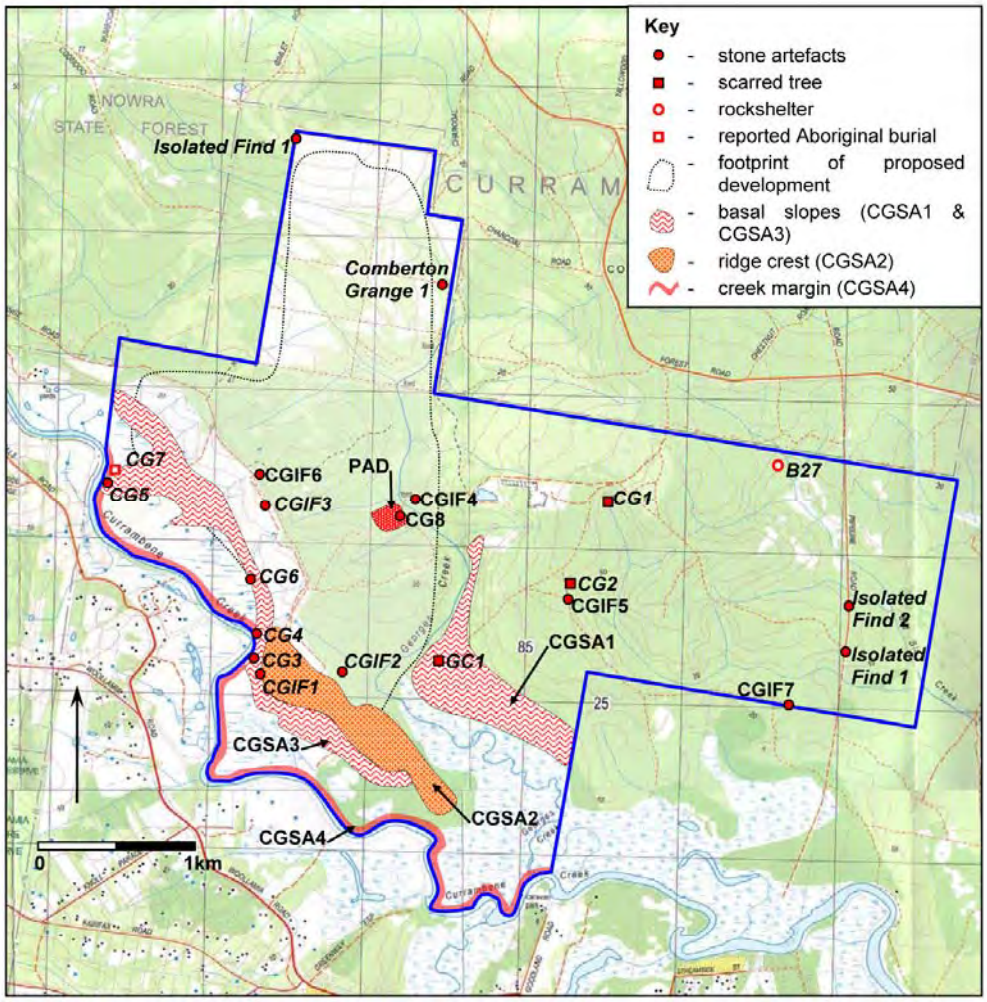

Figure 5.33: Location of Aboriginal sites, areas of PAD and archaeologically sensitive areas on the site (*source: Aboriginal Cultural Heritage Assessment, August 2009*)

(Refer additionally to *Aboriginal Cultural Heritage Assessment – Shaolin Temple and Academy, Comberton Grange, Jervis Bay, NSW* (August 2009) prepared by Navin Officer Heritage Consultants Pty Ltd).

5.10.2 European heritage

Historical background

Comberton Grange was developed on grants located along Currambene Creek. The area adjacent to Currambene Creek cleared for agricultural purposes in the 1840s.

The **Comberton Grange homestead** was built in 1843 on a ridge directly above the floodplain of Currambene Creek, with commanding views to the site and across the valley. The homestead is one of the earliest in the area and built using convict labour from bricks made on the site (Figure 5.34). Shoalhaven Heritage Inventory provides a physical description of the homestead as:

> "*a range of outbuildings to the east includes barns, sheds, chicken runs, stockyards and dairy. A fence separated the homestead from the working areas of the complex. Galvanised water tanks and concrete paths are indicative of the extent of the building and its plan form. Remnant exotic plantings, including a single Pinus radiata, define the homestead area.*" (SHI 2390327, Study No. CR045)

The homestead comprised a vernacular single storey dwelling built in the Old Colonial Georgian style with a bell-cast hipped roof clad originally with timber shingles, to be later replaced by corrugated iron. The dwelling had two symmetrically placed chimneys with the front and rear verandahs of the dwelling supported on timber posts.

Figure 5.34: Comberton Grange homestead (burnt down) (source: Shoalhaven City Council)

Exotic plantings were sited near the dwelling, particularly on the north-west, which included a camellia, cassia, erythrina and indigenous silky oak trees.

The homestead, occupied until 1989, was burnt down in early 1990, with limited evidence of the remains of the house except for rubblestone footings which are visible on the ground. The convict bricks were retained by Council for 10 years and then sold.

From the 1920s, pastoral activities were undertaken on the farmland which included grazing and dairying.

In 1972, Comberton Grange was sold to a company called Armco. In 1985, Shoalhaven City Council purchased Comberton Grange from Armco, "*primarily to gain access to a rock resource which is required for the long term development of services for the rapidly growing Shoalhaven*."

The **quarry** on the Comberton Grange site was quarried from the 1980s to 1990s.

The **pine plantation**, north of the Comberton Grange Homestead site was planted with pines from the post-WW2 period. The plantation was purchased by Shoalhaven City Council from Australian Softwood in 1995.

The Comberton Grange holding and the pine plantation were sold to the Shaolin Temple Foundation (Australia) in 2007.

Heritage listings and archaeological relics

As a **statutory listing**, the site of the Comberton Grange (former Dairy Farm Complex) is listed as a local heritage item in the Shoalhaven Local Environmental Plan 1985 and Draft Shoalhaven LEP 2009 (Item 1160) as a terrestrial archaeological site relating to the initial settlement at Currambene Creek. The archaeological site covers the site of the homestead remains and some of its gardens.

As a **non-statutory listing**, Comberton Grange is listed within the "Jervis Bay and Hinterland" area listed on the former Register of the National Estate. It is classified on the Register of the National Trust of Australia (NSW). It is part of the Currambene Creek Estuary which is within the Jervis Bay Landscape Conservation Area classified by the National Trust of Australia (NSW) 1998.

The site contains relics dating to the 19th century and has been identified as having archaeological research value. Any disturbance of the relics may require an archaeological excavation permit from the NSW Heritage Council.

Physical remains

Remains of structures on the western part of the cleared area of the site comprise:

- Original or early main gates and boundary fencing;
- A disused farm complex with stockyard (from the 1840s onwards);
- A hay barn (c.1940 or later) in fair condition;
- A windmill pump (first half of the 20th century);
- Ponds and dams (c.1940s-1950s);
- Fences of different periods, including the original (prior to 1880s), interlocking split timber post and rails fence; and
- Group of coral trees used as windbreak.

Within the Homestead precinct are the remains of structures of the demolished homestead, which include:

- Rubble footings of the former homestead and concrete path, showing the extent of the demolished homestead;
- A timber pole in front of the house site, as a remnant of the disconnected electricity supply;
- A group of exotic trees and plantings growing near the north-western corner of the house footings;
- A mature conifer tree at the south-west of homestead;
- Remnants of rusting water tanks and support structures north of the homestead,
- A shed with an adjacent well with brick surrounds and covered by weathered corrugated steel sheeting to the east of the homestead;
- Remnants of a cream shed, in poor condition;
- A hay shed, c.1950s, in poor condition, constructed of a timber frame and clad in corrugated steel sheets;
- Fencing from various periods as early as the mid-19th century, including posts and rails, posts and wires;
- Cattle stockyards and drinking wells; and
- Groups of Coral trees as windbreaks.

Elements of heritage significance are illustrated in Figure 5.35.

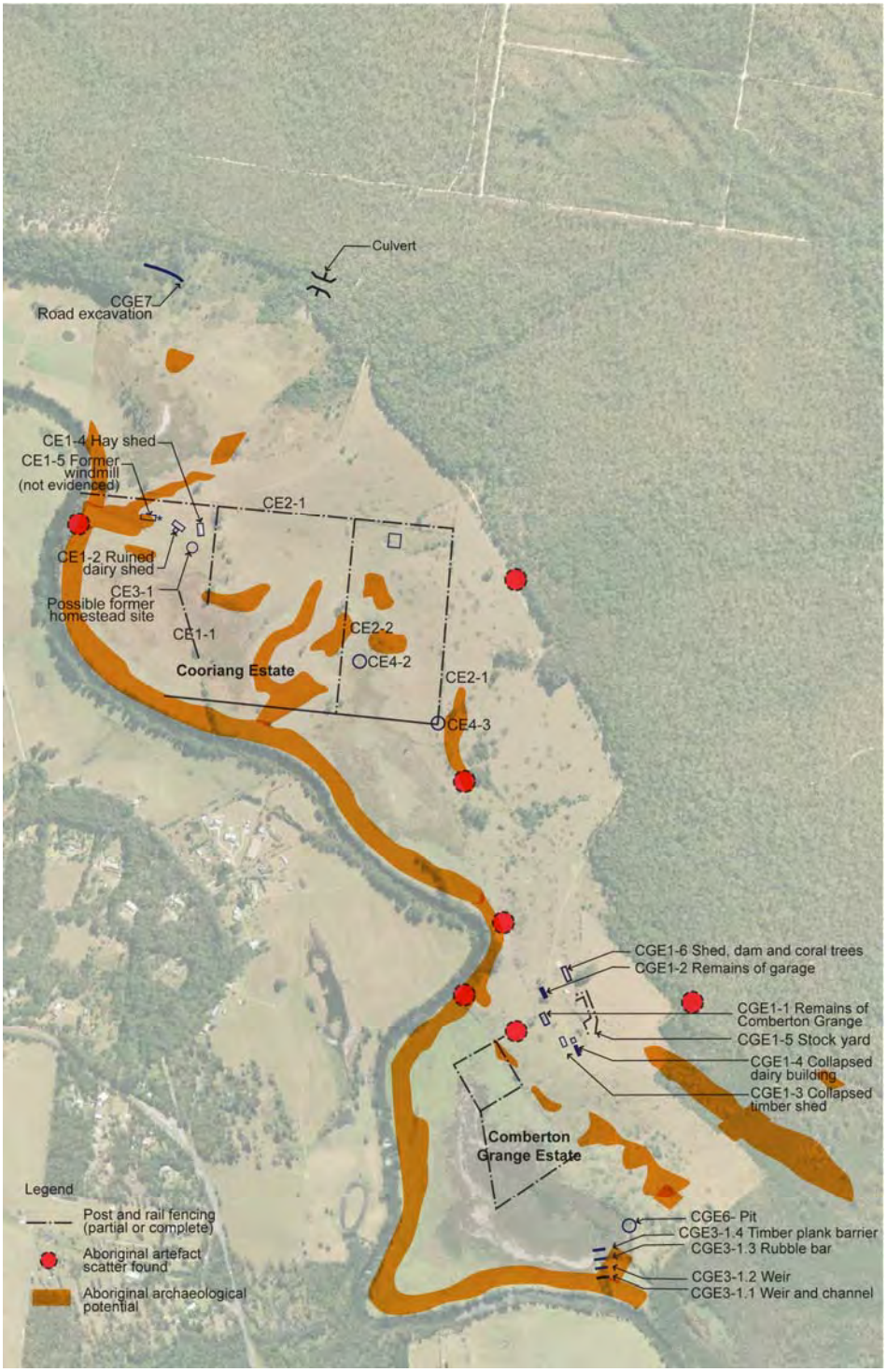

Figure 5.35: Aerial view of Comberton Grange showing elements of heritage significance

(Refer additionally to *Statement of Heritage Impact for the Shaolin Temple Tourist and Residential Development* (June 2012) prepared by Conybeare Morrison).

5.11 Estuaries and Wetlands

Currambene Creek, defined as an estuary, 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.[17]

The site is within the Currambene Creek Catchment, which has an area of 165km^2 and comprises 60% of the Jervis Bay catchment. The catchment includes eight SEPP 14 wetlands along the Currambene Estuary. No. 333 wetland is located on the south-eastern portion of the site north of Currambene Creek. Additionally, several freshwater intermittent wetlands, not listed under SEPP 14, are located within the 1 in 100 year ARI flood level, in a substantial area of the lower Georges Creek/ Currambene Creek and the paddocks of Comberton Grange.

Currambene Creek is tidal with both saltmarsh and mangroves found along its banks.

Currambene Creek and its associated wetlands form part of an important resource that is highly valued for its recreation and habitat significance
.
The former Department of Natural Resources (DNR) has mapped Currambene Creek as a Category 1 watercourse requiring a riparian protection width of 50m either side of the waterway. Other watercourses on the site have been mapped as Category 2 watercourses requiring 30m of riparian protection either side of the waterway.

5.12 Site Hydrology and Flooding

Preliminary assessments by the former Department of Natural Resources (DNR) estimate a localised to substantial flooding potential near Currambene Creek. Approximately 100ha of the western section of the property along the Currambene Creek (along the southern boundary of the site) is affected by the 1 in 100 year ARI flood event. Part of the site is covered by the *Currambene Creek Flood Study* (1982) and the *Currambene Creek and Moona Moona Creek Flood Studies* (November 2006). However, the site is unlikely to be affected by coastal inundation or sea level rise.[18]

The catchment drains from Comberton Grange Road in a south-westerly direction through a series of gullies and depressions toward the floodplain of the creek.

DNR has identified groundwater, in the presence of “significant aquifers” (Coastal Sands Aquifers and Alluvial Aquifers, with high yield and water quality) on the site around the foreshore areas of Currambene Creek.[19]

Identified flood constraints on site development are illustrated in Figure 5.36.

[17] NSW Department of Planning, *South Coast Sensitive Urban Lands Review*.
[18] NSW Department of Planning, *South Coast Sensitive Urban Lands Review*.
[19] NSW Department of Planning, *South Coast Sensitive Urban Lands Review*.

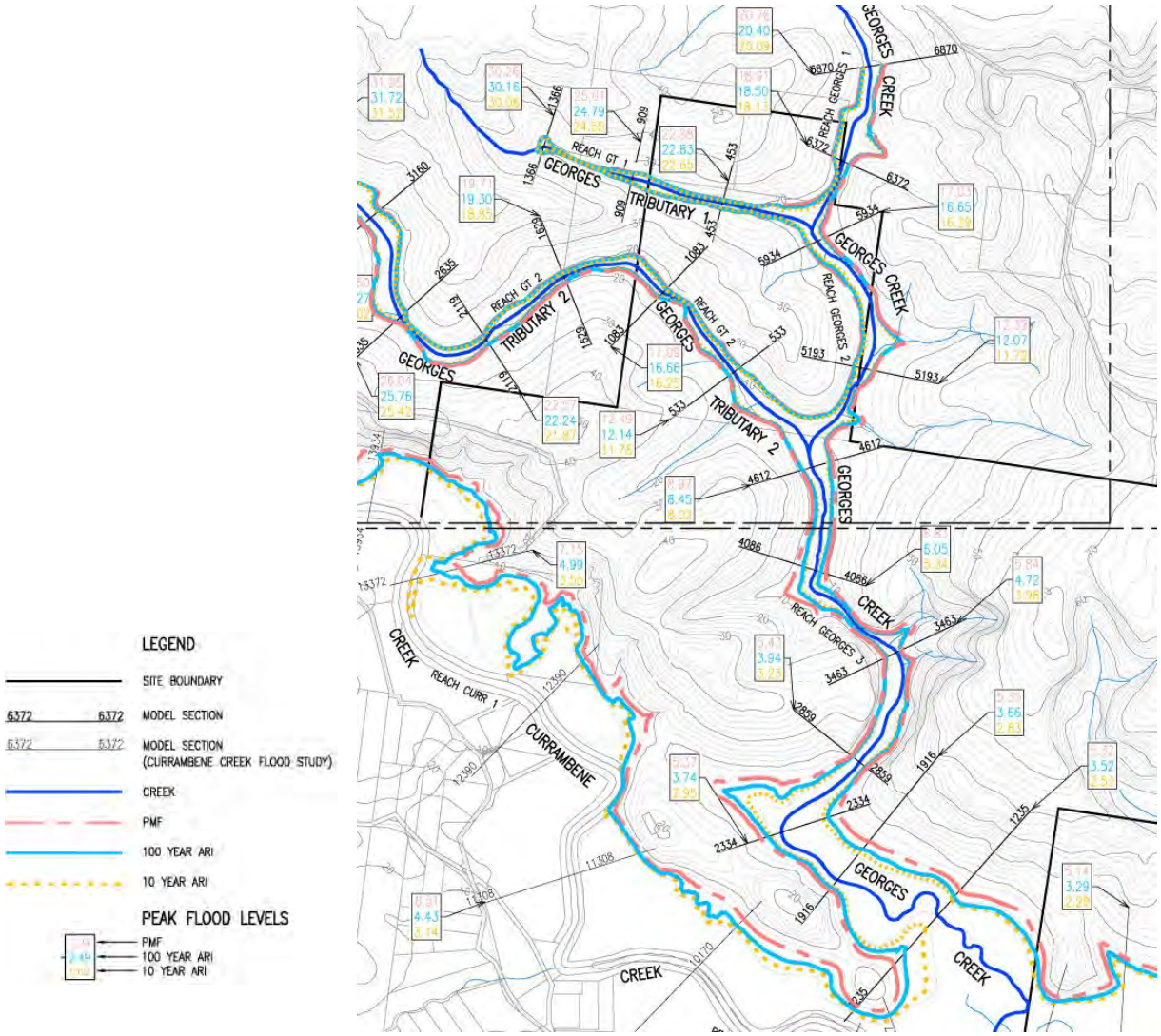

Figure 5.36: Flood extents within the site (*source: Brown Consulting*)

5.13 Bushfire

The majority of the site, except for the floodplain area adjoining Currambene Creek, is within a Vegetation Category 1 bushfire zone (Figure 5.37), which requires that 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.[20]

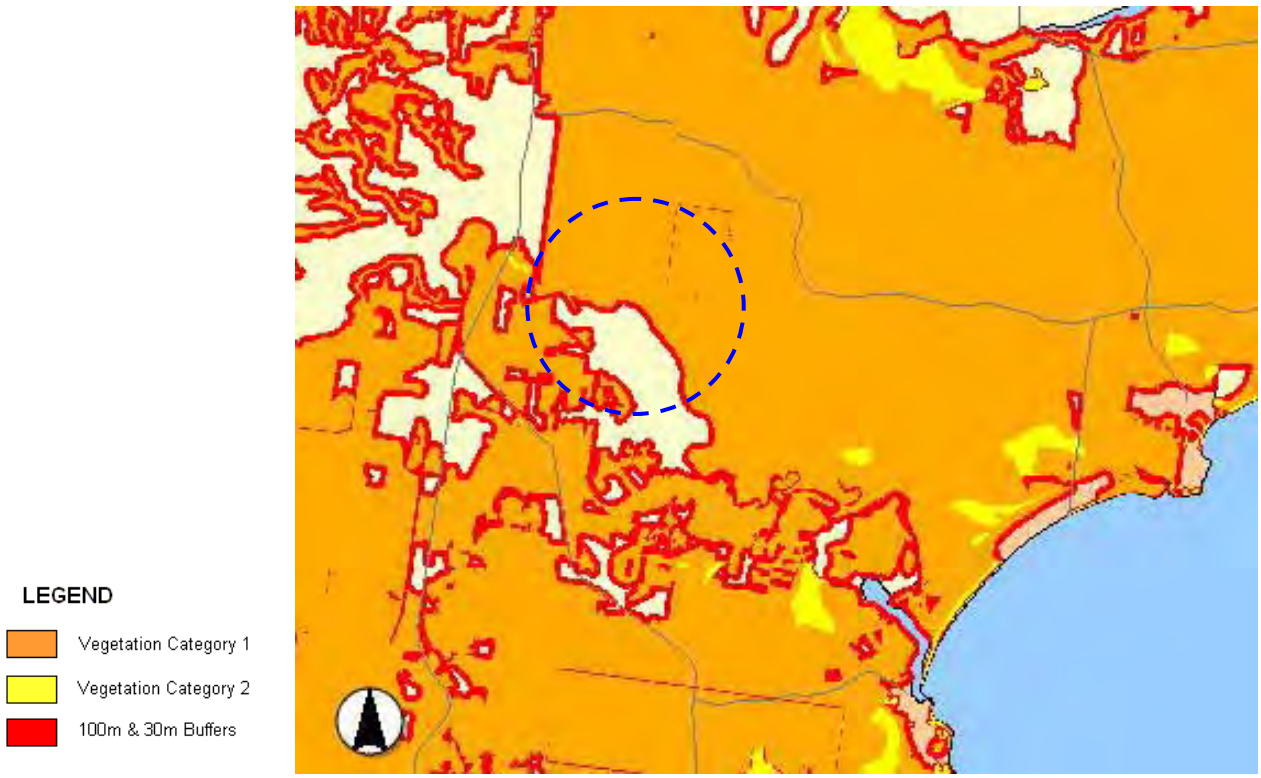

Figure 5.37 Bushfire zone (*source: Shoalhaven City Council*)

[20] David Kettle Consulting Services, *Environmental Study and Planning Report in Respect of the Development Potential of Comberton Grange Property, Comberton Grange Road, Currambene* (October 2001), p.111.

5.14 Existing Site Infrastructure and Services

5.14.1 Water supply and sewerage

Whilst the site is not well provided for in terms of Authority infrastructure, the site is currently serviced by two 25mm metered services (Figure 5.38), being:

- An existing authority 450mm trunk water main that traverses the eastern side of the site and runs north-south from Bamarang Water Treatment Plant (WTP) to the 13ML Vincentia reservoir. The trunk main is sited approximately 4km from the proposed development area; and
- A 55mm main from the south side of Currambene Creek adjacent to Falls Road, which feeds to a 600mm trunk main running in a north-south direction

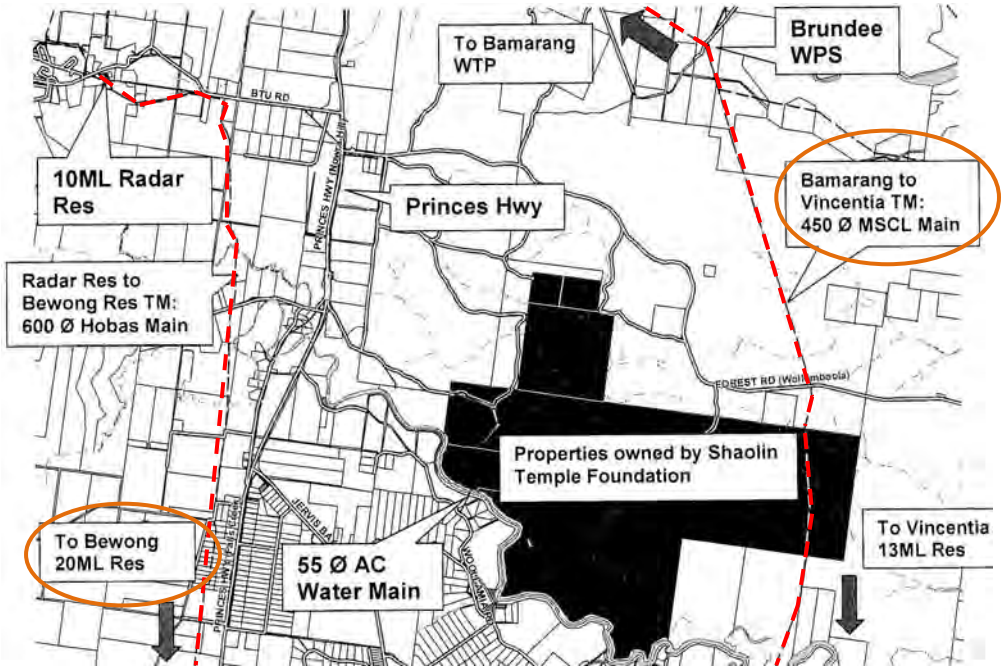

Figure 5.38: Existing water supply infrastructure (source: Shoalhaven Water)

Currently, the site is not serviced by the town sewerage system as the lots are within rural zones.

The existing Callala Waste Water Treatment Plant is designed for a 6,000 EP capacity and supports the coastal villages of Callala Bay, Callala Beach, Myola and Currarong. Whilst no augmentation of the treatment plant has been undertaken, future augmentation proposes an increased capacity to 12,000 EPs. The treatment process includes primary screening, extended aeration, tertiary filtration and chlorine disinfection.

Shoalhaven City Council's sewer pressure mains are located approximately 6km east of the proposed development. Due to the distance and change in elevation, sewage from the site would need to extend to the Authority sewer main via sewer pumping stations (Figure 5.39).

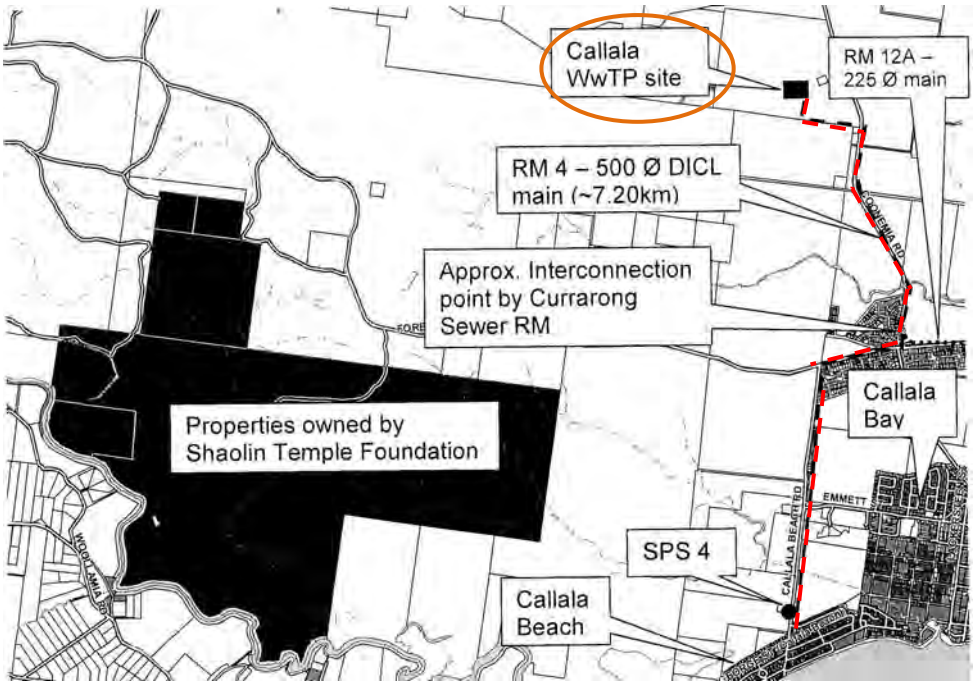

Figure 5.39: Existing sewer infrastructure (source: Shoalhaven Water)

5.14.2 Electrical services

An existing Integral Energy zone substation is located at South Nowra near the BTU Road intersection. Existing overhead transmission lines run on the eastern side of the Princes Highway and cross over to the western side near Parma Road (Figure 5.40).

Integral Energy has identified Comberton Grange as an area for future development.

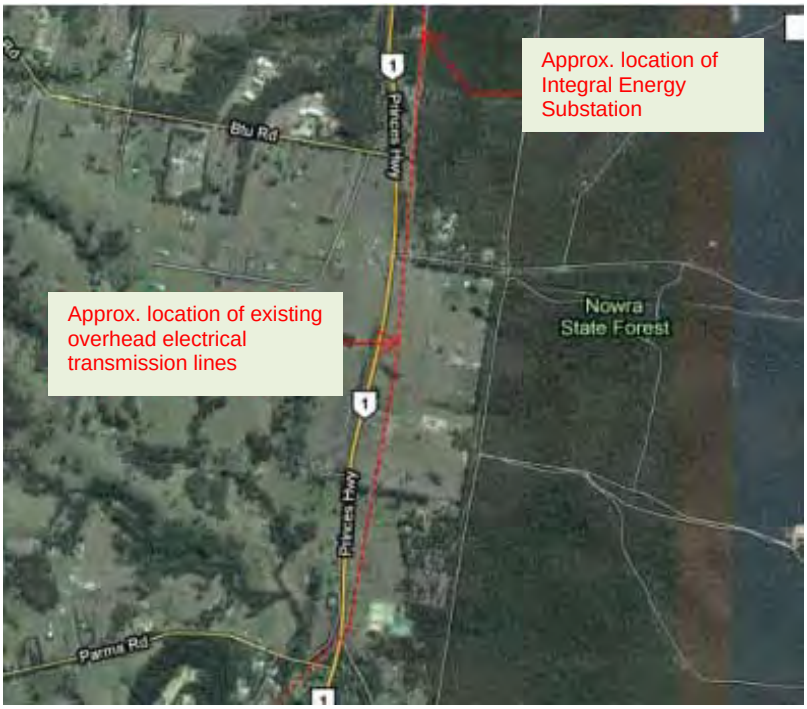

Figure 5.40: Existing electrical transmission line (source: *Electrical Services Infrastructure Concept Report*, Umow Lai, 2010)

5.14.3 Gas

The nearest Authority gas main is located 6km from the site. There are no existing gas services within or in close proximity to the site.

5.14.4 Telecommunications

An existing Telstra/ Optus communications hub is located parallel to the Princes Highway, near Parma Road, west of the site (Figure 5.41). The hub is supplied with underground optical fibre cabling.

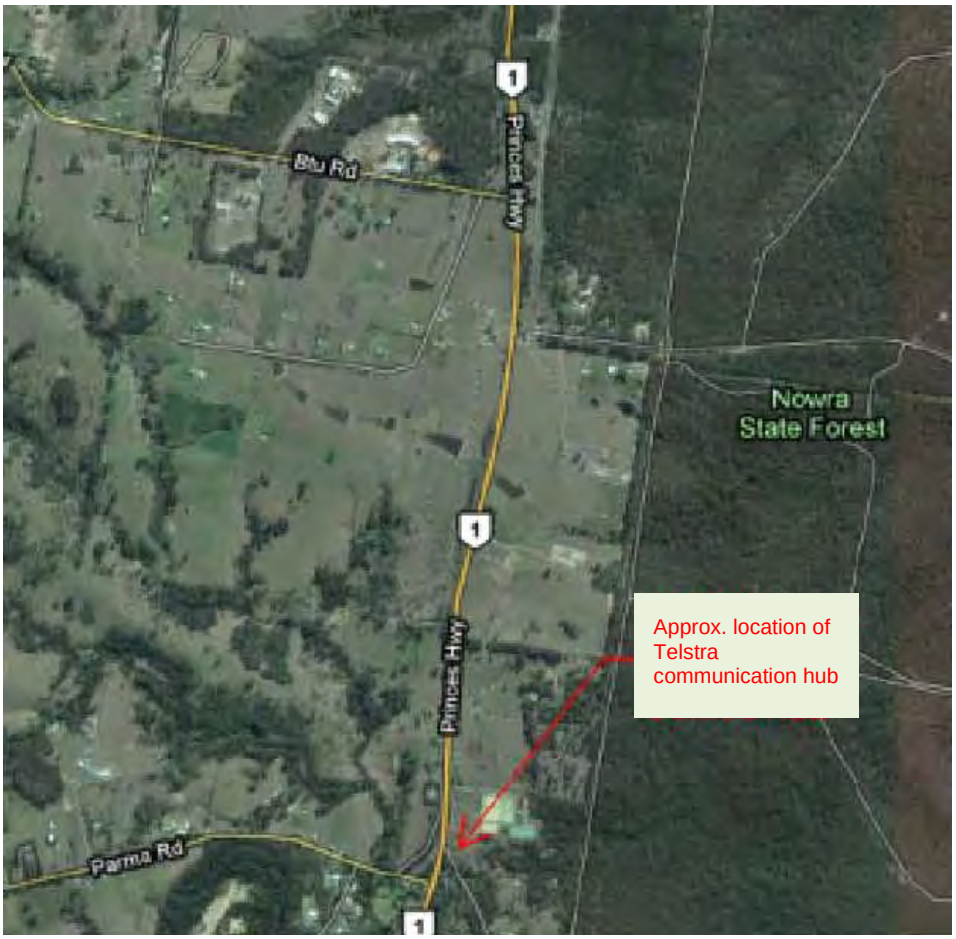

Figure 5.41: Existing telecommunications line (source: *Electrical Services Infrastructure Concept Report*, Umow Lai, 2010)

(Refer additionally to:

- *Shaolin Tourist and Residential Development, Comberton Grange: Electrical Services Infrastructure Concept Report* (February 2012); and
- *Shaolin Tourist and Residential Development, Comberton Grange: Hydraulic Services Infrastructure Concept Report* (February 2012)

prepared by Umow Lai)

5.15 Noise

The site is south-east of the HMAS Albatross base and is located 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, known as "Husky Lane". The transit height of normal flight is 1,000ft (305m approx.) above ground level and may be reduced to 200ft (61m approx.) in poor weather conditions.

This open terrain corridor has been used as a helicopter flight corridor for many years and the Department of Defence anticipates its continued use for this purpose with the site receiving potential noise impacts from military helicopters flying over the site during the week and on weekends. The Department has estimated that a significant portion of the development area is within the 60-70dBA sound contour range.

During site logging by Wilkinson Murray, acoustic consultants, noise levels were measured from six helicopter transits, with resultant noise levels lower than predicted by the Department of Defence's study.

Noise levels were logged at the western portion of the site, directly south of the former pine plantation. Loggers sited nearer Comberton Grange Road indicated the following Rating Background Levels (RBL) of:

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

Attended measurements were undertaken near the central portion of the site, directly south of the pine plantation. Day and night time measurements indicated RBLs of between 28-30dBA, which is typical for rural settings

Noise logging monitored from 12-22 October 2009 indicated 3 days of helicopter transits. Logging indicated the maximum noise levels of between 37-56dBA over the 30 minute flight period.

(Refer additionally to *Shaolin Tourist and Residential Development, Comberton Grange, South Nowra: Noise Assessment* (June 2012) prepared by Wilkinson Murray)

6.0 OPPORTUNITIES AND CONSTRAINTS

6.1 Opportunities

The Shaolin Tourist and Residential development provides the South Coast region of Nowra with an unique opportunity to augment its existing tourist potential of spectacular environments with a quality tourist development. The development, with its internationally recognised "Shaolin" name and its centrepiece being the Buddhist Temple Sanctuary, with is traditional Chinese architectural style of design and construction, will draw an international market into the region free from seasonal fluctuations. Augmenting the development are facilities associated with the Shaolin philosophy, of a martial arts training academy, a traditional Chinese medicine centre, and a neighbourhood town centre that will offer cultural as well as convenient range of goods and services. A small hotel resort will provide temporary accommodation for visitors to experience and enjoy this ecologically exquisite site.

The development aims to optimise on self-sufficiency and ecological preservation. The cultivation of herbs and natural food sources on the lowlands of the site will contribute to the self-sufficiency of the development's occupants. The implementation of ecologically sensitive strategies to each facility and residence will be a key focus of this development.

The development will provide a teaching arena for the public to experience a culture focused on spiritual and physical health and well being, education and respect for the environment.

The associated residential development will provide quality dwellings of a variety of accommodation sizes and housing typologies, sited within this unique setting.

The development will be sited and designed to respect the environmental sensitivity of the site, of its forests and woodlands, creeks and floodplains, and their habitats, which is in keeping with the overall philosophy of the Shaolin order. The development will manage and maintain the site to be worthy of its ecological attributes for the benefit of its residents and visitors.

6.2 Constraints

Comberton Grange is a site of high environmental value identified as Sensitive Urban Land in the *South Coast Regional Strategy* due to the environmental factors on the site of:

- Native flora and fauna;
- Estuaries, coastal lakes and wetlands;
- Soils and landscape capability;
- Ground water;
- Flood risk; and
- European and Aboriginal cultural heritage.

The site has the following identified environmental and planning constraints due to its environmental qualities, which require development within the site to:

- Protect Currambene Creek (declared as a Sanctuary Zone within the Jervis Bay Marine Park) and associated wetlands, as these low-lying floodplain areas adjacent to Currambene Creek have the greatest constraints of flooding (1:100

year flood frequency), acid sulphate soils and non-indigenous heritage and archaeology. (p.38, Independent Review)

- Maintain the water quality of Currambene Creek.
- Rehabilitate and protect riparian vegetation of extent swamp forests and wetlands adjacent to Currambene Creek and the Georges Creek tributaries.
- Ensure no disturbance to endangered ecological communities (EECs), with the retention of undisturbed native vegetation and habitat communities that covers a large portion of the site, which have high conservation value. These include coastal salt marsh and freshwater wetlands along the Currambene Creek corridor, and the Swamp Oak Floodplain Forest and Swamp Schlerophyll Forest along the Georges Creek tributaries and Bid Bid Creek.
- Retain SEPP 14 Coastal Wetland No. 333, which occurs in the south-eastern portion of the site, bordering Currambene Creek and Georges Creek.
- Retain sufficient natural vegetation within habitat corridors on the site of the Jervis Bay REP Habitat Corridor, which traverses the central portion of the site.
- Retain forested areas with high EECs at the eastern and south-eastern portions of the site which are habitats for numerous species and have ecological value.
- Consider the potential aircraft noise impacts from training helicopters flying from HMAS Albatross in Nowra, as Currambene Creek is on an established flight path, 2 miles wide between Jervis Bay and the airfield, known as Husky Lane.
- Develop the site as an integrated tourist facility with associated residential development, with the tourism component being the predominant use and residential development limited to not more than 300 dwellings.

The *South Coast Sensitive Land Review* (October 2006) and the *South Coast Regional Strategy* have identified parts of the site most suitable for development as being the:

- Former pine plantation site at the northern portion of Comberton Grange; and
- Cleared and elevated grazing land immediately south of Comberton Grange Road above Currambene Creek.

Refer to Figure 6.1: Site environmental constraints and Figure 6.2: Site environmental constraints with Concept Masterplan overlay.

For site constraints drawings, refer additionally to **Appendix 1**.

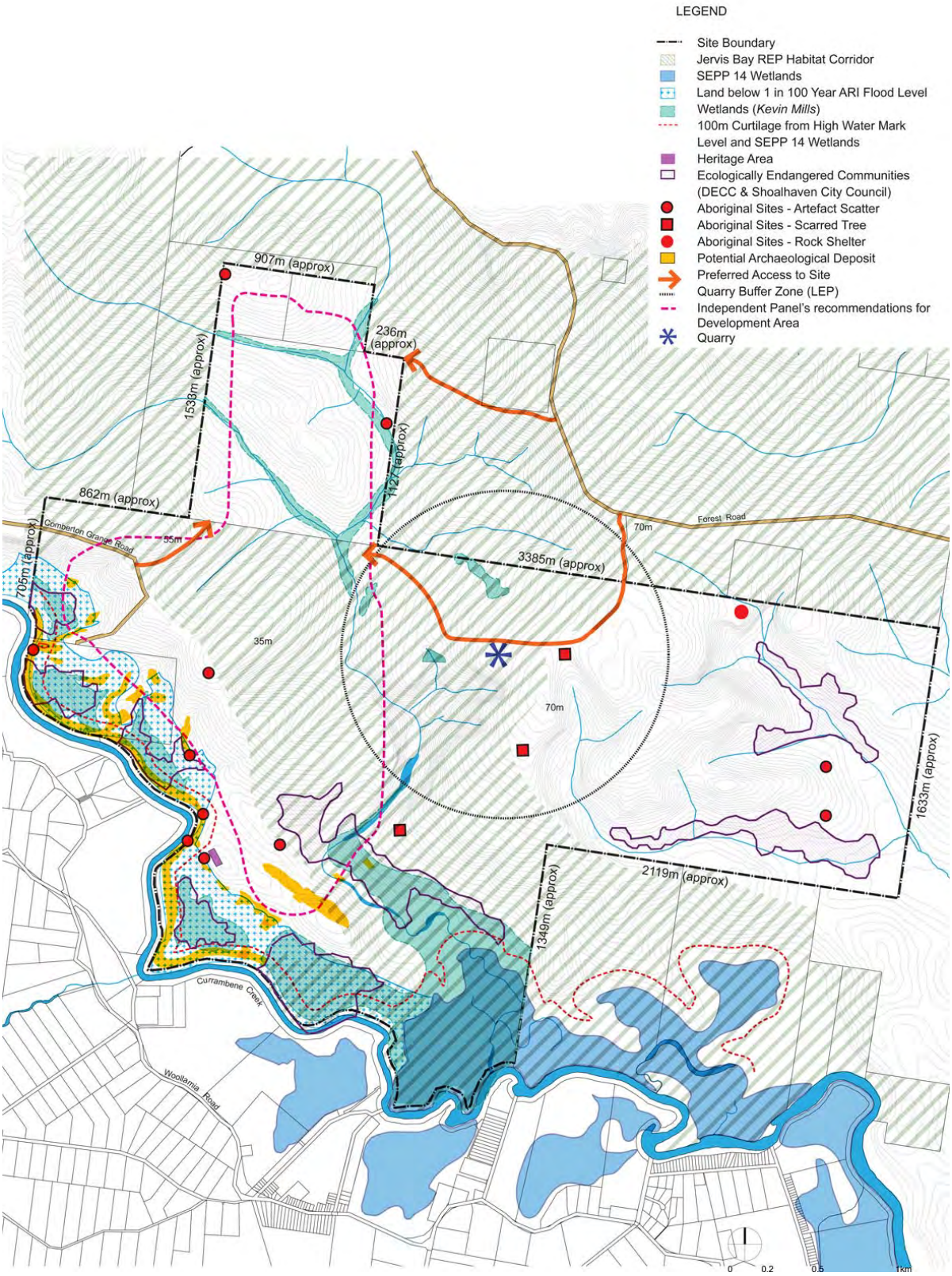

Figure 6.1: Site environmental constraints

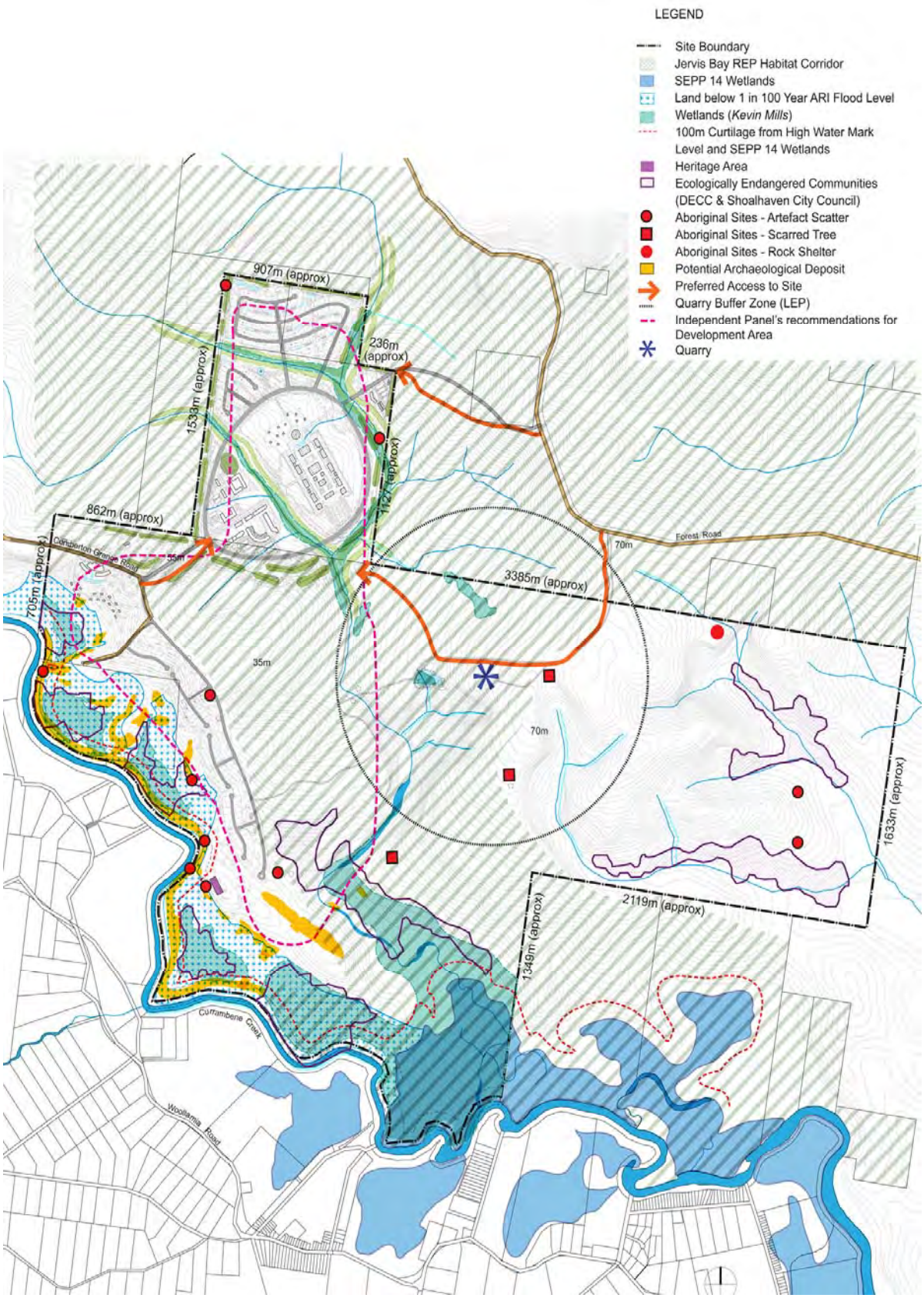

Figure 6.2: Site environmental constraints with Concept Masterplan overlay

7.0 THE DEVELOPMENT MASTERPLAN

The development is an integrated tourist facility with residential development with a community title under the ownership of the Shaolin Temple Foundation (Australia) Ltd.

The Masterplan design, whilst underpinned by the functional requirements of the development brief, has considered the specialist advice on the site from environmental, traffic and engineering consultants, and responded to the opportunities and constraints of the site. The Masterplan provides a sensitive response to the site, guided by strong environmental, social, economic and aesthetic objectives and principles.

The Comberton Grange site was selected by the head of the Shaolin order, its Abbot, for its natural environment of forests and creeks. The Shaolin has a strong respect for the environment and all forms of life, which is reflected in their traditional use of natural materials such as stone and wood, and their care and protection of the natural landscape environment. Its Buddhist philosophy and culture will underpin all aspects of the design.

7.1 History of the Shaolin Temple

The Shaolin Temple is the birth place of Zen Buddhism and Kung Fu and over its 1,500 year history has developed its teachings and belief system from Buddhism, Confucius and Taoism. The Temple has its headquarters in a temple complex at Mount Song Shan in Deng Feng City within the Henan Province in the People's Republic of China.

Over the centuries, the Shaolin Temple was designated as the official temple of the Imperial Court because of the Temple's vast experiences with international matters. The Temple has a reputation for assisting the needy and is often called to arbitrate in disputes. The Shaolin Order's practice of benevolence, helping the poor and needy, and leading a frugal lifestyle, still exists to this day. The Shaolin has developed its own unique disciplines of meditation, Kung-Fu martial arts and traditional Chinese medicine.

Internationally, the religious sect has over 60 million devotees and has a presence in most parts of the world. The current leader of the sect is the Abbot and Buddhist Master, Shi Yong Xin. The vision of the Abbot is to promote Shaolin culture to the world.

7.2 Masterplan Vision

The aim of the development is to achieve a high quality environmentally sustainable tourist and residential development that conveys the Shaolin philosophy and approach to life within a tranquil setting. The development is sited within the forest landscape with development precincts bounded by creeks and forests to preserve the natural attributes and qualities of the site. The proposed development will be *a fortress of enlightenment and a sanctuary for the soul*.

7.3 Masterplan Proposal

The proposal is for a high quality Shaolin tourist and residential development, managed by the Shaolin Temple Foundation (Australia) Ltd. The development will accommodate:

- A Buddhist Temple Sanctuary comprising a walled complex of religious buildings with residential accommodation integrated with the temple complex for initially 30, and up to 50 resident monks;
- A 330 seat prayer or assembly hall within the Temple complex;

- A Shaolin Martial Arts Training Centre/ Kung-Fu Academy for initially 150 students and up to 300 students, with teaching facilities, sporting field and residential accommodation for students and staff;
- A Traditional Chinese Medicine (TMC) centre with associated health and wellness facilities;
- A four star Hotel and tourist cabins with initially 100 rooms and up to 250 rooms, with dining and conference facilities and associated staff accommodation;
- A Village Centre with food outlets, retail, commercial and community facilities;
- A convention facility for initially 300 people;
- Serviced apartments within the Village Centre;
- An external amphitheatre for displays and gatherings located within the public domain of the Village Centre and within the sports field of the Education Precinct;
- A Visitor Information Centre with associated Cultural Museum, administrative facilities and golf cart hiring facilities;
- Residences of approximately 300 dwellings, with 100 dwellings at the first stage of the development;
- Agricultural and herbal gardens integrated within the residential development;
- 18 hole golf course integrated within the northern development site with clubhouse;
- Chinese gardens encircling the existing lake near the quarry;
- Associated open parking areas interspersed throughout the development;
- Internal road network to access the site and facilities; and
- Eco-trails within the site for walking.

The Temple will have its central axis oriented to Mount Cambewarra to the north-west and Jervis Bay to the south-east, with the primary entrance to the development from the north-east (Figure 7.1). The overall development will be sited within a landscaped setting with ESD strategies (Figure 7.2).

7.4 Masterplan Objectives

Key objectives for the design and siting of the Development Masterplan design are to:

- Maintain the natural forested and rural ambience of the site;
- Sensitively integrate the physical requirements of the development with the environmental attributes of the site;
- Retain the visual attributes of the site, from both within the site as well as external views to the site;
- Respect the Aboriginal and archaeological remnants within the site;
- Create a place with a distinctive identity and provide an educational and spiritual experience that conveys the philosophy and lifestyle of the Shaolin order;
- Establish an optimum site density that respects the environmental constraints of the site;
- Ecologically sustain, maintain and enhance the environment and preserve its natural habitats;
- Acknowledge the past uses of the site with an interpretation strategy that conveys the history of the site and its occupants; and
- Optimally utilise ecologically sustainable practices in the design and servicing of the development.

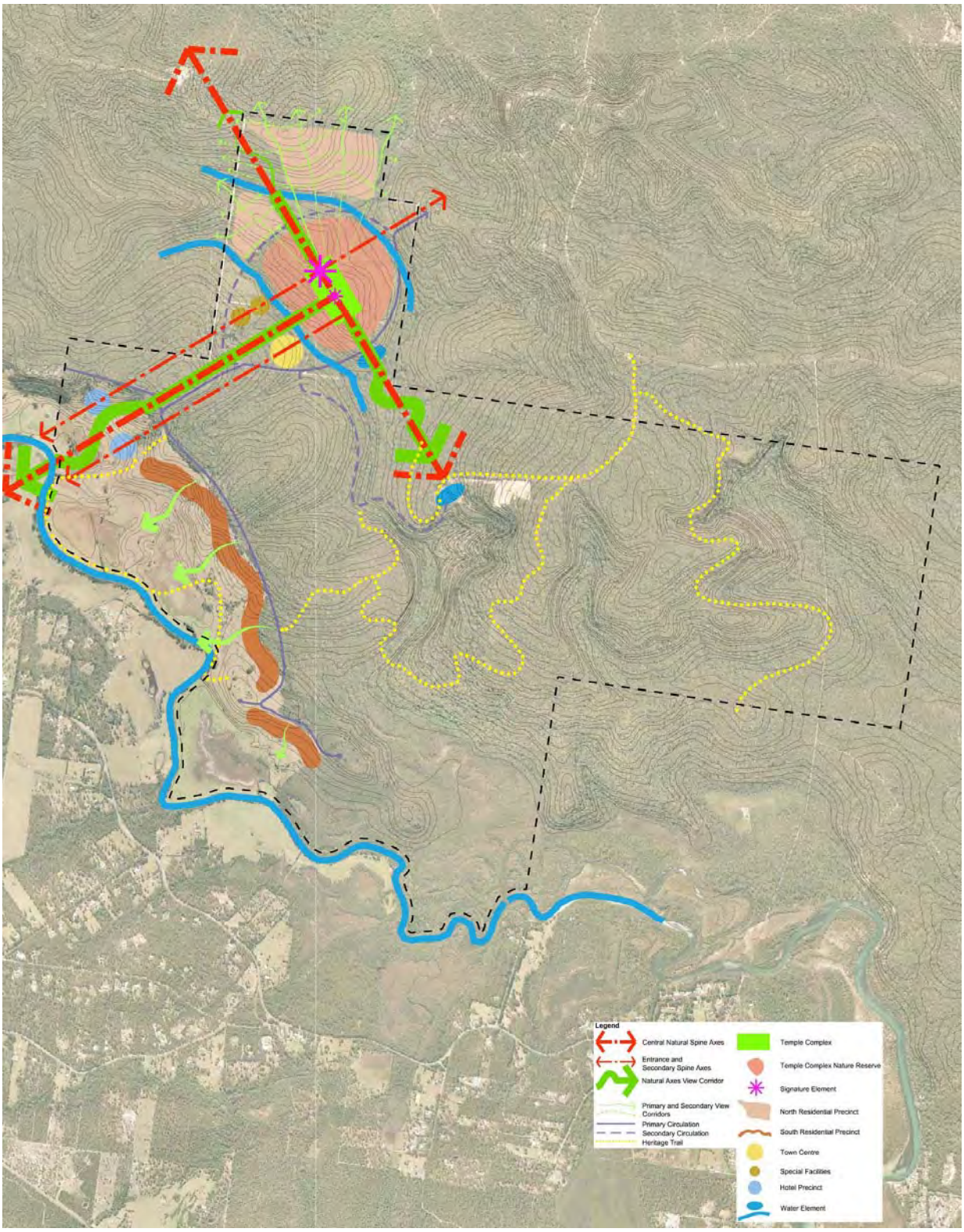

Figure 7.1: Concept Structure Plan

Refer additionally to **Appendix 1**.

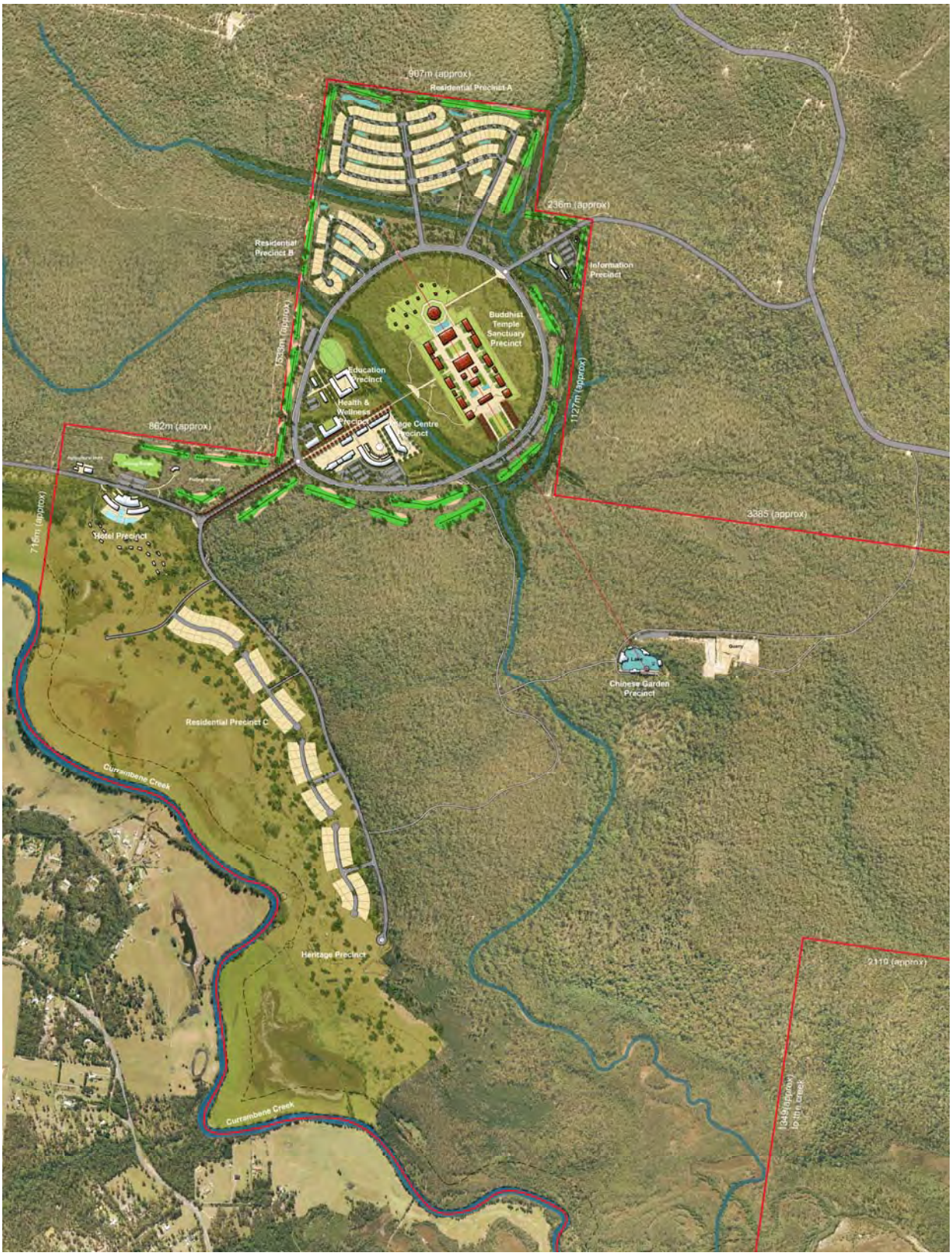

Figure 7.2: Comberton Grange Tourist and Residential Development Masterplan

Refer additionally to **Appendix 1**.

7.5 Masterplan Principles

The Masterplan Principles for development on the site and for the various functional precincts are:

A. SITE DEVELOPMENT PRINCIPLES

The Environment:

- Retain, as much as possible, the identified ecological corridor of forests, woodlands and wetlands within the site.
- Retain the pristine riparian environment along the Currambene Creek and Georges Creek systems and corridors.
- Provide and maintain asset protection zones for bushfire protection to the development.
- Sensitively site the development to respect the topographical characteristics and drainage patterns of the site.

Development character:

- Develop the site as an integrated tourist facility with associated residential development, with the tourism component being the predominant use and residential development of up to 300 dwellings.
- Maintain the rural and forested character of the site with cluster developments, broadly spaced buildings within landscaped settings.
- Optimise outlooks of dwellings and buildings to the natural features of the site.
- Develop road and streets that optimise rural vistas to woodlands and creeklines.

Sustainable design:

- Design to value site attributes, conserving natural attributes of the site, biodiversity corridors, drainage patterns, with management of potential site impacts.
- Reinforce localised natural landscapes and create quality public domains with best practice landscape measures for sustainability.
- Create communities that foster social and cultural interactions, with housing typologies and sizes to suit household and lifestyle opportunities, and quality educational, health and community services.
- Provide employment generating development that balance with the supply of housing and contribute to the economy of the local government area.
- Implement water sensitive urban design measures to all facets of the design of the development.
- Incorporate passive design principles in the design of the development.
- Reduce resource consumption in the design and construction of the development and minimise waste and promote recycling.
- Design for community safety with safety and crime prevention measures.

Site access and internal movement:

- Implement Shoalhaven City Council's preferred main entry point into the site from Forest Road.
- Maintain Comberton Grange Road as the secondary exit from the site.
- Frame and optimise views to key features of the site from entry approaches to primary roads and entries.

- Provide an interconnected, legible and permeable road system to all precincts and facilities that acknowledges site topography and features.
- Develop a functional hierarchy within the internal road network for legibility of movement and circulation.
- Design roads for the functional requirements of servicing the development and for emergency access to all areas of the site.
- Provide attractive streetscapes with high pedestrian amenity and safety.
- Provide convenient parking locations for the occupants and users of the facilities.

Heritage:

- Preserve, in the siting of the development, areas of indigenous and European heritage and archaeology for public appreciation.
- Develop interpretation trails and walks that reveal the significance of these features.
- Provide public awareness of the history and past uses of the site which will contribute to the understanding of the history of the Nowra and South Coast region.

B. PRECINCT DEVELOPMENT PRINCIPLES

Buddhist Temple Sanctuary Precinct:

- Site the Shaolin Temple complex within the central portion of the site in an elevated position in an elevated position on a natural ridge with its primary axis oriented to the mountains (at its rear) and the sea (at its entrance).
- Site the temple complex within a highly vegetated setting of woodland trees.
- Establish a temple precinct that encompasses through its setting, the experience of retreat, contemplation and meditation.
- Design for a ceremonial experience of the Temple Sanctuary with arrival courts and processional route through the complex.
- Provide accessible pedestrian linkages to and from other tourist precincts.

Education Precinct (Martial Arts Training Centre/ Kung-Fu Academy):

- Design an educational precinct within a setting conducive to learning in the siting and layout of buildings to encircle courtyard spaces for passive recreation, with ancillary active open spaces for sports and martial arts training and demonstrations.
- Provide student housing within easy access of educational and sports precincts.
- Provide a playing field for outdoor sports which will additionally serve an outdoor amphitheatre as a venue for outdoor displays of martial art performances and traditional theatre.

Village Centre Precinct:

- Provide a town centre that caters to the needs of tourists and visitors to the site as well as the daily requirements of its residents.
- Design a neighbourhood centre that creates a sense of place, of low rise buildings around public domain areas of gathering and passive recreational spaces and streets of high pedestrian amenity, serviceability and functionality.
- Provide flexible floor space that caters to a variety of dining, retail, commercial and community uses.
- Provide a predominantly pedestrian precinct, safe and universally accessible with the implementation of Crime Prevention Through Environmental Design measures.