Conybeare Morrison

Shaolin Temple Development, Comberton Grange NSW

Visual Impact Assessment

October 2012

Conybeare Morrison International
52 - 58 William Street
East Sydney, NSW 2011
T. +612 8244 8888 F. +612 8244 8877
E. mail@cmplus.com.au
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Revision	Date	Description	By	Chk	App
01	00/04/10	Draft Report	RP	AT	DC
02	15/10/12	Final Report	AT		

List of Figures

Contents

1.0 Introduction

1.1 Purpose of the Report

This Visual Impact Assessment has been prepared by Conybeare Morrison, on behalf of the Shaolin Temple Foundation, for a tourist and residential development at Comberton Grange, South Nowra, NSW as required by item 3 of the Director-General's Environmental Assessment Requirements (DGR's), dated 16 July 2008. Item 3 requires:

3.1 Address the visual impact of the proposal in the context of surrounding development and relevant mitigation measures, particularly:

- *Foreshore amenity;*
- *Overshadowing of public reserves;*
- *Loss of view from public places;*
- *Cumulative impacts.*

Provide visual aids such as scale model and photomontages to demonstrate visual impacts. Address amelioration of visual impacts through design, use of appropriate colours and building materials, landscaping and buffer areas.

This visual assessment describes the scenic qualities of Comberton Grange site which are used to determine the visual effect, sensitivities and potential impact of future development on the landscape setting and surrounding development.

1.2 Visual Impact Assessment Objectives

The objectives of this report are as follows:

- To identify and describe the existing visual and landscape environment and evaluate its current qualities.
- To determine the likely impacts the development will have on the visual and landscape quality of the area
- To recommend design principles to enhance the visual quality and minimise any potentially adverse impacts related to the proposed development.

1.3 Methodology

The study identifies the scenic quality of the site. Views, both to and from the site are, evaluated. Significant view corridor, vantage points within the site and their potential visual impact are identified. Base on these findings and a related visual analysis for Comberton Grange site, development and design recommendations are provided to guide all future development. A chapter by chapter description of the report structure and the methodology follows:

Chapter 1 – Introduction
This chapter provides summary background information to the report including work methodology and structure of the document.

Chapter 2 – Statutory Requirements
This chapter analyses the planning framework relevant to development within and surrounding the site.

Chapter 3 – Site Analysis
The regional and local context, visual and landscape character, visual catchments and view points are described in chapter 3. Information was obtained through site inspection, photographic assessments, research into existing studies and through data from Shoalhaven City Council and other relevant authorities and stakeholders. Topography, site character, landscape features, ecology, heritage and other contributions informing the visual and landscape character of the study area are included.

Chapter 4 – Visual Analysis
This chapter analyses important views and vantage points identified in the previous chapter. The visual sensitivity, based on the natural landscape values and the visual qualities of each important view locations, is detailed in this chapter.

The visual impact is assessed in relation to visual sensitivity and visual effect. The method used is a qualitative approach and is detailed in Chapter 3. In summary:

The **first** step is to assess the visual sensitivity and visual effect. Visual sensitivity refers to the character of a viewpoint; visual effect is result of the relationship between the location and proximity of the viewpoint. This step involves the assessment of the level of visual sensitivity and visual effect from the important viewpoints identified.

The **second** step is to identify important viewpoints from which the landscape character is assessed.

Finally, the **third** step is the assessment of visual impact, which includes a rating of visual sensitivity and visual effects. There are seven assessment ranges from levels from 'Nil' to 'Very High'

Chapter 5 – Vision Statement
Chapter 5 includes the vision for the Comberton Grange site. The intention of the vision statement is to create a desired outcome in which the new development is in harmony with the existing cultural landscape. The vision statement is also intended to inspire all development to be respectful of the cultural and environmental values.

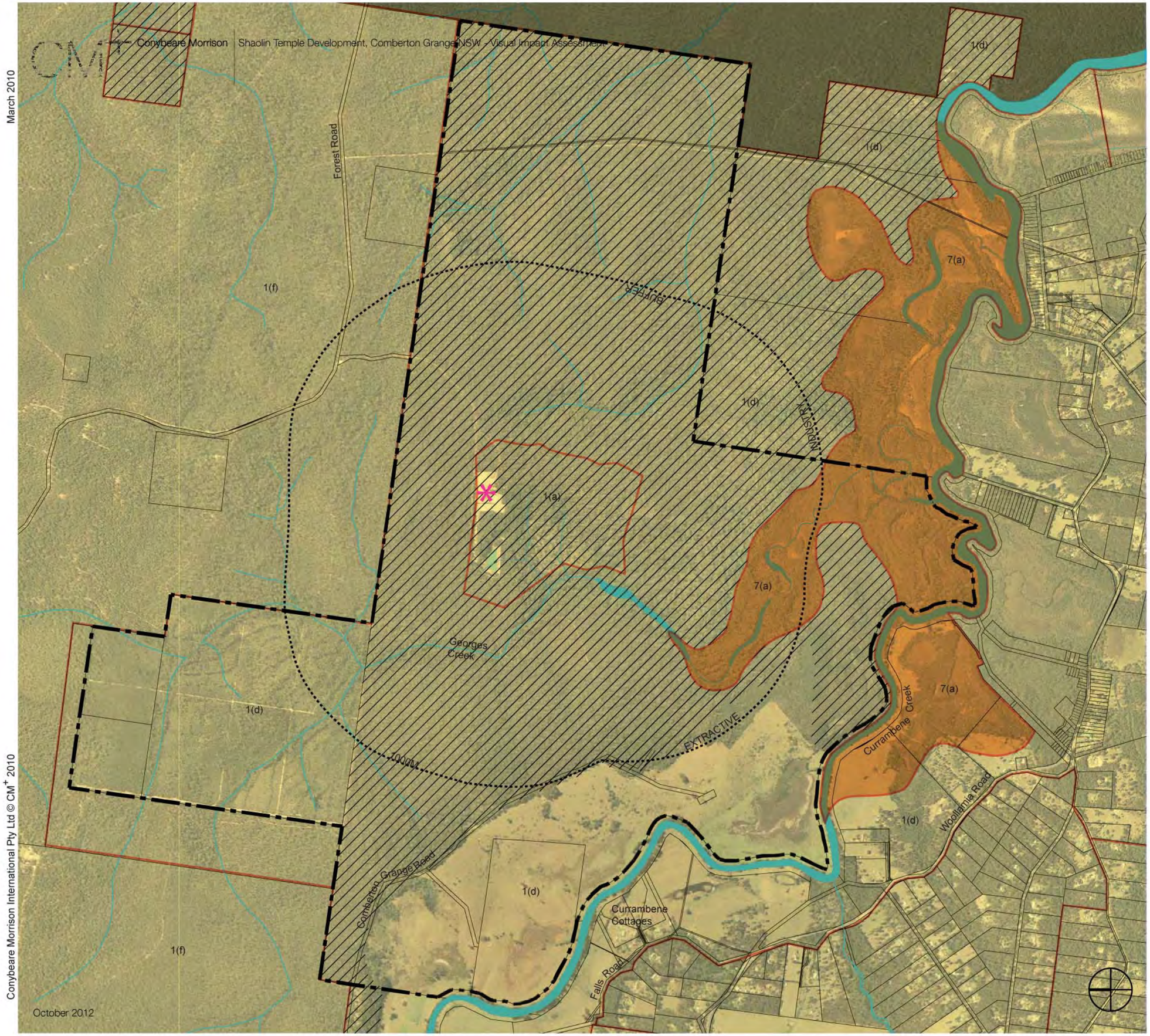
Chapter 6 – Visual Mitigation Objectives
This chapter recommends design guidelines and mitigation measures to minimise potential visual impact of any future development and to maintain the rural setting and conserve the cultural value of the area.

Chapter 7 – Conclusion
This chapter concludes that sensitive development is required on the Comberton Grange site to ensure current and future generations benefit.

1.4 References

Primary reference material for this study includes the following:

a. David Kettle Consulting Services, October 2006, *Kettle Environmental Study and Planning Report*.
b. Kevin Mills & Associates; December 2009; *Biodiversity Assessment; Proposed Shaolin Temple and Associated Developments, Comberton Grange, City of Shoalhaven, New South Wales*.
c. Lyall & Associates Consulting Engineers; November 2006; *Currambene Creek and Moona Moona Creek Flood Studies – Volume 1 & 2 – Appendices*.
d. Navin Officer Heritage Consultants August 2009; *Shaolin Temple and Academy, Comberton Grange – Aboriginal Heritage Assessment*.
e. Douglas Partners; August 2009; *Report on Preliminary Geotechnical Investigation – Proposed Tourist & Residential Development Comberton Grange, Jervis Bay*.
f. Dr. Robert V J P Varman; July 1999, *Comberton Grange Falls Creek, Nowra Archaeological Assessment*.
g. Conybeare Morrison International Pty Ltd; 2010; *Statement of heritage Impact*.



October 2012

LEGEND

- Site Boundary
- Quarry
- Land of Ecological Sensitivity
- 1(a) Zoning 1(a) - Agricultural Production
- 1(d) Zoning 1(d) - General Rural
- 1(f) Zoning 1(f) - Forest
- 7(a) Zoning 7(a) - Ecology

Figure 1

Land Use

0 200 400 600 800 1000m

1: 20,000@A3

2.0 Statutory Requirements

2.1 South Coast Regional Strategy

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

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

A key principle of the Strategy is to discourage new communities and for new residential development to be focused in and around existing towns and settlement and away from environmentally sensitive areas. Any new development/ urban settlement, not already zoned or mentioned in the Strategy, will only be considered if the development can satisfy the requirements of Sustainability Criteria contained in the Strategy.

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

2.2 Jervis Bay Regional Environmental Plan (REP) 1996

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

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

2.3 Shoalhaven Local Environmental Plan 1985

Refer to Figure 1.

Comberton Grange site is located within the LGA of Shoalhaven and Shoalhaven City Council is the consent authority. Under Shoalhaven LEP 1985, the land is zoned as follows:

- **Rural 1(d) – General Rural** over the majority of the site,
- **Rural 1(e) – Extractive and mineral resources** on the quarry site,
- **Environmental Protection 7(a) – Ecology**.

2.4 SEPP 14 – Coastal Wetlands and SEPP 71 – Coastal Protection

SEPP 14 – Coastal Wetland No. 333 occurs in the southeastern corner of the site and borders Currambene Creek and Georges Creek. The wetlands include both fresh and saltwater bodies, with freshwater wetlands occurring on the floodplains and saltwater wetlands occurring along the creek.

The southeastern portion of the site is within the Coastal Zone as defined by SEPP 71 – Coastal Protection. The policy applies to land within the coastal zone and land within a sensitive coastal location as defined to mean:

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

(g) (iv) land to which SEPP 14 – Coastal Wetlands applies.

2.5 NSW Coastal Policy 1997

The 1997 Coastal Policy sets a new direction for coastal zone management, planning and conservation in NSW. The Policy is designed to guide management and planning of the coastal zone, builds on the work of the 1990 Coastal Policy and 1994 Draft Revised Coastal Policy and is the product of an extensive process of review and community participation.

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

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

2.6 Jervis Bay Settlement Strategy 2003

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

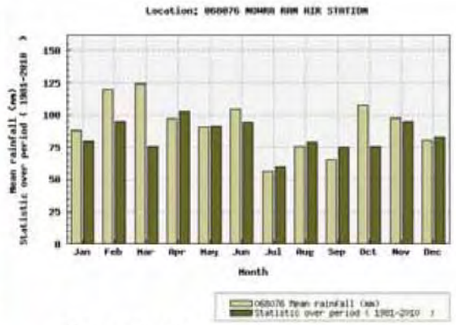
The vision for the Settlement Strategy is:
To maintain and enhance the marine, estuarine and natural resources by providing balanced future living and visiting opportunities which are environmentally, socially and economically sustainable.

2.7 SEPP 44: Koala Habitat Protection

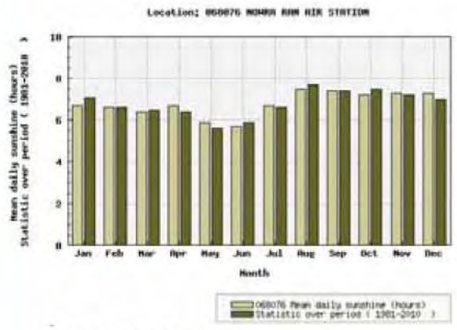
The Shoalhaven Local Government Area has been identified as Koala habitats.

March 2010

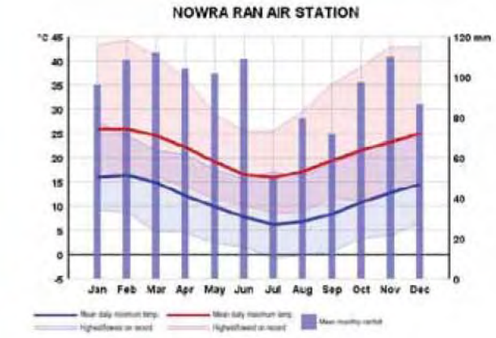
Bamarang
Mundamia
West Nowra
Worrigee
Brundee
South Nowra
Cabbage Tree
Pyree
Mayfield
Forest Rd, NSW, Australia
Nowra Hill
NOWRA STATE FOREST
NOWRA AIRPORT
HMAS Albatross
Wollumboola
SALTWATER SWAMP NATURE RESERVE
Parma
Falls Creek
Comberton
JERVIS BAY NATIONAL PARK
CURRAMBENE STATE FOREST
VALHALLA HORSE RIDING & FARM HOLIDAY
PARMA CREEK NATURE RESERVE
CURRAMBENE COTTAGE
Callala Beach
Woollamia
TOMERONG STATE FOREST
Myola



Mean Rainfall
Source: Bureau of Meteorology



Mean Sunshine
Source: Bureau of Meteorology



Temperature and Rainfall
Source: Weather Zone

LEGEND

Site Boundary

Figure 2

Regional Context and Climate

0 1km 2km 3km 4km

October 2012

3.0 Site Analysis

3.1 Regional Analysis

This regional analysis extends beyond the boundaries of the Comberton Grange site and covers the broader surrounding area. This regional analysis assists in determining the causes and potential effects of visual and landscape impacts on the site.

3.1.1 Site and Surrounds

Refer to Figure 2.

Comberton Grange site is located within the Jervis Bay catchment in the Southern Highlands of New South Wales in the southern most sub-region of the Illawarra. The region is characterised by steep coastal escarpments defining the edge of the Southern Highlands, and is bounded by the Illawarra Escarpment to the West and the Pacific Ocean to the East. The region predominantly comprises rural areas set with the mountainous landscape and the coast, while the urban areas are predominantly concentrated along or near the coast.

Comberton Grange site is located within the Jervis Bay Catchment, approximately 5 km from its entry into Jervis Bay. It is surrounded by forest, woodland and wetlands.

The site is in close proximity to the rural residential area South of Currambene Creek. The town of Callala Beach is 10 km southeast and Nowra CBD is 12 km North of the site.

3.1.2 Climate

Refer to Figure 2.

Comberton Grange and its surrounds is subject to a mild temperate climate with mean daily temperatures typically reaching 15.8 ^{0}C in winter and 25.8 ^{0}C in the summer and an average annual rainfall slightly under 1100 mm, distributed uniformly throughout the year with slight summer-autumn dominance. Lower evapotranspiration in autumn and winter compensates for the lower rainfall, resulting in substantially more runoff in these seasons than during summer (Bureau of Meteorology). These climatic conditions are partly responsible for the existing endemic vegetation of the region.

3.1.3 Landform

Comberton Grange site is surrounded by Illawarra Escarpment to the West

Currambene Creek, which forms the southern boundary of the site, is one of the short streams which drain the coastal strip of the South Coast of NSW. It rises in the plateau area occupied by RAN Air Station, HMAS Albatross at an elevation of 100m. Currambene Creek generally flows in the northwest – southeast direction along the southern boundary of the site. It is fed by Georges Creek, the main sub-catchment on the northern bank, which enters Currambene Creek 7km down stream from Princess Highway (Lyall & Associates Consulting Engineers, *Currambene Creek and Moona Moona Creek Flood Studies Volume 1 Report*, November 2006). Georges Creek flows from North to South through the middle of the study area and joins Currambene Creek in the southeast corner.

Bid Bid Creek, a tributary of Callala Creek, and its tributaries comprise second and third order drainage lines in the far eastern portion of the study area.

Comberton Grange site is located within the lower reaches of the Currambene Creek Catchment.

3.1.4 Soils

The physical character of the landform of the region can be broadly categorised into sand, clay/silt, siltstone and sandstone.

The site is underlain by Nowra Sandstone and Wandrawandian Siltstone both belonging to the Shoalhaven Group of Permian age. The Nowra Sandstone comprises quartz sandstone while the Wandrawandian Siltstone comprises sandstone, siltstone and conglomerate (Douglas Partners, *Report on Preliminary Geotechnical Investigation Proposed Tourist and Residential Development Comberton Grange, Jervis Bay*, 11 August 2009).

The soil of the site has been identified as Nowra and Shoalhaven soil landscapes. The soils of the area have been classified as Red-Yellow Podzolic Soil with fine sandy loam underlain by fine light sandy clay to medium clay.

The soils of the plantation area have a sandy loam upper horizon with a medium-heavy clay lower horizon, which may be prone to erosion and waterlogging.

The site has a low level of soil and landscape constraint, however, low-lying floodplain areas adjacent to Currambene Creek have moderate to very high soil and landscape constraints. These areas are most susceptible to acid sulphate soils and are located on the low-lying floodplain below 6m AHD (South Coast Sensitive Urban Lands Review).

March 2010

Forest Road

Georges Creek

Comberton Grange Road

Currambene Cottages

Falls Road

Currambene Creek

Woollamia Road

LEGEND

- Site Boundary
- Quarry
- Land Below 1 in 100 Year ARI Floor Level
- Wetlands (*Kevin Mills*)
- SEPP 14 Wetlands
- Jervis Bay REP Habitat Corridor
- Ecologically Endangered Communities (DECC & Shoalhaven City Council)
- 100m Curtilage from High Water Mark Level
- Independent Panel's Recommendations for Development Area

Figure 3

Natural Systems

0 200 400 600 800 1000m

1: 20,000@A3 October 2012

3.2 Local Analysis

This section analyses the landscape character within Comberton Grange site which enhances the rural landscape of the area. Important views and vistas available from significant locations within and to the site are also identified.

3.2.1 Study Area

Refer to Figure 3.

Comberton Grange site is located 15 km South of Nowra and comprises of Lot 4 DP 63405, Lot 1 DP 550098 and Lot 1 DP 725955.

The site comprises approximately 1,284 hectares, of largely forested land, of which approximately 170 hectares is within the former pine plantation, and approximately 110 hectares along the cleared slopes overlooking Currambene Creek. The site is bounded by Currambene Creek to the South, Nowra State Forest to the West and North and Currambene State Forest to the East.

The site includes a diverse range of major landscape features including forested mountains and hills of the Illawarra Escarpment, majority of the Georges Creek catchment, a tributary of Currumbene Creek and the headwaters of Bid Bid Creek. Wetlands, which are located around Currambene Creek to the South have conservation and habitat value. An existing sandstone and dolerite quarry (Comberton Grange Quarry) is located in the central part of the site and has an unsealed access from Forest Road. There is a sedimentation control dam downstream of the quarry.

The remnant of the former Comberton Grange Farm complex are located in the southeast corner of the site. The homestead was destroyed by fire in 1990 and only some farming structures remain, which includes sheds, water tanks and fencing. The former Comberton Grange Farm complex has local significance and played a significant part in the earliest European development of Currambene Creek (Dr. Robert V P J Varman, 1999, *Comberton Grange Falls Creek, Nowra Archaeological Assessment*).

3.2.2 Proposed Development Area

Refer to Figure 3.

The South Coast Sensitive Urban Lands Review, prepared by an Independent Review Panel in October 2006 on the suitability of development on sites zoned for urban expansion in the South Coast region identified in the South Coast Regional Strategy, has identified part of the site as suitable for urban development.

Land generally suitable for development includes the area West of Georges Creek and also the Pine Forest sub-precinct.

Any future development will be contained within the identified development area. The visual analysis undertaken in the following section predominantly deals with potential visual impacts of future development within the identified development area.

3.2.3 Existing Vegetation

Refer to Figure 3.

The site is predominantly covered in native forest comprising a number of vegetation communities of high conservation significance, including Endangered Ecological Communities (EECs) and forest types identified in the Southern Rivers Catchment Action Plan to be of high conservation priority.

Around 75% of the Comberton Grange site is covered by forest, woodland and wetlands. The remainder has been cleared for farming over the years (Source: Kevin Mills & Associates, *Biodiversity Assessment - Proposed Shaolin Temple and Associated Development*, December 2009).

The environment and landscape of the site has been modification over years by agriculture, grazing and dairying practices, which is evident from the cleared grazing land along Currambene creek. The cleared farmland above Currambene Creek is covered in exotic grasses and other introduced species

The northern part of the site, the former pine plantation site, now contains plantation remnants, native forest regrowth as well as mature eucalypts. 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 bushland located within the centre of the site has been defined as a habitat corridor under the Jervis bay Regional Environmental Plan (REP). The eastern portion of the site East of the quarry, although not identified under the REP, provides habitat for numerous threatened species.

The existing vegetation has been extensively described in the report prepared by Kevin Mills & Associates, *Biodiversity Assessment - Proposed Shaolin Temple and Associated Development*, December 2009.

March 2010

Forest Road

Georges Creek

Comberton Grange Road

Currambene Cottages

LEGEND

- Site Boundary
- 2-14
- 14-16
- 26-38
- 38-50
- 50-62
- 62-74
- 74-86
- Major Ridgeline
- Minor Ridgeline

Figure 4

Topography

0 200 400 600 800 1000m

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3.2.4 Topography

Refer to Figures 4, 5 & 6.

The site is characterised by low undulating hills and hill crests with moderately sloped hill sides. The slopes generally fall to the South to 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 are highly variable with low slope gradients of 2% to up to 8% in the southern and western parts, with some isolated areas of up to 15% slope. The area along the wetlands is located on the southwest facing edge of a ridgeline with site levels falling towards Currambene Creek at grades of 1 in 10 to 1 in 25 with an overall difference of around 34m. The river banks along Currambene Creek are impacted by a 1:100 year flood

The northern part is centred on a series of West to northeast and West to southeast ridgelines separated by creeklines which drain to the Currambene Creek floodplain. The undulating topography has gradients ranging from 50m AHD at the northwestern corner to below 10m AHD along the drainage lines. Slope gradients in this area are generally less than 10% and average approximately 4-5%.

March 2010

Forest Road

Georges Creek

Comberton Grange Road

Currambene Cottages

LEGEND

Site Boundary

Figure 5

Digital Terrain Model

0 200 400 600 800 1000m

October 2012

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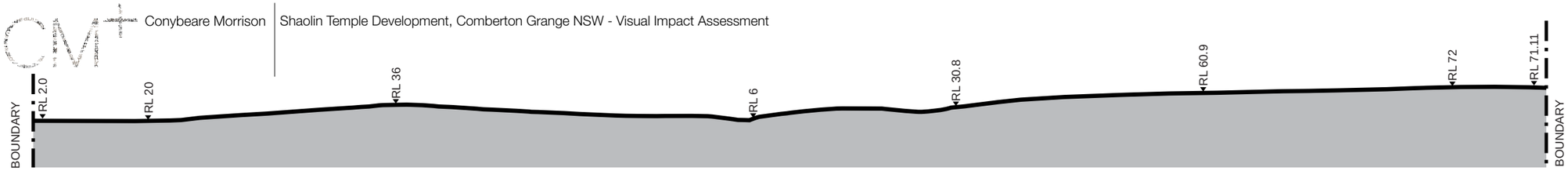
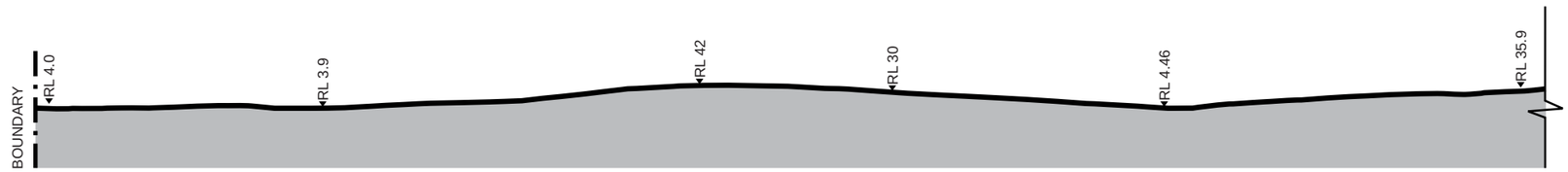


Section 1-1

Section 2-2



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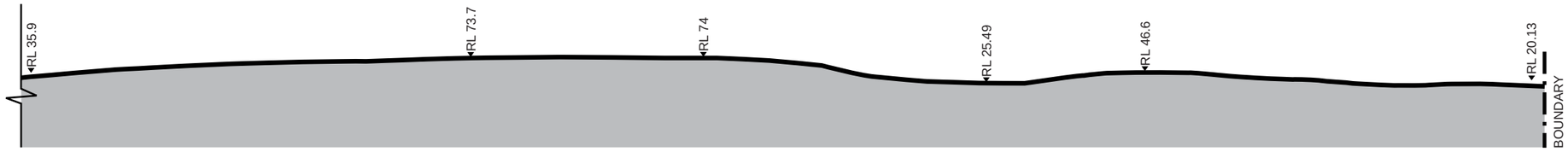
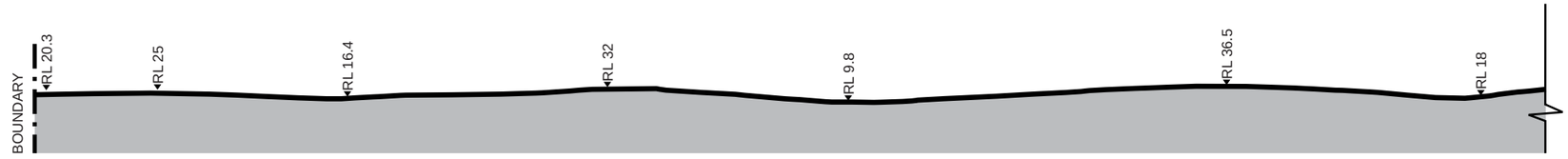
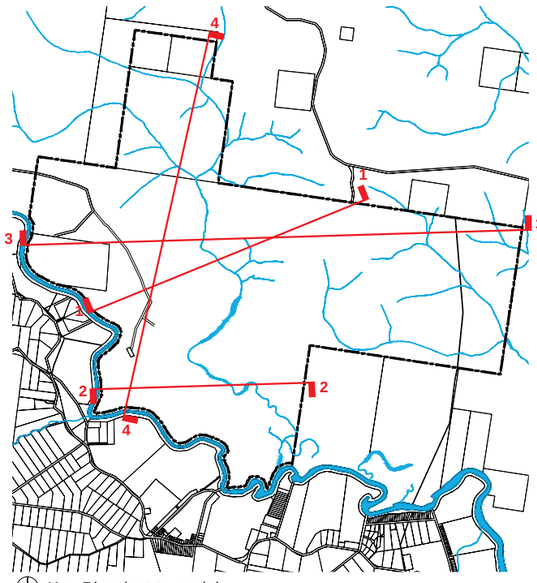


Section 3-3



Section 4-4

Section 4-4



Key Plan (not to scale)

Figure 6

Sections

0 100 200 300 400 500m

1: 10,000@A3

Forest Road

Comberton Grange 1

Georges Creek

CGIF4

CG8

CGSA2

Currambene Creek

Woollamia Road

CGIF6

CGIF3

CG6

Comberton Grange Road

CGSA3

Currambene Cottages

Falls Road

LEGEND

- Site Boundary
- Quarry
- Independent Panel's Recommendations for Development Area

EUROPEAN HERITAGE

- Heritage Area

INDIGENOUS HERITAGE

- Potential Archaeological Deposit
- Aboriginal Sites - Artefact Scatter
- Aboriginal Sites - Scarred Tree
- Aboriginal Sites - Rock Shelter
- Archaeologically Sensitive Area

Figure 7

Heritage

0 200 400 600 800 1000m

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3.2.5 Heritage

Aboriginal Heritage
Refer to Figure 7.

Aboriginal occupation of the Jervis Bay area dates back to at least 3000 years.

A number of Aboriginal archaeological sites have been identified to have moderate to high significance within its local context. A possible burial ground may be located adjacent to Currambene Creek and may have local and potential regional significance. Most areas of potential heritage sensitivity are located adjacent to Currambene Creek on the floodplains (*South Coast Sensitive Urban Lands Review*).

There are twenty-five Aboriginal cultural heritage recordings, including four archaeologically sensitive areas, within the study area. Eight of the heritage recordings (CG6, CG8, CGIF2, CGIF3, CGIF4, CGIF6, CGSA2, CGSA3; identified in Figure 7), are situated partially or wholly within the Independent Panels' recommended development area.

Four of these recordings (CGIF2, CGIF3, CGIF4, CGIF6), have been assessed to be of low to moderate significance within a local context. Two recordings(CG6 and CG8), are considered to be of low significance within a local context. (*Source: Navin Officer, 2009, Shaolin Temple and Academy Comberton Grange, Jervis Bay, NSW, Aboriginal Cultural Heritage Assessment*)

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

European Heritage
Refer to Figure 7.

The site accommodates the former Cooriang Farming Estate (Former Comberton Grange Farm Complex) which was located in the southwestern corner of the site on a ridge above Currambene Creek (State Heritage Register).

The former Comberton Grange (water tank, fencing, remnant garden trees) and the drainage field systems and associated features are considered to have local heritage significance since it played a significant part in the earliest European development of Currambene Creek. The Comberton Grange Homestead, which was built by convict labour between 1843 and 1847, was developed as a viable farm and possible cattle station. The Homestead included a range of outbuildings to the East and included barns, sheds, chicken farm, stockyards and dairy. The homestead was destroyed by fire in 1990.

Comberton Grange, former Dairy Farm Complex (Lot 1 DP550096) is listed as an item of local heritage significance in Shaolhaven LEP 1985 and Draft LEP 2009 (Item 1160), as a terrestial archaeological site related to settlement at Currambene Creek.

The former Comberton Grange site is strongly associated with the early settlement of the district and is remarkable for the intact retention of the original area of the grant as yet not subdivided.

The location of the Homestead on the ridge provides uninterrupted view and vista across the Currambene Creek towards small rural holdings.

The heritage assessment undertaken by Conybeare Morrison has identified a heritage curtilage as the current cleared grazing area, with the regrowth area acting as buffer zone for any proposed development.

The Comberton Grange site contains relics dated back to the 19th century and has been identified as having archaeological research value (Source: Conybeare Morrison, 2010, *Statement of Heritage Impact*). The former Comberton Grange Farm Complex defined the rural landscape for the site and its surrounds. The rural landscape has developed over the past 150 years with constantly evolving pastoral and natural woodland.

These landscape features are important reminders and interpreters of the economic function of agriculture in the development of the region.

P1. View of former Homestead looking North (Source: Shoalhaven Historical Society, date unknown).

P2. Former Homestead garden from North (Source: Shoalhaven Historical Society, date unknown).

P3. (Source: Shoalhaven Historical Society, date unknown).

March 2010

Forest Road

Georges Creek

Comberton Grange Road

Currambene Cottages

Falls Road

Currambene Creek

Woollamia Road

LEGEND

- Site Boundary
- Quarry
- Pine Forest
- Forest
- Farmland
- Habitat Corridor
- Creek Corridor
- Independent Panel's Recommendations for Development Area

Figure 8

Landscape Character Precincts

0 200 400 600 800 1000m

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3.2.6 Existing Landscape Character

The landscape character of Comberton Grange site is dominated by ridgelines and valleys. Large areas of regenerating bushland and the cleared farmland give it a rural character. There are three broad patterns of landscape:

- Native forest and woodlands which covers majority of the site.
- The cleared farmland above Currambene Creek, which is covered in exotic grasses and introduced species.
- Wetland, which are located along Currambene Creek.

The study area has been impacted by farming, dairy activities and bushfires in recent years. This has resulted in sub-precincts with the site with distinctive landscape characteristic which are identified in Figure 8 and described below.

Pine Forest

Refer to Figure 8.

The Pine Forest sub-precinct is characterised by undulating landscape comprising of regenerated bushland interspersed with occasional pine trees (Refer to P5). Pine Forest sub-precinct, which corresponds to a former pine plantation, is centred on a series of West to northeast and southeast ridgelines separated by Georges Creek headwaters. The tributaries of Georges Creek support a wetland forest of native and introduced species with bare areas and scattered trees and a dense understorey of closed to open shrub land.

The Pine Forest sub-precinct landscape is contiguous with similar landscape of Nowra State Forest to the West and North and Currambene State Forest to the East. The continuity of the Pine Forest sub-precinct is interrupted by bush tracks running northsouth and eastwest which provide visual links to the surrounding forest area (Refer to P9).

Forest

Refer to Figure 8.

The Forest sub-precinct located in the eastern portion of the site is characterised by dense native forest vegetation across the major ridgeline running North to southeast with several spurs extending from the major ridge sustaining the Bid Bid Creek and its tributaries.

Bid Bid Creek and its tributaries comprise second and third order drainage lines in the far eastern portion of the study area. The undulating landform comprises dense vegetation in a fairly natural condition ranging from shrub land to young forest with dense understorey of shrubs and grasses. Swamp forest occur along Bid Bid Creek valley

The vegetation of the Forest sub-precinct is similar to the forests and woodlands to the North and East, in Currambene State Forest and Jervis Bay National Park respectively, and with the wetlands around Currambene Creek to the South (Refer to P6 and P10).

Habitat Corridor

Refer to Figure 8.

The Habitat Corridor sub-precinct is characterised by dense native forest vegetation across the centre of the site with the Georges Creek stretching diagonally across the centre. The Habitat sub-precinct includes lesser disturbed sections of level ground on the crest and upper slopes of the watershed ridgeline between Currambene and Georges Creeks. The deep valley of Georges Creek supports an undisturbed tall forest with a dense middle storey and an understorey of grasses in contrast with the vegetation on the edge of the Farmland sub-precinct, which ranges from shrub land to young forest. The only sign of disturbance being the existing Comberton Grange Quarry and a few bush tracks (Refer to P7). Tucked within the dense forest is a sedimentation control dam downstream of the quarry (Refer to P11).

The Habitat Corridor provides a landscape backdrop to the Farming sub-precinct and a visual barrier to the Pine Forest and Forest sub-precinct when viewed from South. Views towards southeast are dominated by forested section in the southeastern corner of the sub-precinct, which is the only surviving area of archaeological potential.

P4. The site looking East, viewed from the edge of Currambene Creek.

P5. Pine Forest vegetation.

P6. The blue gum tall forest in deep valley of Bid Bid Creek (Source: Kevin Mills & Associates, 2010).

P7. Comberton Grange Quarry.

P8. The site looking West, viewed from the southern end of Comberton Grange Road.

P9. Existing tracks within Pine Forest sub-precinct.

P10. Swamp mahogany forest of Bid Bid and Georges Creeks (Source: Kevin Mills & Associates, 2010).

P11. Existing sedimentation control dam.

Farmland
Refer to Figure 8.

Set on the low ridges adjoining Currambene Creek, the Farmland sub-precinct is covered in exotic grasses and introduced species. It has a distinct character of open pastures rolling into the low lying flat flood plains, wooded Currambene Creek corridor to the southwest and native forest of the Habitat Corridor on a higher ground to the northeast (Refer to P14). The pastures are dotted with remnant outbuildings and landscape of the Comberton Grange Homestead (Refer to P11).

The pastures are framed by a backdrop of woodland across ridgelines, with the soft grey and green eucalypt edge defines the local views. The slopes below the unformed internal road entension of Comberton Grange Road has been extensively disturbed as a result of grazing activities, vegetation clearance, multiple vehicle track creation and erosion, and agricultural development. The homestead and the associated garden are buildings set in a clearing with exotic trees, which form a contrast with the surrounding landscape.

Creek Corridor
Refer to Figure 8.

The Creek Corridor sub-precinct stretches diagonally along the southern boundary of the site and contains an extensive area of wetland along Currambene Creek.

The Creek Corridor incorporates three separate freshwater wetlands on the cleared farmland linked to Currambene Creek by small floodplain channel. All of these wetlands are identified as endangered ecological communities in New South Wales (Kevin Mills & Associates; December 2009; *Biodiversity Assessment; Proposed Shaolin Temple and Associated Developments, Comberton Grange, City of Shoalhaven, New South Wales)*.

The Creek Corridor is characterised by a thick narrow band of estuarine vegetation of native forest trees and mostly open understorey of shrubs on both banks and grassed paddocks bordering Currambene Creek.

The flood plain incorporates clusters of dense vegetation, which is visually dominant and make it one of the most significant natural features of the site (Refer to P13 and P15).

P12. View of former Comberton Grange Farm complex located within the grazing paddocks, looking East.

P13. Currambene Creek vegetation.

P14. Habitat Corridor with the grazing paddocks in the foreground, viewed from the Hayshed.

P15. Currambene Creek.