NSW GOVERNMENT
Department of Planning

Contact: Paulina Hon
Phone: 9228 6106
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Our ref: 06_0135
Your ref:
File: 9042763

Mr Patrick Kwok Leong Pang
Shaolin Temple Foundation (Aust) Ltd
c/o Ms Audrey Thomas
Conybeare Morrison International P/L
PO Box A866
SYDNEY SOUTH NSW 1235

Dear Ms Thomas

Subject: Mixed Tourist, Residential and Commercial Project - Comberton Grange Road, Comberton Grange, South Nowra, Shoalhaven local government area, 06_0135

The Department has received your application for a proposed mixed tourist, residential and commercial concept plan (06_0135) for the above site.

The Director-General's Environmental Assessment Requirements (DGRs) for the environmental assessment (EA) of the concept plan are at **Attachment 1**. The DGRs have been prepared in consultation with relevant government agencies, including Shoalhaven City Council.

Attachment 2 lists the relevant plans and documents which will be required upon submission of your proposal.

It should be noted that the DGRs have been prepared based on the information provided to date. Under section 75F(3) of the Act, the Director-General may alter or supplement these requirements if necessary and in light of any additional information that may be provided prior to the proponent seeking approval for the project.

If the EA is not exhibited within 2 years of the date of issue of these requirements, you should consult further with the Director-General in relation to the preparation of the EA.

Please contact the Department at least two weeks before you propose to submit the EA for the project to determine:

- the fees applicable to the application. Note that you will need to provide a signed statement from a Quantity Surveyor to verify the capital investment value of the project;
- consultation and public exhibition arrangements that will apply; and
- number and format (hard-copy or CD-ROM) of the EA that will be required.

A list of some relevant technical and policy guidelines which may assist in the preparation of the EA are attached at **Attachment 3**.

Prior to exhibition, the Department will review the EA to determine if it adequately addresses the DGRs. The Department may consult with other relevant government agencies in making its decision. If the Director-General considers the EA inadequately addresses the DGRs, he may require the proponent to revise the EA to address additional matters.

Following this review period, the EA will be made publicly available for a minimum period of 30 days.

If your proposal includes any actions that could have a significant impact on matters of National Environmental Significance (NES), it will require an additional approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to any approvals required under NSW legislation. It is your responsibility to contact the Commonwealth Department of the Environment, Water, Heritage and the Arts in Canberra (6274 1111 or http://www.environment.gov.au) to determine if the proposal is likely to have a significant impact on matters of NES and would require an approval under the EPBC Act. The Commonwealth Government has accredited the NSW environmental assessment process for assessing any impacts on matters of NES. As a result, if it is determined that an approval is required under the EPBC Act, please contact the Department immediately as supplementary DGRs will need to be issued.

Please note that under section 75U of the Act, Part 3A applications do not require certain permits/approvals required under other legislation. These matters are assessed as part of the Part 3A process. For example, Section 87 permits and Section 90 consents under the *National Parks and Wildlife Act 1974* are not required for Part 3A applications. Section 75U applies from the date of issue of the DGRs.

Notwithstanding, the Department still requires an equivalent level of information within the EA as would ordinarily be required for the issue of any such permit/approval to enable an assessment of the relevant works. Please notify the Department should any sub-surface testing be required during the preparation of your EA.

Copies of responses from government agencies (provided to date) to the Department's request for key issues and assessment requirements are enclosed at **Attachment 4**. Please note that these responses have been provided to you for information only and do not form part of the DGRs for the EA.

If you have any queries regarding these requirements, please contact Paulina Hon on 9228 6106 or email paulina.hon@planning.nsw.gov.au.

Yours sincerely

16. 7. 07

Chris Wilson
Executive Director,
Major Project Assessments
as delegate for the Director-General

Attachment 1
Director-General's Environmental Assessment Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Application number
06_0135
Project
Concept Plan Application - Mixed tourist, residential and commercial development comprising: Buddhist temple sanctuary; kung-fu academy; agricultural and herbal farm; 500 bed 4 star hotel with ancillary room for staff accommodation (up to 30 rooms); up to 300 dwellings (self-contained independent living villas/adaptable housing for the aged; detached and medium density residential developments); retail, commercial, professional and community services; and 27 hole golf course and associated clubhouse.
Location
Lot 1 DP725955, Lot 1 DP550098, Lot 4 DP63405, and Lots 59, 60 and 61 of DP 755928, Comberton Grange Road, Comberton Grange, South Nowra, Shoalhaven local government area.
Proponent
Conybeare Morrison International Pty Ltd (on behalf of Shaolin Temple Foundation (Australia) Ltd)
Date issued
16 July 2008
General requirements

The Environmental Assessment (EA) for the **Concept Plan** must include:

1. An executive summary;
2. An outline of the scope of the project including:
   - any development options;
   - justification for the project taking into consideration any environmental impacts of the project, the suitability of the site and whether the project is in the public interest;
   - outline of the staged implementation of the project if applicable;
3. A thorough site analysis including constraints mapping and description of the existing environment;
4. Consideration of any relevant statutory and non-statutory provisions and identification of any non-compliances with such provisions, in particular relevant provisions arising from environmental planning instruments, Regional Strategies (including draft Regional Strategies) and Development Control Plans.
5. Consideration of the consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979*.
6. Consideration of impacts, if any, on matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999*;
7. An assessment of the potential impacts of the project and a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures to be implemented to minimise any potential impacts of the project;
8. The plans and documents outlined in **Attachment 2**;
9. A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading; and
10. An assessment of the key issues specified below and a table outlining how those key issues have been addressed.

Key Issues	
1. Strategic Planning	
1.1	Justify the proposal with reference to relevant local, regional and State planning strategies, including the draft Local Environmental Plan to amend the zoning of the site. Provide justification for any inconsistencies with the planning strategies.

1.2	Demonstrate consistency with the recommendations of the *South Coast Sensitive Urban Lands Review* for the subject site and as outlined in Appendix 2 of the *South Coast Regional Strategy*.
1.3	Demonstrate consistency with the Sustainability Criteria (Appendix A1) set out in the *South Coast Regional Strategy*.
2. Urban Design, Layout and Future Character	
2.1	Demonstrate the suitability of the proposal with the surrounding area in relation to bulk, scale, amenity (including noise), visual amenity, aesthetics, energy and water efficiency and safety..
2.2	Discuss the desired future urban form including: public domain/built form interface, building envelopes, building heights, floor space ratios and other design controls.
2.3	Demonstrate consistency of the proposal with the *Coastal Design Guidelines of NSW* 2003, *NSW Coastal Policy 1997,* and *State Environmental Planning Policy 71 – Coastal Protection.*
2.4	Outline the long-term management and maintenance of any areas of open space, including ownership and control, management and maintenance funding, public access, and revegetation and rehabilitation works.
2.5	Demonstrate that future residential buildings will be capable of complying with *State Environmental Planning Policy 65 - Design Quality of Residential Flat Development* and *Building Sustainability Index (BASIX).*
2.6	Demonstrate the 'self-contained independent living/adaptable housing for the aged' component of the proposal complies with the objectives of the *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.*
2.7	Provide details of any staging that demonstrates the development will be released in an orderly and coordinated manner, with the tourist component being the dominant use.
3. Visual Impact	
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 views from public places, and 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.
4. Ownership of the Project	
4.1	Identify the type of ownership arrangements proposed across the site (e.g. leasehold arrangement), having regard to the recommendations of the *South Coast Regional Strategy*.
5. Infrastructure Provision	
5.1	Address existing capacity and requirements of the development for sewerage (including effluent reuse or wastewater recycling), water (including the use of farm dams), electricity, waste disposal, telecommunications and gas in consultation with relevant agencies. Identify and describe staging, if any, of infrastructure works.
5.2	Address and provide the likely scope of any planning agreements and/or development contributions with Council/ Government agencies (including relevant community/state infrastructure contributions).
6. Socio-economic Impacts	
6.1	Provide a social impact assessment for the development. Address the social and economic context of the development (for both the tourist and residential components) in terms of infrastructure requirements, public transport, community services and facilities (including schools and medical services).

7. Traffic and Access	
7.1	Prepare a traffic impact study in accordance with Table 2.1 of the RTA's *Guide to Traffic Generating Developments*, based on the maximum development potential for the site, which addresses the following matters: • Access to and within the site (note: consideration should be made to having all access to the site via only one road, either Forest Road or Comberton Grange Road); • Need for junction upgrades. Appropriate intersection analysis (for junctions of the Princes Highway with Comberton Grange Road/ Forest Road) should be undertaken using SIDRA to determine projected traffic growth for the next 10 years with and without the development; and AM and PM peak volumes and recreation peak volumes. • Identify road infrastructure required to ameliorate the impacts of the development at the junctions of the Princes Highway with Comberton Grange Road and Forest Road. Consideration should be given to the junctions of the Princes Highway with Parma Road and BTU Road. A concept plan of any proposed treatments should be provided and include property boundaries. (Note: suitable agreement with affected property owners will be required where treatments are located outside of the road reserve). • Capacity of the road network to safely and efficiently cater for the additional traffic generated; • Servicing and parking arrangements; • Connectivity to existing developments; • Impact on public transport (including school bus routes); and • Provision of access for pedestrians and cyclists to, through and within the site.
8. Hazard Management and Mitigation	
Contamination	
8.1	Provide a Preliminary Contamination Assessment, identifying any contamination on site and appropriate mitigation measures in accordance with the provisions of *SEPP 55 – Remediation of Land.*
Acid Sulfate Soils	
8.2	Identify the presence and extent of acid sulfate soils on the site and, where relevant, appropriate mitigation measures. Identify the need for an Acid Sulfate Management Plan (prepared in accordance with ASSMAC Guidelines).
Bushfire	
8.3	Address the requirements of *Planning for Bush Fire Protection 2006* (RFS).
Geotechnical	
8.4	Provide a detailed assessment of any geotechnical limitations that may occur on the site and, if necessary, appropriate design considerations addressing the limitations
Flooding	
8.5	Provide an assessment of any flood risk on site (for the full range of floods including events greater than the design flood, up to probable maximum flood; and from coastal inundation, catchment based flooding or a combination of the two) and having consideration of any relevant provisions of the *NSW Floodplain Development Manual 2005.* The assessment should determine: the flood hazard in the area; address the impact of flooding on the proposed development, address the impact of the development (including filling) on flood behaviour of the site and adjacent lands; and address adequate egress and safety in a flood event. The assessment should reference the draft *Currambene Creek Floodplain Risk Management Study and Plan.*
8.6	Assess the potential impacts of sea level rise and an increase in rainfall intensity on the flood regime of the site and adjacent lands with consideration of *Practical Consideration of Climate Change – Floodplain Risk Management Guideline (DECC, October 2007).*

9. Water Cycle Management and Water Quality	
9.1	Address and outline measures for Integrated Water Cycle Management (including stormwater) based on Water Sensitive Urban Design principles which address impacts on the surrounding environment, drainage and water quality controls for the catchment, and erosion and sedimentation controls at construction and operational stages.
9.2	Assess the impacts of the proposal on surface and groundwater hydrology and quality during both construction and occupation of the site. Demonstrate adequate protection of receiving waters, including SEPP 14 Wetlands and groundwater aquifers.
8. Flora and Fauna	
8.7	Assess the potential impacts (both direct and indirect) of the development on flora and fauna taking into consideration impacts on any threatened species, populations, ecological communities and/or critical habitat, groundwater dependent ecosystems, and any relevant recovery plan in accordance with DECC's draft *Guidelines for Threatened Species Assessment* (2005). Provide measures for the conservation of flora and fauna, where relevant.
8.8	Outline measures for the conservation and long term management of existing wildlife corridors and the connective importance of any vegetation on the subject land. Potential for the re-establishment of corridors down drainage lines to wetlands and Currambene Creek should be explored.
8.9	Demonstrate suitable riparian corridor management and appropriate corridor widths/buffering between the development and adjacent waterways/drainage lines or SEPP 14 wetlands in accordance with DECC's stream classification system.
8.10	Investigate the opportunity to permanently conserve the eastern portion of the site (east of the existing quarry and including the SEPP 14 wetland in the southern portion of the site).
9. Heritage and Archaeology	
9.1	Identify whether the site has significance to Aboriginal cultural heritage and identify appropriate measures to preserve any significance. The assessment must address the information and consultation requirements of the draft *Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation* (DEC 2005) and *Interim Community Consultation Requirements for Applicants* (DEC 2004). The cultural heritage assessment should include areas not previously surveyed including the former pine plantation
9.2	Identify any items of non-indigenous heritage significance and, where relevant, provide measures for the conservation of such items. A Heritage Assessment of the non-indigenous heritage values of the site is to be submitted, including any built, archaeological, landscape and moveable items of potential significance. A draft Statement of Heritage Impact is to be submitted detailing and evaluating any impacts that the development concept would have on the non-indigenous heritage significance of the site.
10. Noise	
10.1	Address potential noise impacts (existing and proposed) on the development, in particular, from road traffic noise and aircraft noise (Note: the site is located beneath the flight corridor between the HMAS Albatross and the Jervis Bay Training Area). Appropriate mitigation measures to ameliorate noise impacts should be addressed.
11. Mineral Resources	
11.1	Assess the viability of the existing dolerite and sandstone mineral resources. Ensure appropriate buffers between the resource areas and any proposed residential development.
12. Agriculture	
12.1	Address the suitability for the portion of the site that is classified as 'Class 3' Agricultural land (located in the western portion of the site to the north of Currambene Creek) to be maintained for agricultural purposes.

Consultation

You should undertake an appropriate and justified level of consultation with the following agencies during the preparation of the environmental assessment:

(a) *Agencies or other authorities:*

- Shoalhaven City Council;
- Department of Environment and Climate Change;
- Department of Lands;
- Department of Primary Industries;
- Department of Water and Energy;
- Roads and Traffic Authority;
- NSW Rural Fire Service;
- Southern Rivers Catchment Management Authority;
- Heritage Council of NSW;
- Jervis Bay Marine Park Authority;
- Commonwealth Department of Defence;
- Department of Education and Training;
- NSW Health;
- NSW Police Service;
- Shoalhaven Water;
- Integral Energy;
- State Emergency Service;
- Department of State and Regional Development;
- Tourism NSW; and
- Relevant Local Aboriginal Land Council/s and other Aboriginal community groups.

(b) *Public:*

Document all community consultation undertaken to date or discuss the proposed strategy for undertaking community consultation. This should include any contingencies for addressing any issues arising from the community consultation, and an effective communications strategy. The consultation process and the issues raised should be described in the Environmental Assessment.

Deemed Refusal Period

120 days

Attachment 2
Plans and Documents to accompany the Application

Plans and Documents of the development	The following plans, architectural drawings and diagrams of your proposal and relevant documents must be submitted for your application: 1. The **existing site survey plan** is to be drawn to 1:500 scale (or other appropriate scale) and show: • the location of the land, the measurements of the boundaries of the land, the size of the land and north point; • the existing levels of the land in relation to buildings and roads; • location and height of existing structures on the site; • location and height of adjacent buildings and private open space; and • the Mean High Water Mark (MHWM) (to ensure that possible encroachments are avoided). 2. An **aerial photograph** of the subject site with the site boundary superimposed. 3. A **Site Analysis Plan** must be provided which identifies existing natural elements of the site (including all hazards and constraints), existing vegetation, property dimensions, footpath crossing levels and alignments, existing pedestrian and vehicular access points and other facilities, slope and topography, natural features such as watercourses, rock outcrops, utility services, boundaries, orientation, view corridors and all structures on neighbouring properties where relevant to the application (including windows, driveways etc.). 4. A **locality/context plan** drawn to 1:500 scale (or other appropriate scale) should be submitted indicating: • Significant local features such as parks, community facilities and open space, water courses and heritage items; • The location and uses of existing buildings, shopping and employment areas; • Traffic and road patterns, pedestrian routes and public transport nodes; and • The existing site plan and locality plan should be supported by a written explanation of the local and site constraints and opportunities revealed through the above documentation. 5. **Conceptual Layout Plans** are to be drawn to scale and illustrate the following general features: • Location, boundary dimensions, site area and north point of the land, and names of roads fronting the land; • Title showing the description of the land with lot and DP numbers etc; • Location of any existing building envelopes or structures on the land; • Location of all structures proposed and retained on site; • Proposed dwelling types; • Location of proposed public open space; • Public domain works, proposed communal facilities and servicing points; • Indicative building heights shown as building envelopes in elevation, significant level changes; • FSR, building separations and setbacks; • Parking and vehicular access arrangements; • Pedestrian access to, through and within the site; • Location and details of all proposed roads and footpaths; • Cross sections of roads, including gradients, widths, road names, footpaths etc; • Existing and proposed finished levels in relation to roads, footpaths and structures;

	• Location and details of access points to the development; • Existing vegetation on the land and vegetation to be retained; • Location of services and infrastructure, and proposed methods of draining the land; • Any easements, covenants or other restrictions either existing or proposed on the site; and • Type of ownership proposed for the tourist and residential components of the development. 6. **Stormwater Concept Plan** - illustrating the concept for stormwater management from the site and must include details of any major overland flow paths through the site and any discharge points to the street drainage system. Where an on-site detention system is required, the type and location must be shown and must be integrated with the proposed landscape design. Site discharge calculations should be provided; 7. **Erosion and Sediment Control Plan** – plan or drawing that shows the nature and location of all erosion and sedimentation control measures to be utilised on the site; 8. **Landscape Concept Plan** – plan or drawing that shows the basic detail of planting design and plant species to be used, listing botanical and common names, mature height and spread, number of plants to be utilised and surface treatments (i.e. pavers, lawn etc); 9. **Construction Management Plan** – a plan which outlines traffic and pedestrian management during construction and management of impacts on amenity of adjoining properties and appropriate mitigation measures including noise, dust and sediment and erosion controls; 10. **View analysis** – artist's impression, photomontages, etc of the proposed development in the context of the surrounding development.
Specialist advice	Specialist advice, where required to support your Environmental Assessment, must be prepared by suitably qualified and practising consultants in relation to issues including, the following: • Flora and Fauna; • Bushfire; • Landscaping; • Aboriginal Archaeology and non-indigenous heritage; • Geotechnical and/or hydrogeological (groundwater); • Stormwater/drainage and Flood Management; • Urban Design/Architectural; • Traffic and Access; • Contamination; • Acid Sulfate Soils; • Social and Economic Impact; • Mineral Resources; • Agriculture; and • Noise.
Documents to be submitted	• Both hard copy and electronic versions of the Environmental Assessment will be required to be submitted. Please contact the Department prior to submitting your Environmental Assessment to determine how many copies will be required. • If the Environmental Assessment is bulky, you will be required to package up each Environmental Assessment ready for distribution by the Department to key agencies.
Electronic Documents	Electronic documents presented to the Department for publication via the Internet must satisfy the following criteria:- • All files should be approximately 5 Mb. Large files of more than 5 Mb will need to be broken down and supplied as different files.

Attachment 3
State Government technical and policy guidelines

The following list provides relevant technical and Policy Guidelines which may assist in the preparation of the Environmental Assessment. It should be noted, however, that this list is not exhaustive as other documents and policies may need to be reviewed. It is also important to note that not of all of these guidelines may be relevant to your proposal.

The majority of these documents can be found on the relevant Departmental Websites, on the NSW Government's on-line bookshop at http://www.bookshop.nsw.gov.au or on the Commonwealth Government's publications website at http://www.publications.gov.au.

Aspect	Policy /Methodology
Biodiversity	
Flora and Fauna	Draft Guidelines for Threatened Species Assessment (DEC & DPI, 2005)
	Draft Threatened Biodiversity Survey and Assessment Guidelines (DEC, 2004)
	Threatened Species, Populations and Ecological Communities of NSW Catchments (http://www.threatenedspecies.environment.nsw.gov.au)
Fish and Aquatic Ecosystems	Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings, NSW Fisheries, 2003.
	Threatened Species Management Manual, NPWS, 1998.
Bushfire	
	Planning for Bushfire Protection 2006, NSW Rural Fire Service
Coastal Planning	
	NSW Coastal Policy 1997 - A Sustainable Future for the New South Wales Coast (NSW Government1997)
	Coastal Design Guidelines for NSW (PlanningNSW, February 2003)
	NSW Wetlands Management Policy (DLWC, March 1996)
Community Consultation	
	Guidelines For Major Project Community Consultation, (NSW Department of Planning, 2007) http://www.planning.nsw.gov.au/assessingdev/pdf/Dr3%20DOP%20GuideMajProjComConsult%20BRO.pdf
Contamination and Soils	
	Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (DUAP & EPA, 1998)
	Best Practice in Contaminated Sites, Commonwealth DEH, 1999, ISBN 0 642 546460.
	Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites, (EPA, 1997)
	Contaminated Sites – Guidelines for the NSW Site Auditor Scheme, (EPA 1998)
	Contaminated Sites: Sampling Design Guidelines, EPA, 1999.
	Acid Sulfate Soil Manual, NSW Acid Sulfate Soil Management Advisory Committee (ASSMAC),1998.
Environmental Management Systems	
	NSW Government Interim Water Quality and River Flow Environmental Objectives (DEC)
	Guidelines for the preparation of Environmental Management Plans, DIPNR, 2004.
Heritage	
Aboriginal	Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC July 2005)

Aspect	Policy /Methodology
	Interim Community Consultation Requirements for Applicants (DEC, 2004)
Non-Indigenous	Assessing Heritage Significance Update for Heritage Manual, NSW Heritage Office, 2000
	Statements of Heritage Impact, NSW Heritage Office 2002
	NSW Heritage Manual, NSW Heritage Office 1996
Noise	
	NSW Industrial Noise Policy, DEC, 2000
	Environmental Criteria for Road Traffic Noise, EPA, 1999
	Acoustics - Road traffic noise intrusion - Building siting and construction, Standards Australia, 1989, AS 3671-1989.
	Acoustics – Aircraft Noise Intrusion – Building Siting and Construction, 2000, AS 2021-2000.
Safety and Hazards	
	Electrical Safety Guidelines (Integral Energy)
Traffic and Transport	
	Guide to Traffic Engineering and Guide to Geometric Design of Rural Roads (Austroads, 2003, AP-G1/03)
	Guide to Traffic Generating Developments (RTA, 2002)
Urban Design: Cycleway/Pathway Design	
	Guidelines for the Design and Construction of Paths and Cycleways along Watercourses and Riparian Areas, Version 2, DIPNR/DNR.
Water	
Water Quality	Water quality guidelines for the protection of aquatic ecosystems for upland rivers, (ANZECC, 2000).
	Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000)
Water Management Structures/ Dams	Harvestable rights and the calculation of Maximum Harvestable Right Dam Capacity: Farm Dams Assessment Guide, DWE. (http://www.naturalresources.nsw.gov.au/water/farm_dams/index.shtml)
Effluent Reuse	Environmental Guidelines for the Utilisation of Treated Effluent by Irrigation (NSW DEC 2004)
Floodplain	NSW Government Floodplain Development Manual - the Management of Flood Liable Land, DIPNR, 2005.
	Floodplain Risk Management Guideline – Practical Consideration of Climate Change, (DECC 2007)
Groundwater	NSW Groundwater Policy Framework Document – General (DLWC 2000)
	NSW State Groundwater Quality Protection Policy (DLWC 1998)
	NSW Groundwater Dependent Ecosystem Policy (DLWC 2000)
Rivers and Estuaries	NSW State Rivers and Estuaries Policy (DLWC 1993)
Wetlands	NSW Wetlands Management Policy (DLWC 2000)
Stormwater	Managing Urban Stormwater: Soils & Construction, NSW Landcom, March 2004.
Waterways	Waterways Crossing Design & Construction, Version 4 – DIPNR/DNR Draft Guidelines.

Attachment 4
Agency Responses to Request for Key Issues - For Information Only

NSW Government
Department of Water & Energy

Ms Heather Warton
NSW Department of Planning
GPO Box 39
Sydney
NSW 2001

Contact: Janne Grose
Phone: 9895 7651
Fax: 9895 7501
Email: janne.grose@dnr.nsw.gov.au

File: []
Our Ref: ER20170

9 July 2008
Attention: Jane Flanagan

Dear Ms Warton

Subject: Major Project (MP06-0135) – Tourist Residential Development - Comberton Grange, South Nowra – Shoalhaven LGA – Director General Requirement's

Thank you for your letter of 23 June 2008 seeking key issues and assessment requirements from the Department of Water and Energy (DWE) for the proposed project.

Specific comment is outlined in Attachment A. The Department's key issues and assessment requirements are in relation to:

- the protection/enhancement of watercourses and riparian corridors on the site
- water supply and water licensing requirements for the proposal
- the protection of groundwater resources
- the protection/enhancement of wetlands.

Contact Details:

Should you have any queries in respect to this matter, please contact Jeff Hunt on (02) 4904 2634 at the Newcastle office or Janne Grose on (02) 9895 7651 at the Parramatta office.

Yours sincerely

Janne Grose

pp Jeff Hunt
Senior Project Planner
Major Projects and Planning

NSW Government
Department of Water & Energy

ATTACHMENT A

Major Project – Tourist Residential Development - Comberton Grange

Director-General's Environmental Assessment Requirements

Department of Water and Energy – Key Issues

Relevant Legislation

The Department is responsible for administering the Water Act 1912 and the Water Management Act 2000 (WMA) which manage and regulate the use of surface water and groundwater resources. The Environmental Assessment (EA) is required to take into account the objectives and regulatory requirements of these Acts, as applicable.

Relevant Natural Resource Policies

The EA is required to take into account the following NSW Government policies, as applicable:

- NSW Groundwater Policy Framework Document - General
- NSW Groundwater Quantity Management Policy
- NSW Groundwater Quality Protection Policy
- NSW Groundwater Dependent Ecosystem Policy
- NSW State Rivers and Estuaries Policy
- NSW Wetlands Management Policy
- NSW Farm Dams Policy

Protection of Watercourses and Riparian Lands

The DWE considers it is of fundamental importance that watercourses and riparian vegetation are protected, maintained and enhanced. DWE's considerations are embodied in policy documents including:

- The NSW State Rivers and Estuaries Policy;
- The NSW Wetlands Management Policy
- The State Natural Resource Management (NRM) Targets (particularly Targets 1 and 5) covered by priority E4 in the State Plan:
  - Target 1: *By 2015 there is an increase in native vegetation extent and an improvement in native vegetation condition*
  - Target 5: *By 2015 there is an improvement in the condition of riverine ecosystems*

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Stream Mapping at the site:

Section 2.10 of the Preliminary Environmental Assessment (PEA) refers to the former DNR Riparian Corridor Objective Setting (RCOS) stream categorisation and notes that Currambene Creek is a Category 1 watercourse and the other watercourses on the site are Category 2 watercourses.

Section 4.3.2.2 of the PEA recommends that the riparian corridors to be provided along Currambene Creek are to be greater than Category 1: 50m wide buffer on either side of the stream bank (page 24). The Department is supportive of providing a wider riparian corridor along Currambene Creek. Please note, the riparian zone widths associated with the DNR stream classification are minimum widths and opportunities for achieving greater corridor widths are encouraged. Additional width may be required for geomorphological and environmental considerations (eg to protect and enhance remnant native vegetation adjacent to the riparian corridor and biodiversity).

To be consistent with the Department's stream classification system:

- the minimum riparian corridor width for a Category 1 watercourse should be no less than **50 m** (measured from top of bank) along both sides of Currambene Creek on the subject site, consisting of a **40 m** wide Core Riparian Zone (CRZ) plus a **10** m wide Vegetated Buffer (VB).

- the minimum riparian corridor width for a Category 2 watercourse should be no less than **30 m** (measured from top of bank) along both sides of the other watercourses on the subject site, consisting of a **20 m** wide CRZ plus a **10** m wide VB.

- the riparian corridor (CRZ and VB) should be established for the protection and enhancement of riparian vegetation and vegetated with local native tree, shrub and groundcover species at a density that would occur naturally. Any planting within the riparian corridor should consist of local native plant species.

- All development associated with the proposal (except for environmental protection works and crossings) needs to be located outside the CRZ and VB.

- Any requirement for an Asset Protection Zone (APZ) should be located outside the CRZ and VB.

DWE recommends the EA provides on a scaled plan the location of:

a. the watercourses on the site and top of bank,
b. the riparian corridors, including the CRZ and VB
c. any APZs,
d. the footprint of the proposed development including the proposed golf course and areas of disturbance,
e. any proposed revegetation of the riparian corridors
f. land uses adjacent to the riparian corridor (eg boundaries of roads, basins and any other works adjacent to the riparian corridor).

Crossings:

Bridge crossings should be used to cross Category 1 and 2 watercourses. The bridges should preferably be elevated and span the full width of the identified riparian corridor and maximise light penetration and allow moisture to penetrate under the structure to allow local native vegetation to grow in a continuous fashion beneath the structure and encourage fish passage

Physical Barriers:

If any of the development is to be located adjacent to the riparian zones a physical barrier (such as fencing, bollards, logs etc) should be provided along the outside edge of the riparian corridor (measured from top of bank) to prevent encroachments into the riparian corridor, this also applies to the golf course activities. The barrier needs to be appropriate to the site and be designed to:

- be suitable for any flooding issues.
- not impede the function of the vegetation as a corridor linkage.
- allow for small fauna passage underneath the barrier and must be of an open (eg mesh or bar type) structure to allow light and air flow and to provide continuity with adjacent (buffer or non-riparian) vegetation.
- be suitable as a maintenance edge for any open space management such as mowing/slashing etc.
- be fire proof, if it is the boundary of an APZ.

In the event that stock grazing is continued adjoining Currambene Creek on the site, there is also a need to appropriately exclude stock from the riparian zone.

Rezoning Application

Section 4.3.1.3 of the PEA refers to the proposed rezoning and preparation of a draft LEP for the subject land. DWE recommends the LEP include zoning for the protection and rehabilitation of waterways (including watercourses, creeks and wetlands) and riparian corridors on the site. DWE considers it is crucial that these natural resources are afforded adequate protection by incorporating into the LEP appropriate Standard Instrument zoning such as an E2 (Environmental Conservation) Zone.

DWE recommends:

- the Riparian Corridor Objective Setting (RCOS) stream categorisation of watercourses for the site be incorporated into the draft LEP
- the LEP include provisions to protect and rehabilitate waterways (creeks, watercourses, wetlands) and riparian corridors
- the waterways and riparian corridors at the site are zoned using an appropriate Standard Instrument zone (E2-Environmental Conservation),
- uses permitted with consent in the E2 Zone should be restricted to those uses that will not impact on the values and functionality of the riparian corridors. Appropriate uses include "environmental protection works".
- the LEP include provisions to protect groundwater and groundwater dependent ecosystems.

Surface Water and Groundwater

The EA needs to provide adequate details to assess the impact of the proposal on surface water and groundwater resources. Section 5.1 of the PEA indicates the proposal will accommodate a 27 hole golf course (page 30). Sufficient detail needs to be provided for DWE to assess any water licensing requirements under the Water Act 1912, the EA needs to provide details on:

- the water supply source(s) for the proposal
- any proposed surface water extraction for the proposal, including purpose, location of any existing and proposed pumps, dams,
- any proposed groundwater extraction related to the project,

- volumes of water to be used
- the function and location of all existing and proposed storages/ponds on the site,
- the design, layout, pumping and storage capacities, all associated earthworks and infrastructure works must be clearly shown and explained.

Water Management Structures/Dams

If the proposal includes water management structures/dams the EA needs to provide details on:

- any existing structure/s (date of construction, location, purpose, size and capacity, the legal status/approval for existing structure/s).
- any proposal to change the purpose of existing structure/s.
- if any remedial work is required to maintain the integrity of the existing structure/s.
- the purpose, location and design specifications for any proposed structure/s.
- Size and storage capacity of the structure/s.
- Calculation of the Maximum Harvestable Right Dam Capacity (MHRDC).
- if the structure/s is affected by flood flows.
- any proposal for shared use, rights and entitlement of the structure/s.
- if the proposed development has the potential to bisect the structure/s.

The Department's Farm Dams Assessment Guide provides details on Harvestable Rights and the calculation of the Maximum Harvestable Right Dam capacity (MHRDC). The Harvestable Right gives landholders the right to capture and use for any purpose 10 % of the average annual runoff from their property. The Harvestable Right does not need to have a water licence. Harvestable Right dams can be located on hillsides, gullies and minor watercourses that do not have permanently flowing waters and which are first and second order watercourses in accordance with the Strahler system of stream ordering. Please refer to: http://www.naturalresources.nsw.gov.au/water/farm_dams/index.shtml.

For water licensing queries, please contact Mr Wayne Ryan on phone: 02 4429 4442.

Waste Water Recycling

Section 2.8.1 refers to a former pine plantation on the northern side of the site and notes that the plantation was commenced by Council as part of its waste water recycling scheme. Details should be provided in the EA on what will happen to the waste water recycling scheme and where the waste water is proposed to be used if it is not being used by the pine plantation and the potential impact on surface water and groundwater resources.

Groundwater

Section 2.6 of the PEA notes the former DNR has identified groundwater in the presence of significant aquifers on the site (page 10). The proposal needs to protect groundwater resources in accordance with NSW State groundwater policy, enhance groundwater quality and protect groundwater dependent ecosystems (GDEs).

The EA should identify groundwater issues and potential degradation to the groundwater source and provide the following details:

- the predicted highest groundwater table at the site.
- any works likely to intercept, connect with or infiltrate the groundwater sources.

- any proposed groundwater extraction, including purpose, location and construction details of all proposed bores and expected annual extraction volumes.
- a description of the flow directions and rates and physical and chemical characteristics of the groundwater source.
- the predicted impacts of any final landform on the groundwater regime.
- the existing groundwater users within the area (including the environment), any potential impacts on these users and safeguard measures to mitigate impacts.
- an assessment of the quality of the groundwater for the local groundwater catchment.
- how the proposed development will not potentially diminish the current quality of groundwater, both in the short and long term.
- Measures for preventing groundwater pollution so that remediation is not required.
- protective measures for any groundwater dependent ecosystems (GDEs).
- proposed methods of the disposal of waste water and approval from the relevant authority.
- the results of any models or predictive tools used.

Where potential impact/s are identified the EA will need to identify limits to the level of impact and contingency measures that would remediate, reduce or manage potential impacts to the existing groundwater resource and any dependent groundwater environment or water users, including information on:

- any proposed monitoring programs, including water levels and quality data.
- Reporting procedures for any monitoring program including mechanism for transfer of information.
- An assessment of any groundwater source/aquifer that may be sterilised from future use as a water supply as a consequence of the proposal.
- Identification of any nominal thresholds as to the level of impact beyond which remedial measures or contingency plans would be initiated (this may entail water level triggers or a beneficial use category).
- Description of the remedial measures or contingency plans proposed.
- Any funding assurances covering the anticipated post development maintenance cost, for example on-going groundwater monitoring for the nominated period.

Licensing

If the proposal is likely to intercept or use groundwater, the need for a water license under Part 5 of the Water Act 1912 should be addressed in the EA. All proposed groundwater works, including bores for the purpose of investigation, extraction, dewatering, testing or monitoring must be identified in the proposal and an approval obtained from DWE prior to their installation.

Groundwater Dependent Ecosystems

The EA should provide details on the presence and distribution Groundwater Dependent Ecosystems (GDEs) in the vicinity of the site and identify any potential impacts on GDEs as a result of the proposal.

GDEs are ecosystems which have their species composition and natural ecological processes wholly or partially determined by groundwater. GDEs represent a vital component of the natural environment and can vary in how they depend on groundwater, from having occasional or no apparent dependence through to being entirely dependent. GDEs occur across both the surface and subsurface landscapes ranging in area from a few metres to many kilometres. Surface and groundwaters are often interlinked and aquatic ecosystems may have a dependence on both.

Ecosystems that can depend on groundwater and that may support threatened or endangered species, communities and populations, include:

- Terrestrial vegetation that show seasonal or episodic reliance on groundwater.
- River base flow systems which are aquatic and riparian ecosystems in or adjacent to streams/rivers dependent on the input of groundwater to base flows.
- Aquifer and cave ecosystems.
- Wetlands
- Estuarine and near-shore marine discharge ecosystems.
- Fauna which directly depend on groundwater as a source of drinking water or live within water which provide a source.

Wetlands

Section 2.6 of the PEA notes that a SEPP 14 (No. 333) wetland is located in the south-eastern portion of the site, Currambene Creek (which is located on the southern boundary of the property) is listed on the Directory of Important Wetlands in Australia (page 11) and there are also freshwater intermittent wetlands located within the site.

The EA should provide on a scaled plan, details on the location of:

a. wetlands on or adjacent to the site
b. buffer setback widths around the wetlands
c. any Asset Protection Zones
d. the footprint of the proposed development.

Please note DWE has mapped the SEPP 14 wetland as a Category 1 and the minimum buffer width around the wetland should be no less than 50 m (measured from the top of shore).

The EA needs to address the potential impact of the proposal on the wetlands, including modification to the wetlands hydrologic regime/groundwater recharge and loss/degradation of habitat needs to be assessed and safeguard measures provided to protect and minimise impacts on wetlands

Any requirement for an APZ should be located outside the wetland buffers.

All communications to be addressed to:

Headquarters
NSW Rural Fire Service
Locked Mail Bag 17
GRANVILLE NSW 2142

Telephone: (02) 8741 5555
e-mail: developmentcontrol@rfs.nsw.gov.au

Headquarters
NSW Rural Fire Service
15 Carter Street
HOMEBUSH BAY NSW 2127

Facsimile: (02) 8741 5550

Coastal Assessments
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Heather Warton

Rcvd 3/7/08
To Pauline

Your Ref: MP 06-0135
Our Ref: S08/0031
G08/1958
DA08062652115 MH

Date: 30 June 2008

Dear Ms Warton,

RE: Land Use Application for 1//725955, 1//550098, 4//63405, 59-61//755928, Comberton Grange Road, South Nowra NSW

I refer to your letter received 24 June 2008 seeking the NSW Rural Fire Service key issues and assessment requirements regarding bushfire protection for the above property in accordance with section 75F (4) of the *Environmental Planning and Assessment Act 1979*.

The following key issues and assessment requirements shall be included in the Director-Generals environmental assessment requirements:

1. The NSW Rural Fire Service (RFS) notes that the subject site has significant bush fire issues and is identified as bush fire prone. All proposed residential and Special Fire Protection Purpose developments are to fully comply with the requirements of *Planning for Bush Fire Protection 2006*.

2. Controlling the type of developments permissible in bush fire prone areas.

3. Minimising the impact of radiant heat on buildings and exposure to occupants by separating the development from the bushfire hazard. This is achieved by identifying the extent to which future development can provide for Asset Protection Zones in accordance with *Planning for Bush Fire Protection 2006*. Setbacks will depend on proximity to vegetation, vegetation type and slope.

4. Reducing the rate of heat output (intensity) of a bush fire close to a development through control of fuel levels.

5. The ability to provide for adequate egress/access to the proposed development as outlined within 4.1.3 and 4.2.7 of *Planning for Bush Fire Protection 2006*.

6. The ability to site and provide for adequate future water supplies for bush fire suppression operations in accordance with *Planning for Bush Fire Protection 2006*.

7. Minimising the vulnerability of buildings to ignition from radiation and ember attack by addressing the construction of assets in accordance with *Australian Standard AS 3959 -1999 'Construction of buildings in bush fire-prone areas'*.

For any enquiries regarding this correspondence please contact Mark Hawkins.

Yours faithfully,

Nika Fomin
Development Control Co-ordinator

The RFS has made getting additional information easier. For general information on *Planning for Bush Fire Protection 2006*, visit the RFS web page at www.rfs.nsw.gov.au and search under *Planning for Bush Fire Protection 2006*.

Our Ref: 404da157 (08/224)

Contact: Chris Millet (4221 2570)

Your Ref: MP06_0135

URBAN ASSESSMENTS
RECEIVED
09 JUL 2008

-4 JUL 2008

The Director, Coastal Assessments
Department of Planning
GPO Box 39
SYDNEY 2001

SHOALHAVEN CITY COUNCIL – MP06_0135 – HW1, PRINCES HIGHWAY & COMBERTON GRANGE ROAD, SHAOLIN TEMPLE COMPLEX, COMBERTON GRANGE

Dear Madam

I refer to your letter dated 25 February 2008 regarding the subject major project application forwarded to the RTA for consideration.

The RTA has reviewed the subject application and notes that access to the development is currently proposed via both Forest Road and Comberton Grange Road. As a result, vehicles would have the opportunity to access the Princes Highway site via two junctions (i.e. Forest Road and Comberton Grange Road). This is likely to necessitate significant infrastructure upgrades at both junctions and as such, the RTA recommends that the proponent gives consideration to having all access to the site via only one of these junctions. The other access could provide emergency access only, however the applicant would need to demonstrate how the use of this access would be restricted to emergency access only.

Any proposed junction treatments at Highway must consider traffic volumes and road safety implications. Based on this, it should be noted that the RTA considers that a grade separated interchange is likely to be required either of the junctions with Princes Highway. Further, given the 100km/h speed zone environmental of the Princes Highway within the area, both traffic signals and roundabouts are unacceptable solutions.

Notwithstanding the above, the following information should be provided to allow the RTA to make an informed assessment:

- A traffic impact study (TIS) should be prepared in accordance with Table 2.1 of the *RTA Guide to Traffic Generating Developments* and should be based on the maximum development potential of the site.
- Given the nature of the development, the RTA recommends that applicant submit predicted traffic generation rates and distributions to the RTA for acceptance prior to proceeding with modelling. In this regard information can be emailed to Christopher_millet@rta.nsw.gov.au. Consideration should be given to traffic generation rates associated with similar developments.
- Intersection modelling using SIDRA should be undertaken at the junctions of the Princes Highway with Comberton Grange Road and Forest Road considering the following:
    - AM and PM peaks volumes and recreational peak volumes.

Level 4, 90 Crown Street Wollongong NSW 2520 | PO Box 477 Wollongong NSW 2520 DX5178 Wollongong | T 13 17 82 | www.rta.nsw.gov.au

- Existing traffic volumes with and without development and 10 year projected volumes with and without the development

- The applicant should identify road infrastructure required to ameliorate the impacts of the development at the junctions of the Princes highway with Comberton Grange Road and Forest Road. In determining an appropriate treatment at either Comberton Grange Road or Forest Road, consideration should be given to the junctions of the Princes Highway with Parma Road and BTU Road. A concept plan of any proposed treatments should be provided and include property boundaries. If the treatment does not fit within the existing road reserve the applicant should attain suitable agreements with affected property owners to ensure the works can be completed pending approval.

- The RTA strongly recommends that the developer considers the environmental impacts of any proposed roadworks as part of the Statement of Environmental Effects. If these impacts are not considered, then the RTA would require the applicant to provide a separate environmental impact assessment, a 'Review of Environmental Factors' prior to commencing any works that were conditioned as requirements of the development. Note that the RTA has a responsibility to ensure that all environmental impacts are considered to the fullest extent possible under Section 111 of the Environmental Planning and Assessment Act.

The RTA will commence its detailed assessment once the aforementioned information is provided to its satisfaction. Should you require any clarification on this matter please call Chris Millet on 4221 21570.

Yours faithfully

Trish McClure
Road Safety and Traffic Manager
Southern Operations and Engineering Services

Heritage Council of New South Wales

Contact: Alice Brandjes
abrandjes@heritage.nsw.gov.au
File: S90/05513/ 2
Your Ref: HRL50725

Ms Heather Warton
Director, Coastal Assessments
Department of Planning
GPO Box 39
Sydney NSW 2001

Attention: Brad Vale

Dear Ms Warton,

Request for Provision of Key Issues and Assessment Requirements – MP 06 - 0135 - Shaolin Tourist Residential Development Proposal Comberton Grange

Thank you for your letter of 25 June 2008 referring the Part 3A Major Project to the Heritage Council under section 75H of the Environmental Planning and Assessment Act 1977.

The site of the major project comprises Lot 1 DP 725955, Lot 1 DP 550098, Lot 4 DP 63405 and Lots 59, 60 and 61 DP 755928 Comberton Grange Road, Comberton Grange.

It is understood that the proposal comprises a Buddhist Temple Sanctuary complex with convention centre, amphitheatre and cultural centre; Kung Fu Academy and asociated agricultural and herbal farm; 500 bed 4 star hotel; 300 dwellings comprising adaptable, detached and medium density dwellings; residential accomodation for the Abbot and monks; commercial shopping and community centre; and an optional 27 hole golf course and associated club house.

The property known as Comberton Grange is not currently listed on the State Heritage Register. The Heritage Branch, however, believes that the site of the Comberton Grange Homestead, outbuildings and gardens may have significant archaeological potential as the former homestead was constructed early to mid nineteenth century.

Given the above it is considered that archaeological and heritage assessment of the site of the homestead, outbuildings and gardens should be undertaken so that information arising from this can properly inform the design and construction of the proposal. It is further considered that the archaeological assessment may need to extend to monitoring and test exacavation.

The Part 3A Preliminary Environmental Assessment Report for the Shaolin Tourist Residential Development Report prepared by Conybeare Morrison dated May 2008 makes reference to the former historic Cooriang farming estate being located on the south west corner of the cleared area of the subject land. The archaeological

potential of this land should similarly be assessed and the information arising from this used to inform potential use of this part of the site.

The archaeological and heritage assessments should be undertaken early in the process to avoid potential for delays during construction.

It is noted that the major project will be an "approved project" for the purpose of Part 3A of the Environmental Planning and Assessment Act 1979 and that the requirement for an excavation permit under section 139 of the Heritage Act 1977 is suspended. Notwithstanding this, the following conditions should be included within the conditions of consent should the major project be granted approval :

- If any archaeological relics are discovered during cosnrtuction, work must cease and the Heritage Council is to be notified in accordance with section 146 of the Heritage Act 1977. The Heritage Council may require the remains to be recorded by a suitably qualified archaeologist prior to the recommencement of works.
- That an Interpretation Plan be prepared for the site that interprets the site and its history within the new development.

If you require any additonal information please contact Alice Brandjes on (02) 9873 8560.

Yours sincerely,

8/7/2008

Rajeev Maini
Acting Manager, Conservation Team

Your reference MP06_0135
Our reference : DOC08/28535

Heather Warton
Director Coastal Assessments
Department of Planning
GPO Box 39
SYDNEY NSW 2001I

Dear Ms Warton

RE: REQUEST FOR PROVISION OF DETAILS OF KEY ISSUES AND ASSESSMENT REQUIREMENTS – CONCEPT PLAN – MP06_0135 Comberton Grange, South Nowra, Mixed Tourist Residential Concept Plan Shaolin Shoalhaven Development

I refer to your request for the Department of Environment and Climate Change (DECC) requirements for the environmental assessment (EA) in regard to the above proposal in a letter received on 23 June 2008.

DECC has considered the details of the project as provided by the proponent and has identified the information it requires to assess the project in the following Attachments. The proponent should ensure that the EA is sufficiently comprehensive and detailed to allow DECC to determine the extent of the impacts of the proposal.

DECC has identified the key information requirements for the project and these are summarised below and described in further detail in the following attachments.

1. Water quality impacts of the project including the management and treatment of sewage effluent. (Attachment B)
2. The impacts of the development on coastal estuaries and floodplains.(Attachment A)
3. The impacts of the project on Aboriginal cultural heritage.(Attachment A)
4. . Verification of the High Conservation Value land (Attachment A)
5. The impact of the project on threatened species and endangered ecological communities and their habitat. (Attachment C)

The DECC consider this site to be highly significant, accordingly, the level of detail required by these DGEARS is commensurate to the level of potential impact which this development will have on the site. In this regard, the likely impacts on regionally significant, protected, and threatened species and their habitats need to be assessed, evaluated and reported. This assessment should specifically report on the considerations listed in Step 3 of the Draft Threatened Species Assessment Guidelines (DECC and DPI 2005) as stated below.

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30 Lowe St Queanbeyan NSW 2620
Tel: (02) 61223100 Fax: (02) 62993525
ABN 30 841 387 271

- **Step 3 "Involves identifying not only the magnitude and extent of impacts but also the significance of the impacts as related to the conservation importance of the habitat, individuals and population likely to be affected."**

The EA should clearly state whether it meets each of the key thresholds set out in Step 5 of the draft guidelines and describe the actions that will be taken to avoid or mitigate impacts or offset to prevent unavoidable impacts of the project on threatened species, populations, ecological communities, or their habitats.

The DGEARs also contain significant detail concerning the survey, assessment and interpretation of the data. Should the DoP choose to only provide part of this detail in the DGEARs, the DECC requests that a full copy of this letter and attachments be provided to the proponent to make available the full context to the assessment framework.

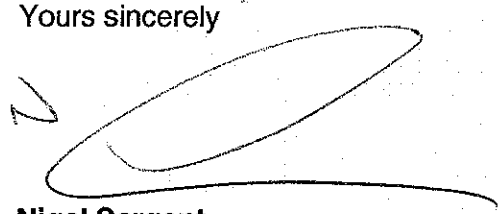
The proponent should be aware that any commitments made in the EA may be formalised as approval conditions. Consequently pollution control or conservation measures should not be proposed if they are impractical, unrealistic or beyond the financial viability of the development. Furthermore, it is important that all conclusions are supported by adequate data.

The concept plan submitted for the preliminary assessment indicates the majority of the residential and tourist development will be located within the intact native vegetation which forms part of the habitat corridor mapped as part of the Jervis Bay Regional Environment Plan 1996. DECC have previously identified significant issues associated with development occurring within the habitat corridor in a letter addressed to Shoalhaven City Council as part of s34 consultation (Attachment A). This letter outlines the planning policies which currently apply to the Comberton Grange site. DECC consider all issues raised in this letter should form part of the DGEARs and be addressed in the Environmental Assessment.

Due to the complexity of this proposal, it is strongly recommended that the proponent consult with DECC during the assessment period.

If you have any queries regarding this matter please contact Allison Treweek on 02 61223100.

Yours sincerely



Nigel Sargent
Manager
South East Region
Environment Protection and Regulation Group

7/7/08

Attachment A - Section 34a Letter to Shoalhaven City Council

Your reference 36840
Our reference : 04-02086
10 April 2008

Mr. Russell Pigg
General Manager
Shoalhaven City Council
PO Box 42
NOWRA NSW 2541

Attn: Gordon Clark, Manager, Strategy Planning

Dear Sir

Re: Section 62 and Section 34A Consultation on Draft Shoalhaven LEP Amendment No 398 Comberton Grange - Ref 36840

I refer to your letter of 21 February 2008 seeking comments from the Department of Environment and Climate Change (DECC) on the proposed rezoning under sections 34A and 62 of the *Environmental Planning and Assessment Act 1979.* The letter notifies DECC that Council has resolved to prepare a Draft Local Environmental Plan over Lots 59, 60, 61 DP 755928; Lot 4 DP 63405; Lot 7 DP725955 and Lot 1 DP 550098 at Comberton Grange for the purpose of a tourist/residential development and associated facilities. DECC is requested to consider Council's resolution, and provide any comments that are relevant to the preparation of a draft Local Environmental Plan for the subject land.

It is noted that the draft LEP amendment is to facilitate the development of the proposed Shaolin Temple Complex and associated uses on the site. The proponents of the Shaolin Temple proposal have been discussing the lodgement of a development application for the subject land with the Department of Planning (DoP) under Part 3A of the Act. The final concept of the proposed development is currently being reworked at the request of the Department of Planning. It is intended that should the project be declared by the Minister for Planning as a Part 3A major project, the rezoning process (LEP) and the development assessment process will operate concurrently. The land was considered by the Independent Review Panel for the South Coast Sensitive Urban Lands Review (the Panel) in October 2006 which made a number of recommendations if development is to occur on the site. The Department of Planning has in recent times notified the applicant that it will not progress the request for Major Project declaration until the inconsistencies with Panel recommendations are considered and the request is adjusted accordingly.

Key considerations for the preparation of the draft LEP would include:

South Coast Regional Strategy (SCRS)
The Section 117 Ministerial Direction No. 30 – Implementation of Regional Strategies, gives legal weight to South Coast Regional Strategy, making it binding for draft LEP to be consistent with the

The Department of Environment and Conservation NSW is now known as
the Department of Environment and Climate Change NSW

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provisions. The SCRS gives clear directions on a number of environmental considerations. These include:

- **Section 3.0 Environmental Opportunities and Constraints** - A key aim of the South Coast Regional Strategy is to "*Protect high value environments including pristine coastal lakes, estuaries, aquifers, threatened species, vegetation communities and habitat corridors by ensuring that new urban development avoids these important areas and their catchments*" (p13). The Jervis Bay area, including the Comberton Grange property, contains many areas with these attributes.

- **Section 3.4 Landbased Biodiversity** - A key action of the SCRS is that *New urban development is to be prohibited in local environmental plans (LEPs) on land assessed as being of high conservation value (HCV)"* (p13). As a part of the LEP it is essential that areas of high conservation value are mapped and verified. High conservation value attributes mapped by the SCRS in the area of Comberton Grange include Endangered Ecological Communities, threatened fauna habitat, threatened flora habitat, wildlife corridors, old growth forest, wetlands and wader habitat. The process and key considerations of mapping the conservation values that should be followed in the subsequent detailed site investigations are included as **Attachment B**.

At the LEP investigation stage verification of the mapped HCV areas in the environment expansion areas should occur in accordance with the matters outlined in the South Coast Regional Strategy.

Independent Review Panel for the South Coast Sensitive Urban Lands Review
If development is to occur on site DECC supports the stated position of DoP, as well as the recommendation of the Panel, that the residential component should be limited to around 300 dwellings and be integrated with the tourism component, whilst ensuring tourism remains the predominant element of any development stage.

The Panel identified the following key environmental issues at Comberton Grange as:

- Estuaries, Coastal waterways and wetlands;
- Native Flora and Fauna;
- Soil and Landscape Capability;
- Groundwater;
- Flood Risk; and
- Cultural Heritage.

The Panel identified that development of certain parts of the site would be considered acceptable provided adequate measures were taken to ensure that:

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

The direct and indirect impacts to these aspects should be fully investigated in the environmental assessment prepared to support the rezoning. The values of the former pine forest site should also be surveyed as it was not considered in the environment assessment carried out previously for the Comberton Grange farm area of the site in 2001.

It is DECCs view that at the recommended scale of development, tourist/residential rezoning could be confined to the cleared and disturbed area of the site (including the former pine plantation) well set back from Currambene Creek and the Jervis Bay Marine Park. In this area there should be ample land to locate to the proposed tourist/residential facility. The initial Kettle Consulting Services Environmental Study, in consultation with Government agencies at that time, indicated that around 79 hectares of cleared land was suitable for some form of tourist/residential development in the Comberton Grange section of the property. In addition to this is the large area of the former pine plantation that has now been added. DECC notes the Panel's recommendation that the density of the residential component should achieve a higher dwelling yield per hectare than traditional to use the land resource more efficiently.

Habitat Corridor

As raised in the DECC submission to the Panel Inquiry and on the previous s62 advice provided for the site, protecting the habitat corridor on the site is an important consideration. The rezoning of the land would have to be consistent with the Jervis Bay Regional Environmental Plan (JBREP) and the Jervis Bay Settlement Strategy (JBSS). Avoiding adverse impacts on the identified habitat corridors is a critical consideration required by these regional planning policies. As Council is aware the three northern corridors, of which this area is a part, along with the Clause 15 lands, are protected by specific clauses which aim to ensure the long term survival and biological diversity of native fauna and flora species in Jervis Bay.

The JBSS states in this regard "***The four corridors are a major element of the Settlement Strategy and represent a general restriction to residential use of the land***" *(JBSS Page 43).* It also states the REP and its background documents indicate that these corridors provide important links between private land, National Parks and other protected land in the Region. They allow flora and fauna to feed, breed, disperse, colonise or migrate to ensure long-term viability of species. *The corridors are considered essential to the survival of species in the National Parks surrounding Jervis Bay. A key action is landuse planning in the region should explicitly recognise the value of lands as habitat corridors and seek to maintain the structure and composition of native vegetation within these areas. In some critical areas, corridor values may be enhanced or improved by replanting and rehabilitation of cleared and/or disturbed areas. JBSS (Page 44)*

This is particularly important for the area of habitat corridor between the former pine plantation and Comberton Grange cleared area. It is already restricted in width to less than 400 metres wide at the narrowest point. Severing this link with continuous development in this area is considered unacceptable. This southern section of Corridor No 1 is very important as the area north of the former pine plantation is Currambene State Forrest, as a production forest it cannot be relied on to provide a continuous linkage as it is dependent on the harvesting regime.

The importance of this area has been reinforced by the recent corridor mapping by the Southern Rivers CMA. It identified Jervis Bay corridors as the critical linkages if connectivity is to be maintained in the northern section of the Shoalhaven LGA. In the face of the impacts of climate change, this analysis considered that a priority should be given to make the corridors larger through restoration and rehabilitation in this area.

It noted that the ecological assessment of Comberton Grange by Kevin Mills and Associates (August 2000) recommended that the habitat be retained. **DECC would object to any proposal to rezone more than a minor part of the corridor for development**. In addition, any proposal for development zones outside the already cleared area would need to be justified by detailed ecological survey and assessments for threatened species and consideration of how the proposal will allow flora and fauna to feed, breed, disperse, colonise or migrate to ensure the long-term viability of species.

Zones to be Applied on Site

DECC considers that development zones should be identified by first identifying where the major values (or constraints to development) exist. Much of this information already exists. At a regional scale the habitat corridors from Jervis Bay Regional Environmental Plan 1995 should form the starting point. At the more site specific scale, environmental constraints to development were mapped in Councils 2001 Local Environmental Study. It identified the land below the 1:100 flood level and steep land. This would leave the identified cleared unconstrained land from the Kettle Study and the former pine plantation as the priority areas for tourism/residential development.

On the remainder of the land DECC supports the Panel recommendations that the Eastern portion of the site (east of the existing quarry and including the SEPP 14 wetland in the southern corner of the site) should be added to the Jervis Bay National Park. It noted that Council, also in its submission to the panel, recommended that the addition of this area to the national park system be investigated. Agreement with the panel recommendation in this regard was subsequently confirmed by DECC in the letter of 9 July 2007 to DoP.

On the Comberton Grange Quarry a continuation of the 1(e) Rural (Extractive & Mineral Resources) or its similar zone would be appropriate if the quarry is intended to remain operational. DECC licences the Comberton Quarry under the Protection of the Environment Operations Act 1997 and, as a hard rock quarry, maintaining the 1,000-metre buffer would be important.

Areas of the site where the vegetated habitat corridor is to be retained in private ownership should be rezoned E2 Environmental Conservation. Other areas that should be considered for E2 are the riparian corridor including at least 50m setback from Currambene Creek and 30m either side of the other creeks on the site. The flood affected areas would be most appropriately zoned rural as well as applying the flood prone land overlay & associated clause.

If you require further information please contact Miles Boak Conservation Planning Officer on 02 62989708.

Yours sincerely

(*signed Thursday April 10*)

Mark Sheahan
A/Manager, Planning and Aboriginal Heritage South
Climate Change and Environmental Protection Group

Section 62 and Section 34A Consultation on Draft Shoalhaven LEP Amendment No 398 Comberton Grange - Ref 36840 - Attachment A

Verification and rules for identification of high conservation value

The following are recommended verification procedures for on-ground truthing of mapped high conservation values on the South Coast.

Value	Verification rules
Vegetation-related values - EECs - Rare vegetation types - Over-cleared vegetation types - Vegetation in over-cleared landscapes	Vegetation is not of high conservation value if it is poor condition (see table below for condition definition) The vegetation community descriptions and listing of diagnostic species and associated environmental parameters in Tozer *et al.* (2006) should be consulted for on-ground verification of vegetation type. The final determinations for EECs under the TSC and EPBC Acts are the key documents in deciding whether or not a patch of vegetation is EEC.
Old growth vegetation	Old growth is largely defined by the current canopy structure, which should largely consist of senescing or mature trees. Regrowth should be less than 30% of the canopy. There should also be negligible evidence of disturbances such as logging or catastrophic fires. The old growth information is probably the least accurate of all environmental information on the South Coast. Thus it is suggested the occurrence of mapped old growth features should be confirmed or checked on-ground.
Threatened fauna	The data provided by the South Coast Regional Strategy ties verified records to mapped vegetation polygons. The Wildlife Atlas can be consulted to determine what threatened fauna records are involved. Until an appropriate survey demonstrates otherwise, the mapped habitat should be regarded as important habitat. The Threatened Species Web Tool provides further assistance in habitat identification and advises what other fauna species should be considered.
Threatened flora	The data provided by the South Coast Regional Strategy ties verified records to mapped vegetation polygons. The Wildlife Atlas can be consulted to determine what threatened plant records are involved. Targeted surveys for the identified plant species should occur within the proposed development or planning area. The Threatened Species Web Tool advises what other plant species should be considered.
Significant aquatic habitats - nationally important wetlands - ICOLL lake catchments - habitat of migratory wetland species	The key question is whether or not a planning or development decision is within, or affects, the catchment of these environmental assets, and (as required by the SCRS) whether this impact will have a neutral or beneficial effect.
Statutory conservation protection - conservation + property agreements - declared wilderness - SEPP 14 Wetlands - SEPP 26 Rainforest	These assets have surveyed or described tenure boundaries. Verification is a matter of determining whether or not the planning or development decision occurs within a defined area.

Definitions of Native Vegetation in Low Condition*

Native woody vegetation is in low condition if:
The over-storey percent foliage cover is < 25% of the lower value of the over-storey percent foliage cover benchmark for that vegetation type (benchmarks provided in Property Vegetation Plan (PVP) developer and DEC website, see
http://www.nationalparks.nsw.gov.au/pdfs/biometric_benchmarks.pdf)

AND

< 50% of vegetation in the ground layer is indigenous species or > 90% is ploughed or fallow.

Native grassland, shrubland or wetland is in low condition if:
< 50% of vegetation in the ground layer is indigenous species or > 90% is ploughed or fallow.

This definition is that employed by regulation under the *NSW Native Vegetation Act 2003* and defined by :
Gibbons, P, Ayers, D, Seddon, J, Doyle, S, and Briggs, S (2005) *BioMetric: A Terrestrial Biodiversity Assessment Tool for the NSW Property Vegetation Plan Developer – Operation Manual.* NSW Department of Environment and Conservation.

Section 62 and Section 34A Consultation on Draft Shoalhaven LEP Amendment No 398 Comberton Grange - Ref 36840 - ATTACHMENT B

Detailed Matters for Consideration

DECC considers the following matters should be addressed to ensure that adequate information is available to consider any rezoning proposed:-

Estuaries, Coastal waterways, wetlands;

As identified the Currambene Creek, which adjoins the site, has been declared a Sanctuary Zone within the Jervis Bay Marine Park and is listed on the Commonwealth Directory of Important Wetlands in Australia. Currambene Creek is tidal with an open entrance and much of the lower part of the estuary is relatively undisturbed, forming an oyster growing area. SEPP 14 Coastal Wetland No. 333 occurs in the south eastern corner of property, bordering Currambene Creek and Georges Creek. Wetlands associated with Currambene Creek include both fresh and saline water bodies, with freshwater wetlands occurring on floodplains and saltwater wetlands occurring along the creek. Wetlands on the site that are not listed under SEPP 14 occur in the area of the lower Georges Creek- Currambene Creek and the paddocks of Comberton Grange.

Detailed considerations would include

- LEPs should not be introducing residential types zoning in the catchments of important coastal lakes and waterways unless it can be demonstrated that a neutral or beneficial effect on water quality as measured at the boundary of the proposed new zoning can be achieved
- The proponent should fully consider the impacts of stormwater runoff on receiving waters, and in particular the Currambene Creek which forms part of Jervis Bay Marine Park and the SEPP 14 wetlands, and fully outline all mitigation measures to ensure that runoff does not detrimentally impact these sensitive receiving environments.
- Site planning must include best practice water sensitive urban design to minimise impacts on Currambene Creek.
- Riparian corridors are to be provided (greater than Category 1 – 50m buffer on either side of stream bank) along Currambene Creek.
- Any urban development should be setback a minimum of 100 metres.
- The floodplain of Currambene Creek should be the subject of early revegetation with locally indigenous plant species to restore the riparian ecology
- Any future development on the site would be connected to reticulated water and sewerage and would have the potential to contribute to the REM's scheme for eventual reuse. Detail should be in regard to water and sewerage treatment and the capacities if it to connect to Councils reticulated system.
- New development, including infrastructure (eg stormwater controls), will be located, designed and constructed in a manner that does not degrade land based or aquatic ecosystems or processes.
- Freshwater, marine and estuarine attributes such as mangrove forests, salt marshes, sea grasses and other aquatic, marine or estuarine habitat will be protected from the impacts of new development in the region
- Public access to riparian, marine and estuarine areas may be provided if such access can

be achieved without or with minimal disruption to freshwater, marine or estuarine biodiversity.

- The provisions of Estuary Management Plans, and the Jervis Bay Marine Park Zoning and Operational Plans, should be considered in formatting planning zones for the site.

Native Flora and Fauna

Native vegetation covers a large proportion of the site and comprises a number of vegetation communities of high conservation significance, including EECs and forest types identified in the Southern Rivers Catchment Action Plan as high priority for conservation. Areas of EECs (including Swamp Oak Floodplain Forest and Coastal Sand Swamp Forest) are located in parts of the floodplain or associated with the wetlands in the south eastern corner of the site, extending up the lower reaches of Georges Creek. Saltmarsh and mangroves occur along the banks of Currambene Creek. The area on the north west of the site, formerly a pine plantation, contains remnants of the plantation, native forest regrowth elements and some mature eucalypts.

A diverse range of habitats occurs on the site (including forest, woodland, wetland and grassland) providing fauna with roosting, nesting and feeding opportunities. Suitable habitat is available for various threatened fauna species, including Yellow-bellied Glider, Glossy Black-cockatoo, Gang Gang Cockatoo, Powerful Owl, Masked owl, Great Pipistrelle, White-footed Dunnart. Regent Honeyeater, Giant Burrowing Frog, Green and Golden Bell Frog, and Grey-headed Flying-fox. There are records of a number of these species on the site and surrounding area.

Detailed matters for consideration would include:

- New urban development should be excluded from land assessed as being of high conservation value (HCV). A major part of the biodiversity investigation should be to establish where these values exist on the site. Key conservation values mapped should include Endangered Ecological Communities, threatened fauna habitat, threatened flora habitat, wildlife corridors, old growth forest, wetlands and waterbird habitat.

- The habitat corridors should be taken to represent a general restriction to residential use of the land as per the Jervis Settlement Strategy 2003 (Page 43).

- New settlement in the region will be encouraged to provide for biodiversity enhancements (or positive cumulative impacts), by incorporating requirements for, amongst others, weed control, habitat rehabilitation, and the use of local native species in landscaping.

- Attachment C provides a detailed indication of DECCs recommended threatened species assessment requirements if the development was to be considered as 3A under the Act. This is provided as an indication to enable any coordination of assessment at the rezoning and environmental assessment stages

Soil and Landscape Capability

The then DNR in their submission to the Panel generally, there is a low level of soil and landscape constraint on the site, however, low-lying floodplain areas adjacent to Currambene Creek have moderate to very high soil and landscape constraints and are susceptible to acid sulphate soils,

- The calculation of development density will only be made following an assessment of soil attributes of the land, and some lands may be totally excluded from development on the basis of their soil attributes.

- Areas of potential acid sulphate soils will be identified and excluded from new development

areas in the region. Assessment and management of acid sulphate soils issues will be undertaken in accordance with the NSW Acid Sulphate Soils Manual.

- Areas of potential acid sulphate soils will be identified and excluded, where possible, when considering the location and construction of infrastructure to serve settlements.

Groundwater

DNR have identified 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, in their submission to the Panel that should be avoided in the detailed intensification of development resulting from tourist residential zoning..

Flood Risk

Preliminary assessments by DNR estimate a localised to substantial flooding potential near Currambene Creek. A section, approximately 100 ha in area, on the western side of the property along Currambene Creek river flats is affected by a 1 in 100 year flood frequency. Part of the site is covered by the draft Currambene Creek Flood Study. The site is unlikely to be affected by coastal inundation or sea level rise.

It is noted that the Jervis Bay Settlement Strategy identifies land within the Flood Planning Area (1% AEP) will not be rezoned to provide for residential development

It is noted that the site specific environmental constraints to development where mapped in Councils 2001 Local Environmental Study. It identified the land below the 1:100 flood level as not suitable for urban type development

Aboriginal Cultural Heritage

A number of sites reflecting high occupation and utilization are reported to occur on the property by DECC. A possible burial ground adjacent to Currambene Creek may have local and potential regional significance. Areas with potential Aboriginal archaeological value are generally located adjacent to Currambene Creek on the floodplain areas

DECC reviewed the Navin Officer Cultural Heritage 2000 report and concluded that:

1. The consultants report the finding and recording of a number of Aboriginal and European archaeological and heritage sites. The SAHU endorses the conclusions and recommendations made in respect of the survey, significance assessment and recommendations as outlined within their report.

2. The recommendations at the three isolated find sites (CGIF 1,2 and 3) are salvaged prior to development if they are to be impacted upon by the development(if this is acceptable to the Jerrinja LALC), is endorsed.

3. The recommendation that Aboriginal sites CG3, CG4 and CD5 and the reported Aboriginal Burial ground CG7 are conserved without further development impact is endorsed.

4. The recommendation that Aboriginal site CG6 and the identified zones of Aboriginal archaeological potential be conserved, or in the event that conservation is the least preferred option, be subject to further subsurface investigation for the purposes of determining further appropriate management

strategies endorsed fully.

5. All further planning decisions made in respect of the Aboriginal heritage sites should be undertaken in full consultation with the Jerrinja Local Aboriginal Land Council.

6. The SAHU, NPWS is unable to make comments in regard to the European heritage assessment as described in the report. Accordingly, the reader is directed to the NSW Heritage Office

Cultural heritage assessment should therefore be undertaken for those development areas of the site not previously surveyed, such as the former pine plantation area. This should be in accordance with the information requirements set out in the draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation, Available from Dept of Planning, Interim Community Consultation Requirements.

The assessment must identify the nature and extent of impacts on Aboriginal cultural heritage values across the project area and describe the actions that will be taken to avoid or mitigate impacts or compensate to prevent unavoidable impacts of the project on Aboriginal cultural heritage values. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.

The assessment needs to clearly demonstrate that effective community consultation with Aboriginal communities has been undertaken in determining and assessing impacts, developing options and making final recommendations.

ATTACHMENT B - Water Quality

The EA must demonstrate that there is sufficient capacity to convey, treat and manage the sewage that is generated by this development. Evidence should be sought from Shoalhaven City Council that demonstrates capacity exists within Councils sewerage infrastructure to support this development.

Additionally, the applicant will need to clearly identify and seek approval from all responsible parties in regards to additions to the sewage treatment system and associated reticulation system extension, and the ongoing long term management arrangements for effluent treatment and disposal (including ongoing environmental monitoring, and management of any proposed effluent reuse areas and wet weather storage including all associated infrastructure). The EA must demonstrate that any proposed effluent reuse will be consistent with the requirements of the Environmental Guidelines for the Utilisation of Treated Effluent by Irrigation (NSW DEC 2004)

The EA must demonstrate how the following environmental outcomes for the project will be achieved.

- Preventing the pollution of waters (including surface water and groundwater) during construction or occupation of the site by the final users.
- There is no inconsistency with any relevant Statement of Joint Intent established by the Healthy Rivers Commission; and
- Consistency with the NSW Governments River Flow Objectives and Water Quality Objectives framework. The EA should provide details of the project that are essential for predicting and assessing impacts to waters including the quantity and physio-chemical properties of all potential water pollutants and the risks posed to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters using technical criteria derived from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000).

Stormwater

The proponent should fully consider the impacts of stormwater runoff on receiving waters, and in particular the SEPP 14 wetlands, and fully outline all mitigation measures to ensure that runoff does not detrimentally impact these sensitive receiving environments.

Acid Sulphate Soils

The applicant must identify, assess and manage acid sulphate soils in accordance with requirements as outlined in "Managing Urban Stormwater – Soils and Construction" (NSW Landcom – 2004).

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ATTACHMENT C - EVALUATION OF IMPACTS ON THREATENED SPECIES

INTRODUCTION

The purpose of these Directors Generals Environmental Assessment Requirements is to allow you, as applicant, to identify the issues pertaining to threatened species, populations, ecological communities or their habitats, and provide appropriate amelioration for adverse impacts resulting from the action and to assist the consent or approval authorities in the assessment of your proposal pursuant to the Environmental Planning and Assessment Act 1979 (EP&A Act).

DEFINITIONS

The definitions given below are relevant to these requirements:

- **Development** has the same meaning as in the EP&A Act.
- **Activity** has the same meaning as in the EP&A Act
- **Proposal** is the development, activity or action proposed
- **Subject Site** means the area directly affected by the proposal.
- **Study Area** means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account.
- **Locality** is the area within a 5km radius of the subject site
- **Subject Species, Populations or Ecological Communities** means those threatened species, populations or ecological communities that are known or considered likely to occur in the study area. The assessment is to explicitly consider the impacts of the proposal on each of these entities.
- **Direct Impacts** are those that directly affect habitat and individuals, usually within the footprint of the proposal. They include, but are not limited to, clearing and habitat removal. Consideration must be given to all of the likely direct impacts of the proposed activity or development.
- **Indirect Impacts** occur when project-related actions affect species, populations or ecological communities in a manner other than direct loss, usually beyond the footprint of the proposal. Indirect impacts can include loss of individuals through predation by domestic and/or feral animals, deleterious hydrological changes (including increased runoff and raising or lowering of the water table), erosion, weed invasion, pollution, trampling or other impacts due to increased human activity within or directly adjacent to sensitive habitat areas, altered fire regimes, habitat fragmentation and disruption of wildlife movement corridors. As with direct impacts, consideration must be given to all of the likely indirect impacts of the proposed activity or development.
- **Life Cycle** is the series or stages of reproduction, growth, development, aging and death of an organism.
- **Viable** means the capacity to successfully complete each stage of the life cycle under normal conditions.
- **Risk of Extinction** is the likelihood that the local population of the species or local occurrence of the endangered population or ecological community will become extinct either in the short, medium or long-term as a result of direct or indirect impacts on the viability of that population and includes changes to the ecological function of communities.

- **Local Population** is the population that occurs in the study area. The assessment of the local population may be extended to include individuals beyond the study area if it can be clearly demonstrated that contiguous or interconnecting parts of the population continue beyond the study area, according to the following definitions.
  - The local population of a threatened plant species comprises those individuals occurring in the study area or the cluster of individuals that extend into habitat adjoining and contiguous with the study area that could reasonably be expected to be cross-pollinating with those in the study area.
  - The local population of resident fauna species comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.
  - The local population of migratory or nomadic fauna species comprises those individuals that are likely to occur in the study area from time to time.

  In cases where multiple populations occur in the study area, each population should be assessed separately.

- **Local Occurrence** means the ecological community that occurs within the study area. However the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.
- **Composition** means both the plant and animal species present, and the physical structure of the ecological community. Note that while many ecological communities are identified primarily by their vascular plant composition, an ecological community consists of all plants and animals as defined under the TSC Act that occur in that ecological community.

All other definitions are the same as those contained in the TSC Act.

1 CONTEXTUAL INFORMATION

1.1 Description of proposal, subject site and study area

A full description of the action proposed includes a description of all associated actions. These actions may occur on or off the subject site.

In describing the action proposed, the proportion of the *subject site* and the *study area* that will be affected is to be provided, including details of the location of any auxiliary infrastructure and all component parts of the proposal including, but not restricted to, (i) roadworks and temporary access and egress routes, (ii) cycleways, walkways, drainage and settling ponds, stockpile areas, diversion banks, vehicle parking areas (iii) changes in surface water flows (iv) utilities such as electricity, drainage, sewage, gas, (v) any actions necessary for fire management, (vi) stockpile areas, (vii) temporary buildings etc.

The type of action proposed shall be detailed, including the timetable for the construction of the proposal. If a staged construction approach is adopted then the timetable shall clearly indicate this.

The vegetation within the study area that is to be retained is to be fully documented, and shown on the relevant plans and maps. The proposed management regimes for such areas are also to be documented.

1.2 Provision of relevant plans and maps

A detailed plan of the study area shall be provided at a preferred scale of 1:4,000 or finer. This plan shall show the proposal, the location and type of vegetation communities present within the *study area*, the full extent of vegetation clearing anticipated, and the scale of the plan.

This plan shall also the location of any key habitat resources for threatened species, such as stands of Glossy Black-cockatoo feed trees, trees used as nesting sites by the Square-tailed Kite and Gang-gang cockatoo , Yellow-bellied Glider feed trees, micro bat roosting or nest trees, and stands of trees bearing hollows.

Colour aerial photograph of the locality (or reproduction of such a photograph) shall be provided. This aerial photograph shall clearly show the *subject site* and the scale of the photograph.

A topographic map of the subject site and immediate surrounds at a scale of 1:25000 shall be provided. This map shall detail the location of the proposal and location of works on site.

A map of the locality, showing landscape features including rivers, swamps, wetlands, any locally significant areas for threatened species such as parks and reserves, and areas of high human activity such as townships, regional centres and major roads will also be provided. The location, size and dimensions of the study area shall be provided. This map shall represent the area within at least a 5 km radius of the subject site.

1.3 Land tenure information

The land tenure across the study area is to be described and any limitations to sampling across the study area resulting from this tenure (e.g. denied access to private land) shall be noted.

2 INITIAL ASSESSMENT

2.1 Subject species, populations and ecological communities

The Eastern Bent Wing Bat, Greater Broad-nosed Bat, Eastern False Pipistrelle, Glossy Black Cockatoo, Gang Gang Cockatoo and Yellow Bellied Glider have all been recorded in the area. Feed and den and nesting trees should be identified for the last three species, while bat roosting sites are particularly significant. Table 1 lists the threatened species which may occur in this area. Targeted surveys for these species or key habitat elements would need to occur.

Table 1 Threatened Species and Endangered Ecological Communities

SPECIES	SCIENTIFIC NAME	STATUS in NSW*
Fauna		
Southern Brown Bandicoot	*Isoodon obesulus*	E
Long-nosed Potoroo	*Potorous tridactylus*	V
White-footed Dunnart	*Sminthopsis leucopsis*	V
Brush-tailed Phascogale	*Phascogale tapoatafa*	V
Eastern Pygmy-possum	*Cercartetus nanus*	V
Squirrel Glider	*Petaurus norfolcensis*	V
Yellow-bellied Glider	*Petaurus australis*	V
Spotted-tailed Quoll	*Dasyurus maculatus*	V
Large-footed Myotis	*Myotis adversus*	V
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	V
Eastern Bent-wing Bat	*Minopterus schreibersii oceanensis*	V
Golden- Tipped Bat	*Kerivoula papuensis*	V
Eastern Freetail-bat	*Mormopterus norfolkensis*	V
Large-eared Pied Bat	*Chalinolobus nanus*	V
Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*	V
Grey Headed Flying fox	*Pteropus poliocephalus*	V
Greater Broad-nosed Bat	*Scoteanax rueppellii*	V
Giant Burrowing Frog	*Heleioporus australiacus*	V
Green and Golden Bell Frog	*Litoria aurea*	E
Glossy Black-cockatoo	*Calyptorhynchus lathami*	V
Gang–gang Cockatoo	*Callocephalon fimbriatum*	V
Swift Parrot	*Lathamus discolor*	E
Regent Honeyeater	*Xanthomyza phrygia*	E
Square-tailed Kite	*Lophoictinia isura*	V
Powerful Owl	*Ninox strenua*	V
Sooty Owl	*Tyto tenebricosa*	V
Masked Owl	*Tyto novaehollandiae*	V
Black Bittern	Ixobrychus flavicollis	V

SPECIES	SCIENTIFIC NAME	STATUS in NSW*
- Australasian Bittern	- *Botourus poiciloptilus*	- V
- **Flora**		
- Nowra Heath Myrtle	- *Triplarina nowraensis*	- E
- Bauer's Midge Orchid	- *Genoplesium baueri R.Br*	- V
- Tangled Bedstraw	- *Galium australe*	- E
- Illawarra Greenhood	- *Pterostylis gibbosa*	- E
- Leafless Tongue-orchid	- *Cryptostylis hunteriana*	- V
- Biconvex Melaleuca	- *Melaleuca biconvexa*	- E
- Tessellated Spider Orchid	- *Caladenia tessellata*	-
- Eastern Australian Underground Orchid	- *Rhizanthella slateri*	- V
- **Endangered Ecological Communities**		
- Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion		
- Swamp Oak floodplain forest of the NSW North Coast Sydney basin and South East Corner Bio Region.		
- Coastal Salt marsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions		
- Freshwater wetlands on Coastal Floodplains		
- Swamp Sclerophyll Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions		
- River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions		

* Defines whether the species is listed as Vulnerable or Endangered under the Threatened Species Conservation Act 1995.

The list above is not definitive and there may be other subject species, or ecological communities that may also need to be included for assessment in this Evaluation of impacts on the basis of desktop and habitat analyses and the outcomes of fieldwork.

Consideration may also need to be given to species that are not threatened in NSW, but are Commonwealth listed under the EPBC Act (e.g. White-bellied Sea Eagle).

2.2 Identifying habitats

In describing the study area, consideration shall be given to the previous land uses and the effect of these land uses on the study area. Relevant historical events may include fire, clearing, logging, slashing, recreational use and agricultural activities.

A description of habitats including such components as the frequency of tree hollows, the presence of wetlands, the density of understorey vegetation, the composition of the ground cover, the soil type, the presence of heath and permanent or ephemeral swamps shall be given. The condition of these habitats within the study area shall be discussed, including the prevalence of introduced species. A description of the habitat requirements of threatened species likely to occur in the study area shall be provided.

Any areas which may provide habitat connectivity between the study area and adjacent areas of likely habitat for subject species, or ecological communities shall be identified and described.

In defining the study area, consideration shall be given to possible indirect impacts of the proposed action on species/habitats in and surrounding the subject site: for example through altered fire and hydrology regimes, soil erosion or pollution, fencing, habitat fragmentation and disruption of wildlife movement corridors, increased predation by the European Red Fox and Feral Cat, edge effects, altered light and noise regimes, disturbance of roosting areas or other impacts due to increased use of the area by humans, impact of increased levels of domestic and feral predators.

3 SURVEY

3.1 Requirement to survey

A flora and fauna survey for the *subject species* and Endangered Ecological Communities is to be conducted in the study area, that includes targeted surveys for subject species, populations and ecological communities where considered appropriate by the analysis outlined below, in accordance with the survey techniques detailed in Appendix 1.

In determining the appropriate subject species and ecological communities that are to be the focus of targeted surveys, consideration shall be given to the habitat types present within the study area and their condition, the results of any preliminary flora and fauna surveys of the study area, recent records of threatened species and ecological communities in the locality and the known distributions and habitats of threatened species and ecological communities in the region. Databases such as the DECC Atlas of NSW Wildlife, and those of the Australian Museum and Royal Botanic Gardens may be used to assist in refining the list.

Full justification will need to be provided for subject species and ecological communities excluded from targeted surveys on the basis of this analysis.

The locations of any subject species and ecological communities recorded during the flora and fauna survey shall be represented on a map of the study area. All available historical records shall also be included. Where the habitat of each subject species and ecological community within the study area can be clearly delineated, this habitat shall be represented on a map of the study area.

Previous surveys and assessments may be used to assist in addressing this requirement. However, the efficacy of such previous surveys and assessments in meeting this requirement must be described in full. These previous surveys do not negate the need for the targeted survey work set out in Appendix 1.

Identification of all species is essential. Identification to genus only is not acceptable. Species of taxonomic uncertainty shall be confirmed by a recognised authority such as the Australian Museum or National Herbarium at the Royal Botanic Gardens, Sydney.

Flora
Particular attention shall be paid to the timing of flora surveys, as many of the subject species will only be present for a few months each year. Orchid species will only be present above ground for a few months each year and can only be identified with confidence when flowering.

Fauna
Particular attention shall be paid to the timing and climatic conditions for conducting fauna surveys, as many of the subject species will only be present or detectable for a few months each year or during certain climatic conditions. Additional advice on these matters should be sought from the nominated DECC contact officer.

3.2 Documentation of survey effort and technique

Survey technique(s) shall be described and a reference given, where available, outlining the survey technique employed.

Survey site(s) shall be identified on a map with a clear legend. The size, orientation and dimensions of quadrat or length of transect shall be clearly noted for each type of survey technique undertaken. Full AMG grid references for the survey site(s) shall be provided.

DECC survey proformas or similar proformas are to be used by field staff when applying a range of standard fauna survey techniques. Examples of standard proformas are included in Attachment E. Digital copies of these proformas can be requested from the nominated DECC contact officer if required. These proformas shall be used by field staff when undertaking fauna surveys and completed data sheets are to be included as an appendix.

The time invested in each survey technique shall be summarised in the 'Evaluation of Impacts' , based on completed proformas, e.g. number of person hours / transect, duration of call playback, number of nights that traps are set.

It is not sufficient to aggregate all time spent on all survey techniques. Effort must be expressed separately for each survey technique that is applied.

Personnel details including name of surveyor(s), contact phone number, qualifications and experience must be included. The person who identified records (e.g. Anabat, hair tubes, scat analysis) shall also be identified in this manner.

Environmental conditions during the survey shall be noted from the commencement of each survey technique until its completion. These conditions must be documented.

An assessment of the efficacy of each survey regime in detecting each species under the intensity utilised by the study is to be provided. The effect of the season and weather at the time of the field survey shall be considered with respect to the adequacy of survey results. An assessment will also be made of the adequacy of the survey and background information used to assess the likely area of use (home range) for each subject species, population or ecological community, and the areas providing habitat connectivity.

A full list of all flora and fauna species recorded during the course of surveys shall be included (such information is indicative of the habitat quality of the site). Completed Atlas of NSW Wildlife cards are to be provided for each threatened species record in any survey conducted for the purposes of the evaluation of impacts. For confidentiality, these cards are not to be included in the evaluation of impacts but rather shall accompany the evaluation of impacts when supplied to the DECC.

You are advised that discussions between the consultant(s) engaged to prepare the evaluation of impacts and DECC may be necessary in order to derive an appropriate survey regime for some of these requirements, and to confirm any proposed modifications to the survey regimes.

4 ASSESSMENT OF LIKELY IMPACTS ON THREATENED SPECIES, POPULATIONS AND ECOLOGICAL COMMUNITIES

For all subject species, populations and ecological communities, the 'Evaluation of Impacts' shall describe the following:

a. the location, nature and extent of habitat removal or modification which will result from the action proposed;

b. the likely and potential impact of the removal of habitat. Particular attention shall be given to:

   i. the impact on and extent of loss of hollow-bearing trees utilised for breeding, roosting or denning by threatened fauna such as the Brush-tailed phascogale, Yellow Bellied Glider, Squirrel Glider, Glossy Black -cockatoo, Gang-gang cockatoo and micro-chiropteran bats.

   ii. The impact and extent of loss, of foraging habitat for the Eastern Pigmy possum, squirrel glider and Gang Gang Cockatoo

   Similarly, attention is to be given to the likelihood of and extent of loss of food resources and the impact this may have on the subject species, populations or ecological communities.

c. any indirect impacts of the proposal including:

   i. the fragmentation or isolation of local populations and/or local occurrences, and the increased distance required for the movement of individuals/genetic material between habitat patches,

   ii. change in vegetation floristics and structure resulting from edge effects,

   iii. altered hydrology regimes (including increased runoff and raising or lowering of the water table), particularly on the SEPP 14 wetlands and the Endangered ecological Communities(EEC's) located around the development site.

   iv. soil erosion and pollution, and the potential impacts on all EEC's located within and adjacent to the site,

   v. disturbance to feeding or nesting/breeding of species,

   vi. trampling or other impacts due to increased use of the area by humans, particularly on the EEC's located within and adjacent to the site,

   vii. increased mortality rates due to road deaths,

   viii. habitat fragmentation and disruption of wildlife movement corridors and pollination mechanisms,

   ix. altered light and noise regimes,

   x. the likely contribution of the action proposed to the threatening processes already acting on populations of those subject species or populations and occurrences of subject ecological communities in the locality.

All of the above contextual information (which can be incorporated into Sections 4.1 - 4.5 below) will assist with the assessment of cumulative impacts on the subject species, populations and ecological communities.

4.1 Assessment of species likely to be affected

This requirement allows refinement of the list of subject species or populations (given the outcome of survey and analysis of likely impacts) in order to identify which threatened species or populations may be affected, and the nature of the impact.

The remaining requirements in this section (4.2 – 4.5) need only be addressed for those threatened species or populations that are likely to be affected by the proposal.

4.2 Discussion of local and regional abundance

4.2.1 Discussion of other known local populations

A discussion of other known local populations in the locality shall be provided. The long-term security of other habitats shall be examined as part of this discussion. The relative significance of the subject site for the subject species, populations and ecological communities in the locality shall be discussed.

The need for off-site surveys to provide context to the anticipated impacts of the proposal, may also be required for other threatened species recorded during the surveys of the study area for the 'Evaluation of Impacts'.

4.2.2 Discussion of habitat utilisation
An estimate of the number of individuals of each subject species utilising the study area shall be provided as well as a description of how these individuals use the study area (e.g. residents, transients, adults, juveniles, nesting, foraging). A discussion of the significance of these individuals to the viability of the subject species in the locality shall be provided.

4.2.3 Description of vegetation
The vegetation present within the study area and the surface area covered by each vegetation community shall be mapped and described. Reference to the vegetation classification system used (e.g. Specht) and to the ecological communities determined as endangered by the NSW Scientific Committee shall be provided. Classification must have regard to both structural and floristic elements.

4.2.4 Discussion of corridors
Particular attention shall be given to identifying movement corridors for subject species within the study area. The impact of the proposal on these corridors and the resulting impact on the resident subject species shall be discussed.

4.3 Assessment of habitat

4.3.1 Description of habitat values
Specific habitat features in the study area shall be described and quantified (e.g. frequency and location of stags, hollow bearing trees, culverts, rock shelters, rock outcrops, crevices, caves, drainage lines, soaks, area of ecological communities etc.), as well as the density of understorey vegetation and groundcover.

The condition of the habitat within the study area shall be discussed, including the prevalence of introduced species, species of weeds present and an estimate of the total weed cover as a

percentage of each vegetation community, whether trampling or grazing is apparent, effects of erosion, prevalence of rubbish dumping, history of resource extraction or logging and proximity to roads. Details of the study area's fire history (e.g. frequency, time since last fire, intensity) and the source of fire history (e.g. observation, local records), shall be provided.

4.3.2 Distribution and condition of regional habitats
For the habitats of subject species and populations found in the study area, the 'Evaluation of Impacts' shall discuss the distribution and condition of similar habitats in the region. For the subject ecological communities found in the study area, the 'Evaluation of Impacts' shall discuss the distribution and condition of these ecological communities in the region. Regional information may be obtained from existing datasets and from other sources.

4.4 Discussion of conservation status

Assessment shall include reference to the threatening processes that are generally accepted by the scientific community as affecting the subject species, population or ecological community and which are likely to be caused or exacerbated by the proposal. Assessment shall also include reference to any approved or draft recovery plans which may be relevant to the proposal. Up-to-date lists and copies of approved and draft recovery plans are available on the DECC website www.environment.nsw.gov.au by following the links to threatened species.

4.5 Description of feasible alternatives

Description of alternative design layouts, which reduce the impact on threatened species habitat ,including hollow bearing trees and foraging resources, should be provided. Justification for chosen design layout should also be included.

5 IMPACT AMELIORATION

5.1 Description of ameliorative measures

5.1.1 Long term management strategies
Consideration shall be given to the information contained in approved and draft recovery plans or threat abatement plans for existing taxa, known or likely to occur in the study area, and whether any recommendation is applicable to the proposal.

The development of long-term management strategies shall be considered to protect areas within the study area which are of particular importance for the subject species, populations or ecological communities likely to be affected by the proposal. This may include proposals to restore or improve habitat on site where possible. If mitigation is to include rehabilitation of the site, then the rehabilitation strategy shall be detailed.

Any measures proposed to mitigate the effect of the proposal on local populations of threatened species and populations and/or local occurrences of ecological communities shall be described. The potential effectiveness of any such amelioration in maintaining a viable local population and/or local occurrence in the short, medium and long term shall be discussed (e.g. fauna underpasses, vegetation management).

5.1.2 Compensatory strategies
If significant modification of the proposal to minimise impacts on subject species, populations or ecological communities is not possible, then compensatory strategies shall be considered. These may include other off-site or local area proposals that contribute to long term conservation of the subject species, populations or ecological communities.

The areas proposed to be used for compensatory strategies must be described in full including a detailed description of their biodiversity.

Where such proposals involve other lands, or where involvement of community groups is envisaged in such proposals, landholders, land managers and/or community groups are to be consulted and proposals shall contain evidence of support from these stakeholders and relevant land managers.

Compensatory benefits likely to result from such measures proposed for alternative sites are to be discussed and evaluated along with a discussion of the mechanisms through which they might best occur.

5.1.3 Ongoing monitoring

Any proposed pre-construction monitoring plans or on-going monitoring of the effectiveness of the mitigation measures shall be outlined in detail, including the objectives of the monitoring program, method of monitoring, reporting framework, duration and frequency. Generally, ameliorative strategies that have not been proved effective should be undertaken under experimental design conditions and appropriately monitored.

5.1.4 Translocation

DECC does not consider that translocation of threatened species, populations and ecological communities is an appropriate ameliorative strategy for the purposes of considering impacts of a particular development/activity. It strongly supports the view that development proposals which may impact on significant local populations of subject species and populations or significant local occurrences of subject ecological communities, as determined by the 'Evaluation of Impacts', should aim to:

i. minimise the impacts by considering all possible alternatives to the proposal, such that a significant effect is not likely; and

ii. manage the remaining habitat (if any) to ensure that the local population and/or local occurrence continues to exist in the long term.

6. ASSESSMENT OF SIGNIFICANCE OF LIKELY EFFECT OF PROPOSED ACTION

An assessment of significance (s5A EP&A Act) is to be provided for each subject species, population or ecological community identified in the Evaluation of Impacts, incorporating relevant information from sections 4.1 to 5 of the "Evaluation of impacts" . On the basis of these assessments, a conclusion is to be provided concerning whether, based on more detailed assessment through the process and consideration of alternatives and/or ameliorative measures proposed in the 'Evaluation of Impacts', the proposal is still considered likely to have a significant effect on threatened species, populations or ecological communities or their habitats.

7 ADDITIONAL INFORMATION

7.1 Qualifications and experience

The Evaluation of Impacts must include details of the qualifications and experience in threatened species conservation of the person preparing the statement and of any other person who has conducted research or investigations relied on in preparing the assessment.

APPENDIX 1. Survey requirements for subject species.

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Potorous tridactylus	Long-nosed Potoroo	V	1. Digital Infra-red Cameras are considered to be the most effective and cost-efficient technique. Bait stations are set up with cameras mounted to them and then left in situ for 2 weeks. Approximately three bait stations each with a camera would suffice for the site. Cameras cost about $600-$700. 2. Alternatively, a program of small cage trapping could be employed, using at least 25 cage traps set over at least 4 nights, to provide coverage of the areas required for targeted survey. 3. Surveys for these species must be conducted with "handiglaze" hair tubes spaced at 20-50m intervals. Hair tubes must be left in place for a minimum of 7 days. 4. Handiglaze hair-tubes are constructed using: Handiglaze plastic to make a D-shaped cylinder, pieces of hose cut to the appropriate length for holding the cylinder in-shape, tea infusers for housing the bait, u-shaped pegs for securing the tube to the ground and double-sided tape to collect hairs. 5. These hair-tubes appear to have a higher success rate for the target species (SBB and LNP) than both trapping and the use of commercially available hair-tubes. The Environmental consultant should discuss the appropriate survey methods with DECC prior to undertaking the survey.	All year	Forest, woodland, coastal banksia scrub, heath.
Isoodon obesulus	Southern Brown Bandicoot	E			

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Cercartetus nanus *Sminthopsis leucopus*	Eastern Pygmy Possum White-footed Dunnart	V V	Surveys for these species must be conducted with pitfall traps. Pitfall trapping must be conducted with two litre buckets (at least 40 cm deep) set in clusters of three with each pit/trap in a cluster being approximately 5 m apart. These trap clusters should be spaced at 50 m intervals along transects at least 200 m in length (i.e 15 pitfalls per 200 m). Pitfall trapping must be conducted for a minimum of two (but preferably three) separate sessions of 5 consecutive nights. The status of the White-footed Dunnart and Eastern Pygmy Possum in the region is poorly known. If either of these species is found on the subject site, then additional surveys in the locality must be undertaken to determine the significance of the population on the subject site.	December to February inclusive.	Forest, woodland, coastal banksia scrub, heath.
Phascogale tapoafata	Brush-tailed Phascogale	V	Map the location of den sites and feed trees within and adjacent to the study area. All trees to be removed or isolated by the development must be assessed to determine if they are being used as den or feed trees. Use one medium-sized Elliott trap per 50-100m trapping transect. Trap to be positioned on the trunk of the tree 1.5m - 2m above the ground. Honey solution is to be sprayed above and below the trap. A small cardboard tube should be provided in the trap for insulation and for the animal to relieve its aggression. The trap should be left out for 5 nights and checked each morning. When checking traps, one should look around the door for the presence of hairs or parts of the tail as the animal has been known to escape once inside and its tail can be caught or amputated as the door re-shuts. Additional surveys in the locality must be undertaken to determine the significance of the population on the subject site. It is suggested that the ecological consultants meet with the DECC to discuss the conduct of the surveys off site. If the species is present, given the rarity of the species in the region, any proposed development must avoid direct impacts on the species in the first instance, minimise any unavoidable or indirect impacts, and then set up processes which establish long-term conservation of the species on-site.	All year	

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Petuarus norfolcensis	Squirrel Glider	V	The consultant needs to determine the distribution and abundance of the species on the subject site and its status in the region. Squirrel Gliders may occur across a wide variety of forest and woodland vegetation types. Live-trapping in trees is the preferred survey method for detecting Squirrel Gliders. Traps should be either large Elliott box traps or wire mesh 'bandicoot' traps (200 mm wide x 170 mm tall x 500 mm long; Figure 2) (manufactured by R.E. Walters Pty. Ltd., Sunshine, VIC). Live-trapping is a preferred sampling technique as it allows for unequivocal identification of animals. This is particularly important as the Squirrel Glider is very similar in appearance to the smaller Sugar Glider, P. breviceps. If definite identification cannot be made then any captured animals should be photographed and measured. Subsequent identification of the animal in question can then be made by an appropriate expert. Bait should consist of a mixture of peanut butter, honey and rolled oats. A honey and water solution may be sprayed above and below the trap entrance. The number of traps set at a site will vary according to the extent of suitable habitat, the area over which possible den sites are present, and the scale of the proposed clearing or activity. Traps should ideally be positioned horizontally in low tree branches. Traps must be attached to trees and spaced approximately 50-100 m apart in a transect or grid layout, as the habitat allows. Traps must be set for a minimum period of 3-4 consecutive nights. On each day traps should be set at dusk and checked the following morning. Where possible, traps should not be left open during daylight hours, particularly during periods of hot weather. In situations where the same animals are being repeatedly trapped, individual trap stations may need to be closed. If the species is present, given the rarity of the species in the region, any proposed development must avoid direct impacts on the species in the first instance, minimise any unavoidable		

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
			or indirect impacts, and then set up processes which establish long-term conservation of the species on-site.		
Petaurus australis	Yellow-bellied Glider	V	Map the location of den sites and feed trees within and adjacent to the study area. All trees to be removed or isolated by the development must be assessed to determine if they are being used as den or feed trees. Map the location and size of the areas occupied by Yellow-bellied Glider family groups in the locality. Surveys must consist of stag watching, spotlighting, call play-back and habitat assessment. Spotlighting and call play-back surveys must be undertaken on foot. At each call play-back site, the call of the Yellow-bellied Glider should be played through a megaphone for 5 minutes, followed by at least 10 minutes of listening. An assessment of potential links between habitat on the subject site and habitats in the locality must be conducted particularly identifying routes used by the resident Yellow-bellied Gliders within and adjacent to the subject site.	All year	Eucalypt forest and woodland. Feed trees are characterised by 'v'-shaped scars on the trunks and branches where gliders have incised the surface to extract sap.

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Dasyurus maculatus	Spotted tailed Quoll		Live cage traps using platform cat traps 30cmx 30cmx60cm. Trapping should be undertaken from late March over a 10 day period. Drainage lines should be targeted for surveys. 5 cage traps per drainage lines should be placed 50m apart. Repeat surveys should be undertaken in may using the same methods March. Infra red cameras may also be used for Tiger quolls using appropriately placed cameras and bait. Further information on these techniques can be obtained from the DECC	March through winter	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites. Mostly nocturnal, although will hunt during the day; spends most of the time on the ground, although also an excellent climber and may raid possum and glider dens and prey on roosting birds. Use 'latrine sites', often on flat rocks among boulder fields and rocky cliff-faces; these may be visited by a number of individuals; latrine sites can be recognised by the accumulation of the sometimes characteristic 'twisty-shaped' faeces deposited by animals. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits and insects; also eats carrion and takes domestic fowl.
Bats					
Miniopterus schreibersii oceanensis	Eastern Bent-wing Bat	V	Surveys using anabat recorders and stag watching should aim to identify the number and location of roost sites for the five subject bats and identify important foraging habitat in the study area and the locality. If required, the DECC can provide further advice on bat survey techniques to acquire this information.	Spring, Summer, Autumn	Forage in forests and woodlands. Roost in caves or rock cavities.
Mormopterus norfolkensis	Eastern Freetail-bat	V			Forage in forests and woodlands. Roost in tree hollows.
Falsistrellis tasmaniensis	Eastern False pipistrelle				Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy.

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Saccolaimus flaviventris	*Yellow Bellied Sheathtailed bat*				Roosts singly or in groups of up to six, in tree hollows and buildings Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Breeding has been recorded from December to mid-March.
Chalinolobus nanus	Large Eared Pied bat				Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Hirundo ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. The relatively short, broad wing combined with the low weight per unit area of wing indicates manoeuvrable flight. This species probably forages for small, flying insects below the forest canopy. Likely to hibernate through the coolest months. It is uncertain whether mating occurs early in winter or in spring.
Scoteanax rueppellii	Greater Broad nosed bat				Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Roosts in hollow Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species.

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Kerivola papuensis	Golden Tipped Bat				Found in rainforest and adjacent sclerophyll forest. Roost in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests located in rainforest gullies on small first- and second-order streams. Will fly up to two km from roosts to forage in rainforest and sclerophyll forest on upper-slopes. Specialist feeder on small web-building spiders
Myotis adversus	Large-footed Myotis	V			Forage over streams and pools. Roost close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Pteropus poliocephalus	Grey Headed Flying Fox	v			Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, birth and the rearing of young. Annual mating commences in January and a single young is born each October or November. Site fidelity to camps is high with some caps being used for over a century. Travel up to 50 km to forage. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops and can inflict severe crop damage.
Birds					
Calyptorhynchus lathami	Glossy Black Cockatoo	V	Diurnal bird surveys across the study area for breeding activity in woodland/forest with hollow-bearing trees. Diurnal bird surveys across the study area in vegetation with Allocasuarina understorey for foraging activity (or signs of foraging from chewed Allocasuarina cones). Map foraging habitat on subject site and in the locality. Identify and map all hollow-bearing trees (potential nest trees) on the subject site and estimate the availability of hollow-bearing trees in the locality. Target survey potential nests during known breeding season of species to determine any parts of the site need to be excluded from development ie nest trees and appropriate vegetated	Breeding activity - March to June. Other surveys - all year	Nest in large hollow-bearing trees (dead and alive) in forest and woodland. Forage in forest, woodland or heath with Allocasuarina.

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
			buffers of hollow bearing trees		
*Lathamus discolour**	Swift Parrot	V	The regional significance of the subject site for the Swift Parrot is unknown. The site may provide suitable winter foraging habitat in Spotted Gum and Swamp Mahogany areas. Diurnal fixed-width transect or point-count surveys between March and October should be conducted across the subject site.	March and October	
*Xanthomyza phrygia**	Regent Honeyeater	E	The regional significance of the subject site for the Regent Honeyeater is unknown. There are potential breeding and foraging habitats on the subject site that should be surveyed using diurnal fixed-width transect or point-count surveys and call playback techniques, as the species responds to taped calls during the breeding season. Whilst surveys can be conducted at any time of the year, the optimal time is spring and summer during the breeding season.		
Callocephalon fimbriatum	Gang Gang Cockatoo	V	Diurnal bird surveys across the study area. Identify and map all hollow-bearing trees (potential nest trees) on the subject site and estimate the availability of hollow-bearing trees in the locality. Target the survey to potential nests during known breeding season of species to determine any parts of the site which need to be excluded from development ie nest trees and appropriate vegetated buffers of hollow bearing trees	Winter	Eucalypt forest and woodland.
Ninox connivens	Barking Owl	V	Nocturnal call playback (1 site per 100 ha) with an initial listening period of 10 min then play the call of each subject species separated by at least a 2 min listening period, then finish with a 10 minute listening period. Identify and map all hollow-bearing trees (potential nest trees) on the subject site and estimate the availability of hollow-bearing trees in the locality. Target the survey to potential nests during known breeding season of species to determine any parts of the site which need to be excluded from development ie nest trees and appropriate vegetated buffers of hollow bearing trees	All year	Eucalypt forest and woodland.
Ninox strenua	Powerful Owl	V			
Tyto novaehollandiae	Masked Owl	V			
Tyto tenebricosa	Sooty Owl	V			

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Ixybrychus flavicollis	Black Bittern	v	Diurnal bird surveys across the subject area targeting wetland and swamp areas. Opportunistic surveys should be conducted in the locality given the large home range of the species.		Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves. Feeds on frogs, reptiles, fish and invertebrates, including snails, dragonflies, shrimps and crayfish, with most feeding done at dusk and at night. During the day, roosts in trees or on the ground amongst dense reeds. When disturbed, freezes in a characteristic bittern posture (stretched tall, bill pointing up, so that shape and streaked pattern blend with upright stems of reeds), or will fly up to a branch or flush for cover where it will freeze again. Generally solitary, but occurs in pairs during the breeding season, from December to March. Like other bitterns, but unlike most herons, nesting is solitary. Nests, built in spring are located on a branch overhanging water and consist of a bed of sticks and reeds on a base of larger sticks. Between three and five eggs are laid and both parents incubate and rear the young.
Botourus poiciloptilus	Australasian Bittern	v	Diurnal bird surveys across the subject area targeting wetland and swamp areas. Opportunistic surveys should be conducted in the locality given the large home range of the species.		Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleoacharis spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. Breeding occurs in summer from October to January; nests are built in secluded places in densely-vegetated wetlands on a platform of reeds; there are usually six olive-brown eggs to a clutch.

Scientific Name	Common Name	Legal status	Survey Requirements	Survey Season	Habitat
Marsupials					
Lophoictinia isura	Square-tailed Kite	V	Diurnal bird surveys across the subject area targeting woodland and forest for nesting sites. Opportunistic surveys should be conducted in the locality given the large home range of the species.	July to February	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. Nests are generally located in trees along or near watercourses, in a fork or on large horizontal limbs.
Frogs					
Litoria aurea	Green and Golden Bell frog		Survey suitable habitat using spotlight/headlamp searches, call playback, diurnal visual searches and dip-netting surveys for tadpoles. Surveys must be conducted on 3 visits separated by at least 2 weeks. Small areas of habitat (<0.3 ha) should be surveyed for a minimum of 1 hr for both nocturnal (spotlight and call playback) and diurnal (visual searches and dip-netting) visits (i.e. 1 hr nocturnal survey, 1 hr diurnal survey X 3 visits). Larger areas should be surveyed at a rate of 3 hrs per ha of habitat.	Spring and summer. Call mainly between September and January but may call through to March in favourable weather. Calling and breeding is stimulated by rainfall.	Natural and artificial wetlands with emergent or fringing vegetation
Heleioporus australiacus	Giant Burrowing Frog	V	Pitfall trapping conducted for Eastern Pygmy Possum and White-footed Dunnart will be suitable to detect this species. Call play-back for this species should be conducted during other call play-back and spotlight surveys within the study area and locality.	Calls most frequently between February and April. Most frequently detected from January through to May. Active at night, mostly after rain storms and generally under warm or mild conditions.	
Flora					

Flora					
Pterostylis gibbosa	Illawarra Greenhood		Systematic surveys using evenly spaced transects located about 5m apart through all areas of heath/shrubland and woodland with heath/shrubland understorey must be undertaken		The Illawarra Greenhood is a deciduous orchid that is only visible above the ground between late summer and spring, and only when soil moisture levels can sustain its growth. The leaf rosette grows from an underground tuber in late summer, followed by the flower stem in winter. After a spring flowering, the plant begins to die back and seed capsules form (if pollination has taken place). In the Illawarra region, the species grows in woodland dominated by Forest Red Gum Eucalyptus tereticornis, Wollybutt E. longifolia and White Feather Honey-myrtle Melaleuca decora. Near Nowra, the species grows in an open forest of Spotted Gum Corymbia maculata, Forest Red Gum and Grey Ironbark E. paniculata. In the Hunter region, the species grows in open woodland dominated by Narrow-leaved Ironbark E. crebra, Forest Red Gum and Black Cypress Pine Callitris endlicheri.
Triplarina nowraensis	Nowra Heath Myrtle		The species can be surveyed at any time		Nowra Heath Myrtle occurs on poorly drained, gently sloping sandstone shelves or along creek lines underlain by Nowra Sandstone. The sites are often either treeless or have a very open tree canopy due to the impeded drainage. Individuals have been observed to resprout from lignotubers and they are also expected to reproduce from seed though this needs to be confirmed.
Melaleuca biconvexa	Biconvex Melaleuca		The species can be surveyed at any time. Should it be located, this would represent the most eastern population in southern NSW. There may, therefore, be a need to undertake a genetic analysis as per earlier work undertaken by DEC to determine the relationship of this population with others in the region.		There are records of this species in close proximity to the proposed development site and it is possible that the species occurs along drainage lines on the site.
Rhizanthella slateri	Australian Underground Orchid -		Survey methodology and appropriate timing for surveys are currently being formulated by the Shoalhaven City Council (SCC) and a recognised underground orchid expert. The	Flowers October to November.	Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in

Flora					
			consultant should, therefore, contact Dr Sandie Jones, Environmental Planner, Shoalhaven City Council for further information.		sclerophyll forest. Highly cryptic given that it grows almost completely below the soil surface, with flowers being the only part of the plant that can occur above ground. Therefore usually located only when the soil is disturbed.
Cryptostylis hunteriana.	Leafless Tongue Orchid		This species can only be satisfactorily surveyed when it is flowering, although it is possible for experts to recognise stems of this species at the bud stage. The exact flowering time is unpredictable and the species can flower anytime between early December and mid March. Flowering should be confirmed ate the nearest known site prior to surveys being undertaken. Known sites in the Ulladulla area have been in flower in the week preceding 24 December in 2004-2007. Alternatively, searches of the study area at about three weekly intervals over this period could be undertaken. Systematic surveys using evenly spaced transects located about 5m apart through all areas of heath/shrubland and woodland with heath/shrubland understorey must be undertaken	Early December and mid March.	The larger populations typically occur in woodland dominated by Scribbly Gum (Eucalyptus sclerophylla), Silvertop Ash (E. sieberi), Red Bloodwood (Corymbia gummifera) and Black Sheoak (Allocasuarina littoralis); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (C. subulata) and the Tartan Tongue Orchid (C. erecta
Caladenia tessellata	Tessellated Spider Orchid		Systematic surveys using evenly spaced transects located about 10 m apart through all areas of heath/shrubland and low woodland with heath/shrubland understorey must be undertaken DECC should be consulted by the ecological consultant to confirm flowering times and seasons, and appropriate survey methods for both Tangled bedstraw Tessellated Spider Orchid	Flowers appear between September and November (but apparently generally late September or early October in extant southern populations).	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. The single leaf regrows each year.
Galium australe	Tangled bedstraw		Systematic surveys using evenly spaced transects located about 10 m apart through all areas of heath/shrubland and low woodland with heath/shrubland understorey must be undertaken DECC should be consulted by the ecological consultant to confirm flowering times and seasons, and appropriate survey methods for both Tangled bedstraw Tessellated Spider Orchid		In NSW Tangled Bedstraw has been found in moist gullies of tall forest, Eucalyptus tereticornis forest, coastal Banksia shrubland, and Allocasuarina nana heathland. In other States the species is found in a range of near-coastal habitats, including sand dunes, sand spits, shrubland and woodland.

Endangered Ecological Communities					
River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions			Surveys shall identify the extent and condition of this ecological community in the subject site, study area and locality. This shall involve the use of vegetation surveys in the subject site and the study area. The use of existing datasets held by DECC in combination with ground-truthing of selected sites within areas mapped by DECC as the ecological community is recommended for surveys of the locality. The sites sampled shall be used to provide context to the ecological community affected by the action proposed. Surveys can be undertaken at any time of the year under varied seasonal conditions.		As the name suggests, this EEC is found on the river flats of the coastal floodplains. It has a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. While the composition of the tree stratum varies considerably, the most widespread and abundant dominant trees include *Eucalyptus tereticornis (forest red gum)*, *E. amplifolia* (cabbage gum), *Angophora floribunda* (rough-barked apple) and *A. subvelutina* (broad-leaved apple). *Eucalyptus baueriana* (blue box), *E. botryoides* (bangalay) and *E. elata* (river peppermint) may be common south from Sydney, *E. ovata* (swamp gum) occurs on the far south coast, *E. saligna* (Sydney blue gum) and *E. grandis* (flooded gum) may occur north of Sydney, while *E. benthamii* is restricted to the Hawkesbury floodplain.
Coastal Salt marsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions			Surveys shall identify the extent and condition of this ecological community in the subject site, study area and locality. This shall involve the use of vegetation surveys in the subject site and the study area. The use of existing datasets held by DECC in combination with ground-truthing of selected sites within areas mapped by DECC as the ecological community is recommended for surveys of the locality. The sites sampled shall be used to provide context to the ecological community affected by the action proposed. Surveys can be undertaken at any time of the year under varied seasonal conditions.		

Endangered Ecological Communities					
Illawarra Lowlands Grassy woodland in the Sydney Basin Bioregion					
Freshwater wetlands on Coastal Floodplains			Surveys shall identify the extent and condition of this ecological community in the subject site, study area and locality. This shall involve the use of vegetation surveys in the subject site and the study area. The use of existing datasets held by DECC in combination with ground-truthing of selected sites within areas mapped by DECC as the ecological community is recommended for surveys of the locality. The sites sampled shall be used to provide context to the ecological community affected by the action proposed. Surveys can be undertaken at any time of the year under varied seasonal conditions.		Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes but may also occur in backbarrier landforms where floodplains adjoin coastal sandplains. Generally occur below 20 m elevation on level areas.
Swamp Sclerophyll Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions			Surveys shall identify the extent and condition of this ecological community in the subject site, study area and locality. This shall involve the use of vegetation surveys in the subject site and the study area. The use of existing datasets held by DECC in combination with ground-truthing of selected sites within areas mapped by DECC as the ecological community is recommended for surveys of the locality. The sites sampled shall be used to provide context to the ecological community affected by the action proposed. Surveys can be undertaken at any time of the year under varied seasonal conditions.		Associated with humic clay loams and sandy loams, on waterlogged or periodically inundated alluvial flats and drainage lines associated with coastal floodplains. Generally occurs below 20 m (though sometimes up to 50 m) elevation. The composition of the community is primarily determined by the frequency and duration of waterlogging and the texture, salinity nutrient and moisture content of the soil, and latitude. The composition and structure of the understorey is influenced by grazing and fire history, changes to hydrology and soil salinity and other disturbance, and may have a substantial component of exotic grasses, vines and forbs.
Swamp Oak flood Plain forest of the NSW North Coast, Sydney Basin and South East corner Bioregion			Surveys shall identify the extent and condition of this ecological community in the subject site, study area and locality. This shall involve the use of vegetation surveys in the subject site and the study area. The use of existing datasets held by DECC in combination with ground-truthing of selected sites within areas mapped by DECC as the ecological community is recommended for surveys of the locality. The sites sampled shall be used to provide context to the ecological community		This community is found on the coastal floodplains of NSW. It has a dense to sparse tree layer in which *Casuarina glauca* (swamp oak) is the dominant species northwards from Bermagui. Other trees including *Acmena smithii* (lilly pilly), *Glochidion* spp. (cheese trees) and *Melaleuca* spp. (paperbarks) may be present as subordinate species, and are found most frequently in stands

Endangered Ecological Communities					
			affected by the action proposed. Surveys can be undertaken at any time of the year under varied seasonal conditions.		of the community northwards from Gosford. Tree diversity decreases with latitude, and *Melaleuca ericifolia* is the only abundant tree in this community south of Bermagui.

Attachment F
Guidance Material Assessing Environmental Impacts

Ambient Water Quality Goals

DECC considers that the goals for ambient water quality are relevant environmental goals to the project. The central reference document for managing ambient water quality is the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC Guidelines) and Water Quality Objectives framework (http://www.epa.nsw.gov.au/ieo/). The ANZECC Guidelines provide instructions for translating statements about desired environmental values and human uses into more practical management and numerical criteria.

Water quality

- National Water Quality Managment Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000)
- NWQMS Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC 2000)
- Healthy Rivers Commission Report into Coastal Lakes and Statement of Joint Intent
- NSW Government Water Quality and River Flow Environmental Objectives for
- The relevant targets within the State Water Management Outcomes Plan
- *NSW Guidelines for Urban & Residential Use of Reclaimed Water* (NSW Water Recycling Coordination Committee, 1993).

Wastewater

- National Water Quality Management Strategy: Guidelines for Sewerage Systems - Effluent Management (ARMCANZ/ANZECC 1997)
- National Water Quality Management Strategy: Guidelines for Sewerage Systems – Use of Reclaimed Water (ARMCANZ/ANZECC 2000)
- Environmental Guidelines for the Utilisation of Treated Effluent by Irrigation (NSW DEC 2004)
- Environment and Health Protection Guidelines: 'Onsite Sewage Management for Single Households', February 1998 (Silver Book).

Stormwater

- Managing Urban Stormwater: Soils and Construction (NSW Landcom, 2004)
- Managing Urban Stormwater: Source Control (EPA 1998)
- Managing Urban Stormwater: Treatment Techniques (EPA 1998).

Assessing Threatened Species Impacts

- Draft Guidelines for Threatened Species Assessment - Available from Department of Planning.

Assessing Aboriginal Cultural Heritage Impacts

- Draft Guidelines For Aboriginal Cultural Heritage Impact Assessment and Community Consultation - Available from Dept of Planning
- Interim Community Consultation Requirements for Applicants
- http://www3.environment.nsw.gov.au/npws.nsf/Content/Protecting+Aboriginal+objects+and+places
- Aboriginal Cultural Heritage Standards and Guidelines Kit - Available shortly on-line through DECC's webpage.

Attachment .G **Examples of suitable survey pro-formas.**

DIURNAL HERPETOFAUNA CENSUS SURVEY PROFORMA

Survey Details

Date of survey _____

Name of surveyor _____ Contact number _____

Number of surveyors _____ _____

Total effort expressed in person-hours _____ Total effort expressed in terms of survey technique _____

Location Details

Location (including basic habitat) description _____

_____

_____

_____

Map number _____ Map name _____

Type of survey, e.g. transect or quadrat _____ AMG Zone _____

Active or passive search _____ Size of survey area (ha) _____

Survey area Eastings (6 digits) _____ Northings (7 digits) _____

Eastings (6 digits) _____ Northings (7 digit) _____

Start time (24hr) _____ End time (24 hr) _____

Weather Details

At start of survey, record: Cloud cover* _____

Wind direction and speed* _____ Rain* _____

Temperature (°C) _____ Moon* _____

At end of survey, record: _____

Temperature (°C) _____

Comments _____

_____

Species name (Scientific/Common)	Ob. type*	MH type*	Grid reference (full AMGs i.e. Eastings and Northings)	Accuracy

* See Attachment 3: Standard reporting codes

DIURNAL BIRD CENSUS SURVEY PROFORMA

Survey Details

Name of surveyor _____ Contact number _____

Number of surveyors _____ Date of survey _____

Total effort expressed in person hours _____ Number of hectares covered or transect or point dimensions _____

Location Details

Location description _____

Map number _____ Map name _____

Full AMG reference(s) for survey site or transect

AMG Zone _____

Start details _____ Finish details _____

Easting (6 digits) _____ Easting (6 digits) _____

Northing (7 digits) _____ Northing (7 digits) _____

Start time (24hr) _____ End time (24 hr) _____

Weather Details

At start of survey, record:

Cloud cover* _____

Wind direction and speed* _____ Rain* _____

Temperature (°C) _____ Moon* _____

At end of survey record: _____

Temperature (°C) _____

Comments _____

Species name	Ob. type*	MH type*	Grid reference (full AMGs)	Accuracy

* See Attachment 3: Standard reporting codes

Species name	Ob. type*	MH type*	Grid reference (full AMGs)	Accuracy

* See Attachment 3: Standard reporting codes

DIURNAL HOLLOW-BEARING TREE CENSUS SURVEY PROFORMA

Survey Details

Date of survey _____

Name of surveyor _____ Contact number _____

Number of surveyors _____ _____

Total effort expressed in person-hours _____

Location Details

Location (including basic habitat) description _____

_____

_____

_____

Map number _____ Map name _____

Type of survey, e.g. transect or quadrat _____ AMG Zone _____

_____ Size of survey area (ha) _____

Survey area Eastings (6 digits) _____ Northings (7 digits) _____

Eastings (6 digits) _____ Northings (7 digit) _____

Start time (24hr) End time (24 hr) _____

Cloud cover. Record cloud cover in eights of sky.

Moon. Record using the following codes. 0=None, 1=1/4 moon, 2=1/2 moon, 3=3/4 moon, 4=full moon.

Wind direction and speed. Record wind direction to nearest cardinal point. Record wind speed using the following codes. 0=calm 1= Light, leaves rustle 2= Moderate, branches move 3=Strong, tops of trees move

Rain. Record using the following codes. 0=none, 1=drizzle - light, 2=drizzle - heavy 3=heavy rain

Sizes of hollows. Record using the following codes. S=Small (1-5cm diameter), M=Medium (5-15cm diameter), L=Large (greater than 15cm diameter).

Types of hollows. Record using the following codes. T=Trunk hollow, B=Branch hollow

Observation type

Use the following codes:

O	Observed (sighted)	R	Road kill	F	Tracks, scratching
W	Heard call	D	Dog kill	Z	In raptor/owl pellet
X	In scat	C	Cat kill	M	Miscellaneous
P	Scat	V	Fox kill	E	Nest or roost
T	Trapped or netted	K	Dead	B	Burnt
H	Hair or feathers	S	Shot	Y	Bones or teeth
A	Stranded/beached	I	Fossil/subfossil	N	Not located

MH (microhabitat) type

Use the following codes:

AC	Flying above canopy	IB	In burrow	OB	On (beach) sand
BR	In/on bridge	IC	In cave	OL	On log
BU	In building	IG	In grass	OR	On rock
CK	Crevice in rock	IH	In tree hollow	OW	Over water
CL	Crevice in log	IL	In litter	RD	On road
DA	Farm/fire dam	IR	In reeds	TK	On trunk
DT	In dead tree (stag)	IS	In soil	UB	Under bark
EW	Edge of water	IT	In (live) tree	UC	Upper canopy
FC	In/on post or stump	IW	In water	UG	Undergrowth
FL	Flying within canopy	LC	Lower canopy	UL	Under log
GR	On ground	LS	Low shrub	UR	Under rock
HS	High shrub	MC	Mid canopy	UT	Under iron
				WH	Waterhole