

# Environmental Assessment

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

Item	Commitment	Timing
Ecological	<p>36. The developer will implement the mitigation and amelioration measures recommended by SLR Consulting as follows:-</p> <ul style="list-style-type: none"> <li>the use of sediment fences and other appropriate control measures during construction activities to manage and/or avoid erosion and sediment discharge or the discharge of other contaminants;</li> <li>the installation of stormwater infrastructure to manage stormwater discharge volumes and water quality from the development area according to current 'best practice' principles and as outlined in the <i>Water Cycle Management Report</i> of Storm Consulting (2012);</li> <li>the installation of stormwater infrastructure to maintain water quality, soil moisture and groundwater regimes, and to provide supplementary habitat for native biota;</li> <li>the selective removal of vegetation to create APZs and to ensure that habitat and resources for, and individuals of, threatened species are protected;</li> <li>the implementation of a management regime during the construction process to ensure that no wastes (including building rubble, garbage, contaminants, fuels, oils, paints or other chemicals) are discharged from the construction area, and that all such wastes and contaminants are contained within the construction footprint and are appropriately managed;</li> <li>the selective removal of vegetation to create the <i>Asset Protection Zones</i> (APZs), where required, around the development to retain specimens of and habitat or resources for the relevant threatened biota, including <i>inter alia</i>: <ul style="list-style-type: none"> <li>the preferential and selective retention of hollow-bearing trees;</li> <li>the preferential and selective retention of identified Yellow-bellied Glider and Glossy Black Cockatoo feed trees;</li> <li>the slashing of shrub layer and understorey vegetation at selected locations to promote the Nowra Heath-myrtle;</li> </ul> </li> </ul>	For the duration of the subdivision.

**Environmental Assessment**

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

Item	Commitment	Timing
	<ul style="list-style-type: none"><li>the preparation and implementation of a <i>Vegetation Management Plan</i> (VMP) for the <i>E2 – Environmental Conservation Zone</i> to ensure the long-term viability of flora and fauna populations which utilise the land, particularly the Glossy Black Cockatoo, Yellow-bellied Glider and Nowra Heath-myrtle.</li><li>the collection of native vegetation removed from development areas and its re-use within the <i>Conservation Area</i> for bushland rehabilitation and/or landscaping purposes and/or the provision of that material to Council for bushland management and rehabilitation purposes;</li><li>the destruction or appropriate removal of weeds from the development footprint and from the <i>Conservation Area</i>; and</li><li>the implementation of a <i>Hollow-bearing Tree Protocol</i>, involving:<ul style="list-style-type: none"><li>the segmental ‘dismantling’ by professional tree experts of hollow-bearing trees in order to salvage tree-hollows, wherever possible;</li><li>the placement of salvaged tree-hollows on existing large trees or dedicated poles in the <i>Conservation Area</i>;</li><li>alternatively, the placement of salvaged tree-hollows on the ground as hollow log habitat, where placement in existing trees is not practical; and the use of artificial nest boxes to replace tree-hollows which cannot be salvaged and to supplement that resource on the site.</li></ul></li></ul>	

## 8.0 DIRECTOR GENERAL ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The Director-General issued EAR dated 20<sup>th</sup> October 2010. The following table details all of the key issues which have been identified in the EAR, and outlines the relevant Section of the EA which has addressed the issues.

### ASSESSMENT TABLE

<i>General Requirements</i>	<i>Comments</i>
<p>The Environmental Assessment (EA) for the Project Application must include:</p> <ol style="list-style-type: none"> <li>1. An executive summary.</li> <li>2. A detailed description of the proposal</li> <li>3. An outline of the scope of the project including: <ul style="list-style-type: none"> <li>• any development options;</li> <li>• 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;</li> <li>• outline of the staged implementation of the project if applicable.</li> </ul> </li> <li>4. A thorough site analysis including constraints mapping and description of the existing environment.</li> <li>5. 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.</li> <li>6. Consideration of the consistency of the project with the objects of the Environmental Planning and Assessment Act 1979.</li> </ol>	<p>Executive Summary provided as part of the EA.</p> <p>A comprehensive description of the proposal is included in Section 3.0 of this EA.</p> <p>Section 3.0 of the EA details the scope of the project and addresses development options (Section 3.5) justification for the project (Section 3.4); suitability of the site (Section 3.4.4); and the public interest. The staging of the development is detailed in Section 3.3 of the EA.</p> <p>A Site Analysis is undertaken in Section 2.0 and <b>Figure 2</b> of this EA.</p> <p>Relevant statutory and non-statutory planning provisions are dealt with in Section 4.0 of the EA and this includes relevant environmental planning instruments, regional strategies and Development Control Plans. Non-statutory planning provisions are dealt with in more detail in Section 3.4.3 which addresses Project Justification. Section 4.0 identifies areas of non-compliance and addresses suitability of departures.</p> <p>Objects of the EP&amp;A Act are dealt with in Section 4.2.1 of the EA.</p>

# Environmental Assessment

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

<b>General Requirements</b>	<b>Comments</b>
7. Consideration of impacts, if any, on matters of National Environmental Significance under the Environmental Protection and Biodiversity Conservation Act 1999 (Cth);	NES matters specified in the Commonwealth EPBC Act are addressed in the Environmental Flora and Fauna Assessment ( <b>Annexure 3</b> ) prepared by SLR, and Section 4.1.1 of the EA.
8. 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.	A Statement of Commitments is provided in Section 7.0 of the EA.
9. The plans and documents outlined in Attachment 2.	Plans and documents required in Attachment 2 of the DG's EARs are provided in this EA and also <b>Annexure 1</b> .
10. A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading.	A signed statement from the author of this EA is contained in the EA.
11. An assessment of the key issues specified below and a table outlining how those key issues have been addressed.	Assessment of key issues and how they have been addressed appears below.

<b>Key Issues</b>	<b>Comments</b>
<b>1. STRATEGIC PLANNING</b>	
1.1 Justify the proposal with reference to relevant local, regional and State planning strategies, policies and plans, including the Mundamia Master Plan. Provide justification for any inconsistencies.	Justification for the proposal is provided in Section 3.4. The property is within the Mundamia new living area identified by Shoalhaven Council.
1.2 Demonstrate consistency with the South Coast Regional Strategy, specifically the Sustainability Criteria; and the use of the delivery of key infrastructure such as electricity, water and sewer as a tool to implement the staging program.	The provisions of the SCRS are detailed in Section 3.4.3.1 and the proposal is consistent with its aims and objectives being consistent with the NBSP, adopted Masterplanning principles with appropriate open space and essential infrastructure.  Infrastructure is addressed in a separate Utilities Investigations Report prepared by Allen Price and Associates ( <b>Annexure 9</b> ) and in Section 5.2 of this EA. The proposed subdivision will be serviced by all essential infrastructure.

# Environmental Assessment

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

Key Issues	Comments
<p>1.3 Address the Nowra Bomaderry Structure Plan, specifically the Considerations, Desired Future character, and Planning and Design Principles identified for the area. Address how the proposal will be linked to the remainder of the new Living Area (not included as part of the proposal) identified within the Structure Plan.</p> <p>1.4 Address the findings of the investigative work for the Draft Shoalhaven Comprehensive LEP (proposed Draft LEP). Address the permissibility framework provided by the proposed Draft LEP, noting that approval of the Major Project will not occur until gazettal of the proposed Draft LEP.</p>	<p>The NBSP is addressed in Section 3.4.3.2 of the EA.</p> <p>The provisions of the Draft Shoalhaven LEP 2013 are addressed in Section 4.5.2 of this EA and the proposal is consistent with its provisions.</p> <p>It is noted that approval to this Major Project application cannot be granted until gazettal of the Draft Shoalhaven LEP 2013.</p>
<b>2. SUBDIVISION DESIGN, LAYOUT AND DESIRED FUTURE CHARACTER</b>	
<p>2.1 Demonstrate the consistency of the proposal with the character of existing development in terms of the locality, street frontage, scale, building envelopes and future built form controls, aesthetics, energy and water efficiency, and safety.</p> <p>2.2 Demonstrate the consistency of the proposed subdivision design and layout with the <i>Coastal Design Guidelines for NSW, NSW Coastal Policy 1997 and SEPP 71 – Coastal Protection</i>.</p>	<p>The proposal is sited within Mundamia, a New Living Area proposed by SCC, which will change the existing rural and rural residential character of the locality. In creating this New Living Area, SCC has adopted the Mundamia Masterplan and Principles to guide its future development. This includes provisions relating to character, orientation and layout, and lot size. The proposal is consistent with the provisions of this Masterplan, and they are dealt with in Section 3.4.3.3 of this EA.</p> <p>It is not intended to impose building envelopes or other controls to guide further development on the resultant allotments as SCC already has adopted policies which are suitable and will be applied. This is addressed in Section 3.2.5 of this EA.</p> <p>Safety by design issues are dealt with in Section 3.2.12 of this EA.</p> <p>The Coastal Design Guidelines are addressed in Section 4.2.4.2 of this EA and the proposal is consistent with suitable lot sizes, appropriate consideration of natural hazards and preservation of native vegetation.</p> <p>The NSW Coastal Policy is addressed in Section 4.2.4.1 and in <b>Annexure 12</b> which provides a checklist of specific relevant requirements.</p> <p>The provisions of SEPP 71 are addressed in Section 4.2.3.5.</p>

**Environmental Assessment**

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

<b>Key Issues</b>		<b>Comments</b>
2.3	Identify the proposed titling of subdivision across the site (ie. community, Torrens, strata).	The proposed method of land titling, Torrens Title, is outlined in Section 3.2.4 of this EA.
2.4	Provide details of potential building envelope, built form, design quality and 'safety by design' controls, and the means for implementing them.	It is not intended to identify specific building envelopes, or require any design controls given the suitable established controls SCC already have in place for residential development. This is outlined in Section 3.2.5 of this EA.
2.5	Demonstrate a subdivision layout that accommodates housing choice with a mix of medium density and detached dwellings, and potentially some appropriate student accommodation.	The proposed layout provides a variety of allotment sizes ranging in size from 503 m <sup>2</sup> to 1101 m <sup>2</sup> . Justification of the proposed lot sizes is provided in Section 4.6.3. The proposed lot sizes comply with the requirements of SCC.
2.6	Provide details of any staging that demonstrates the lots will be released in an orderly and co-ordinated manner.	The subdivision is to be undertaken in a staged fashion and this is outlined in Section 3.3 and within the Subdivision Sketch Plan No 25489-01 prepared by APA as shown in <b>Annexure 1</b> . The proposed staging is logical and efficient, and pays due regard to servicing and natural hazard mitigation.
2.7	Outline long term management and maintenance of any areas of open space or conservation including ownership and control, management and maintenance funding, public access, revegetation and rehabilitation works, and bushfire management.	Management and maintenance of the open space and conservation areas is addressed in Section 3.2.14 and it is intended that this be undertaken by SCC.
<b>3. VISUAL IMPACT</b>		
3.1	Address the visual impact of the proposal in the context of surrounding development and relevant mitigation measures. In particular, address impacts on the amenity of the foreshore, overshadowing of public reserves, loss of views from public places and cumulative impacts.	<p>The visual impact of the proposal is addressed in Section 5.1 of this EA.</p> <p>The site is not prominent, and is not visible from the coast, foreshore or river. The site is not prominent from any public place. Views of the site are generally restricted to longer distances where the prominence is significantly reduced, with the property blending into the surrounding landscape.</p>

## Environmental Assessment

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

Key Issues	Comments
<b>4. INFRASTRUCTURE PROVISION</b>	
4.1 Address existing capacity and requirements of the development for sewerage, water, electricity, waste disposal, telecommunications and gas, in conjunction with relevant agencies, identify and describe staging of infrastructure works.	The provision of infrastructure is addressed in the Utilities Investigation Report as <b>Annexure 9</b> and in Section 5.2 of the EA. This site will be provided with all essential infrastructure including reticulated water and sewerage services, power and telecommunication services.
4.2 Address and provide the likely scope of a planning agreement and/or developer contributions with Council/government agencies.	Developer contributions are addressed in Section 5.2 of the EA. Contribution rates are still to be determined by Shoalhaven Council.  Furthermore at its meeting of 26 March 2013 Council gave in principle agreement to the preparation of a planning agreement with relevant landowners in the Mundamia urban release area
<b>5. TRAFFIC AND ACCESS</b>	
5.1 Prepare a traffic impact study in accordance with Table 2.1 of the RTA's Guide to Traffic Generating Developments which addresses matters, including the following: <ul style="list-style-type: none"> <li>• Connectivity to existing, surrounding developments, including West Nowra, Wollongong University and the Thompsons Point area;</li> <li>• Provision for a future road reserve on both sides of George Evans Road to link to the west Bypass corridor and to the Nowra CBD; and</li> <li>• Upgrade requirements for Yalwal/George Evans Road and Yalwal/Albatross intersections.</li> </ul>	A separate Transport Report has been prepared by CBHK and is shown as <b>Annexure 2</b> . Traffic matters are also considered in Section 5.3 of the EA. In particular, the assessment concludes that vehicular access will be provided to existing and surrounding developments, a proposed roundabout will include provision for connections to a future by-pass, and the need to upgrade the intersection of Yalwal and Albatross Roads with a separate left and right turn lanes.
5.2 Undertake intersection modelling using SIDRA for the key junctions in the area including Yalwal Road and MR92 intersection, and consider: <ul style="list-style-type: none"> <li>• AM and PM peak volumes and holiday peak volumes;</li> <li>• Existing traffic volumes with and without development; and</li> <li>• 10 year projected volumes with and without the proposal.</li> </ul>	A separate Transport Report has been prepared by CBHK and is shown as <b>Annexure 2</b> . Traffic matters are also considered in Section 5.3 of the EA. The assessment concludes that reasonable LOS will be provided and modelling by SIDRA has included 10 year projections.

<i><b>Key Issues</b></i>	<i><b>Comments</b></i>
<b>6. HAZARD MANAGEMENT AND MITIGATION</b>	
<i>Coastal Processes</i>	
6.1 Address coastal hazards and the provisions of the <i>Coastline Management Manual</i> . In particular consider impacts associated with wave and wind action, coastal erosion, sea level rise and more frequent and intense storms. Provide details of proposed safeguards to mitigate any impacts of such hazards on the proposal.	Coastal Processes are addressed in Section 5.4.1 of the EA and due to the location of the property, these have no impacts.  A separate Water Cycle Management Report has been prepared by Storm Consulting and is shown as <b>Annexure 7</b> and this addresses impacts associated with higher intensity storm events.
6.2 A risk management assessment of climate change impacts to the year 2100, is to be undertaken using the latest available information from the International Panel on Climate Change (IPCC), Department of Environment and Climate Change (DECC), and the CSIRO. This should include sensitivity analyses for low level, mid range and high level ocean impacts as set out in the relevant DECC Guideline ( <i>Floodplain Risk Management Guidelines: Practical Consideration of Climate Change</i> , 2007).	Impacts of climate change are addressed in Section 5.4.1 of this EA and in the Storm Consulting report ( <b>Annexure 7</b> ). Impacts are generally restricted to higher intensity rainfall.
<i>Contamination</i>	
6.3 Prepare a preliminary site assessment and identify any contamination on site and appropriate mitigation measures in accordance with the provisions of SEPP 55 – Remediation of Land.	Martens Consulting Engineers prepared a comprehensive suite of assessments including a Stage 1 Preliminary Assessment, Stage 2 Environmental Site Assessment and Remedial Action Plan (RAP) and these are contained in <b>Annexure 5</b> . Contamination matters are also addressed in Section 5.4.2 of the EA. Some contamination has been identified and the RAP has identified methodology and validation works necessary to ensure the site is suitable for the proposed residential use.
<i>Acid Sulfate Soils</i>	
6.4 Identify the presence and extent of acid sulfate soils on the site and, where relevant, appropriate mitigation measures.	Martens Consulting Engineers prepared a separate Preliminary Geotechnical and Constraints Assessment which included an assessment of acid sulfate soils and this is shown as <b>Annexure 4</b> . Acid sulfate soils are also addressed in Section 5.4.3 of the EA. The site is not mapped as being affected by acid sulfate soils, and nor have the investigations undertaken by Martens revealed presence of acid sulfate soils, and consequently, no mitigation is required.



# Environmental Assessment

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

<b>Key Issues</b>	<b>Comments</b>
<p><i>Bushfire</i></p> <p>6.5 Address the requirements of <i>Planning for Bush Fire Protection 2006</i> (RFS). Demonstrate that the proposal can provide asset protection zones, access arrangements, water supplies and utilities, building construction and design, and emergency management arrangements in accordance with <i>Planning for Bush Fire Protection 2006</i>.</p>	<p>Eco Logical Australia has prepared a separate Bushfire Protection Assessment which is shown as <b>Annexure 6</b>. Bushfire matters are also discussed in Section 5.4.4 of this EA. The proposal will comply with the provisions of PBP with mitigation measures proposed including APZ, suitable access and appropriate management.</p>
<p><i>Geotechnical</i></p> <p>6.6 Provide an assessment of any geotechnical limitations that may occur on the site and if necessary, appropriate design considerations that address these limitations.</p>	<p>Martens Consulting Engineers prepared a separate Preliminary Geotechnical and Constraints Assessment which included an assessment of geotechnical constraints and this is shown as <b>Annexure 4</b>. Geotechnical constraints are also addressed in Section 5.4.3 of the EA. The proposed subdivision is not significantly constrained by geotechnical matters.</p> <p>The assessment of Storm Consulting (<b>Annexure 7</b>) considered sea level rise due to the impacts of climate change however it is noted that the site is very well elevated such that it is not impacted by expected increases to sea levels.</p>
<p><i>Flooding</i></p> <p>6.7 Provide an assessment of any flood risk on site including the potential effects of sea level rise and an increase in rainfall intensity in consideration of any relevant provisions of the <i>NSW Floodplain Development Manual</i> (2005); NSW Government Sea Level Rise Policy Statement (DECCW, October 2009); Draft Coastal Risk Management Guide: Incorporating Sea Level Rise Benchmarks in Flood Risk Assessments (DECCW, 2009); and NSW Coastal Planning Guideline: Adapting to Sea Level Rise (DoP, August 2010).</p>	<p>The site is not affected by wider flooding impacts, being sited well above known flood levels. Flooding matters, which are localised only, are addressed in Section 5.4.1 of this EA.</p> <p>The assessment of Storm Consulting (<b>Annexure 7</b>) has considered impacts of climate change through increased rainfall intensity in the water quality and drainage recommendations and which is outlined in Section 5.4.5 of this EA.</p>

## Environmental Assessment

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

Key Issues	Comments
6.8 Consider the potential impacts of filling on the flood regime of the site and adjacent land.	This is addressed in the assessment of Storm Consulting ( <b>Annexure 7</b> ) and Section 5.4.5.3 of this EA. Minor filling is necessary to ensure that large flow events are confined to the proposed drainage through the site which will have a negligible impact on the flood regime as the proposed development is at the lower end of the Flat Rock Creek catchment and no detention is required.
<b>7. WATER CYCLE MANAGEMENT</b>	
7.1 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, mitigate impacts on water quality downstream, drainage and water quality controls for the catchment, and erosion and sedimentation controls during construction and for the life of the proposal.	A separate Water Cycle Management Report has been prepared by Storm Consulting and is shown as <b>Annexure 7</b> . This is further addressed in Section 5.4.5 of this EA.  Furthermore, a Construction Management Plan ( <b>Annexure 10</b> ) prepared by APA details conceptual construction methods.
7.2 Assess the impacts of the proposal on surface and groundwater hydrology and quality during construction and occupation of the site.	These matters are addressed in the Storm Consulting report ( <b>Annexure 7</b> ). This matter has been addressed through the proposed installation of bioretention systems which will ensure that infiltration is similar to pre development conditions and there will be minimal impacts to groundwater hydrology and quality. Furthermore, some level of stormwater retention will be provided in the form of rainwater tanks and bioretention. To protect potentially vulnerable vegetation, stormwater discharge shall be as diffuse as possible. Detention is not required on the site as the site is at the lower end of the Flat Rock Creek catchment and the Shoalhaven River is immediately downstream.
7.3 Address safeguards to mitigate any impacts upon water quality, including impacts downstream on Flat Rock Creek, Flat Rock Creek Dam and the Shoalhaven River. Provide details of proposed effluent management, stormwater, road drainage, alterations to town water supply and water quality management for the site, for example, description and locations of on-site wastewater systems, swales, water quality retention ponds, etc.). Address the requirements, where relevant, of the Flat Rock Creek Notification Area under the <i>Mining Act 1992</i> (NSW) and the <i>Dam Safety Act 1978</i> (NSW).	These matters are addressed in the Storm Consulting report ( <b>Annexure 7</b> ) and the Environmental Flora and Fauna Assessment prepared by SLR ( <b>Annexure 3</b> ).  Safeguards are proposed in the form of water quality control measures including strategically located bio-filtration trenches within each identified catchment, and on-site storage of rainwater and infiltration within allotment boundaries.

**Environmental Assessment**

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

<b>Key Issues</b>	<b>Comments</b>
7.4 Include consideration of any specific existing or draft Estuary Management Plan and Coastline Management Plan.	Matters relating to the draft Estuary Management Plan and Coastline Management Plan are addressed by Storm Consulting in <b>Annexure 7</b> . Of particular relevance to this site is the requirement that the development must take into consideration potential stormwater impacts on the estuary and wetlands. This has been addressed through the preparation of a stormwater management plan and demonstrated through the use of water quality modelling showing that the proposal will meet BMP guidelines for water quality management.
<b>8. HERITAGE AND ARCHAEOLOGY</b>	
8.1 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 <i>Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation</i> (DEC 2005). <u>Note that the personal/contact details of any individual should not be publicly disclosed without first making it known to those concerned that their details may be publicly disclosed in the EA.</u>  8.2 Identify any items of European heritage significance and, where relevant, provide measures for the conservation of such items.	SEA prepared a separate Aboriginal Heritage Assessment ( <b>Annexure 8</b> ) which is further considered in Section 5.5.2 of this EA. This assessment, which included consultation with the Aboriginal community and field work, did not detect any evidence of Aboriginal heritage, whilst predictive modelling indicated a very low potential for deposits.  This is addressed in Section 5.5.1 of this EA. Furthermore, the Aboriginal Heritage Assessment ( <b>Annexure 8</b> ) also includes an assessment of European heritage matters.  The site is not identified as containing any items of environmental heritage, whilst the property is not in the vicinity of identified items and therefore this issue does not constrain development.

Key Issues	Comments
<b>9. FLORA AND FAUNA</b>	
<p>9.1 Prepare a Flora and Fauna Assessment Report in accordance with the <i>Draft Guidelines for Threatened Species Assessment</i> (DEC, DPI, Jul 2005), <i>Threatened Biodiversity Survey and Assessment Guidelines Working Draft</i> (DEC 2004), and the <i>Threatened Species Assessment Guidelines: The Assessment of Significance</i> (DECC Aug 2007). Address potential impacts of development on the flora and fauna of the site and setting in the landscape, particularly impacts on any threatened species, populations, endangered ecological communities (EECs), and/or critical habitat, and any relevant recovery plan, with particular regard for relevant EECs or threatened species, where known (bearing in mind DECC's letter dated 30 September 2008, attached, particularly its comments in relation to Attachment A and the proposed development envelope). Surveys should target the <i>Triplarina nowraensis</i> species and the assessment should demonstrate that the proposal will have minimal impact on this species. Provide measures for the conservation of flora and fauna, habitats and communities, where relevant, including the provision of adequate vegetated buffers, particularly on the eastern side, bordering the Flat Rock Creek gully.</p> <p>9.2 Address the potential bio-certification of the Draft Shoalhaven LEP 2013. Any native vegetation proposed to be removed within the area identified in DECC's submission dated 30 September 2008 (attached), needs to be offset in accordance with the principles of "maintain or improve environmental outcomes" in DECC's Draft Guidelines.</p> <p>9.3 Resolve the provision of arterial road access for the proposal and any impacts on threatened species assessed, using the "avoid, mitigate, offset framework in DECC's Draft Guidelines.</p>	<p>An Environmental Flora and Fauna Assessment (<b>Annexure 3</b>) has been prepared by SLR and this has addressed flora and fauna issues. This is further discussed in Section 5.6 of this EA.</p> <p>The assessment by SLR has been undertaken in accordance with the relevant guidelines.</p> <p>The assessment found the proposal will unlikely have a significantly impact provided recommended mitigation measures are implemented. The most significant conservation measure relates to the development of less significant, disturbed lands, and the preservation of the most significant vegetation within land to be dedicated for conservation purposes.</p> <p>The Environmental Flora and Fauna Assessment (<b>Annexure 3</b>) prepared by SLR addresses bio-certification of the Draft Shoalhaven LEP 2013. This is further discussed in Section 5.6 of this EA. The preparation of Draft Shoalhaven LEP did not result in its bio-certification however notwithstanding this, the assessment of SLR concluded that the proposal will unlikely have a significantly impact provided recommended mitigation measures are implemented.</p> <p>This matter is addressed in SLR Report (<b>Annexure 3</b>). It is noted by SLR that the proposal for a arterial road access is no longer relevant with suitable access already physically constructed.</p>

# Environmental Assessment

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

Key Issues	Comments
<p>9.4 Outline measures for the conservation of existing wildlife corridor values and/or connective importance of any vegetation on the subject land. Address the conservation and enhancement of the remnant line of trees running east-west across the centre of the property by the provision of a wildlife corridor from the creek to the forest. Investigate opportunities to conserve or enhance local and regional corridors and important habitats, such as creek lines, in the design of the proposal.</p>	<p>The Environmental Flora and Fauna Assessment (<b>Annexure 3</b>) prepared by SLR addresses the provision of habitat corridors in the locality. According to SLR, <i>“the proposed development will not impinge upon any relevant existing corridors within the subject land itself, or in the immediate vicinity”</i>. This is further discussed in Section 5.6 of this EA.</p>
<p>9.5 Describe all aquatic environments (watercourses, wetlands) located on or adjacent to the site and their regional significance.</p>	<p>The Environmental Flora and Fauna Assessment (<b>Annexure 3</b>) prepared by SLR includes a description of aquatic environments located on and adjacent to the site and which are limited to farm dams and modest intermittent watercourses. This is further discussed in Section 5.6 of the EA.</p>
<p>9.6 Predict impacts upon aquatic environments on or adjacent to the site (both temporary and permanent). Predict any temporary and permanent impacts upon water quality and aquatic threatened species, populations and ecological communities listed under the <i>Fisheries Management Act 1994 (NSW)</i>.</p>	<p>The Environmental Flora and Fauna Assessment (<b>Annexure 3</b>) prepared by SLR considers impacts on aquatic environments and this is further discussed in Section 5.6 of the EA. SLR conclude that no significant impacts will result from the proposal.</p>
<p>9.7 Address measures and safeguards to protect adjacent aquatic habitats, including SEPP 14 wetlands and riparian habitats; and provide full details and widths of proposed riparian buffer zones for Flat Rock Creek.</p>	<p>The Environmental Flora and Fauna Assessment (<b>Annexure 3</b>) prepared by SLR and the Water Cycle Management Report prepared by Storm Consulting (<b>Annexure 7</b>) and the Hydrogeological Assessment prepared by Martens Consulting Engineers (Annexure F of the Storm Report) addresses measures and safeguards associated with the protection of aquatic habitats. In particular, the proposal is to include the following mitigation measures:</p> <ul style="list-style-type: none"> <li>the design and the subsequent management of stormwater control features, both during construction activities and following completion and occupation of the land, to limit the potential discharge of contaminants and to maintain existing hydrologic regimes within the Conservation Area. These features will be constructed and managed according to current 'best practice' principles, and as outlined in the Water Cycle Management Report of Storm Consulting (2012);</li> </ul>

**Environmental Assessment**

Twynam Mundamia Pty Ltd – George Evans Road and Jonsson Road, Mundamia

<b>Key Issues</b>	<b>Comments</b>
9.7 <i>continued</i>	<ul style="list-style-type: none"><li>the implementation of 'Water Sensitive Urban Design' principles, including the capture and re-use of stormwater runoff, the treatment of water to be discharged from the development, and the avoidance of the use of potable water for other purposes; and</li><li>detailed design of the peripheral bioretention swale and detention basin system to maintain soil moisture and groundwater regimes, and to provide supplementary habitat for native biota (particularly in the peripheral bioretention swale and detention basin system on the eastern side of the proposal).</li></ul>
<b>10. NOISE</b>	
10.1 Address potential noise impacts (existing and proposed) on the development, in particular, from road traffic and aircraft noise, and noise from the proposed Bamarang Power Station Stage 2 (MP08_0021). Address appropriate mitigation measures to ameliorate any identified noise impacts.	Noise issues having regard to road traffic, aircraft and the Bamarang Power Station are addressed in Section 5.7 of this EA.  No noise impacts are expected due to the distance the site is from noise generating activities. Traffic generation is within RTA limits of acceptability.  Mitigation of noise is therefore not required.
<b>11. AVIATION/DEFENCE</b>	
11.1 Address potential impacts of the proposal on the operations of HMAS Albatross, and consider flight path impacts from military aircraft operations on the proposal.	Impacts on the operations of HMAS Albatross are addressed in Section 5.8 of this EA. In this regard, no impacts are anticipated as the site is well clear of HMAS Albatross, and no development at a height to impact aircraft is proposed.

## **9.0 CONCLUSION**

This report provides an Environmental Assessment in relation to a Part 3A Major Project Application for a residential subdivision at Mundamia within the City of Shoalhaven on the south coast of NSW.

The Mundamia area has been specifically identified by Shoalhaven City Council as an area suitable for residential development in order to meet the expected population growth over the next 20 to 30 year period and followed an extensive consultation phase with the community and relevant government agencies.

The proposed subdivision provides for the development of 312 residential allotments and various public reserve allotments for recreation and conservation purposes. The development supports the aims of SCC to provide for urban expansion of the Nowra urban area in a planned manner, considerate of relevant ecological and social impacts, that supports the essential and social infrastructure invested in this locality.

The proposed subdivision layout and accompanying reports are the result of extensive assessment undertaken on behalf of our clients, Twynam Mundamia Pty Ltd, and Shoalhaven City Council over a number of years. The proposed development is consistent with the ecological constraints applicable to the site.

This Environmental Assessment considers the issues raised by the Director-General of the Department of Planning in the Environmental Assessment Requirements, issued October 2010 and has properly addressed the requirements.

In preparing this environmental assessment, separate reports have been prepared addressing Aboriginal Heritage Impacts, Traffic and Transport Impacts, Ecological Flora and Fauna, Bushfire, Water Cycle Management, Site Contamination, Geotechnical Constraints and Acid Sulfate Soils, and these have been considered in this Environmental Assessment.

Key mitigation measures of this development include an appropriate subdivision design which will ensure that the development has a distinctive character, retention and conservation of ecologically sensitive areas, use of best practice stormwater management and consideration of natural hazards.

Support for the development is recommended subject to implementation of those matters outlined in the statement of commitments.