

**Table 8-1: Recommended Construction Standards for Development Estate A**

<b>Vegetation Type</b>	<b>Direction from Development Estate</b>	<b>Slope</b>	<b>APZ</b>	<b>Distance from Vegetation</b>	<b>Construction Level</b>
Open Forest	North	Cross-slope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	South	Cross-slope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	West	4.18° downslope	25m	25-32m	BAL 40
				32-43m	BAL 29
				43-57m	BAL 19
				57-100m	BAL 12.5
Open Forest	West	5.71° downslope	35m	35-39m	BAL 40
				39-53m	BAL 29
				53-69	BAL 19
				69-100m	BAL 12.5
Open Forest	East	12.3° upslope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	East	13.86° upslope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	East	14.41° upslope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	East	14.47° upslope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5

**Table 8-2: Recommended Construction Standards for Development Estate B**

Vegetation Type	Direction from Development Estate	Slope	APZ	Distance from Vegetation	Construction Level
Open Forest	North	Cross-slope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	South	10.65° downslope	50m	50-64m	BAL 29
				64-82m	BAL 19
				82-100m	BAL 12.5
Open Forest	South	11.95° downslope	50m	50-64m	BAL 29
				64-82m	BAL 19
				82-100m	BAL 12.5
Open Forest	South	12.41° downslope	50m	50-64m	BAL 29
				64-82m	BAL 19
				82-100m	BAL 12.5
Open Forest	South	9.26° upslope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	South	13.28° upslope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5
Open Forest	West	Cross-Slope	20m	20-25m	BAL 40
				25-35m	BAL 29
				35-48m	BAL 19
				48-100m	BAL 12.5

**To Note:** The construction requirements for the next lower BAL than that determined for the site may be applied to an elevation of the building where the elevation is not exposed to the source of bushfire attack. An elevation is deemed to be not exposed to the source of bushfire attack if all straight lines between that elevation and the source of bushfire attack are obstructed by another part of the building.

Given the information in the above tables, all future dwellings within the proposed allotments will comply with AS3959 - 2009.

## 9 Conclusion and Recommendations

It is clear from this investigation and assessment that the Catherine Hill Bay (Middle Camp) site, in part constitutes BFPL. Therefore, development of the proposed residential development estates will have to be carried out in accordance with the specifications contained within PBP (RFS, 2006) as assessed and presented within this report.

If the recommendations contained within this report are duly considered and incorporated, it is considered that the fire hazard present is containable to a level necessary to provide an adequate level of protection to life and property on the site.

In summary, the following key recommendations have been incorporated into the Concept Plan for the development estate to enable the proposal to meet the relevant legislative requirements:

- APZ's from 20 metres to 50 metres will be required from vegetation external to the site. Perimeter roads have been implemented between bushfire hazards and future dwellings, this will form all or part of the required APZ's. Any remaining part of the APZ will be established within allotments if required.
- Any proposed development should be linked to mains pressure water supply and that suitable hydrants be clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure should comply with AS2419.1, 2005.
- Roads should be constructed in accordance with section 4.1.3 (1), PBP 2006 as outlined in section 6 of this report. Any lessening of these requirements will need a performance-based assessment to be undertaken.
- Any future dwelling within the proposed development estates should have due regard to the specific considerations given in the BCA, which makes specific reference to the Australian Standard (AS3959 – 2009) construction of buildings in bushfire prone areas.
- It is recommended that a Fuel Management Plan (FMP) be prepared for the development estate. This plan will detail the required strategies to create the required APZ's and management of these APZ's in such a manner as to preserve the natural and cultural features of the development estate, while reducing the risk of bushfire.

*Finally, it is believed that the implementation of the measures and recommendations forwarded within this report would contribute to the amelioration of the potential impact of any bushfire upon the development estate, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.*

## 10 Bibliography

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- NSW Rural Fire Service (2006). *Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. NSW Rural Fire Service
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- Ramsay, GC and Dawkins, D (1993). *Building in Bushfire-prone Areas – Information and Advice*. CSIRO and Standards Australia.
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- Standards Australia (1999). *AS 3959 – 1999: Construction of Buildings in Bushfire-prone Areas*

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## Appendix I

### DGEAR's

# Director-General's Requirements

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

<b>Project</b>	<b>Concept Plan (MP10_0089):</b> for a residential subdivision of the Middle Camp site for up to 222 dwellings across approximately 28 hectares and the dedication of approximately 527 hectares for conservation.
<b>Site</b>	<b>Middle Camp</b> Lot 202 DP 702669, Lot 2030 DP 841175, Lot 6 DP 746077, Lot 5 DP 736170, Lot 12 DP 854197, Lot 223 DP 1102989, Lot 16 DP 755266 and Lots 9 and 10 Section D DP 163.
<b>Proponent</b>	Coal & Allied Industries Pty Ltd
<b>Date of Issue</b>	19 August 2010
<b>Date of Expiration</b>	(2 years from date of issue)
<b>General Requirements</b>	<p>The Environmental Assessment (EA) must include:</p> <ol style="list-style-type: none"> <li>(1) An executive summary.</li> <li>(2) A detailed description of the project including the: <ol style="list-style-type: none"> <li>(a) strategic justification for the project;</li> <li>(b) alternatives considered; and</li> <li>(c) various components and stages of the project in detail (and should include infrastructure staging).</li> </ol> </li> <li>(3) A consideration of the following with any variations to be justified: <ol style="list-style-type: none"> <li>(a) all relevant State Environmental Planning Policies (with particular regard to <i>SEPP Major Development 2005</i>, <i>SEPP 44</i>, <i>SEPP 55</i>, <i>SEPP 71</i>, <i>SEPP (Infrastructure) 2007</i>, and <i>SEPP (Mining, Petroleum Production and Extractive Industries) 2007</i>;</li> <li>(b) applicable planning instruments; and</li> <li>(c) relevant legislation and policies, including the <i>NSW Coastal Policy 1997</i>, <i>Lower Hunter Regional Strategy</i>, and <i>Lower Hunter Regional Conservation Plan</i>.</li> </ol> </li> <li>(4) A consideration of the proposal and cumulative impacts in relation to the development of other future urban land identified in the <i>Lower Hunter Regional Strategy</i>.</li> <li>(5) A draft Statement of Commitments, outlining specific commitments to the project's management, mitigation and monitoring measures with a clear identification of the timing and responsibility for these measures.</li> <li>(6) A conclusion justifying the project, taking into consideration the environmental impacts of the proposal, mitigation measures to address these impacts, the cumulative impacts of the proposal, the suitability of the site, and whether or not the project is in the public interest.</li> <li>(7) An outline of development contributions applicable to the site between <ol style="list-style-type: none"> <li>(i) the Proponent and Lake Macquarie Council;</li> <li>(ii) the Proponent and State Government agencies for State infrastructure in accordance with <i>Planning Circular PS 07-018</i>; and</li> <li>(iii) if relevant, any public benefits to be provided with the development.</li> </ol> </li> <li>(8) A signed statement from the author of the EA certifying that the information contained in the report is neither false nor misleading.</li> <li>(9) A report from a quantity surveyor identifying the correct capital investment value for the concept plan and the four project applications.</li> </ol>
<b>Key Assessment Requirements</b>	<p><b>Urban design and built form</b></p> <ol style="list-style-type: none"> <li>(1) Provide an assessment against the <i>Coastal Design Guidelines for NSW</i> and <i>NSW Coastal Policy (1997)</i>.</li> <li>(2) Propose development controls and design guidelines for the site which ensure that the future development responds to the site location appropriately.</li> </ol>

- (3) Provide details of the proposed treatment of all public domain areas.
- (4) Identify opportunities to link the proposed development to the existing urban areas, including through appropriate pedestrian and cycleway connections.
- (5) Address the principles of Crime Prevention Through Environmental Design.

#### **Coastal Foreshore and Public Access**

- (1) Outline measures to protect and enhance existing public access through the site to and along the foreshore and provide, where appropriate, new opportunities for public access that is compatible with the natural attributes of the coastal foreshore.

#### **Biodiversity impact**

- (1) Identify the potential impact of the development on threatened species and their habitats having regard to the *draft Threatened Species Assessment Guidelines* (DEC July 2005), and outline measures proposed to avoid or mitigate impacts on threatened species and their habitat.
- (2) Demonstrate that biodiversity impacts can be appropriately offset in accordance with the NSW Government's policy for 'improvement or maintenance' of biodiversity values.
- (3) Address the impact of the development on wetlands identified under State Environmental Planning Policy No. 14 – Coastal Wetlands.
- (4) Consider and identify measures to manage interface impacts on land proposed to be dedicated for conservation.
- (5) Provide an assessment of the cumulative impacts on biodiversity of the proposed development, and other development proposed in the area.
- (6) Demonstrate consistency with the approval granted by the Commonwealth Department of Environment, Water, Arts and Heritage under the *Environmental Protection and Biodiversity Conservation Act 1999*.

#### **Transport and Accessibility**

- (1) Prepare a Traffic Study in accordance with RTA's *Guide Traffic Generating Developments* that includes (but is not limited to) the following:
  - (a) an identification of all relevant vehicular traffic routes and intersection for access to/from the area;
  - (b) current traffic counts for all of the above traffic routes and intersections;
  - (c) the anticipated vehicular traffic generated from the proposed development and associated trip distribution on the road network;
  - (d) consideration of the traffic impact on the existing and proposed intersections and the capacity of the local and classified road network to safely and efficiently cater for the additional vehicular traffic generated;
  - (e) an analysis of the cumulative traffic and transport impacts of the development taking into consideration other proposed developments;
  - (f) details of necessary road network infrastructure upgrades required to maintain existing levels of service both on the local and classified road network;
  - (g) an intersection analysis, using SIDRA or similar traffic model, as well as a micro simulation model to determine the need for intersection and mid block capacity upgrades and to ensure traffic signal co-ordination;
  - (h) proposed pedestrian and cycleway access within and to the site that connects to all relevant transport services, nearby settlements, and other key off-site locations having regard to the *NSW Planning Guidelines for Walking and Cycling* (2004), and the

	<p><i>NSW Bike Plan</i> (2010);</p> <ul style="list-style-type: none"> <li>(i) timing of delivery of proposed transport infrastructure including road and intersection upgrades, pedestrian and cycle paths, and public transport infrastructure; and</li> <li>(j) consideration of impacts on existing property access.</li> </ul> <p>(2) Assess the proposal against the objectives of the Integrating Land Use and Transport policy package.</p> <p><b>Noise impacts</b></p> <p>(1) Assess noise impacts in accordance with the <i>Environmental Criteria for Road Traffic Noise</i> (EPA, 1999), and outline any proposed measures to mitigate or manage impacts.</p> <p><b>Mining Activities</b></p> <ul style="list-style-type: none"> <li>(1) Identify the requirements of previous consents, approvals, lease arrangements, and current legal and financial responsibilities in relation to the mine operation and closure and the impact approvals will have on these arrangements.</li> <li>(2) Provide a risk analysis examining the risk factors associated with the former mining use of the site and what effects it may have on future development, including mine subsidence.</li> <li>(3) Identify measures that would be implemented to avoid, minimise or remediate potential subsidence issues encountered on the site.</li> <li>(4) Investigate the impacts of future mining activities.</li> </ul> <p><b>Heritage</b></p> <ul style="list-style-type: none"> <li>(1) Provide an archaeological assessment and heritage impact statement in accordance with NSW Heritage Office guidelines. The statement should assess the impacts of the application on the area and any significant components of the site, including indigenous heritage.</li> <li>(2) Provide an assessment in accordance with the <i>draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation</i> (DEC 2005).</li> </ul> <p><b>Water quality</b></p> <ul style="list-style-type: none"> <li>(1) Provide appropriate detailed information on the drainage and stormwater management measures to be incorporated on site including: on site stormwater detention; water sensitive urban design measures; and drainage infrastructure.</li> <li>(2) Identify future management arrangements for proposed stormwater infrastructure, including where relevant, in consultation with Council.</li> <li>(3) Assess the impact of the proposal on the hydrology of the site and surrounding area including impacts on surface water, groundwater, the sea or any nearby beach, or an estuary, a coastal lake, a coastal creek or other similar body of water, or a rock platform.</li> </ul> <p><b>Flooding</b></p> <p>(1) Develop suitable flood planning levels for the proposed development and identify flood evacuation requirements for land up to the Probable Maximum Flood level. Demonstrate consistency with the <i>NSW Floodplain Development Manual: the management of flood liable land</i> (2005), the <i>DECCW Floodplain Risk Management Guideline – Practical Consideration of Climate Change</i>, the <i>NSW Sea Level Rise Policy Statement</i> (DECCW 2009), and <i>Draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise</i> (Department of Planning 2009).</p> <p><b>Visual</b></p> <p>(1) Assess and provide mitigation measures in response to potential visual impacts of the project in the context of adjoining development, impact on any heritage items (on-site or in the vicinity) and the development as viewed from publicly accessible areas and the natural environment.</p>
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	<p><b>Bushfire</b></p> <ol style="list-style-type: none"> <li>(1) Identify how the proposed concept plan addresses the requirements of <i>Planning for Bush Fire Protection</i> and <i>Australian Standard 3959 (Building in Bush Fire Prone Areas)</i>.</li> <li>(2) Outline ongoing management arrangements of any proposed APZs, including through negotiation with relevant agencies where APZs are proposed to be located on land to be dedicated for a public purpose.</li> </ol> <p><b>Infrastructure and utilities</b></p> <ol style="list-style-type: none"> <li>(1) Identify and address the impacts of additional demand created by the development on existing infrastructure including public transport, open space, and recreation facilities, retail facilities and other social and community facilities. Identify the need for additional facilities through negotiation with State or local government agencies. This should inform the scope of proposed State and local infrastructure contributions.</li> <li>(2) Prepare a utility and infrastructure servicing report and plan for the Site that includes (but is not limited to): <ol style="list-style-type: none"> <li>(a) Identification and assessment of the capacity of existing utility and infrastructure servicing the site; and</li> <li>(b) Identification and assessment of all necessary augmentation works to service the site and whether these works can sustain this and other development foreshadowed for the Wallarah Peninsula shown in the <i>Lower Hunter Regional Strategy</i>.</li> </ol> </li> </ol> <p><b>Ecologically Sustainable Development</b></p> <ol style="list-style-type: none"> <li>(1) Demonstrate how the development will commit to ESD principles in design, construction and ongoing operation phases.</li> <li>(2) Demonstrate that the development is capable of achieving the requirements of BASIX.</li> </ol> <p><b>Site preparation works</b></p> <ol style="list-style-type: none"> <li>(1) Identify the likely extent of site preparation works with respect to cut and fill activities to cater for the proposed residential development. In particular, assess how the proposed built form will respond to final levels of the site and demonstrate consideration to minimise the extent of cut and fill required.</li> </ol> <p><b>Subdivision</b></p> <ol style="list-style-type: none"> <li>(1) Provide a subdivision plan to identify all covenants, easements and notations proposed for each title, for the proposed subdivision to facilitate transfer of lands to Government agencies.</li> </ol> <p><b>Future public land</b></p> <ol style="list-style-type: none"> <li>(1) Identify any proposed open space or conservation land, and arrangements for ownership and control, management and maintenance, funding, public access, revegetation and rehabilitation works and bushfire management.</li> </ol>
<p><b>Consultation Requirements</b></p>	<p>An appropriate and justified level of consultation should be undertaken. Where consultation has already been undertaken this should be documented in the EA.</p> <p>Consultation must be undertaken with the following relevant agencies:</p> <p>a) <i>Agencies and other authorities:</i></p> <ul style="list-style-type: none"> <li>• Lake Macquarie Council</li> <li>• Wyong Shire Council</li> <li>• Hunter Water</li> <li>• Catchment Management Authority - Hunter – Central Rivers</li> <li>• NSW Department of Industry and Investment</li> <li>• NSW Department of Environment, Climate Change and Water</li> <li>• NSW Office of Water</li> </ul>

	<ul style="list-style-type: none"> <li>• Transport NSW</li> <li>• Roads and Traffic Authority</li> <li>• NSW Emergency Service agencies, namely NSW Police Department, the Ambulance Service of NSW, the State Emergency Service, NSW Rural Fire Service, and NSW Fire Brigades</li> <li>• All utility providers</li> <li>• Relevant Local Aboriginal Land Councils</li> </ul> <p>The consultation process and the issues raised should be described in the Environmental Assessment.</p>
<b>Deemed refusal period</b>	60 days

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## Appendix 2

### Vegetation Formations

# CATHERINE HILL BAY VEGETATION FORMATIONS



Swamp Oak - Rushland Forest



Swamp Mahogany - Paperbark Swamp Forest



Riparian Melaleuca Swamp Woodland

## Forested Wetlands

Restricted to riverine corridors and floodplains subject to periodic inundation. Dominated by eucalypts, tea-trees and paperbarks or she-oaks. Distinguished by presence of hydrophytes and woody plants that can live in flooded environments. Soils vary from peaty and semi-humic loam soils to mineral clays and sandy loams.