

Our Ref: 24530-1:MD

29 January 2010

APPENDIX

GWANDALAN LOWER HUNTER LANDS PROJECT PRELIMINARY ENVIRONMENTAL ASSESSMENT ECOLOGY

It is proposed that the entire Coal & Allied Industries Limited (Coal & Allied) owned Gwandalan site be rezoned/listed as a 'State Significant Site' (SSS) in Schedule 3 of State Environmental Planning Policy (Major Development). A draft Schedule 3 listing will be prepared with the Concept Plan Application.

The Concept Plan for a residential subdivision of the Gwandalan site will apply to the entire 268ha Gwandalan site. The key parameters for the proposed development of the site are as follows:

- Dedication of 205.75ha of conservation land to the New South Wales Government (NSWG) that is identified in the Lower Hunter Regional Strategy and Lower Hunter Regional Conservation Plan, comprising approximately 77% of the Gwandalan site.
- Maximum dwelling yield of 623 dwellings over 62.24ha.
- Indicative development staging. The number of lots and extent of staging for release areas will be largely dictated by the service infrastructure requirements as well as responding to market forces.
- The provision of associated infrastructure.
- Torrens title subdivision of the Gwandalan site. The Torrens title subdivision and boundary realignment of Coal & Allied land will enable land 205.75ha in area that is owned by Coal & Allied to be excised and dedicated to NSWG for conservation land.

Approval will not be sought under the Concept Plan for a specific lot layout. An indicative lot layout will indicate how the maximum dwelling yield of 623 dwellings could be achieved on the site.

Similarly, approval will not be sought under the Concept Plan for subdivision or construction of individual houses. However, the desired future character of the proposed concept plan will be included in Urban Design Guidelines. Urban Design Guidelines will be prepared to inform the Concept Plan in respect of urban form, built form, open space and landscape, access and movement and visual impact for the site.

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It is proposed to dedicate land for conservation purposes as part of the Major Project Application via a Voluntary Planning Agreement (VPA) between Coal & Allied and the NSWG in accordance with s.93F of the Environmental Planning & Assessment Act, 1979 (EP&A Act).

The proposed Concept Plan and a Plan showing the proposed development areas and conservation areas is included in the Preliminary Environmental Assessment (PEA) prepared by Urbis.

Brief Overview of Regional & Site Context

The ecological features of the Southern Lake Macquarie/ Wallarah Peninsula include:

- The vast majority of the locality contains intact remnant native vegetation, including forests, woodlands, wetlands, coastal scrub, heath, beach foredunes and headlands.
- The site is a component of a larger coastal forest area stretching from and providing linkage between Lake Munmorah and Munmorah State Recreation Area in the south, to Wallarah National Park on the northern Wallarah Peninsula, and Lake Macquarie State Conservation Area to the west. This entire forested area has been indicated as being a crucial green buffer between development around Lake Macquarie and that further south on the Central Coast.
- The site is situated adjacent and connected to, and form part of a significantly important gene pool of biodiversity, including direct linkage to areas reserved and zoned for conservation.
- The region encompasses areas containing excellent examples of coastal ecosystems and geomorph types.
- The regions forested areas contain potential habitat for an array of native fauna species, including numerous threatened or regionally significant species as mentioned above. Importantly, such habitat extends to threatened fauna (and to a lesser extent, flora) species that are typically associated with coastal forest / heathland / wetland systems.

Ecological Considerations

A preliminary assessment has been undertaken over the site to inform the PEA. Preliminary assessments drew on a number of information sources including previous preliminary reporting and information held on government databases and archives. Data gathered during preliminary assessments was used to assist in identifying distributions, suitable habitats and known records of threatened species. Preliminary assessment utilised a number of information sources, including:

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- Aerial Photograph Interpretation (API) and literature reviews to determine the broad categorisation of vegetation within the site;
- Review of fauna and flora records contained in the DECCW Wildlife Atlas (Accessed Jan 2010);
- Literature reviews;
- Regional vegetation mapping projects:
 - LHCCREMS – Vegetation Survey, Classification and Mapping. (NPWS 2000, House 2003);
 - Natural Vegetation of Wyong Local Government (Bell 2002);
- Hunter Bird Observers Club (HBOC) records;
- Birddata (web version of Birds Australia's New Atlas of Australian Birds);
- A review of GIS data including aerial photography, topographic maps, SEPP 14 Wetland Mapping, Soil Landscapes, Acid Sulphate Soil Potential; and
- Collective knowledge gained from extensive work in the area.

The preliminary assessment has revealed 11 vegetation communities are present on the Gwandalan site, based on regional vegetation community mapping prepared for the Lower Hunter and Central Coast Regional Environmental Management Strategy - LHCCREMS (House 2003; NPWS 2000) as follows:

- MU 11 - Coastal Sheltered Apple – Peppermint Forest;
- MU 30 - Coastal Plains Smooth-barked Apple Woodland;
- MU 31 - Coastal Plains Scribbly Gum Woodland;
- MU 40 - Swamp Oak Rushland Forest;
- MU 32 - Narrabeen Snappy Gum Forest (Bell, 2002);
- MU 38 - Redgum Roughbarked Apple Forest;
- MU 37 - Swamp Mahogany - Paperbark Forest;
- Mu 42 - Riparian Melaleuca Swamp Woodland;
- MU 44 - Coastal Wet Cyperoid Heath;
- MU 46 - Freshwater Wetland Complex; and
- MU 47 - Mangrove Estuarine Complex.

Based on the aforementioned vegetation communities, the following are considered to be commensurate with Endangered Ecological Communities as gazetted under Schedule 1 of the Threatened Species Conservation Act 1995.

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- Freshwater Wetland Complex is commensurate with 'Freshwater Wetlands on Coastal Floodplains in the NSW North Coast, Sydney Basin and South East corner Bioregions';
- The vegetation community delineated as Redgum Roughbarked Apple Forest is commensurate with 'River Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bio-regions';
- The vegetation community delineated as Swamp Oak Rushland Forest is commensurate with 'Swamp Oak Floodplain Forest in the NSW North Coast, Sydney Basin and South East Corner Bio-regions'; and
- The vegetation communities delineated as Swamp Mahogany - Paperbark Forest and Riparian Melaleuca Swamp Woodland are both commensurate with 'Swamp Sclerophyll Forest on Coastal Floodplains in the NSW North Coast, Sydney Basin and South East Corner Bio-regions'.

Notably the Mangrove Estuarine Complex vegetation community present on site is protected under the *Fisheries Management Act 1994*.

The desktop search results indicated numerous threatened flora and fauna species have been previously recorded within the locality and/ or have potential habitat within the site. The following have been recorded within 5km of the site and/or if not recorded on the DECCW Wildlife Atlas are considered to have potential habitat and therefore should be considered.

Flora

- *Acacia bynoeana*
- *Angophora inopina* (Chamhaven Apple)
- *Caladenia tessellata* (Thick Lip Spider Orchid);
- *Caladenia porphyrea*
- *Callistemon linearifolius* (Netted Bottle Brush)
- *Chamaesyse psammogeton* (Sand Spurge)
- *Cryptostylis hunteriana* (Leafless Tongue Orchid)
- *Cynanchum elegans* (White-flowered Cynanchum)
- *Dendrobium melaleucaphilum* (Spider Orchid)
- *Diuris praecox* (Rough Double Tail)
- *Eucalyptus camfieldii* (Camfield's Stringybark)
- *Eucalyptus parramattensis* ssp. *Decadens*
- *Genoplesium insignis* (Variable Midge Orchid)

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- *Grevillea parviflora ssp parviflora* (Little-flower Grevillea)
- *Melaleuca biconvexa*
- *Melaleuca groveana* (Grove's Paperbark)
- *Microtis angusii*
- *Pultenaea maritima* (Coastal Headland Pea)
- *Rutidosis heterogama* (Heath Wrinklewort)
- *Syzygium paniculatum* (Magenta Lilly Pilly)
- *Tetratheca glandulosa*
- *Tetratheca juncea* (Black-eyed Susan)

Fauna

- *Calyptorhynchus lathami* (Glossy Black-Cockatoo)
- *Lathamus discolor* (Swift Parrot)
- *Crinia tinnula* (Wallum Froglet)
- *Ixobrychus flavicollis* (Black Bittern)
- *Ephippiorhynchus asiaticus* (Black-necked Stork)
- *Pandion haliaetus* (Osprey)
- *Haematopus fuliginosus* (Sooty Oystercatcher)
- *Haematopus longirostris* (Pied Oystercatcher)
- *Charadrius mongolus* (Lesser Sand Plover)
- *Sterna albifrons* (Little Tern)
- *Ptilinopus regina* (Rose-crowned Fruit-Dove)
- *Ninox connivens* (Barking Owl)
- *Ninox strenua* (Powerful Owl*)
- *Tyto novaehollandiae* (Masked Owl)
- *Tyto tenebricosa* (Sooty Owl)
- *Xanthomyza phrygia* (Regent Honeyeater)

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- *Pomatostomus temporalis temporalis* (Grey-crowned Babbler)
- *Dasyurus maculatus* (Spotted-tailed Quoll)
- *Phascolarctos cinereus* (Koala)
- *Cercartetus nanus* (Eastern Pygmy-possum)
- *Petaurus norfolcensis* (Squirrel Glider)
- *Pteropus poliocephalus* (Grey-headed Flying-fox*)
- *Mormopterus norfolkensis* (Eastern Freetail-bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Miniopterus australis* (Little Bentwing-bat*)
- *Miniopterus schreibersii oceanensis* (Eastern Bentwing-bat*)
- *Myotis adversus* (Large-footed Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)
- *Hoplocephalus bitorquatus* (Pale-headed Snake)
- *Hoplocephalus stephensii* (Stephen's Banded Snake)
- *Lophoictinia isura* (Square-tailed Kite)
- *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail-bat)

Potential Impacts

Generally impacts associated with land development can be summarised into the following categories:

- Habitat loss;
- Landscape fragmentation and severing of connectivity;
- Riparian zone degradation;
- Edge effects; and
- Degradation to genetic flow, integrity and population dynamics.

Although the proposal will result in the removal of intact vegetation, a considerable amount of time has been spent on determining the location of the proposed developable area to ensure it is concentrated in already disturbed environs and that ecological impacts across the Gwandalan site are minimised where possible.

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The large tracts of native vegetation in the proposed conservation land will provide habitat for a wide variety of native flora and fauna and are important to achieving long term regional biodiversity outcomes in the Lower Hunter region as outlined within the LHRS and the Lower Hunter Regional Conservation Plan. The diverse nature of the landform settings to be conserved, varying from coastal ranges forests and woodlands to coastal heath to wetlands, provides a diverse array of habitats and resources for native fauna. The conservation lands are known to contain important populations of numerous threatened fauna species, including birds, mammals and herpetofauna. The proposed conservation of these lands will provide secure regional biodiversity gene pools, and also through linkages facilitate valuable genetic material exchange and other key processes associated with sustainable ecological population dynamics.

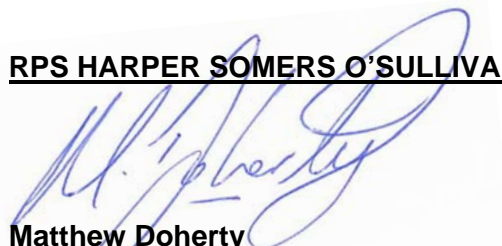
Given that measures have been taken to avoid any development in particularly sensitive areas (such as the ecologically significant Strangers Gully, including an occurrence of the highly restricted vegetation community - Coastal Wet Sand Cyperoid Heath) where practical and considering the large area of conservation land that is proposed to be set aside as part of the proposed development, overall it consider that the proposal will provide positive ecological outcomes across the entire Gwandalan site

The PEA will be expanded upon to include rigorous field survey and associated reporting that complies with relevant guiding policy and legislation in a suitable scientific format to inform the final EA.

EPBC Act Considerations

The project has been referred to the Commonwealth, Department of Environment & Water Resources (DEWHA) pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provisions. The Minister is currently considering this application.

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A handwritten signature in blue ink, appearing to read 'M. Doherty', is written over the company name.

Matthew Doherty
Environment & GIS Manager
BLMC