Ecological Assessment Report – Lower Hunter Lands

Nords Wharf

Prepared by:

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Disclaimers

Executive Summary

INTRODUCTION

RPS Australia East Pty Ltd (RPS) has been commissioned by Coal & Allied Industries Limited (Coal & Allied) to undertake an *Ecological Assessment Report* (EAR) over land within Nords Wharf, for proposed development and conservation offsets as outlined within the Lower Hunter Regional Strategy. The proposal is to be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*. Due recognition and consideration of the *Threatened Species Conservation Act 1995* and the *Fisheries Management Act 1994* has been made throughout this assessment. Director General's Environmental Assessment Requirements (DGEARs) were issued for the site on 19thAugust 2010

This study is intended to investigate the potential ecological impacts of the proposal as required by the Part 3A DGEARs. The primary impacts are likely to be associated with the removal of vegetation both in terms of direct impacts upon native stands of vegetation and to a lesser extent, upon habitat for native fauna within and directly adjacent to the development estates. To ensure completeness, ecological fieldwork and assessment has covered the full extent of the Coal & Allied surplus lands, including all development and conservation lands.

BACKGROUND

Harper Somers O'Sullivan (2005) has previously undertaken Preliminary Vegetation Mapping over various holdings administered by Coal & Allied in the Lower Hunter Valley / Central Coast Region. This preliminary mapping was undertaken to provide a baseline dataset pertaining to the broad-scale distribution of ecological communities throughout the land holdings. This assessment was largely undertaken at a desktop level relying on aerial photography combined with existing regional mapping datasets and limited ground-truthing.

Between January 2007 – April 2010 ecological investigations were undertaken to inform the urban design and NSWG assessment process.

These investigations were intended to provide a brief assessment of the conservation status of previously delineated vegetation communities.

The report herewith builds on the existing dataset, and provides the necessary level of detailed information for the assessment of the proposals under relevant legislation.

A Concept Plan has been prepared for Nords Wharf which will enable key site parameters associated with land use, infrastructure delivery and timing, and environmental conservation to be resolved up front, with subsequent detailed stages being submitted for approval progressively.

METHODS

The DGEARs stipulate assessment should have due regard to DECCW's Threatened Species Assessment Guidelines. These guidelines refer the user to consult the Threatened Biodiversity Survey and Assessment Guidelines – Working Draft (DEC 2004) and any relevant recovery plans and threat abatement plans for ecological assessment. To this end these documents have formed the core basis for ecological assessment over the site. In brief the methods employed to assess the ecological merit of the site involved the following (Note: Detailed assessment methods are presented within Section 3 of this report):

- Literature Review
- Preliminary (Desktop) Assessments
- Field Investigations
  - » Flora Assessment
    - Plant Identification and Vegetation Mapping
    - Floristic Structure Information
    - Targeted and Significant Flora Surveys
  - » Fauna Assessment
  - » Habitat Assessment and Mapping

RESULTS

Flora

A total of 220 flora species were identified over the Nords Wharf site during targeted flora surveys, including one threatened flora species (*Tetratheca juncea*) and two Endangered Ecological Communities.

A total of 6,798 *Tetratheca juncea* plants were located during the targeted surveys within the Nords Wharf site. Of these 5,933 (88%) will be retained within the conservation lands to the south and north of the Development Estate. The remaining 865 (12%) individuals will be removed as part of the proposal.

A further six threatened flora species (section 4.1.5) were considered to have potential habitat within the site. For one of these species, *Diuris praecox*, separate targeted searches were conducted during its flowering season, but the remaining five species were targeted during *Tetratheca juncea* surveys, apart from *Cryptostylis hunteriana*, which flowers during summer (i.e. post survey and report production).

No ROTAP listed species (Briggs and Leigh, 1996) were identified within the Nords Wharf site.
Six native vegetation communities have been delineated and described in the Nords Wharf site, including two listed EECs which collectively comprise approximately 13.94% of the study area:

- *Coastal Plains Smooth-barked Apple Woodland*

This vegetation community occurs within a small section of the northern portion of the site and encompasses 20.32ha, of which the entirety will be protected within conservation lands under the proposal.

- *Coastal Sheltered Apple – Peppermint Forest*

This vegetation community occurs in the majority of the Nords Wharf Site and encompasses 51.04 ha of which 42ha (82.3%) occurs within lands to be protected as conservation lands within the proposal.

- *Narrabeen Foreshore Redgum-Ironbark Forest*

This vegetation community occurs along the southern section within Browns Point within the exposed areas along the foreshore of Lake Macquarie and encompasses 11.23ha of which the entirety will be protected as conservation lands within the proposal.

- *Swamp Oak Rushland Forest (EEC – Swamp Oak Floodplain Forest)*

This vegetation community occurs along the foreshore of Lake Macquarie along Browns point and extends in a northern direction to South Beach Wharf. This community also extends along the creekline to the north of Browns Point. This vegetation community encompasses approximately 3.12ha of which the entirety will be protected as conservation lands within the proposal.

- *Swamp Mahogany - Paperbark Forest (EEC Swamp Sclerophyll Forest on Coastal Floodplains)*

This vegetation community occurs in the lower lying estuarine drainage lines, adjoining the Swamp Oak Rushland Forest and the Coastal Sheltered Peppermint – Apple Forest. This vegetation community encompasses 15.34ha of which the entirety will be protected as conservation lands within the proposal.

- *Narrabeen Wallarah Sheltered Grassy Forest*

This vegetation community occurs on the upper slopes and ridges adjoining the Pacific Highway in the north of the site and encompasses 31.36 ha of which the entirety will be protected as conservation lands within the proposal.

Fauna

Thirty-five (35) threatened fauna species (apart from oceanics) have been previously recorded within 10km of the site and a further 4 species were considered as potentially occurring within 10km of the site. Of those 35 species, six threatened fauna species were recorded within the site during fauna surveys, those being *Pteropus poliocephalus* (Grey-headed Flying-fox), *Ninox strenua* (Powerful Owl), *Falsistrellus tasmaniensis* (Eastern False Pipistrelle), *Miniopterus australis* (Little Bentwing-bat), *Miniopterus schreibersii oceanensis* (Eastern Bentwing-bat), and *Calyptorhynchus lathami* (Glossy Black-Cockatoo), which was recorded from secondary indications in the form of chewed *Allocasuarina littoralis* cones.

A further seven threatened fauna species are considered as having a moderate or greater opportunity of occurring within the site on at least an intermittent basis, due to the existence of potential habitat within the site and these are noted within Table 5-1.

Habitat

Generally the site is characterised by intact native vegetation communities, although the site is traversed by a network of tracks, which have provided opportunity for rubbish dumping and access to recreational motorcycle riding. The northwest corner of the site has been cleared of understorey and midstorey vegetation to accommodate Kanangra Scout Camp.

The site contains potential habitat for threatened flora species, largely within the open forest habits, although there are limited opportunities for threatened flora within swamp forest and riparian habitats. These are discussed within Section 4.1.5

The wooded areas of the site provide potential foraging opportunities for a number of threatened fauna guilds.

Widespread foraging occurs for insectivorous bat species and nectar producing trees occur across the site, but those of greatest significance to nectivorous species, such as, Grey-headed Flying-fox, Swift Parrot and Regent Honeyeater occur within Swamp Mahogany and Forest Red Gum stands, which occur within those areas that will be protected as conservation lands under the proposal. The site has widespread *Allocasuarina* spp., which are the almost exclusive food tree species of Glossy Black-Cockatoos.

Hollow-bearing trees are widespread within the site's forest habitats, providing widespread roosting opportunities for hollow-dwelling Microchiropteran bats, and hollow-bearing trees of sufficient size to provide nesting opportunities for forest owls and Glossy Black-Cockatoos, the majority of which will be protected as conservation lands under the proposal.

Open woodlands trees of sufficient age and size provide nesting opportunities for estuarine birds of prey and there are foraging and nesting opportunities for Black Bitterns where the site's drainage lines enter Lake Macquarie.

Conservation & Development Outcomes

The Lower Hunter Region's vegetation is of bio-geographic significance as it supports a transition between the northern and southern plant and animal assemblages. This north-south link is not evident elsewhere in the Hunter Valley. The Region also forms an east-west migratory pathway and a drought refuge for inland species.

The preservation of large vegetated areas that are linked to other similar areas has been recognised as fundamentally important to achieving long term regional biodiversity outcomes in the Lower Hunter region. The two most valued of these areas in the Lower Hunter contain large land areas owned and controlled by Coal & Allied. Firstly, the green corridor that links the Watagans and Yengo National Parks with the coastal plains of the Tomago Sandbeds, Stockton Bight and Port Stephens. Secondly, the Wallarah Peninsula lands provide a regionally significant break between urban areas, and contain areas of high biodiversity, scenic amenity and heritage value.
The Coal & Allied lands to be dedicated form both large vegetated areas in their own right, and complete linkage of identified regional corridors in key areas.

In addition to their important strategic location in a wider landscape context, the conservation lands contain valuable biodiversity resources. They contain and will conserve a range of important vegetation communities, including areas of Endangered Ecological Communities (EEC) and other vegetation types that have been depleted in the region. Several threatened plant species have been recorded within the lands, including significant occurrences of *Tetratheca juncea* (Black-eyed Susan).

The diverse nature of both the landform settings, 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 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.

In summary, the Coal & Allied conservation dedications provide outcomes that contribute to meeting the Environmental Protection goals outlined in the Sustainability Criteria contained within the Lower Hunter Regional Strategy. Such includes:

- Outcomes consistent with the Lower Hunter Regional Conservation Plan;
- Maintains/improves areas of regionally significant biodiversity;Maintains environmental areas for air & water quality; and
- Protects areas of Aboriginal cultural heritage value and historical heritage value.

These outcomes:

- Conserve in perpetuity key strategic parcels of land that complete long sought after regional biodiversity conservation corridors and buffer areas;
- Provide large intact areas of conserved habitat that will function as regional biodiversity gene pools;
- Protect an important array of vegetation communities, flora and fauna species, and natural landscape assets, including threatened species and EEC's;
- Contribute significantly to the successful implementation of the Lower Hunter Regional Conservation Plan; and
- Achieve additional conservation benefits within the Development Estate via appropriate urban design and management practices, as described below.

CONCLUSION & RECOMMENDATIONS

The detailed studies undertaken herewith have confirmed that development of a small portion of the site as a whole will provide a mechanism for beneficial ecological outcomes within the proposed conservation lands for the vast majority of species and communities contained therein. The quantum of the Offset Lands, when viewed holistically with proximate existing and proposed conservation reserve areas, provides a robust long-term outcome for all species and communities. Furthermore, suitable actions are proposed to minimise potentially deleterious permanent and ongoing impacts to the conservation lands.

The field and desktop studies have recorded the following parameters of ecological significance within both the conservation lands and the Development Estate:

- native vegetation commensurate with those listed as EEC's;
- threatened flora species recorded within and adjacent to the proposed development;
- threatened fauna species recorded within and adjacent to the proposed development;
- habitat for threatened flora and fauna species known from within and adjacent to the proposed development; and
- other areas containing native vegetation with varying degrees of modification / degradation.

With these potential ecological issues noted, a series of recommendations have been generated in this report, to aid in the reduction of potential impacts associated with the proposal.

Given that measures have been taken to avoid ecological impacts and that where native vegetation may be affected, efforts have been made to avoid particularly sensitive areas where practical, it is considered unlikely that any significant impacts would occur upon threatened species, communities or populations. The large areas of conservation lands that have been set aside as part of the development provide sound ecological outcomes across the site. As a result of

conservation of these Offset Lands coupled with other large land parcel dedications in the locality, a large vegetation corridor will be created across the Wallarah Peninsula. These conservation lands will link three state conservation reserves of Lake Munmorah State Conservation Area, Lake Macquarie State Conservation Area and Wallarah National Park. This large tract of native vegetation will provide protected habitat for a wide variety of native flora and fauna.

Therefore, it has been concluded that the proposed development should not significantly impact upon threatened or regionally significant flora and fauna, ecological communities or populations. The implementation of operative environmental management practices should also ensure that the ecological impact of the project is minimised.

The following recommendations have been outlined to ensure that the ecological impact of the proposed Development Estate is minimised as far as possible.

- Foremost, the management of the development and conservation land interface is critical to ensure that no direct or indirect impacts occur in the short and long term on dedicated conservation lands. As such, appropriate management plans should be prepared and implemented within the development framework in consultation with the NSW NPWS.
- The minimum amount of clearing necessary to facilitate the development should take place as a general objective of the project, particularly within those areas that currently contain identified native vegetation communities. These areas have been described within this report. This is especially important within or near those areas identified as containing vegetation consistent with EEC's.
- It is recommended that both an *Angophora inopina* and a *Tetratheca juncea* management plan be prepared to ensure the conservation and long term survival of these two threatened species within both the retained areas of the Development Estate and the Conservation Lands.
- Mature and / or hollow-bearing trees should be retained wherever feasible within the development framework.
- Pre-clearing inspections should be undertaken by an ecologist in wooded areas where threatened fauna species have been recorded or are considered likely to occur. This is particularly important in areas where threatened fauna have been noted during recent surveys either breeding or nest-building.
- During the construction phase, for any tree removal within forested areas, and in particular where hollow-bearing trees may be removed, all works should be supervised by an ecologist to recover any native fauna that are potentially displaced. Furthermore, where such risks occur, site-specific ecological advice should be sought to minimise impacts during the entire process. A clearing protocol should be adopted for the removal of trees containing suitable habitat hollows as follows (***this is considered as a guideline only***, variations on the methods employed may be required to accommodate site specific factors):
  - » All hollow bearing trees are to be flagged by an ecologist prior to the commencement of works on site.

- » Underscrubbing of the entire site should be carried out by a 4x4 tractor with a slashing deck, this will minimise the establishment of degradation processes and leave a layer of mulch to aid in soil retention in the event of adverse weather. At this time felling of non habitat trees can take place, however a matrix of trees *must* be maintained to allow animal movement into the designated refuge area.
- » After a period of two weeks, clearing of habitat trees should commence. Clearing must be carried out moving from the fringe of the matrix towards the refuge area. Trees should be 'soft felled' and inspected immediately by an ecologist for displaced fauna. All trees must be left for a minimum of two nights prior to being moved to a stockpile, to allow resident fauna to vacate tree hollows.

Note: Clearing should ideally take place outside of the dominant breeding seasons of resident fauna, preferably during late Autumn and Winter.

- Species selection for future landscaping works and seed stock for revegetation should be limited to locally occurring native species to maintain local genetic diversity. This should include *Eucalyptus robusta* and other regionally significant species.
- Appropriate vegetation, habitat and bushfire management plans should be included under an overarching Environmental Management Plan.
- Where possible, earthworks (and certainly all works in the vicinity of drainage lines) should be undertaken during appropriate (i.e. dry) weather conditions. This will ensure that any potential erosion events will be intercepted and that downstream impacts are minimised within any of the drainage lines. This will help to maintain existing habitat characteristics for native fauna in those areas, including those for threatened species.
- Nutrient and sediment control devices should be erected pre-clearing and post-construction works in sensitive areas where degradation processes may be triggered such as areas adjacent to watercourses until suitable rehabilitation has occurred to maintain surface integrity. Furthermore, stockpiles should be subject to individual sediment and nutrient control devices.

Terms & Abbreviations

Abbreviation	Meaning
aff.	Affinity
CEEC	Critically Endangered Ecological Community
CMA	Catchment Management Authority
Coal & Allied	Coal & Allied Industries Ltd
Conservation OR Offset Lands	Land proposed for dedication to NSW Government
Development Estate	Proposed Development Lands
DBH	Diameter (centimetres) at Breast Height
DECCW	NSW Department of Environment, Climate Change and Water
DGEAR's	Director General's Environmental Assessment Requirements
DoP	NSW Department of Planning
EA	Environmental Assessment
EAR	Ecological Assessment Report
EEC	Endangered Ecological Community
EMP	Environmental Management Plan
EPA Act	*NSW Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
FM Act	NSW *Fisheries Management Act1994*
ha	hectare
HBOC	Hunter Bird Observers Club
Hwy	Highway
LGA	Local Government Area
LHCCREMS	Lower Hunter and Central Coast Regional Biodiversity Strategy(NPWS 2000; House 2003)
LHRCP	Lower Hunter Regional Conservation Plan
LHRS	Lower Hunter Regional Strategy
NPWS	NSW National Parks and Wildlife Service
NSWG	NSW Government
PFC	Projected Foliage Cover
RPS	RPS Australia East Pty Ltd
ROTAP	Rare or Threatened Australian Plants (Briggs & Leigh 1995) ROTAP Codes are as follows:- 2 = Geographic Range in Australia is less than 100 km R = Rare C = Conserved - = Reserved population unknown
SEPP 14	State Environmental Planning Policy 14 "Coastal wetlands"
SEPP 44	State Environmental Planning Policy 44 "Koala Habitat Protection"
Ssp. or subsp.	Subspecies
Sp	Singular Species
Spp	Multiple Species
SSS	State Significant Site
TSC Act	NSW *Threatened Species Conservation Act 1995*
Var.	Variety

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EPBC Act Approval

APPENDIX 7

Justification of EPBC Approval Consistency

1 Introduction

RPS Australia East Pty Ltd (RPS) has been commissioned by Coal & Allied Industries Limited (Coal & Allied) to undertake an *Ecological Assessment Report* (EAR) over land within Nords Wharf, for proposed development and conservation offsets as outlined within the Lower Hunter Regional Strategy. The proposal is to be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*. Due recognition and consideration of the *Threatened Species Conservation Act 1995* and the *Fisheries Management Act 1994* has been made throughout this assessment.

1.1 Background

Harper Somers O'Sullivan (2005) has previously undertaken Preliminary Vegetation Mapping over various holdings administered by Coal & Allied in the Lower Hunter Valley / Central Coast Region. This preliminary mapping was undertaken to provide a baseline dataset pertaining to the broad-scale distribution of ecological communities throughout the land holdings. This assessment was largely undertaken at a desktop level relying on aerial photography combined with existing regional mapping datasets and limited ground-truthing.

Between January 2007 – April 2010 ecological investigations were undertaken to inform the urban design and NSWG assessment process.

These investigations were intended to provide a brief assessment of the conservation status of previously delineated vegetation communities.

The report herewith builds on the existing dataset, and provides the necessary level of detailed information for the assessment of the proposals under relevant legislation.

1.2 Site Particulars

Locality – The site occurs on the Wallarah Peninsula on the south-eastern side of Lake Macquarie. The site encompasses lands owned by Coal & Allied, which occur to the south and east of the village of Nords Wharf.

LGA – Lake Macquarie City Council.

Title(s) – PART LOT 6 DP 746077, PART LOT 5 736170, PART LOT 12 DP 854197.

Area – The site is approximately 127ha of which 10.18ha is proposed for development and the remainder (116.6ha) will be dedicated as conservation lands to the NSW Government.

Zoning – Zone 7 (1) Conservation (Primary).

Boundaries – The site is bound to the east by the Pacific Highway and to the southwest by Lake Macquarie. In the northeast the land is bounded by the village of Nords Wharf and in the south by conservation lands.

Current Land Use – A small portion of the Development Estate is currently used as a Scout Camp with the remaining land vacant native vegetation. Outside of the Development Estate the site is largely represented by natural bushland communities.

Topography – The site is surrounded by low undulating hills, with the majority draining to the east into Lake Macquarie.

1.3 Description of the Proposal

It is proposed that the entire Coal & Allied owned Nords Wharf 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 development and conservation of the Coal & Allied land holdings, has been collectively classified into 'Southern Lands' and 'Northern Lands' (Refer to Figure 1-1.). The Southern Lands encompass the Catherine Hill Bay (Middle Camp), Nords Wharf and Gwandalan Development Estates and associated Conservation Estates. Refer to Figure 1-1, Figure 1-2 and Figure 1-3.

The Concept Plan for a residential subdivision of the Nords Wharf site will apply to the entire 127ha Nords Wharf site. The key parameters for the proposed development of the site are as follows:

- Dedication of 116.6ha 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 92% of the Nords Wharf site.
- Maximum dwelling yield of 90 dwellings over 10.18ha.
- Indicative development staging. Depending on market forces, it may be decided to release the lots in 3-4 stages of 25-30 lots each.
- The provision of associated infrastructure.
- Torrens title subdivision and boundary realignment of the Nords Wharf site.

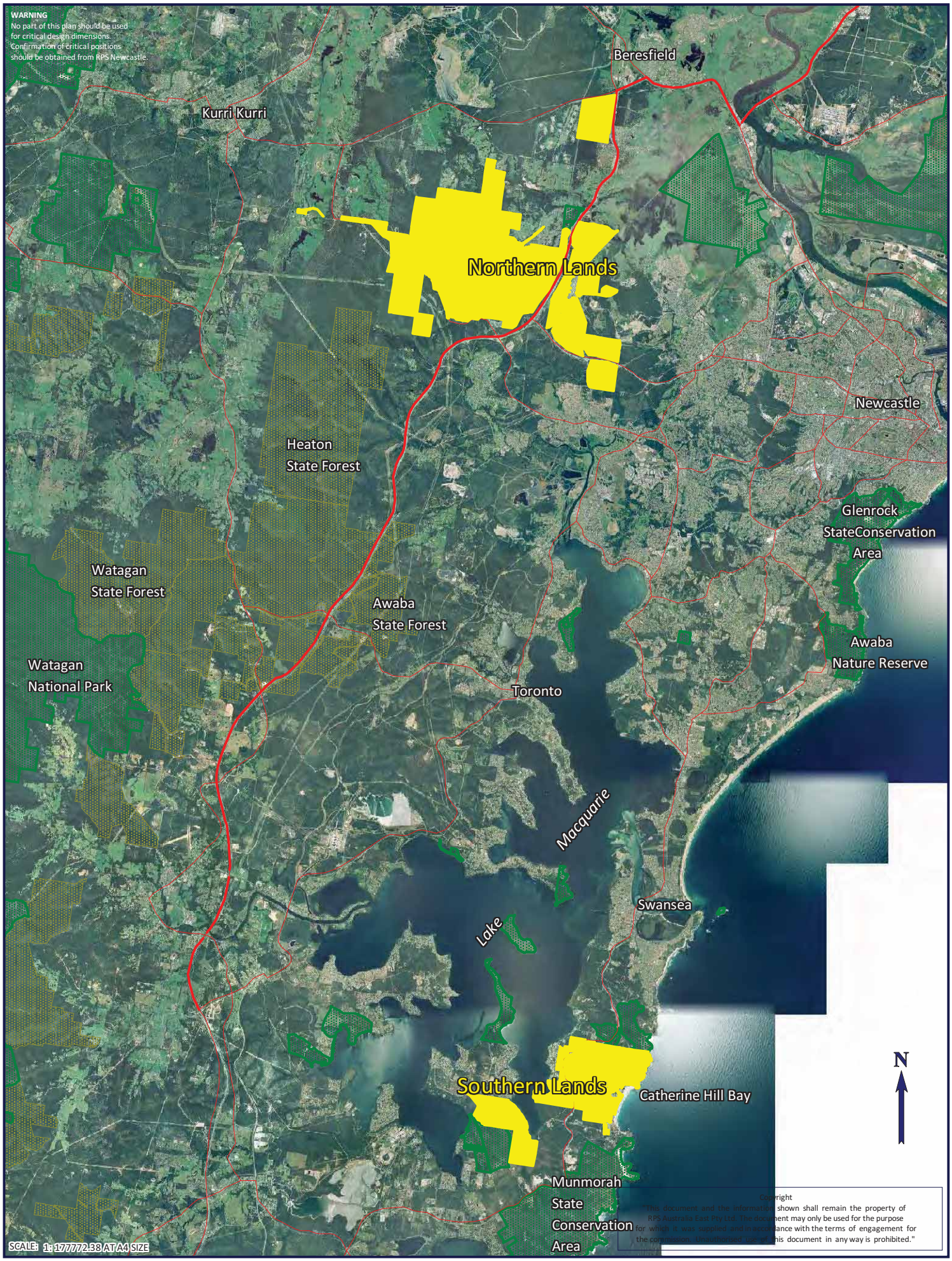
The Torrens title subdivision and boundary realignment of Coal & Allied land will enable land 116.6ha in area that is owned by Coal & Allied to be excised and dedicated to NSWG for conservation purposes.

Approval will not be sought under the Concept Plan for a specific lot or road layout. An indicative lot layout will indicate how the maximum dwelling yield of 90 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.

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). Notably the Conservation Estates are identified in the LHRCP prepared by the DECCW and make significant contributions toward meeting conservation goals indentified in the LHRCP. Refer to Figure 1-4.

A Concept Plan has been prepared for Minmi-Link Road which will enable key site parameters associated with land use, infrastructure delivery and timing, and environmental conservation to be resolved up front, with subsequent detailed stages being submitted for approval progressively. Refer to Figure 1-5 and Figure 1-6.



TITLE: FIGURE 1-1 C & A SURPLUS LANDS	LOCATION: HUNTER REGION	DATUM: DATUM PROJECTION: MGA ZONE 56 (GDA 94)	DATE: 8/3/2010 PURPOSE: EAR	LAYOUT REF: 24\DRAFTING\ECOLOGY\SOUTHERN LANDS\ALL WORKSPACES\2010 24530 FIG 1-1 SURPLUS LANDS VERSION (PLAN BY): A (A.P-M.D)	

CLIENT: COAL & ALLIED INDUSTRIES LTD
JOB REF: 24530

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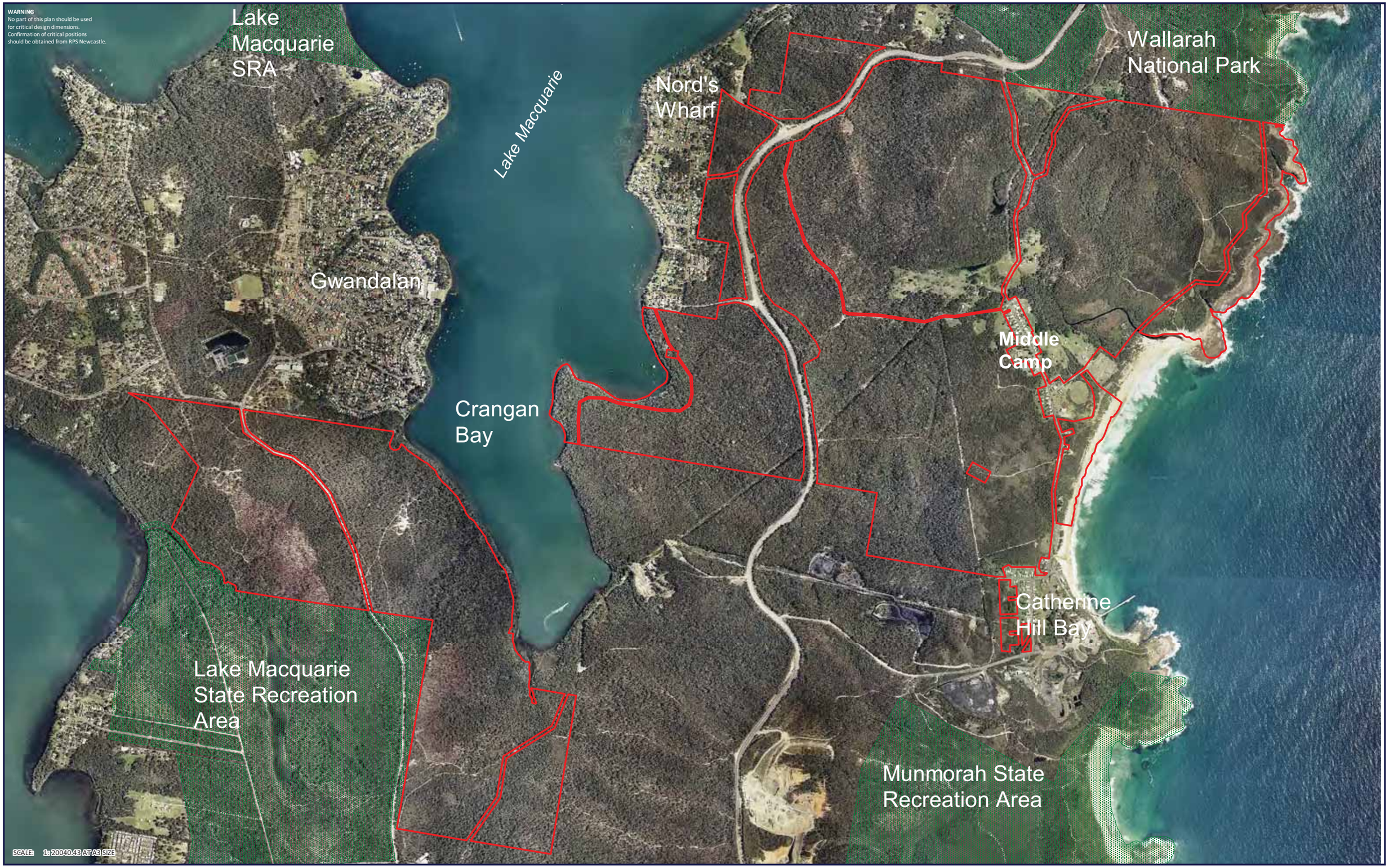

TITLE: FIGURE 1-2 SOUTHERN LANDS

LOCATION: SOUTHERN LAND HOLDINGS

DATUM: DATUM
PROJECTION: MGA ZONE 56 (GDA 94)

DATE: 10/3/2010
PURPOSE: EAR

J:\JOBS\24K\24530 HUNTER VALLEY\DRAFTING\ECOLOGY\SOUTHERN LANDS
LAYOUT REF: \ALL WORKSPACES\2010 NEW TEMPLATE WORKSPACES\FIG 3-1 STH LAND
VERSION (PLAN BY): A (A.P - M.D)

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TITLE: FIGURE 1-3 SITE LOCATION

LOCATION: NORDS WHARF

DATUM: DATUM
PROJECTION: MGA ZONE 56 (GDA 94)

DATE: 23/3/2010
PURPOSE: EAR

LAYOUT REF: 24530\DRAFTING\ECO\SOUTH\ALLWORK\2010\NORDS\FIG1-3 SITE LOC 2010
VERSION (PLAN BY): A (A.P-M.D)

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