Appendix A

Fauna Species List

Table 5 Fauna Species List

Family	Scientific Name	Common Name	Record
Avifauna			
Accipitridae	*Accipiter novaehollandiae*	Grey Goshawk	o
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea-eagle [+]	o
Accipitridae	*Haliastur sphenurus*	Whistling Kite	o
Anatidae	*Cygnus atratus*	Black Swan	o
Anatidae	*Chenonetta jubata*	Australian Wood Duck	o
Anatidae	*Anas platyrhynchos*	Mallard *	o
Anatidae	*Anas superciliosa*	Pacific Black Duck	o
Ardeidae	*Ardea ibis*	Cattle Egret	o
Ardeiadae	*Butorides striatus*	Nankeen Night Heron	o,w
Artamidae	*Gymnorhina tibicen*	Australian Magpie	o
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird	o
Cacatuidae	*Eolophus roseicapillus*	Galah	o
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	o
Charadriidae	*Vanellus miles*	Masked Lapwing	o, w
Cinclosomatidae	*Psophodes olivaceus*	Eastern Whipbird	w
Columbidae	*Streptopelia chinensis*	Spotted Turtledove *	o,w
Columbidae	*Ocyphaps lophotes*	Crested Pigeon	o,w

Family	Scientific Name	Common Name	Record
Corvidae	*Corvus coronoides*	Australian Raven	o
Cuculidae	*Scythrops novaehollandiae*	Channel-billed Cuckoo	o,w
Cuculidae	*Cacomantis flabelliformis*	Fan-tailed Cuckoo	w
Dicruridae	*Grallina cyanoleuca*	Magpie-lark	o
Dicruridae	*Rhipidua albiscapa*	Grey Fantail	o
Dicruridae	*Dicrurus bracteatus*	Spangled Drongo	o
Dicruridae	*Rhipidura leucophrys*	Willie Wagtail	o,w
Estrildidae	*Neochmia temporalis*	Red-browed Firetail	o
Falconidae	*Falco cenchroides*	Nankeen Kestrel	o
Halycyonidae	*Dacelo novaeguineae*	Laughing Kookaburra	o
Halcyonidae	*Todiramphus sanctus*	Sacred Kingfisher	o,w
Hirundinidae	*Hirundo neoxena*	Welcome Swallow	o
Maluridae	*Malurus cyaneus*	Superb Fairy-wren	o,w
Meliphagidae	*Philemon corniculatus*	Noisy Friarbird	o, w
Meliphagidae	*Acanthorhynchus tenuirostris*	Eastern Spinebill	o
Meliphagidae	*Anthochaera chrysoptera*	Little Wattlebird	o
Meliphagidae	*Lichenostomus chysops*	Yellow-faced Honeyeater	o,w
Meropidae	*Mreops ornatus*	Rainbow Bee Eater	w
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler	w
Pardalotidae	*Acanthiza pusilla*	Brown Thornbill	o,w

Family	Scientific Name	Common Name	Record
Pardalotidae	*Gerygone levigaster*	Mangrove Gerygone	w
Pardalotidae	*Pardalotus punctatus*	Spotted Pardalote	w
Pardalotidae	*Megalurus timoriensis*	Tawny Grassbird **	o,w
Pardalotidae	*Sericornis frontalis*	White-browed Scrubwren	o
Pardalotidae	*Gerygone olvacea*	White-throated Gerygone	w
Podargidae	*Podargus strigoides*	Tawny Frogmouth	o
Psittacidae	*Platycercus eximius*	Eastern Rosella	o, w
Rallidae	*Porphyrio porphyrio*	Purple Swamp Hen	o, w
Scolopacidae	*Gallinago hardwickii*	Latham's Snipe ** +	o
Threskiornithidae	*Threskiornis molucca*	Australian White Ibis	o
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis	o
Threskiornithidae	*Platalea flavipes*	Royal Spoonbill	o
Mammals			
Leporidae	*Oryctolagus cuniculus*	European Wild Rabbit *	o
Phascolarctidae	***Phascolarctus cinereus***	**Koala**	o, w
Phalangeridae	*Pseudocheirus peregrinus*	Common Ring-tail Possum	o
Macopodidae	Macropus giganteus	Eastern Grey Kangaroo	o

Family	Scientific Name	Common Name	Record
Reptiles			
Cheluidae		Freshwater turtle	s
Scincidae	*Tiliqua scincoides*	Common Blue-tongue	o
Amphibians			
Hylidae	*Litoria fallax*	Eastern Dwarf Tree Frog	w
Hylidae	*Litoria nasuta*	Rocket Frog	w
Hylidae	*Litoria peronii*	Peron's Tree Frog	o,w
Hylidae	*Litoria tyleri*	Tyler's Tree Frog	w
Myobatrachidae	***Crinia tinnula***	**Wallum Froglet**	o, w
Myobatrachidae	*Limnodynastes peronii*	Striped Marsh Frog	o, w
Myobatrachidae	*Crinia signifera*	Common Froglet	w
Myobatrachidae	*Uperoleia* sp.		w

w = heard; o = observed; s = shell, * = Introduced species, + = listed as Migratory under the EPBC Act, ** unconfirmed (possible) sighting

Species indicated in bold are listed under the NSW *Threatened Species Conservation Act 1995*

Appendix B

Performance Criteria for Rezoning Requests (PSC 2006)

Performance Criteria for Rezoning Requests

(Appendix 2 of Port Stephens Comprehensive Koala Plan of Management (PSC 2006))

These Performance Criteria for rezoning requests apply only to circumstances where a request is made of Council to rezone land. They do not apply to individual Development Applications. The performance criteria for development applications are contained in Appendices 4 & 5. Any activity that is currently allowed under an existing land use zone is not affected by the following performance criteria for Rezoning Requests.

Consideration is to be given to the following matters when assessing rezoning requests including any amendment to the Port Stephens LEP Prior to approving any such rezoning proposal, Council is to take into consideration the likely impacts of the development made possible by the rezoning including environmental impacts on both the natural and built environment, and social and economic impacts on the locality. In particular Council should be satisfied that the rezoning would:

1. Not result in development within areas of Preferred Koala Habitat or defined Habitat Buffers;
2. Allow for only low impact development within areas of Supplementary Koala Habitat and Habitat Linking Areas;
3. Minimise the removal of any individuals of preferred koala food trees, where ever they occur on the site; and
4. Not result in development which would sever koala movement across the site. This should include consideration of the need for maximising tree retention on the site generally and for minimising the likelihood of impediments to safe/unrestricted koala movement.

To facilitate the application of the above performance criteria when assessing rezoning proposals, Council's LEP Amendment Policy should be amended to include these performance criteria. The information required to support a rezoning proposal must include an investigation of the site by an appropriately qualified person in accordance with the Guidelines for Koala Habitat Assessment presented in Appendix 6 of this CKPoM.

Appendix C

Offsetting Principles

Offsetting Principles

(Appendix 1 of Draft Lower Hunter Regional Conservation Plan)

1. Impacts must be avoided first by using prevention and mitigation measures.

Offsets are then used to address remaining impacts.

This may include modifying the proposal to avoid areas of biodiversity value or putting in place measures to prevent offsite impacts. Clearing or development can only proceed where offsets (and conservation actions) improve or maintain biodiversity.

2. All regulatory requirements must be met.

Offsets cannot be used to satisfy approvals or assessments under other legislation, for example, assessment requirements for Aboriginal heritage sites, polluting activities or other environmental impacts unless specifically provided for by legislation, or additional approvals.

3. Offsets must never reward ongoing poor performance.

Offset schemes will not reward landholders who deliberately degrade or mismanage land in order to provide an offset. Offsets must not reward poorly designed developments.

4. Offsets will complement other government programs.

A range of tools are required to achieve the NSW Government's conservation objectives, including the establishment and management of new conservation areas, regional parks and incentives for private landholders to manage for conservation purposes.

5. Offsets must be underpinned by sound ecological principles.

- They must include the consideration of structure, function and compositional elements of biodiversity, including threatened species;
- They must enhance biodiversity at a range of scales, that is, at the genetic, species and ecosystem levels;
- They must consider conservation status of ecological communities; and
- They must ensure the long-term viability and functionality of biodiversity.

Biodiversity management actions, such as enhancement of existing habitat and securing and managing land of conservation value for biodiversity, can be suitable offsets. Reconstruction of ecological communities involves high risks and uncertainties and time delays for biodiversity outcomes. It is generally less preferable than other management strategies such as enhancing existing habitat.

6. Offsets should aim to result in a net improvement in biodiversity over time.

Enhancement of biodiversity in offset areas should be equal to or greater than the loss in biodiversity from the impact site.

Setting aside areas for biodiversity conservation without additional management or increased security is generally not sufficient to offset against the loss of biodiversity.

Factors to consider include protection of existing biodiversity, time-lag effects, and the uncertainties and risks associated with actions such as revegetation.

Offsets may include enhancing habitat, reconstructing habitat in strategic areas to link areas of conservation value, or increasing buffer zones around areas of conservation value.

7. Offsets must be enduring – they must offset the impact of the development for at least the period that the impact occurs.

All offsets must be secured by an appropriate legal mechanism. As impacts on biodiversity are likely to be permanent, the offset must also be permanent (secured by a conservation agreement or reservation and management for biodiversity). Wherever possible, offsets should be secured by a conservation agreement attached in perpetuity to the title of the land (eg. under s69 *National Parks & Wildlife Act 1974*). Where land is donated to a public authority or a private conservation organisation and managed as a biodiversity offset, it should be accompanied by resources for its management. If an appropriate legal mechanism to secure the offset is not possible, then the value of the offset will be reduced. Alternative mechanisms, such as land use planning zones, may be appropriate where they complement conservation agreements. However, such mechanisms alone do not necessarily provide long-term security. The security of the management agreement will be factored into the value of the offset.

8. Offsets should be agreed prior to the impact occurring.

Offsets should minimize ecological risks from time-lags. Offset negotiations and actions should occur prior to the approval of the impact. For example, prior to the grant of a development consent.

Where the offset involves rehabilitation or revegetation works it may be necessary to conduct this work well in advance of the development.

9. Offsets must be quantifiable – the impacts and benefits must be reliably estimated.

Offsets should be based on quantitative assessment of the loss in biodiversity from the clearing or other development and the gain in biodiversity from the offset. The methodology for calculating the biodiversity loss and gain must be based on the best available science, be reliable and used for calculating both the loss from the development and the gain from the offset (Note that a state-wide computer based tool will be developed for Biobanking based on the tools developed for the Native Vegetation Act 2003). The best available information/data should be used when assessing impacts of biodiversity loss and gains from offsets. Offsets will be of greater value where they protect land with high conservation values, where management actions have greater benefits for biodiversity, where the offset areas are not isolated or fragmented, and the management for biodiversity is in perpetuity (eg. secured through a conservation agreement). Management actions must be deliverable and enforceable.

10. Offsets must be targeted – they must offset impacts on a like-for-like or better basis.

Offsets should be targeted according to biodiversity priorities in the area, based on conservation status of ecological communities, presence of threatened species or their habitat, connectivity, and potential to enhance condition from management actions. Only ecological communities that are equal or greater in conservation significance to the type of ecological community lost should be used for offsets. One type of environmental benefit cannot be traded for another. For example, biodiversity offsets may also result in improvements in water quality or salinity but these benefits do not reduce the biodiversity offset requirements. However at a regional level it maybe ecologically of greater benefit to consolidate offsets by linking high conservation values across the landscape. This may involve offsets, which are spatially removed from the offset, or compromise different vegetation communities.

11. Offsets must be located appropriately – they must offset the impact in the same region.

Wherever possible, offsets should be located in areas that have the same or similar ecological characteristics as the area affected by the development, in reasonable proximity to the region impacted.

12. Offsets must be supplementary – they must be beyond existing requirements and not already be funded under another scheme.

An offset used in the past for another project cannot be used again to offset a new project. Areas that have received incentive funds from another process cannot be used for offsets. Existing protected areas on private land cannot be used for offsets unless additional security or management actions are implemented. Areas already managed by the government, for example national parks, flora reserves, nature reserves, karst conservation areas and crown reserves, cannot be used as offsets. In some cases, new management works on public lands could be used as an offset.

13. Offsets and their actions must be enforceable – through development consent conditions, licence conditions, conservation agreements or a contract.

Offsets must be audited to ensure that the actions have been carried out, and monitored to determine that the actions are leading to positive biodiversity outcomes.

GHD Pty Ltd ABN 39 008 488 373

352 King St Newcastle NSW 2300
PO Box 5403 Hunter Region Mail Centre NSW 2310
T: (02) 4979 9999 F: (02) 4979 9988 E: ntlmail@ghd.com.au

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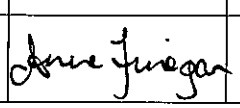
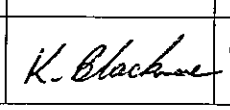
2	Radika Michniewicz	Anne Finegan		K Blackmore		01/02/07

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NSW Department of Planning

Airport Related Employment Zone Development Strategy - Stage 2

Traffic and Transport Input

February 2007

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

Contents

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1. Background

1.1 Introduction

The aim of this report is to provide a better understanding of the capabilities of transport network surrounding the selected site for the Airport/Defence Related Employment Zone, Williamtown (AREZ) and the site's potential access requirements. This investigation has been completed as a desktop and evaluates the network at a broad level using information obtained from background studies, existing State and Local Government data sources and information obtained during consultation with key stakeholders.

This investigation itself will form an input second stage (Stage 2: Land Use Capability/ Suitability Investigations Report) of a three stage assessment process for the site. The site chosen is situated on two main road links and next to Newcastle Airport and RAAF base. The proposed employment zone is likely to consist of light industrial and service industries that primarily function as supporting services to the Newcastle Airport and RAAF Base.

1.2 Outline of Assessment Process

This investigation will examine the following issues:

- Identify key issues associated with the operation of surrounding road network from a review of background reports, plans and strategies;
- Review current traffic levels, function and traffic arrangements on adjacent roads to the selected site;
- Project potential future traffic levels resulting from the proposed delivery of land use (using RTA's Guide to Traffic Generating Developments (2002)) on the preferred site;
- Provide a brief understand of the relationship between the development potential of the site and traffic generation;
- Identify the assumed catchment area and traffic distribution for the selected site;
- Access needs and opportunities offered under the existing road layout, this will include an understanding of the directional distribution of traffic, traffic levels and emergency vehicle requirements;
- Identify key crash trends that may influence the location of access points;
- Identify public transport service levels and potential to connect to the proposed site; and
- Undertake a broad level assessment of traffic operating conditions with and without the proposed development.

2. Review of Relevant Documents

Relevant sections of the following documents were reviewed in order to obtain an understanding of existing traffic conditions, strategic issues and future infrastructure commitments along key road links servicing the site.

2.1 Draft Lower Hunter Integrated Transport Strategy

The Draft Lower Hunter Integrated Transport Strategy was not complete at the time of compiling this report, however a summarised section of the proposed report relating to Newcastle Airport was made available to GHD. This section emphasised the strategic importance of the Newcastle Airport area to the region and the need to provide adequate transportation connections to the key transport corridor in the region. The document also mentioned the importance of the Pacific Highway and a connection to the site via Cabbage Tree / Tomago Road corridor.

2.2 Draft Port Stephens Community Settlement and Infrastructure Strategy

The Draft Port Stephens Community Settlement and Infrastructure Strategy was reviewed as part of the Stage 2 analysis. This strategy identifies that the Pacific Highway will be upgraded within 10 years and the potential for a Sydney to Newcastle fast rail link. The delivery of both transport infrastructure projects would further improve regional accessibility to Port Stephens from Maitland, Sydney and other sections of the Lower Hunter.

2.3 State Infrastructure Strategy, New South Wales 2006-07 to 2015-16

The State Infrastrucure Strategy (SIS) was reviewed as part of the Stage 2 analysis. Nelson Bay Road is included in the $110 billion strategy as a key strategic road link in the Hunter region.

2.4 Upgrading the Pacific Highway – F3 to Raymond Terrace Preferred Route Community Update

In August 2006, the RTA made a public announcement on the preferred route for the Pacific Highway upgrade from the F3 freeway to Raymond Terrace. The preferred route includes an option to provide a grade separated intersection (GSI), where the Pacific Highway intersects Tomago Road. This potential new interchange would provide a high quality road connection between the Pacific Highway and destinations beyond such as the Hunter Valley or Sydney and the RAAF Base Williamtown or Newcastle Airport. The development of this new interchange would provide significant accessibility benefit for the proposed AREZ selected site and other land uses situated along Tomago Road and Cabbage Tree Road.

2.5 Newcastle Airport Master Plan 2025 – Draft Report

The Newcastle Airport Master Plan 2025 Draft Report outlined plans for expansion of the Newcastle Airport facility. The report indicated that upgrading the intersection of Williamtown Drive and Nelson Bay Road is a current condition of consent for the improvements to the current car parking area situated in the Newcastle Airport grounds.

2.6 Consultation with the RTA

Consultation with the RTA indicated that the existing road network currently operates satisfactory. RTA plans indicate that there are no immediate plans to upgrade the road network other than Nelson Bay Road, which is a long term goal that aims to upgrade the entire length to a dual carriageway.

The RTA has also indicated that there is potential for the delivery of other future development along Tomago Road. This development may result in a need to upgrade Tomago Road and/ or Cabbage Tree Road and associated intersections. Details of these potential developments are not currently available.

3. Existing Road Network Condition

The following section outlines existing operating conditions on the road network surrounding the preferred site for AREZ.

3.1 Existing Site

The preferred Newcastle Airport Limited (NAL)/RAAF employment zone site is situated between Newcastle Airport (to the north), Nelson Bay Road (to the east) and Cabbage Tree Road (to the south). Refer to Figure 2 for an understanding of the proximity of the site and the surrounding road network.

3.2 Existing Road Network Characteristics

The existing road network servicing the preferred site for the AREZ is summarised below.

- Cabbage Tree Road / Tomago Road (MR 302):
  - Is an important road link running east west, connecting Nelson Bay Road at Williamtown to the Pacific Highway at Hexham;
  - The entire length of the route consists of two traffic lanes along single carriageway;
  - The signposted speed limit adjacent to the site is 60 km/h with a 40km/h school zone outside the Williamtown School. This speed limit changes to 90km/h approximately 900m west of the intersection with Nelson Bay Road;
  - The intersection with Nelson Bay Road is a two lane roundabout with an inscribed diameter of approximately 60m;
  - The road is known as Cabbage Tree Road to the east of the intersection with Masonite Road and Tomago Road to the west;
  - Tomago Road currently insects the Pacific Highway at a seagull type intersection; and
  - There is potential in the future to upgrade the above intersection to form a grade separated intersection with the proposed Pacific Highway, F3 Freeway to Raymond Terrace section (Preferred Route Announcement, August 2004).
- Nelson Bay Road (MR 108):
  - Is the major traffic corridor running north south, connecting Newcastle (to the south) and Nelson Bay or Port Stephens (to the north) via the Newcastle Airport and RAAF base; and
  - The majority of Nelson Bay Road is a two way, two lane undivided road with intermediary overtaking lanes along its length. Between the intersections of Cabbage Tree Road and Medowie Road, Nelson Bay Road is a four lane dual carriageway road;

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1:40,000
0 120240 480 720 960
Metres
Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

GRID N

LEGEND
- Study Area
- Investigation Zone
- Main Road
- Road

Spatial layers courtesy of Port Stephens Council

1 November 2006

Surrounding Road Network

Williamtown Employment Zone - Stage 2

Figure 1

- The signposted speed limit on Nelson Bay Road varies from 70km/h to 100km/h. Adjacent to the preferred site for the AREZ, the signposted speed limit is 80km/h; and
- The configuration of intersections in close vicinity to the preferred site for the AREZ consist of roundabouts at Fullerton Road, Cabbage Tree Road and Medowie Road and a seagull type intersection with Williamtown Drive.

- Medowie Road (MR 518):
  - Is a main road running north south between the town of Medowie and Williamstown or Newcastle Airport;
  - The road intersects Nelson Bay Road to the northeast of the preferred site for the AREZ;
  - Functions as the main access route for vehicles travelling to the RAAF and Newcastle Airport from the North Coast (via the Pacific Highway) and Raymond Terrace (via Richardson Road); and
  - Is a two lane, single carriageway road with a posted speed limit of 80km/h.
- Richardson Road:
  - Provides an access route between Raymond Terrace (to the north) and Medowie, Port Stephens and Newcastle Airport;
  - The road intersects with Medowie Road approximately 4km north of the preferred site for the AREZ;
  - Intersects with the Pacific Highway east of Raymond Terrace; and
  - Is a two lane, single carriageway road.
- Williamtown Drive:
  - Is the main access road to Newcastle Airport;
  - Is configured as a dual carriageway with one traffic lane in each direction; and
  - Is the minor approach to the intersection with Nelson Bay Road and is controlled under stop sign controls.
- Sanderson Drive:
  - Forms a secondary access point to the rest of Newcastle Airport via Slades Road in a low traffic environment; and
  - Has left in, left out type access arrangement with Nelson Bay Road.

3.3 Traffic Data

3.3.1 Average Annual Daily Traffic Volumes (AADT)

The following table provides an understanding of current daily traffic volumes on key roads on the road networking servicing the Newcastle Airport. All of the roads identified in Table 1 could potentially be impacted by traffic generated by the proposed location of the AREZ.

Table 1 Average Annual Daily Traffic Volumes (AADT) from RTA

Station	Location	1995[1]	1998[1]	2001[1]	2004[1]	2005[2]
05.191	Nelson Bay Road (MR 108) 0.2km North of Cabbage Tree Road	13364	14893	15401	17174	19665
05.592	Cabbage Tree Road (MR 302), West of Nelson Bay Road	4004	4547	4591	5612	5279
05.590	Tomago Road (MR 302), East of Pacific Highway	7360	8147	8323	9343	9524
05.650	Medowie Road (MR 518), North of Nelson Bay Road	5407	5669	6123	6929	6998
05.648	Richardson Road (MR 104), West of Medowie Road	5965	5456	7160	8475	8252

1. Source: Roads and Traffic Authority, Traffic Volume Data for Hunter and Northern Regions (2004)
2. Source: Port Stephens Council, Draft Port Stephens Community Settlement and Infrastructure Strategy (2006)

AADT Volumes from the Roads and Traffic Authority Publication *Traffic Volume Data for Hunter and Northern Regions (2004)* was used to calculate the historical growth of the network. The average annual historical traffic growth for each road surrounding the preferred site for the AREZ is shown in the table below.

Table 2 Assumed Traffic Growth along the Surrounding Road Network

Road	Historical Period Analysed	Annual Growth (linear)
Nelson Bay Road	18 years	3.3% per annum
Cabbage Tree Road	16 years	6.1% per annum
Tomago Road	16 years	4.7% per annum
Medowie Road	12 years	1.7% per annum
Richardson Road	12 years	2.2% per annum

3.4 Assessment of Existing Road Network Operation

3.4.1 Rural Road Mid-Block Performance Criteria

In order to enumerate the proportion of existing road space actually used by traffic flows, the nominal capacity of each road segment needs to be determined. The desirable maximum capacity of each road section is determined from *Austroads Guide to Traffic Engineering Practice, Part 2 - Roadway Capacity.* Both Level of Service (LoS) and the Volume to Capacity Ratio (V/C Ratio) are accepted measures for evaluating operating condition of roads and can be used to determine required road upgrades. In this report LoS is used to assess midblock capacity. The level of service ranges are described in Section 1.3.2 of *Austroads Guide to Traffic Engineering Practice, Part 2 - Roadway Capacity* which indicated that LoS A is good and LoS E and F are unsatisfactory.

This section assesses the existing condition of mid-block performance along the road network near the proposed site. The assessment is based on the traffic data presented in Table 1. The results of the mid-block analysis are shown in Table 3.

Table 3 Existing (2005) Mid-Block Operating Performance

Location	Peak Traffic Flow (one way flow)	LoS
Nelson Bay Road (MR 108) 0.2km North of Cabbage Tree Road	983	A
Nelson Bay Road (MR 108) South of Cabbage Tree Road	998	B
Cabbage Tree Road (MR 302), West of Nelson Bay Road	264	A
Tomago Road (MR 302), East of Pacific Highway	476	A
Medowie Road (MR 518), North of Nelson Bay Road	346	A
Richardson Road (MR 104), West of Medowie Road	413	A

The above results indicate that the majority of existing roads provide a level of service of A, which indicates that all roads are operating satisfactory with some spare capacity.

3.4.2 Intersection performance

As highlighted in Section 2.6, from the consultation with the RTA, all intersections identified to be within close vicinity to the preferred site for the AREZ, perform adequately with the exception of the intersection of Nelson Bay Road and Cabbage Tree Road.

A review of the Draft Traffic and Parking Study, conducted by Better Transport Futures (2006) and provided by Newcastle Airport Limited, indicated that under existing traffic conditions, vehicles turning right out of Williamtown Drive in the PM peak period experience unacceptable delays (LoS F).

Subsequently, the RTA have specified as a condition of consent for the car park upgrade development at the Airport that the intersection be upgraded from seagull stop sign control to a signalised intersection.

3.5 Existing Public Transport

The Private transport operator, Port Stephens Coaches, is the sole public transport company that services the Newcastle Airport. Port Stephens Coaches operate the services shown in Table 4, seven days a week. The frequency of peak services from Monday to Friday in the peak periods are shown in Table 4.

Table 4 Existing Public Transport Services and Peak Frequencies

Port Stephens Coaches Bus Route	Number of Peak Services	
	7:30am to 9:30am	4:30pm to 6:30pm
Nelson Bay to Newcastle via Newcastle Airport	2	2
Newcastle to Nelson Bay via Newcastle Airport	2	2
Newcastle to Newcastle Airport	2	2
Newcastle Airport to Newcastle	2	2

These public transport services are complemented by the operation of shuttle bus services to key centres in Newcastle and the Central Coast, regular coach services to the North Coast, and local taxi services.

3.6 Crash Analysis

A review of RTA supplied crash data was undertaken for a 5 year period between January 2000 and December 2004. This review will be used to understand road safety concerns associated with the road network surrounding the AREZ site.

The road network analysed as part of this task was as follows:

- A 1km section of Cabbage Tree Road from the intersection with Nelson Bay Road to a point approximately 1km west of the intersection; and
- Nelson Bay Road from the intersection with Cabbage Tree Road to a point south of the intersection with Medowie Road.

The findings from this review indicated that over the 5 year period a total of 19 crashes were recorded, one (5%) of these involved a fatality and 8 crashes (42%) resulted in injuries.

The crash resulting in a fatality occurred at the intersection of Nelson Bay Road and Williamtown Drive. The crash involved a car turning right onto Nelson Bay Road colliding with a car travelling north on Nelson Bay Road and occurred at night after the peak period. Speed and fatigue were not recorded as factors influencing the fatal crash.

Of the crashes resulting in injuries, 4 (50%) occurred at the intersection with Nelson Bay Road and Williamtown Road and 2 (25%) occurred at the intersection of Nelson Bay Road and Cabbage Tree Road.

33% of all accidents occurred in the peak periods of 7:30am to 9:30am and 4:30pm to 6:30pm Monday to Friday.

The above results suggest that the safety of the intersection of Nelson Bay Road and Williamtown Road and Cabbage Tree Road and Nelson Bay Road should be reviewed with consideration to any future upgrades.

There were no recorded crashes in the vicinity of the proposed access options mentioned in Section 4.2.

4. Access and Function

The following section outlines the function of the Williamtown Employment Zone (AREZ) and access point options to the preferred site.

4.1 Site Function

As mentioned is Section 1.1, the proposed employment zone is likely to consist of light industrial and service industries that primarily function as supporting services to the Newcastle Airport and RAAF Base.

As mentioned in Section 3.1, the preferred site for the employment zone is bordered by Williamtown Drive in the north, Nelson Bay Road in the east, and Cabbage Tree Road in the south.

The access point (s) to the road network from the preferred site will need to have sufficient capacity to accommodate the potential traffic generated from industrial and commercial uses. The development potential of the preferred site is approximately 100 hectares (ha).

4.2 Potential Site Access

The following options have been identified and will be considered as site access options. Access Options 1 and 2 are shown on Figure 2.

4.2.1 Access Option 1 - Williamtown Drive

An access to the site from Williamtown Drive would provide the following benefits:

- No new intersection would be required onto the external road network; and
- Airport related companies would be able to access the Newcastle Airport facility without having to access the external road network.

As mentioned in Section 3.4.2, the intersection of Williamtown Drive and Nelson Bay Road has already been identified to be upgraded to a signalised intersection as part of identified improvements to the Airport. This upgrade should take into account the potential additional traffic generation from the new employment zone.

The Development Application phase of the project should assess the capacity needs and staging requirements associated with the proposed development.

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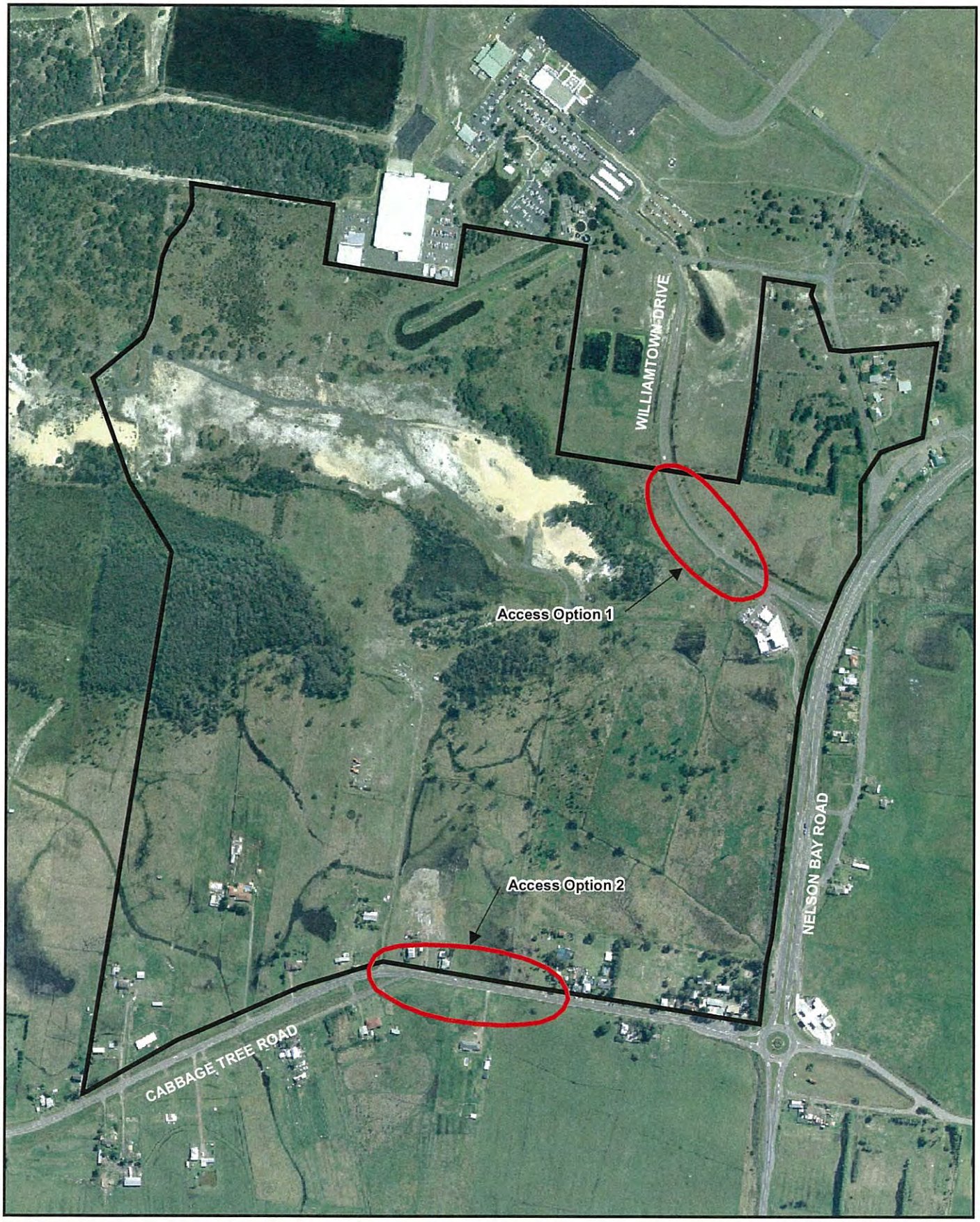

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Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geodetic Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

GRID N

LEGEND

- Investigation Zone
- Site Access Options

Spatial layers courtesy of Port Stephens Council

1 November 2006

Site Access Options

Williamtown Employment Zone - Stage 2

Figure 2

4.2.2 Access Option 2 - Cabbage Tree Road

Another option is to access the site from Cabbage Tree Road. This would involve the construction of a new intersection on Cabbage Tree Road approximately 500m from the intersection of Cabbage Tree Road and Nelson Bay Road. An access to the site from Cabbage Tree Road would provide the following benefits:

- Traffic volume increases along Nelson Bay Road as a result of the proposed development would be minimized, as vehicles traveling to and from the site via Tomago Road would not need to travel on Nelson Bay Road; and
- Potential to reduce the volume of traffic traveling through the intersection of Nelson Bay Road and Cabbage Tree Road, which has been highlighted in Section 6.2.2 as an intersection requiring upgrade.

4.2.3 Access Option 3 – Willamtown Drive and Cabbage Tree Road

Option 3 would include two accesses to the site. Vehicles traveling from the South would access the site via a new access on Cabbage Tree Road, while vehicles traveling from the North would access the site via Nelson Bay Road. The benefits of having two accesses include:

- Reduces impact at the intersections of Cabbage Tree Road with Nelson Bay Road and Nelson Bay Road with Williamtown Road, which have been identified as intersections with capacity concerns;
- Improves direct access arrangements to the site from all directions;
- Offers energy efficient savings;
- Minimises traffic growth along both Nelson Bay Road and Cabbage Tree Road;
- Reduces safety and capacity needs by not concentrating traffic at one intersection with the site;
- Can be utilized by pubic transport service routes and emergency services; and
- Provides a secondary emergency access route into the AREZ.

4.3 Staged Approach

A staged approach to the development could include the provision of access to the site from Williamtown Drive initially, with a central access corridor continued through to Cabbage Tree Road, in the medium to long term. This would allow developers to prioritise development of land in the short term to that, which is within close proximity to the Airport and other related services.

5. Background Traffic Information and Assumptions

The following section presents background information and assumptions to be used in order to understand the likely site operations. This assessment would be based on the traffic data obtained from the RTA and Port Stephens Council. The assessment includes an understanding of traffic growth along the network and traffic generation. The traffic generation has been based on the *RTA Guide to Traffic Generating Developments (2002)*

5.1 Trip generation rates

Traffic generation rates stated in Section 3.10.4 of the *RTA Publication Guide to Traffic Generating Developments (2002)* for Business Parks have been used for this assessment. The traffic generation rate for business parks is 1.1 vehicle two way movements per hour (peak hour) per 100m^2 of total gross leasable area.

Other assumptions applied to the analysis of future traffic volumes resulting from the introduction of industrial and commercial uses at the preferred site are as follows:

- The total area of gross leasable area was assumed to be 50% of the 100ha employment zone; and
- The peak hour vehicle trips are assumed to comprise of 10% of the Daily Vehicle trips.

Based on the above rates and assumptions, the likely traffic generation rates for the staged development of the AREZ is as follows:

Table 5 Traffic Generation Rate for Employment Zone

Area of Land Development (ha)	PVT (two-way)	Daily Trips (two-way)
25	1,375	13,750
50	2,750	27,500
75	4,125	41,250
100	5,500	55,000

5.2 Assumed Future Traffic Characteristics

- AADT heavy vehicle factor is assumed to be 10% of the total traffic flow along all roads impacted by the site (Source – RTA traffic survey on Nelson Bay Road, sited in "Newcastle Airport Limited, Traffic and Parking Study, Better Transport Futures (2006));
- Future traffic growth along the road network will be linear; and
- The traffic split is assumed to be 80/20 during the morning peak period, i.e. 80% incoming traffic and 20% outgoing traffic.

5.3 Assumed Site Traffic Distribution

The assumed traffic distribution during operation of the preferred site is as follows:

- 70% of vehicles would travel south to or from the site. This traffic would be distributed onto the network as follows:
  - 55% would travel along Nelson Bay Road to or from destinations around Newcastle; and
  - 15% would travel along Cabbage Tree/Tomago Road to and from destinations in the Hunter Valley, Central Coast or Sydney.
- 30% of Vehicles would travel north to or from the site. This traffic would be distributed onto the network as follows:
  - 10% would travel via Medowie Road to destinations around Medowie, the NSW North Coast or Raymond Terrace; and
  - 20% would travel via Nelson Bay Road to destinations in Port Stephens.

The above traffic distribution assumptions are based on the likely future worker profile for the proposed employment zone, and weighted towards the key catchments being situated in Newcastle and Lake Macquarie. The above assumptions have been used to calculate the performance of the network in the AM peak period.

6. Road Network Analysis

This section presents a broad level analysis of the operating conditions along the road network surrounding the AREZ. The assessment of road network conditions has been completed in the form of a midblock performance analysis and was undertaken in accordance with guidelines set out in the *Austroads Guide to Traffic Engineering Practice, Part 2 – Roadway Capacity, 1988.* This analysis is used to determine the ability of the current road network to convey the estimated traffic generation of the proposed employment zone.

The midblock analysis was undertaken for a Do Nothing scenario and a Development Scenario over a 20 year horizon. Only one access to the site from Williamtown Drive was assumed for the purpose of this assessment.

6.1 Midblock Scenario Testing

The assessment will comprise of the following midblock scenario assessments:

- ***'Do Nothing' Scenario*** - This assessment will estimate midblock operating conditions along the surrounding road network over a 20 year period without the development (estimated using traffic growth assumptions presented in section 3.3 and 2005 traffic counts obtained from Port Stephens Council).
- ***'With' Development Scenario Assessment -*** This assessment will estimate midblock operating conditions along the surrounding Road Network with the development. This assessment will be completed as a 50% of the 100ha development scenario after 10 years and 100% of the 100ha development scenario after 20 years (this is estimated using traffic levels presented in the '*Do Nothing'* Scenario plus proposed development traffic).

6.1.1 '*Do Nothing'* Scenario

The midblock performance of the road network surrounding the preferred site was based on traffic volumes presented in Table 1.

Table 6 presents the predicted increase in traffic without the development and uses historical traffic growth rates identified in Table 2.

Table 6 Current and Predicted Average Daily Traffic Volumes

Location	2005	2015	2025
Nelson Bay Road (MR 108) 0.2km North of Cabbage Tree Road	19,665	27,208	37,644
Cabbage Tree Road (MR 302), West of Nelson Bay Road	5,279	9,454	16,930
Tomago Road (MR 302), East of Pacific Highway	9,524	15,076	23,865
Medowie Road (MR 518), North of Nelson Bay Road	6,998	8,201	9,707
Richardson Road (MR 104), West of Medowie Road	8,252	10,258	12,752

Table 7 shows the predicted LoS for both the 10 and 20 year horizons under the '*Do Nothing'* scenario.

Table 7 Future Midblock Operating Performance – '*Do Nothing'* Scenario

Location	2015		2025	
	Traffic Flow Peak	LoS Peak	Traffic Flow Peak	LoS Peak
Nelson Bay Road (MR 108) 0.2km North of Cabbage Tree Road	1360	B	1882	C
Nelson Bay Road (MR 108) South of Cabbage Tree Road	1381	C	1911	D
Cabbage Tree Road (MR 302), West of Nelson Bay Road	473	A	847	B
Tomago Road (MR 302), East of Pacific Highway	754	A	1193	B
Medowie Road (MR 518), North of Nelson Bay Road	410	A	485	A
Richardson Road (MR 104), West of Medowie Road	513	A	638	A

It is evident from Table 7 that in most cases the midblock operation of the surrounding road network is satisfactory under the Do Nothing scenario. The only capacity constraint was identified to be Nelson Bay Road south of the intersection with Cabbage Tree Road, which operated at Level of Service of D in 2025 under its current configuration of one traffic lane in each direction.

6.1.2 '*With*' Development Scenario

The midblock performance of the road network surrounding the preferred site was based on traffic volumes presented in Table 1**.** The '*with'* development scenario is based on the traffic generation (50% and 100%) presented in Table 5 (site traffic generation potential), combined with the background traffic shown in Table 1 and the assumptions for traffic distribution presented in Section 5.3. Table 8 provides the operating performance of the surrounding road network under these conditions.

Table 8 Future Midblock Operating Performance – '*With'* Development Scenario

Location	2015 (50%)		2025 (100%)	
	Traffic Flow Peak	LoS Peak	Traffic Flow Peak	LoS Peak
Nelson Bay Road (MR 108) 0.2km North of Cabbage Tree Road	2900	E	4962	F
Nelson Bay Road (MR 108) South of Cabbage Tree Road	2591	F	4331	F
Cabbage Tree Road (MR 302), West of Nelson Bay Road	861	B	1507	C
Tomago Road (MR 302), East of Pacific Highway	1084	B	1853	D
Medowie Road (MR 518), North of Nelson Bay Road	630	A	925	B
Richardson Road (MR 104), West of Medowie Road	733	A	1078	B

It is evident from Table 7 that with exception to Tomago Road and Nelson Bay Road the midblock operation of the surrounding road network is satisfactory under the *'with'* development scenario with only one access to the network via Nelson Bay Road. Future network capacity concerns are highlighted as follows:

The dual carriageway section of Nelson Bay Road to the north of the intersection with Cabbage Tree Road, performs at a LoS E under the 50% *'with'* development scenario and LoS F in the 100% *'with'* development scenario. This would indicate that having one access point to the development may cause unstable traffic conditions on Nelson Bay Road north of Cabbage Tree Road and that an upgrade to this road section may need to occur with or without the introduction of an alternative access point.

The single carriageway section of Nelson Bay Road to the south of the intersection with Cabbage Tree Road, performs at LoS F under the 50% *'with'* development scenario and LoS F in the 100% *'with'* development scenario. This would indicate that the sections of Nelson Bay Road south of Cabbage Tree Road that are currently two way single carriageway roads, would require upgrading to a dual carriage way with two traffic lanes in each direction for both the 50% and 100% development scenarios.

Tomago Road performs at LoS B under the 50% *'with'* development scenario and LoS D in the 100% *'with'* development scenario. This would indicate that planning for the upgrade of Tomago Road should be considered for the 100% *'with'* development scenario.

6.2 Intersection Capacity

The capacity of intersection was not modeled for this assessment, however the likely performance of the intersection of Cabbage Tree Road and Nelson Bay Road and Nelson Bay Road and Williamtown Drive were reviewed.

6.2.1 Intersection of Nelson Bay Road and Williamtown Drive

As noted in Section 3.4.2, this intersection currently performs at a level of service of F for traffic turning right onto Nelson Bay Road from Williamtown Drive in the PM peak period. The projected traffic from the development would further increase the need for a signalized intersection. The number of turning lanes at the intersection, and phasing details would need to be determined in the development application phase of the project when more detailed information about the land uses and traffic generation at the site are known.

6.2.2 Intersection of Nelson Bay Road and Cabbage Tree Road

A review of the peak traffic forecast for Nelson Bay Road in the 100% development scenario would indicate that the existing 2 lane roundabout treatment at this intersection would not perform satisfactorily. Figure 3.3 in the Austroads publication *Guide to Traffic Engineering Practice – Part 6 Roundabouts (1993)*, indicates that the maximum entry flow for a three lane roundabout is 2500 vehicles per hour. The calculated peak flow of close to 5000 vehicles per hour would require a signalized intersection treatment.

The number of turning lanes at the intersection, and phasing details would need to be determined in the development application phase of the project when more detailed information about the land uses and traffic generation at the site are known.

6.2.3 Other Key Intersections on the Road Network

Other notable intersections to be affected by the development include the roundabout intersection of Medowie Road and Nelson Bay Road and the seagull intersection of Tomago Road and the Pacific Highway. An option to develop a grade separated intersection at Tomago Road announced as part of the Preferred Route Phase of the F3 to Raymond Terrace Pacific Highway Upgrade project would benefit the Williamtown Employment Zone and proposed developments on Tomago Road.

6.3 Summary of Potential Infrastructure Upgrades

The potential Infrastructure upgrades summarised below are based on the traffic generation (50% and 100%) presented in Table 5 (site traffic generation potential), combined with the background traffic shown in Table 1 and the assumptions for traffic distribution presented in Section 5.3. The potential infrastructure upgrades are:

- Upgrading Nelson Bay Road south of Cabbage Tree Road to a four lane dual carriage way road and provision of a four lane dual carriage way road from Newcastle to the AREZ for the 50% upgrade scenario;
- Inclusion of a new intersection on Cabbage Tree Road to service the AREZ;
- Upgrade of the intersection of Nelson Bay Road and Williamtown Drive to a signalised intersection;
- Upgrading of Tomago Road for the 100% upgrade scenario; and
- Upgrading of the intersection of Tomago Road and the Pacific Highway.

The degree of upgrading necessary to the above road corridors and intersections would need to be determined in the development application phase of the project when more detailed information about the land uses and traffic generation at the site are known.

7. Summary of Findings

This section provides a summary of the findings from a broad level desktop review of capability of the transport network surrounding the selected AREZ site and potential access options.

- The Draft Lower Hunter Integrated Transport Strategy highlighted the strategic importance of the Newcastle Airport area to the region and the need to provide adequate transportation connections to the key transport corridor in the region;
- The Draft Port Stephens Community Settlement and Infrastructure Strategy identifies that the Pacific Highway will be upgraded within 10 years;
- The preferred route for Pacific Highway Upgrade between the F3 and Raymond Terrace identifies an option to provide a grade separated intersection at Tomago Road;
- The Newcastle Airport Master Plan 2025 Draft Report identified that the upgrade of the Williamtown Drive and Nelson Bay Road intersection is a current condition of consent for the improvements to the car parking area situated in the Newcastle Airport grounds;
- The midblock analysis of peak periods in 2005 indicates that the road network currently performs satisfactory;
- Existing public transport services provide regular services to the Newcastle airport from Nelson Bay and Newcastle with two morning and two afternoon peak hour service to each destination;
- One fatal crash has occurred at the intersection of Nelson Bay Road and Williamtown drive in the five year period between January 2000 and December 2004;
- No crashes were recorded in the vicinity of either of the two proposed access points (refer to Section 4.2 for access options) in the five year period between January 2000 and December 2004;
- Access Option 3 (includes two access points, one along Williamtown Drive and the other on Cabbage Tree Road) offers capacity, accessibility, alternative and emergency service benefits above that offered under the single access options;
- The midblock operation of the surrounding road network is satisfactory under the do nothing scenario with exception of Nelson Bay Road south of the AREZ. This road link will require some level of upgrade in future under the assumed background traffic conditions;
- The dual carriageway section of Nelson Bay Road to the north of Cabbage Tree road does not operate satisfactory under the 50% and 100% '*with'* development scenarios and consideration should be given to upgrading this key road link;

- The single carriageway section of Nelson Bay Road to the south of Cabbage Tree Road does not operate satisfactory under the 50% and 100% '*with'* development scenarios and consideration should be given to upgrading this key road link;
- The midblock operation of Tomago Road (LoS D) in the 100% *'with'* development scenario, indicates that planning for the upgrade of Tomago Road should be considered; and
- The existing intersection configurations on the surrounding road network would need to be assessed and reconfigured prior to development of the AREZ.

8. References

Austroads (1988), *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity"*

Austroads (1993), "*Guide to Traffic Engineering Practice, Part 6: Roundabouts"*

Better Transport Futures (2006), "*Newcastle Airport Limited, Draft Traffic and Parking Study"*

NSW Treasury (2006), "*State Infrastructure Strategy, New South Wales 2006-07 to 2015-16"*

Port Stephens Council (2006), "*Draft Port Stephens Community Settlement and Infrastructure Strategy"*

Roads and Traffic Authority of NSW (2002), "*Guide to Traffic Generating Developments"*

Roads and Traffic Authority of NSW (2004), "*Traffic Volume Data for Hunter and Northern Regions"*

Roads and Traffic Authority of NSW (2006), *"Upgrading the Pacific Highway – F3 to Raymond Terrace Preferred Route Community Update"*

Airbiz (2006), *Newcastle Airport Master Plan 2025 - Draft Report*

GHD Pty Ltd ABN 39 008 488 373

352 King St Newcastle NSW 2300
PO Box 5403 Hunter Region Mail Centre NSW 2310
T: (02) 4979 9999 F: (02) 4979 9988 E: ntlmail@ghd.com.au

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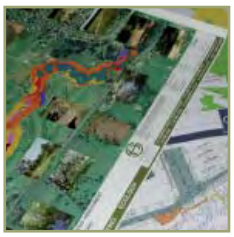
		Name	Signature	Name	Signature	Date
0	D O'Shaughnessy	G Hughes	for K. Blackmore	K. Blackmore	K. Blackmore	13/3/07



Cultural Heritage Assessment

for the Defence Airport
Related Employment Zone
(DAREZ)
over various allotments
at
Williamtown Drive
Williamtown NSW

Prepared for
Hunter Land Pty Ltd
PO Box 42
Thornton NSW 2322

Job Reference 23701 - August 2007

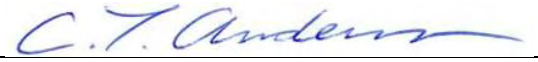
HARPER SOMERS O'SULLIVAN
PLANNING › SURVEYING › ECOLOGY
A member of RPS Group Plc

HARPER SOMERS O'SULLIVAN

PLANNING • SURVEYING • ECOLOGY

A member of RPS Group Plc

Prepared By:
RPS Harper Somers O'Sullivan
PO Box 428
Hamilton NSW 2303
Tel: (02) 4961 6500
Fax: (02) 4961 6794
Web: www.rsphso.com.au

PROJECT: CULTURAL HERITAGE ASSESSMENT FOR PROPOSED REZONING FOR THE DAREZ	
CLIENT:	HUNTER LAND PTY LTD
OUR REF.	23701
DATE:	AUGUST 2007
APPROVED BY:	NICOLE Y DAVIS
SIGNATURE:	
CHECKED BY:	CRAIG ANDERSON
SIGNATURE:	

EXECUTIVE SUMMARY

RPS Harper Somers O'Sullivan (RPS HSO) has been engaged by Hunter Land Pty Ltd to undertake a cultural heritage assessment to inform a rezoning and subsequent industrial development over land on Lots 10 & 11 DP 1036501, and Part Lots 131 & 132 DP 609165, with frontage to Williamtown Drive, Cabbage Tree Road and Nelson Bay Road, Williamtown (hereafter referred to as the '*subject area*').

The subject area is a part of a larger industrial expansion investigation area that has been initiated by the NSW Department of Planning, and has been assessed as being strategically important for regional growth within the Lower Hunter Regional Strategy. The subject area forms a part of a proposed defence related airport business park expansion, which is seen as vital to support and service Newcastle Airport's growth. Regionally, there is a demonstrated need for industrial support zones around the current airport complex. The subject area has previously been subject to sand mining activities.

In accordance with DECC Guidelines, advertising in local newspapers resulted in responses being received from Worimi Local Aboriginal Land Council (WLALC) and Mur-roo-ma Incorporated (MI). The Indigenous cultural heritage assessment subsequently occurred in partnership with WLALC and MI. Community consultation also occurred as part of the process. The assessment considers all possible impacts on Indigenous cultural heritage, the archaeological potential of the locality, and where appropriate develops management recommendations suitable to all stakeholders.

The non Indigenous cultural heritage assessment provides an outline of the general historical composition of the locality, defines the historical archaeological potential, and documents an anecdotal history of the site. The assessment where appropriate, develops management recommendations suitable to all stakeholders.

This assessment has been undertaken principally to identify any cultural heritage constraints that would require consideration as part of any land use planning proposals concerning the subject area. The assessment aims to recognise the relevant requirements of all applicable state and commonwealth legislation relating to cultural heritage management issues, and provide guiding recommendations accordingly.

The cultural heritage management considerations pertinent to the subject area relate primarily to a pre-recorded burial site and an associated campsite which is listed on the DECC AHIMS Database. It is considered by WLALC and MI a necessity that the known burial site remain intact. The probable location of the burial site was collectively agreed by all present at the site survey from a scientific, cultural and landform perspective. A Conservation Area / Keeping Place will need to be established around this location. The extent of the Conservation Area / Keeping Place has been identified in consultation with the relevant Indigenous stakeholders.

The recommendations of this assessment stem from a review of surveys, reports and documents that relate to Indigenous and non Indigenous cultural heritage of the subject area. The desktop review was followed by a ground survey and site inspection. The Indigenous cultural heritage of the region has been the subject of a number of reports and investigations with a focus on areas where the exposure of cultural heritage material has occurred as a result of previous land use, primarily sand mining. The Newcastle Bight region is known for its rich Indigenous cultural

heritage and spiritual significance to the Worimi people, having a diverse range of Aboriginal sites recorded.

The non Indigenous cultural heritage of this area is defined by the Hunter Regions economic development in terms of pastoral, agriculture and mining industries. No significant non Indigenous cultural heritage material was located during the survey of the subject area.

- *In relation to the Indigenous cultural heritage, it is considered permissible that the rezoning of the subject area proceed in accordance with the recommendations listed at the conclusion of this assessment. Key recommendations include the establishment of a Conservation Area / Keeping Place within the subject area.*

- *In relation to non Indigenous cultural heritage, it is not considered to be in the vicinity of any area designated as a heritage precinct for the conservation of historic cultural heritage or items of the Newcastle Bight Region. Therefore there are no impediments to the rezoning of the subject area proceeding on heritage grounds.*

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LIST OF APPENDICES

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1 INTRODUCTION

1.1 Overview

RPS Harper Somers O'Sullivan (RPS HSO) has been engaged by Hunter Land Pty Ltd to undertake a cultural heritage assessment to inform a proposed rezoning and subsequent industrial development over land situated south of Williamtown Airport. The land to which this specific proposal and assessment applies encompasses Lots 10 & 11 DP 1036501, and Part Lots 131 & 132 DP 609165. This land is hereafter referred to as the *'subject area'.* Refer to Figure 1-1.

This assessment aims to examine the likelihood of the proposal to have a significant effect on any cultural heritage sites that occur within and surrounding the proposed development. This cultural heritage assessment has been undertaken by Nicole Y Davis, (Archaeologist) in conjunction with Laraine Nelson (Senior Archaeologist) of RPS Harper Somers O'Sullivan (RPS HSO), and provides recommendations in relation to an assessment of both Indigenous and non-Indigenous cultural heritage of the subject area. The report considers the possible impacts this proposed development may have on cultural heritage, the archaeological potential of the subject area and where appropriate, develops management recommendations.

In accordance with DECC Guidelines, advertising in local newspapers resulted in responses being received from Worimi Local Aboriginal Land Council (WLALC) and Mur-roo-ma Incorporated (MI). The Indigenous cultural heritage assessment subsequently occurred in partnership with WLALC and MI. The assessment considers all possible impacts on Indigenous cultural heritage, the archaeological potential of the locality, and where appropriate develops management recommendations suitable to all stakeholders.

The non Indigenous cultural heritage assessment provides an outline of the general historical composition of the locality, defines the historical archaeological potential, and documents an anecdotal history of the site. The assessment where appropriate, develops management recommendations suitable to all stakeholders.

Hunter Land is the proponent of the proposed development, at Lots 10 & 11 DP 1036501, and Part Lots 131 & 132 DP 609165, located on Nelson Bay Road, Williamtown. The subject area is a part of a larger industrial expansion investigation area that has been initiated by the NSW Department of Planning, and has been assessed as being strategically important for regional growth within the Lower Hunter Regional Strategy. The subject area forms a part of a proposed defence related airport business park expansion, which is seen as vital to support and service Newcastle Airport's growth. Regionally, there is a demonstrated need for industrial support zones around the current airport complex. The subject area has previously been subject to sand mining activities.

WLALC and MI have articulated that it is paramount that it be identified by all those involved in the cultural heritage assessment process that the *landscape* itself is significant and that it plays a vital role in the spirituality of the Worimi people. They collectively require that they are a part of the ongoing cultural heritage assessment process at *all* stages of the development process.

The Newcastle Bight region is known for its rich Indigenous cultural heritage and spiritual significance to the Worimi people. Of primary concern is that a pre-recorded burial site and an associated campsite are probably located on the eastern sand

dune and are listed on the DECC AHIMS Database. It is considered by WLALC and MI a necessity that the known burial site remain intact.

1.2 Site Particulars

Locality Williamtown Drive, Cabbage Tree Road and Nelson Bay Road, Williamtown.

LGA Port Stephens.
Title(s) Lots 10 & 11 DP 1036501, and Part Lots 131 & 132 DP 609165.
Area 95ha (approx).
Zoning Currently zoned Rural 1(a).

Boundaries – Williamtown Airbase and NAL abuts the subject area to the north. The eastern boundary aligns with Nelson Bay Road with rural land extending beyond this. The southern boundaries abut Cabbage Tree Road along with rural land uses and an area of native vegetation within these rural properties. Land to the west contains remnant vegetation.

Current Land Use – The subject area is currently unused. Recent maintenance is evident across the subject area. Past anthropogenic practices within the subject area include sand mining and cattle grazing. Some remnant native vegetation is noted.

Topography and Drainage – Much of the site slopes are < 5% with elevation being less than 20m AHD. A small vegetated sand dune is situated toward the centre of the subject and the south western corner. Examination of pre-mining contour maps suggests that the remnant sand dune in the eastern end of the subject area was connected to the western dunes via a continuous sand dune. This connection has been totally removed by sand mining.

Drainage depressions and heath swamp areas are found across the subject area within the central section of the site abutting the northern and southern boundaries with no interconnection. A drainage channel extends from the southern swamp in a westerly direction. This drainage channel is often a depression with no defined low flow channel or banks.

Soils and Geology – The subject area is situated on the Tomago Sandbeds, which is derived from Holocene and Pleistocene Aeolian and marine sand deposits that stretch from Newcastle to Port Stephens. These deposits have been extensively reworked to form dune systems and sand sheets. These sand deposits consist of predominantly Quaternary sediments, including Aeolian and marine sand deposits and silt and clay deposits of interbarrier depression.

Matthei (1995) has mapped three soil types as occurring within the subject area. The northern portion of Lot 11 has been mapped as two Aeolian soil types of Tea Gardens and Shoal Bay. These sandy soils comprise of Humus podzols on poorly drained depressions, which occur within the lower elevations adjoining the swamps within the site. Podzol sands occur within the higher elevations within the site.

The southern portion of the subject area has been mapped as the estuarine soil landscape of Bobs Farm. This soil landscape comprises of poorly drained Humic Gleys and is located within broad interbarrier estuarine flats on the Tomago Coastal Plain. Within the subject area the soil landscape is located on the upper tributaries of

Tilligerry Creek. This Creek is located on the estuarine flats associated with Fullerton Cove.

Vegetation – The majority of the subject area contains pasture/ grassland with scattered trees. Open forest and woodland with an open understorey occur within the western area of the subject area and there is an isolated patch located within the northern area. The cleared areas exist as disturbed areas with high incursions of pasture weeds and no mid stratum. Drainage lines exist across the subject area with sedge and wetland species associated to these areas and other low lying areas frequently saturated during flooding. Weed species of note include Lantana and Bitou Bush.

1.3 Description of the Proposal

This assessment has been undertaken to identify possible heritage constraints that are likely to occur within the scope of a proposed rezoning and industrial development of the subject area. The subject area is currently zoned 1 (a) and is approximately 95 hectares. Due to being identified as being strategically important to development of the Lower Hunter an investigation of the area for industrial use is being examined by both NSW Department of Planning and Port Stephens Council (PSC). Hunter Land is proposing to develop the subject area which is a part of a larger industrial expansion, as a part of a proposed industrial airport complex expansion to support and service the Williamtown RAAF Base and Newcastle Airport's growth. Refer to Figure 1-1.

1.4 Scope of Assessment

The following cultural heritage assessment included:

- Liaison and partnership with Mr. Andrew Smith CEO, Worimi Local Aboriginal Land Council (WLALC) and Mr. Anthony Anderson, CEO Mur-roo-ma Incorporated (MI);

- In accordance with Interim Community Consultation Requirements for Applicants *(National Parks and Wildlife Act 1974)* advertisements were placed in local newspapers. Advertisements were placed in the Newcastle Herald and Port Stephens Examiner. Letters outlining the proposed development were forwarded to key stakeholders including WLALC, MI, the Registrar of Aboriginal Owners, Native Title Services, PSC and the Department of Environment & Climate Change (DECC);

- A review of all relevant documentation and statutory requirements with regard to Indigenous cultural heritage including DECC Aboriginal Heritage Information Management System (AHIMS) for known archaeological sites, the State Heritage Register, the Register of the National Estate, and the Register of the National Trust;

An investigation of regional and local environmental information to ascertain the probability of archaeological sites occurring, the type of site and the likelihood of disturbances that may have affected the integrity of potential sites was also undertaken.

1.5 Partnership

WLALC, MI, The Registrar of Aboriginal Owners, Native Title Services, PSC and *DECC* were contacted and advised of the proposed Cultural Heritage Assessment. Sites Officers from both WLALC and MI participated in the archaeological field survey on Tuesday 10th July 2007, and were provided with a Draft Cultural Heritage Assessment of the subject area to review and comment on prior to report finalisation.

1.6 Legislative Context

It is incumbent on any land manager to adhere to legislative requirements that protect both Indigenous and Non Indigenous Cultural Heritage in NSW. The relevant legislation is as follows:

Indigenous Cultural Heritage

NSW National Parks and Wildlife Act 1974, Amendment 2001 (NPW Act) Section 90. A person must not destroy, deface, damage or desecrate, or cause or permit the destruction, defacement, damage or desecration of, an Aboriginal object or Aboriginal place. The NPW Act provides statutory protection for all Aboriginal relics *(not being a handicraft made for sale)* with penalties levied for breaches of the Act.

Aboriginal Places (that may or may not contain archaeological material) are given protection under *Section 84* of the *NPW Act.* This is a place that, *in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture, to be an Aboriginal place for the purposes of this Act*.

Environmental Planning and Assessment Act 1979 (EP&A Act)
The Act regulates a system of environmental planning and assessment for New South Wales. Land use planning requires that environmental impacts are considered including the impact on cultural heritage and specifically Aboriginal heritage. Within the EP&A Act Parts III; IV; V relate to Aboriginal Heritage;

- Part III: regulates the preparation of planning policies and plans;
- Part IV: governs the manner in which consent authorities determine development applications and outlines those that require an environmental impact statement;
- Part V: Under this State government agencies that act as determining authorities for activities conducted by that agency or by authority from the agency are regulated. The National Parks and Wildlife Service is a Part V authority under the EP&A Act.

In brief, the *NPW Act* provides protection for Aboriginal objects or places while the *EP&A Act* ensures that Aboriginal cultural heritage is properly assessed in land use planning and development.

Other legislation of relevance to Aboriginal cultural heritage in NSW include: *NSW Heritage Act (1977)* and *NSW Local Government Act* and at the Federal level: *Aboriginal and Torres Strait Islander Heritage Protection Act (1984)* and *Australian Heritage Commission Act (1975).*

Non Indigenous Cultural Heritage

Non-Indigenous or post-contact Cultural Heritage is subject to:

- *Heritage Act, 1977 (NSW)*;
- *Environmental Planning and Assessment Act, 1979 (NSW)* and the
- Australian Government, the *Environment Protection and Biodiversity Conservation Act 1999*

An important feature of these Acts (and subsequent amendments) is the maintenance of a register of significant heritage items. The level of significance determines placement on the following:

- National Heritage List;
- State Heritage Register;
- Local Environment Plan (Schedule).

Further statutory heritage listings with effect in NSW include the Register of the National Estate, Commonwealth Heritage List (for Commonwealth owned properties); and the Heritage and Conservation Register (for State Government owned properties).

TITLE:
Figure 1-1 Site Location

CLIENT:
Hunter Land Pty Ltd

PLANNING SURVEYING ECOLOGY

HARPER SOMERS O'SULLIVAN

SCALE: 1: 50000 at A4 Size
DRAWN: S. Bishop
APPROVED: M. Doherty
DATUM: MGA Zone 56 (GDA 94)
DATE: 24/7/2007
LAYOUT REF: J:\JOBS\23k\23701 - Williamtown\MapInfo\Arch\23701 Figure 1 A-A4.wor
CONTOUR INTERVAL: N/A
JOB REF: 23701

241 DENISON STREET BROADMEADOW PO BOX 428 HAMILTON NSW 2303
T: 02 4961 6500 F: 02 4961 6794 E: survey@hso.com.au W:www.hso.com.au ABN 11 093 343 858

2 ENVIRONMENTAL CONTEXT

2.1 Introduction

The subject area is located about 10kms north of Newcastle NSW, and occurs on Tomago Sandbeds, a low Pleistocene coastal sandy barrier at Newcastle Bight. The regional landscape is defined by the coastal sand deposits of the Stockton Bight barrier system, which is the largest coastal barrier system within NSW. Sand deposits of marine estuarine and Aeolian origin extend over an area of 35kms by 15kms, from the Hunter River in the south to Birubi Point on the coast and Oyster Cove on the Shore of Port Stephens.

The Barrier system comprises two major units, the Inner Barrier being deposited some 120,000 years ago as a series of low, parallel beach ridges and the Outer Barrier, deposited from about 6,000 years ago, after the sea level reached its present position. Newcastle Bight is a coastal embayment with the area retaining a dual barrier dune system. The area, with the exception of the Newcastle suburb of Stockton, due to its inaccessibility was largely untouched until the mid twentieth century. This has resulted in large tracts of natural vegetation still occurring despite the intrusion of sand mining. According to an archaeological assessment conducted by Umwelt (2002, p. 2) at Duckhole Hill, Williamtown, both landscapes are considered of high archaeological significance and potential, with large numbers of Aboriginal sites known to occur.

2.2 Geomorphology

The Newcastle Bight is a coastal embayment continuing a dual barrier dune system. The geomorphology has three district features:

- The Inner Barrier - Pleistocene Age. Deposited approximately 120,000 years ago, as a series of low, coast parallel beach ridges, which have been reworked into numerous low progressive dunes approximately 17,000 years ago.
- The Outer Barrier - Holocene Age. Deposited approximately 6,000 years ago, after the sea level reached its present level.
- Interbarrier Depression. Formed from Holocene Aged estuarine sediments. (Koettig 1987, Pam Dean Jones 1992)

Williamtown locality is a part of the Outer Barrier which was initially formed between 6000 to 4500 years ago. This was followed by a series of three dune movements (transgressions) followed by periods of stability that formed the land surface of today. The first dune movement was between 4500 to 4000 years ago followed by one 2300 to 1200 years ago and the most recent that commenced 300 years ago and is ongoing. (Dean-Jones 1992)

See Figure 2.1 Geomorphology of the Newcastle Bight.

2.3 Waterways

The subject area lies amidst a variety of both estuarine and marine waterways, including lakes, rivers, swamps and the ocean, as well as being in the vicinity and drainage channel of Tilligery Creek. The subject area also contains several other draining lines, when eventually drain to the south west into Fullerton Cove. Listed below are the approximate distances that the subject area is away from the water source.

• Pacific Ocean	4kms	East
• Fullerton Cove / Hunter River	3kms	South/West
• Grahamstown Lake	4kms	North West
• Galloping Swamp	3kms	North
• Telegraph Swamp	4kms	North West
• Campvale Swamp	5kms	North
• Moffats Swamp	8kms	North East

2.4 Flora & Fauna

The following extracts have been taken from the ecological assessment undertaken on site by GHD (2007).

Flora
Based on broad scale vegetation mapping and onsite verification, four vegetation communities were identified under LHCCREMS (2003) vegetation mapping, there included:

- Coastal Sand Wallum Woodland/Heath
- Swamp Mahogany Paperbark Forest
- Tomago and Swamp Woodland
- Coastal Sand Apple - Blackbutt Forest

Of the four communities listed above, and based on the LHCCREMS mapping and information from PSC Comprehensive State of the Environment Report (2004), regarding which LHCCREMS map units are most likely to correspond with State and Commonwealth Endangered Ecological Communities (EEC's), one vegetation community mapped within the study area, Swamp Mahogany Paperbark Forest, may correspond to the EEC: "Swamp Sclerophyll Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions". In addition, an area identified as *Casuarina glauca* woodland is likely to represent a remnant area the EEC: "Swamp oak floodplain forest of the NSW North Coast, Sydney basin and South East Corner Bioregions". Both these communities are listed as Endangered Ecological Communities under the TSC Act. However a detailed survey would be required to quantify the extent of these two communities.

Fauna
Broad scale habitat and shelter assessment and onsite evidence of faunal activity showed that this area provides important habitat for a range of mammals including macropods, native rodents, bandicoots, insectivorous bats and small dasyurid marsupials. The Koala (*Phascolarctos cinereus*) was recorded calling within the

study area during this survey. The TSC Act lists the Hawks Nest population of Koala as threatened.

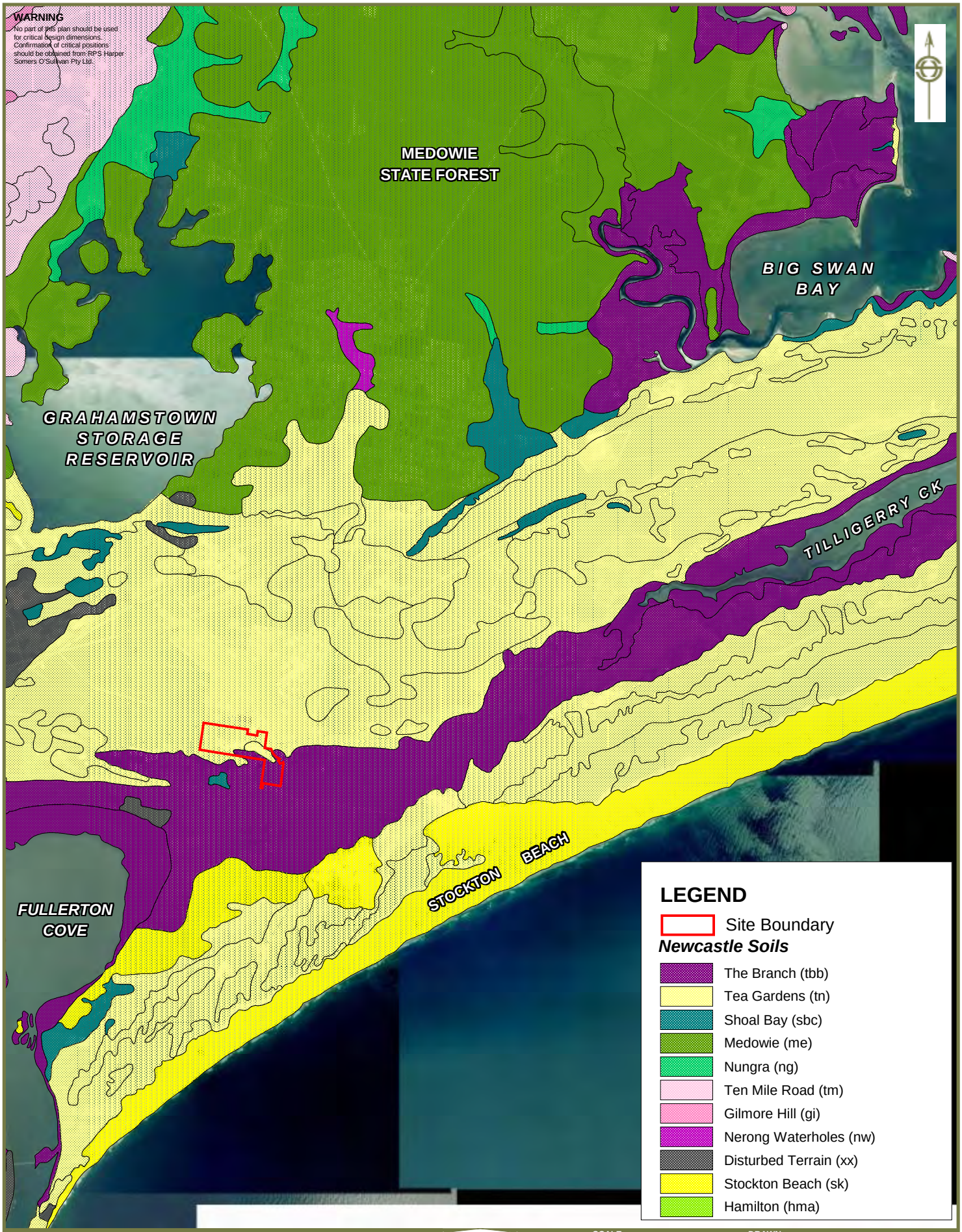
A number of birds were recorded within the study area including: Eastern Whipbird; Spangled Drongo; Eastern Spinebill; White-throated Gerygone; Red-browed Firetail and Black Swan. Based on the habitats recorded, the site evidently provides shelter, breeding and seasonal feeding for a range of other avifauna species that were not recorded during this survey. The ephemeral water bodies and swampy area may provide suitable habitat for a number of wader and wetland bird species.

Eight species of frogs were recorded including Wallum Froglet (*Crinia tinnula*), which is listed as Vulnerable under the TSC Act.

2.5 Land Use

The land use of the area is linked to the local topography, soil characteristics and the availability of water. In the flat inter barrier depression areas, European agriculture and associated grazing practices have occurred over large parts of the general area and present land uses include agriculture, horse and cattle grazing and a variety of hobby farms. On the higher dune areas located north east of the subject area, well drained soils facilitate vineyards, avocado farming, vegetable and wildflower production occur. Mining and quarrying has also been undertaken in various localities throughout the Newcastle Bight, with a number of mining leases still operating. The Newcastle Airport is located adjacent to the subject area, which further highlights the industrial and modified nature of the landscape generally.

Due to the diverse nature of land use activities in the area the archaeological integrity of the subject area cannot be assumed. McCardle (2003, ERM report for the Electricity Supply & Upgrade from Tomago to Tomaree) argues that the complex nature of clearing, grazing, agricultural, mining and residential and commercial ventures that have occurred may have contributed to contamination of archaeological material in the industrial areas of the Newcastle Bight Region.



TITLE:
Geomorphology of the Newcastle Blight

CLIENT:
HUNTER LAND PTY LTD

PLANNING SURVEYING ECOLOGY

SCALE: 1: 100000 at A4 Size
DRAWN: M. Doherty
APPROVED: M. Doherty
DATUM: MGA Zone 56 (GDA 94)
DATE: 26/7/2007
LAYOUT REF: J:\JOBS\23k\23701 - Williamtown\Mapinfo\Arch\23701 FIGURE 2-1 A-A4.wor
CONTOUR INTERVAL: N/A
JOB REF: 23701

HARPER SOMERS O'SULLIVAN
241 DENISON STREET BROADMEADOW PO BOX 428 HAMILTON NSW 2303
T: 02 4961 6500 F: 02 4961 6794 E: survey@hso.com.au W:www.hso.com.au ABN 11 093 343 858

3 ARCHAELOGICAL CONTENT

3.1 Archaeology of the region

Dyall (1979, 1982), Koettig (1987), Dean-Jones (1990, 1991), Baker (1994), Resource Planning (1991, 1992, 1996), Dallas (1999), Umwelt (2000, 2002) and ERM (2005) have all provided comprehensive studies of the region and locality, and the most relevant studies are outlined and assessed in terms of their proximity to the subject area.

The region described as Newcastle Bight is a coastal sand barrier boarded on the south by the Hunter River estuary and extending in the north to Port Stephens. The subject area is located about 10 kms north of Newcastle and is constructed on the Tomago Sandbeds, a Pleistocene coastal sand barrier at Newcastle Bight, the largest dual coastal barrier system within NSW. The archaeological resources of the Newcastle Bight Region are assessed as having a high regional and potentially national archaeological significance in terms of both site form and content and for the potential to clearly demonstrate the relationship between the archaeological evidence and the landscape. These landscapes are considered to be of high archaeological significance due to the numerous sites recorded for the area.

From a regional perspective there is a high potential for the Indigenous archaeological sites to be preserved in Pleistocene sand dunes, especially when located within the vicinity of wetlands and swamps. (Dean-Jones, 1991, p. 16) There have been several key studies undertaken in the Newcastle Bight Region. Two of the most significant studies were managed by Pam Dean-Jones (1990, & Resource Planning 1992) and highlighted the area as having considerable archaeological sensitivity. These results were reiterated in the Newcastle Bight Aboriginal Management Plan (Sullivan and Hibberd, 1994).

The (1990) Newcastle Bight Study undertaken by Dean-Jones provides a concept pattern for past Indigenous land use throughout the region. The report highlights that there would have been a wide range of environmental landscapes that would have facilitated Aboriginal populations to thrive due to the abundant resources. Sand dunes stabilized by open dry sclerophyll woodlands provided habitat for numerous fauna species that the Aboriginal people were able to exploit, while freshwater wetlands would have provided an abundant habitat for bird, animal and plant life. The rich resources of these habitats are reflected in the density of artefacts recorded during the Bight Survey. (Dean-Jones 1990).

The archaeological sites recorded by Dean-Jones (1990) in the areas adjacent to estuarine and marine resources are dominated by shellfish. The marine sites are predominately pipi (*Plebidonax deltoides*) along the Bight, while the Birubi Point middens reflect targeting of adjacent rock platform shellfish as well as pipi. The estuarine sites demonstrate shellfish availability after 4,500BP, reflecting a greater use of oyster and mud whelk (*Pyrazus ebenius*) than cockle (*Anadara trapezia*). The overall findings, though hampered by the differential loss of sites through deflation, obliteration or destruction, found that Aboriginal populations utilized the wide range of resources available across the entire region. (Dean-Jones 1990, 1992, and Baker 1994).

Generally, previous archaeological research of the region reveals that freshwater resources such as Galloping, Campvale and Moffats Swamp all located within 8 km of the subject area have been extensively utilised by Aboriginal people in the past.

Such freshwater wetlands would have provided excellent food and water resources for the Aboriginal population (Umwelt 2002). Such research is supported by the detection of numerous sub-surface artefacts at Galloping Swamp (3 kms away) and Moffats Swamp (8 kms away) (Baker 1994).

Resources Planning Pty Ltd (1992) conducted a survey led by Archaeologist Matthew Barber in an area approximately 8 kilometres to the south of the subject area. The western and central portions of the landscape exhibited similar characteristics to the subject site, and like it occupies a similar central position between the marine resources of Stockton Beach and the estuarine resources of Fullerton Cove. Barber (1992) examined and recorded results based on the different dune units, active transgressive dunes, low lying stabilized sand and swamp areas and stabilized transgressive dunes.

The low lying stabilized sand and swamp area lies between the beach front dunes and the stabilized transgressive dunes to the west of the site. With good supplies of fresh water and food resources, Barber (1992) assumed this would be a favoured environment and correspondingly located a series of small scattered middens, containing Pipi, close to waterholes. Barber assumed that the sites were much larger than the evidence exhibited and that further midden material was obscured by dune sand and vegetation. In conclusion, Barber considered all landform units archeologically sensitive with the complex of sites reflecting the targeting of a rich range of resources.

Dyall's (1982) detailed midden excavations and analysis at Burubi Point, (located at the junction of an ocean beach and rocky headland) at the northern end of Newcastle Bight yielded considerable information on the diversity of species targeted by the local Aboriginal populations. Of significance was the retrieval of large quantities of fish bones (23 species) that were identified with the assistance of the Australian Museum. Despite the site being primarily focused on marine resources, other food sources were also found: mammals (15 species); birds (12 species); and lizards (7 species). Shellfish were represented with species from both the beach and rocky headland.

Dyall (1982) also assessed artefacts found at the site that included shellfish hooks and a bone point. The site surprisingly returned only 3 recognizable stone artefacts despite the large quantities of stone excavated, the assumption being that this was a knapping site. The site also revealed a number of hearths and small elongated boulders set on end.

Dyall's earlier (1971) assessment, examined Newcastle area coastal sites at Swansea Heads, Redhead dunes, Murdering Gully, Birubi Point and Williamtown. These sites from Port Stephens in the north to Swansea in the south provide an overview of ocean, estuarine and freshwater wetland archaeological site types. Overall, Dyall (1971) delineated that the Aboriginal populations of the Port Stephens region had a preference for establishing camp sites with access to abundant food resources and freshwater. Dyall further identified that a greater concentration of campsites were to be found on sand dune ridges, although acknowledging that it may have been a result of differential site preservation of the locality.

3.2 Archaeology of the locality

A review of the archaeological context and previous reports of the Newcastle Bight locality was also completed as to develop a predictive model for the subject area under assessment. The locality is defined as being restricted to within a 5 km radius from the centre of the subject area.

The subject area falls within the Inner Barrier Pleistocene aged sand dune system. The Inner Barrier would have possessed a wealth of resources for Aboriginal people to exploit, which is likely to be reflected within the archaeological record.

Koettig (1987, p. 5) completed a report for sand extractions along Nelson Bay Road, which was located approximately 2km to the east of the present subject area. The report highlights that the estuarine and ocean resources would have been only 2.5km apart, which would have allowed for the Worimi people to readily harvest a wide range of terrestrial resources. Koettig (1987) surveyed this area, east of Nelson Bay Road, and located 10 sites and one isolated artefact. All sites were associated with dune ridges that were composed of varied dense shell scatters and artefacts. Estuarine shell fish dominated the deposits; although stone artefacts were located they were not constantly found with the shellfish material. Koettig (1987) further argues that artefact exposure may have been reduced due to ground surface modification.

This survey was conducted on the same area as the (2005) ERM and Dean-Jones reports discussed above. The survey was hampered by dense vegetation with surface visibility limited. 10 sites and one isolated artefact were located in areas were disturbance had revealed ground surfaces. Stone artefacts found were almost exclusively from Nobby's Tuff, while shellfish reflected targeting of estuarine rather than marine resources. The sites consisted of dense scatters of shell and artefacts and were consistently associated with the dune ridges.

Dean-Jones (1992, 1994) completed a report to support an application for rezoning, covering the same area as the (2005) ERM report utilizing shovel test excavations as well as surveying. The following relevant conclusions for the present locality were drawn:

- Archaeological evidence was concentrated on elevated ground though not necessarily the highest or the ridge crests;
- There is a relationship between site distribution and availability of fresh water with occupation evidence most common where elevated ground is separated by swamp forest wetlands;
- Shellfish species on the inner barrier reflect a targeting of estuarine species i.e. Mud whelk and oyster, and that;

There was no local stone sources suitable for flaking within the locality; materials for stone tool manufacture would have to have been sourced some distance away from Nobby's Head or Tomago.

3.3 DECC Aboriginal Management System

A search of the DECC AHIMS on the 28 March 2007 revealed 11 sites within a 5km radius from the centre of the subject area. It should be noted that all listed sites have

been previously recorded, some up to 54 years ago (as with Williamtown II 38-4-54) and the accuracy of the specific site locations relates to both the quality of recording and age of the initial assessment. Therefore, results are often an indication of potential site presence rather than a definitive site location.

Table 3.1 – Aboriginal Archaeological Sites – AHIMS Database

Site type	Number of sites
Traditional Burials	1/2
Open Camp Sites	9
Middens	2

3.4 Local Significance of AHIMS Results

Open Camp Sites dominate the AHIMS search results recorded within 5kms from the centre of the subject area.

Williamtown II (38-4-0053) is the only site possibly located within the subject area and it is a Burial / open campsite / midden complex. The site was initially recorded in 1942 when the airstrips were being constructed. Further recorded in 1975 as being present were pipi, oyster and med whelk, three used chert flakes, two flaking cores and twenty five waste flakes. Very little documented information is available.

Williamtown 1 (38-4-0340), an open artefact scatter (shell scatter), was recorded in 1993 by G.Hamm during the laying of the Telstra Fibre Optical Cable. The material was located in modern Holocene sand dunes in the Tomago sand mining area. Small shell fragments up to 1000 in number (including mud whelk, mud oyster, and Sydney rock oyster) were located as well as small to medium beach chert flakes.

Fullerton Cove RD 1 (38-4-0241), an open camp site also recorded by Dean-Jones (1990), was located on a low Holocene transgressive dune east of Fullerton Cove. Vegetation difference included the addition of casuarinas and blackbutt species being present. The ground scatter of shell was up to twenty pieces per square meter and estuarine shell and one flaked stone was recovered. Fullerton Cove RD 2 (38-4-0334) a midden site being composed of a sparse scatter of cockle, whelk and oyster material though no stone artefacts were located.

Six sites were recorded by Dean-Jones in her 1990 study of the area. Of note from the results is that five out of the six were open camp sites (Williamtown 1 38-4-0301, Williamtown 4 38-4-0303, MD4 38-4-0254, MD5 38-4-055, and MD 7 38-4-256). All were located on Pleistocene transgressive dunes in aeolian sands with Angophora / Banksia / Woodlands being the dominate vegetation present. The exception is Williamtown 2 (38-4-0302), which was a midden and open camp site located on a mid Holocene transgressive dune. All sites were located within 5kms of the subject area.

The two open camp sites recorded in the Medowie area, (approximately 8km north west of the subject area), MS1 (38-4-0614) and MS2 (38-4-0615), were recorded in an area previously surveyed by Dallas (1999), however they were revealed by subsequent earthworks and were recorded by Gay (2000). Both of the sites were located close to Moffats Swamp in wet heath forest on the Tomato Coastal Plain. MS1 contained 3 stone artefacts, 2 silcrete broken flakes and one mudstone flake piece, neither displaying retouch or usewear. MS2 contained three groups of stone

artefacts, two stone artefacts (one silcrete broken flake and one mudstone flake), approximately one hundred stone artefacts exposed in a bulldozed area, and one silcrete flake.

As eleven Aboriginal sites consisting of Burial/s, Open Camp Sites and Middens have been recorded within a 5km radius of the centre of the subject area and it is considered to be of *high local archaeological potential.*

Most of the middens and flaked stone artefact scatters recorded in the immediate area have usually been identified as a result of disturbance, most commonly associated with mining practices. Dean Jones (1992) and Baker (1993) argue that exploitation of the Tomago Sandbeds has driven the archaeological research of the immediate area, with a succession of mining leases over the past 20 years perpetuating the present flow of archaeological data.

3.5 Heritage Register Listings

The NSW Heritage Office State Heritage Register Database and the Australian Heritage Commission Register for the National Estate Database were searched for Aboriginal places. There are no additional Aboriginal sites listed near the study area.

3.6 Predictive model for the study area

Previous surveys of the Newcastle Bight region identified a range of site types that may be located in the subject area they include Traditional Burial Sites, Open Camp Sites or Stone artefacts scatters, Middens, Isolated Finds and Modified Trees

Traditional Burial Sites
The AHIMS search for the area listed two burials, one probably located within the subject area at Williamtown (38-4-0053), and the second in relatively close proximity to the subject site (38-4-0895). The spatial accuracy of the records is unknown; however, the supplied co-coordinates are only listed to the nearest 10m.

The ethnographic information specifically in relation to burial practices for the Newcastle Bight Region is required to establish key determining criteria in relation to the subject area and the pre-recorded burial site. McCardle (2003, pp. 12-13) reviews burial practices for the area, in which she argues that such practices were varied and may have been determined by the environment. The Worimi Cultural Heritage Mapping Plan seeks to delineate all sites, physical, mythological and spiritual, and elucidates the interrelatedness of all facets of Worimi cultural. Such oral testimony dictates that when a person passes away, the deceased were buried in localities that overlooked working areas or campsites. Burials also tend to be located under of near middens, as to bring the sprits to an area of feasting and gathering and for protection. Burial Sites are therefore most likely to occur within sand dunes overlooking campsites and/or middens, within close proximity to water resources and food supplies (personal. communication Anthony Anderson 10 June 2007).

Burial sites may occur as a range of types. The dead may have been cremated, or been placed in hollow trees, on ledges or buried, generally in soft sand or earth. A number of burials have also been found in soft sands in coastal areas, including Fingal Bay and Anna Bay, on coastal Port Stephens. Burials are found usually during excavation or erosion as there are rarely associated recognizable surface features. (Brayshaw, 1987).

Burial practices in the area appear to be varied, often dictated by the landscape. Anthony Anderson, MI, advises that Burials also often looked over 'spiritual places' (Pers. Comm. 10 July 2007) Koettig (1987) discussed two other burials (not included in the AHIMS results for the subject area) located in the area, one in a sand sheet covering bedrock in the Pleistocene sand barrier complex (38-5-34/43) and one in a Holocene dune (38-5-49). Indigenous burials are predominantly likely to occur in soft sediments, sand or alluvial silts, however, they may occur in middens, rock shelters and hollow trees. (Dallas, 1999, p. 16).

Traditional Burial Sites have been recorded in the sand bodies of the Port Stephens Region, often associated with shell middens or in non-acidic sand. Indigenous Burials occur specifically in the Pleistocene Sand Dunes of Williamtown locality. Ground burials are the most common form utilized by Aboriginal people in land settings such as Williamtown, hence there is a high probability for additional burial/s and / or associated material to occur on the dune ridges within the subject area.

Open campsites or stone artefact scatters
This common site type can range from a few stone flakes to a high density site with a complex range of artefact types. The simplest example may be evidence of a single occupation while a more artefact dense site can provide a record of an intensely used area. As with an isolated find, stone artefact scatters may indicate the visible evidence of a much larger site below the surface.

Open camp sites have a high probability of occurring within the Williamtown subject area. Locally significant recorded open camp sites include Richardson Road (Dean-Jones 1990), Galloping Swamp (Dean Jones 1991) and Moffats Swamp (Baker 1996). As all three swamps reflect a similar environment to the subject area, there is a high probability that additional open camp sites are located within the subject area.

Middens
Middens within the Newcastle Bight region dominate the general archaeological record. Middens are a concentration of artefactual debris that includes marine or freshwater shell. They usually contain the remains of an interim/base camp within the vicinity of a marine environment. Middens that have been recorded in the area indicate a connection between spring fed waterholes and elevated dunes on swamp boundaries. These middens often form a part of larger open camp sites that contain evidence of a greater diversity of resource exploitation. (Dallas, 1991, p.15).

Middens may be comprised solely of shellfish remains, or they may contain other cultural material such as stone artefacts, worked shell or faunal remains (Sullivan, 1982, 49-53). This site type is the most commonly found in the Newcastle Bight area in close proximity to either a marine and/or estuarine environment. A midden can vary from a simple site to a more complex site containing a shell, faunal remains and a range of artefacts. The simplest example may be evidence of a transitory use while more artefact dense sites provide a record of an intensively used area. It should also be noted that while surface evidence of a site may be scant it may be just an indication of a larger sub surface site.

Isolated finds
An individual stone artefact found without any obvious association to other artefacts. Isolated artefacts are a common find and may be the result of an accidental or intentional discard. Due to the high proportion of sites located in the area, it is reasonable to expect to locate isolated finds within the subject area.

Modified trees
Modified and Scarred Trees have been recorded within the Newcastle Bight Region generally. They are a result of bark being removed from trees for a specific purpose such as a shield, canoe or coolamon production. These are trees where bark has been removed to make a shelter, canoe, shield or other article. Notches were also carved in trees to permit easier climbing. Goddard (1934. 191-193) describes the Worimi people cutting the bark from *Avicennia officinalia* (Grey Mangrove) along Tirrigerry (sic) Creek to make shields. Carved trees with distinct patterns are easier to identify and often indicate the presence of a ceremonial or burial ground. Enright (1936. 85-88) discusses the *Keepara*, or initiation rites and the ceremonial ground of the Worimi where trees were carved with various symbols to represent the tribes that participated.

Despite such sites being recorded within the Port Stephens area (Nelson Bay and Corlette), these sites are located some 30kms away from the subject area, and the vegetation within the subject area tends to indicate that although potentially present, they are unlikely to remain intact within the subject area. As time progresses, these living / biodegradable features are steadily disappearing from the archaeological record.

Other site types
Sites such as axe grinding grooves, rock art and rock shelters can be discounted due to lack of stone outcrops in the survey area.

Archaeological site character specific to the locality
Dean-Jones (1991, pp.10-11) highlights that archaeological sites of the Pleistocene Barrier are usually characterized by high densities of stone flakes, but a lower shell content.

An exception relates to sites found on Pleistocene dunes that infringe on the current estuarine shoreline, where both estuarine (*Andara and Pyrazus*) and open ocean shell species (*Plebidonax*) are recorded.

The flaked stone assemblage is likely to be composed of a variety of raw material, pale cream / grey weathered tuff (including Nobby's Tuff) dominating previous sites, Shortland Tuff (crystalline), Quartz, Pink Cert and Grey Silcrete also potentially present. The types of flaked stone include flakes, flaked pieces, backed blades, cores and pebbles. Dean-Jones (1991, p.12) argues that archaeological sites that are most likely to occur in the archaeological record of the Pleistocene barrier will occur on:

- The crests or flanks of dunes; or
- Unmodified dunes.

Archaeological material will be located in the top 30-100cm of the dune, and raw materials are likely to be made up from stone obtained from across the entire Newcastle Bight embayment. Therefore, raw materials such as Nobby's Tuff are likely to occur and dominate the archaeological record within the subject area.

3.7 Non Indigenous Archaeology of the Locality

The non Indigenous cultural heritage of the Newcastle Bight Region is described as having an agricultural and / or industrial character. With the economy of the lower Hunter typically built around pastoralism and mining, especially cattle grazing

practices, and sand extraction, it is the cultural remains of these practices that are most likely to occur in the archaeological record.

Rural heritage encompasses those items which document pastoral development in NSW. Shearing sheds, barns, wool sheds, stables, outbuildings, stock yards, as well as wineries, residential buildings, homesteads, grave yards and associated complexes are examples of items that may need to be considered when assessing the proposed development site. Similarly, rural fences may also be of consideration the to subject area.

4 INDIGENOUS ARCHAEOLOGICAL FIELD SURVEY

4.1 Methodology

The subject area is approximately 95 hectares, and was readily accessible and able to be surveyed on foot. A day was set aside for the survey.

Four Survey Zones were designed prior to fieldwork to ensure all environmental landforms of the subject area were examined. Primary focus was on the areas of greatest exposure, namely the sand dunes, past mining area, access trails and land cleared of vegetation. The survey was to be carried out in order of the survey zones listed below. As the potential for artefact scatters and open camp sites to be located was relatively high, the focus was on erosional surfaces that provided the greatest delectability. Of particular importance to the survey was Survey Unit 3, given the burial record and the association evidence with the use of dunal systems.

4.2 Survey Strategy

The survey pattern was based on utilizing landform units. In keeping with the five morphological types of landform elements described by Speight (1984) (crest; slope; flat; open depression and closed depression) the landform elements surveyed can be classed as:

Survey Unit 1 — **Flat Zone – Cleared Managed Land (CML)**
Approximately 80% of the subject area
Main development zone, exposure will most likely be limited due to dense ground cover.

Survey Unit 2 — **Slope Zone** – on the sides of the remnant sand dunes located in the subject area. The slope fascias / depressions comprise a relatively small area, possibly only 5%, however they have the potential to yield archaeological material, due to visibility as a result of either natural erosion or human modification. Survey Unit 2 provided good exposure, however the integrity of any archaeological material located needed to be carefully assessed in relation to past land activities to ensure minimal site interference.

For example where sand mining has occurred in dunes, midden material may have been redeposited.

Survey Unit 3 **Crest Zone** – the dune ridge line or crest running along the top centre of the main sand dune. Such a location would have provided Aboriginal people with good views over the landscape, possibly an observation site overlooking local resources. It is agreed by the archaeologist and the participating Indigenous groups (WLALC & MI) that the pre-recorded burial site is most likely located within the main sand dune, possible facing east, overlooking the landscape.

Exposure varied greatly due to the age and intact nature of the sand dune, and the mature vegetation located upon the ridge line which has kept erosional processes and disturbance to a minimum. Exposed sand areas were targeted.

Survey Unit 4 **Open Depressions / Fresh Water Wetland Zone –** the freshwater wetland areas are located on floodplains and comprise a sizable component of the subject area. Visibility was limited due to dense ground cover associated with ground water and vegetation.

4.3 Survey

The survey was conducted on Tuesday 10 July 2007. The following participated in the survey;

- Nicole Y Davis, Archaeologist, RPS HSO;
- Craig Anderson, Project Manager & Director, RPS HSO;
- Jamie Merrick, Sites Officer, Worimi Local Aboriginal Land Council; and
- Anthony Anderson, CEO, Mur-Roo-Ma Incorporated.

See **Table 4-1 Survey Coverage**, which provides an estimate of the percentage of 'bare' ground area available for inspection of surface archaeological material, and see **Table 4-2 Survey Exposure and Visibility**, which records the factors that reduced ground visibility in some areas.

4.4 Analysis

The results of the field based survey were combined with a thorough desktop survey, local library search and an assessment of local anecdotal evidence from both local residents, neighbours and the Port Stephens Historical Society.

The site survey revealed an area that had been subject to agricultural use for some considerable time. More importantly the apparent re-working and clearing of the area through land modification for modern farming practices, sand mining activities and associated business ventures has reduced the potential for historical cultural heritage material to remain within the subject area.

4.5 Field Survey Results – Aboriginal and Historical

No additional evidence of Indigenous or Non Indigenous cultural heritage material was observed.

Table 4.1 – Survey Coverage

Survey Unit	Landform	Total area of survey unit in Sq. M.	Exposure	Area of exposure in Sq. M.	Visibility	Area available for detection in sq. M.	Landform unit available for site detection.
1 (a)	Flat	8000 sq. m	20%	1600 sq. m.	10%	16 sq. m	0.2%
1 (b)	Flat	8000 sq. m	60%	2800 sq. m.	50%	1400 sq. m	17.5%
1 (c)	Flat	8000 sq. m	80%	6400 sq. m	50%	3200 sq. m	40%
1 (d)	Flat	4000 sq. m	10%	400 sq. m.	5%	20 sq. m	0.5%
1 (e)	Flat	8000 sq. m	50%	4000 sq. m	2.5%	100 sq. m.	1.25%
1 (f)	Flat	8000 sq. m	15%	1200 sq. m.	5%	30 sq. m	0.375%
1 (g)	Flat	8000 sq. m	20%	1600 sq. m	10%	16 sq. m.	0.2%
2 (a)	Slope	4000 sq. m	95%	3800 sq. m	90%	3420 sq. m	85.5%

2 (b)	Slope	4000 sq. m	50%	2000 sq. m	25%	500 sq. m	12.5%
2 (c)	Slope	8000 sq. m	60%	4800 sq. m	40%	1920 sq. m	24%
2 (d)	Slope	40000 sq. m	95%	3800 sq. m	95%	3160 sq. m	90.25%
3	Crest	4000 sq. m	5%	200 sq. m.	2.5%	5 sq. m	0.125%
4 (a)	Open Depression	4000 sq. m	10%	400 sq. m	5%	20 sq. m	0.5%
4 (b)	Open Depression	4000 sq. m	15%	600 sq. m	5%	30 sq. m	0.75%

Table 4.2 – Survey Exposure and Visibility

Survey Unit	Vegetation	Ground Surface exposure	Ground Surface Visibility	Comments
1	Grasslands Cleared Managed Land Angophora Woodlands Banksia / Melaleuca Woodlands	Varied Average < 50%	Varied Moderate < 50%	Largest Survey unit. Variety of vegetation communities, variation in exposure. Mostly grasslands/woodlands. Good exposure on and around access trails/walking tracks. ***No Artefacts Found***
2	Sand Dune Complexes Minimal vegetation Scattered native trees	High Good exposure < 95%	High < 95%	Most archaeological significant area-high predictability of sites being located. ***Two Artefacts Scatters Located.*** ***Small Artefact Scatter*** along southern boundary, sand dune depression, adjoining swamp lands (4 Flakes – Nobby's Tuff, white, cream, pink). ***Larger Artefact Scatter***, Large core and associated flakes (up to 8 flakes, white, cream, and pink) located in the sand dune deflation adjacent to the potential pre-recorded Burial site, below the vegetated primary undisturbed sand dune.

3	Sand Dune Ridge	Low Dense Mature Vegetation and associated ground cover > 5%	Low > 2.5 %	Survey focused upon any exposed or uneven ground. Intact mature vegetation. Indicating that the pre-recorded burial may be present. Burial possibly located on the eastern face of the sand dune. Vegetated landform deflation located above eastern face of the sand dune, could indicate associated ceremonial activities. Area to form main part of the proposed Conservation Area / Keeping Place. ***No Artefacts Found***.
4	Freshwater Wetlands CML Dense Pasture Reeds / Weed. Sp.	Low Ground water dominated survey area < 10%	Low < 5%	Survey focused upon perimeter tracks where there was some exposed ground. Highly modified landscape. ***No Artefacts Found***

4.6 Findings

The survey of the subject area yielded two separate stone tool artefact scatters. Both sites were located on the exposed sand dune surfaces (Survey Unit 2) and it is probable in light of cross referencing with AHIMS site cards that they are a part of the pre-recorded open camp site (AHIMS site number Williamtown 1 38-4-0301) that Dean- Jones examined in the 1990 archaeological survey of the region.

The survey examined all landform types located within the subject area.

- **Survey Unit 1**

Despite being the largest survey unit, poor ground visibility provided little opportunity for observation. Large tracks of the subject area were traversed to ensure adequate assessment. The vegetation, predominantly grasslands and woodlands, obscured ground visibility. No artefacts were found. (See Plates 1 - 3).

- **Survey Unit 2**

Provided high probability for the location of cultural material with good exposure across a series of sand dune landform types. Survey intensity and effort was focused upon these areas.

The only Aboriginal cultural heritage material in evidence was in this Survey Unit. The material, being stone artefacts - both cores and flakes, composed of Nobby's Tuff (pink, white & cream), were probably a part of the previously recorded sites examined by Dean-Jones in 1991, as outlined above. The material is from around the base and associated sand dune deflations (See Plates 4 - 9).

- **Survey Unit 3**

Sand dune ridges were covered in dense mature vegetation providing minimal visibility. Despite no cultural material being found, the mature vegetation combined with the relativity undisturbed context of the sand dune ridge would indicate that the likely presence of the pre-recorded burial in this survey unit was high. The survey focused upon assessing the overall composition of the sand dune in the landscape, and the potential for the location of the burial. Despite no physical evidence of the burial being located, it was collectively agreed on site that the probability is that it lies on the eastern face of the main sand dune complex. (See Plates 10 – 11, 14 - 15).

- **Survey Unit 4**

The fresh water wetlands and other tracks of associated cleared modified land were carefully examined, however, due to both dense pasture and water presence, exposure was limited. This survey unit was often highly modified. No artefacts were found. (See Plates 12 - 13).

5 NON INDIGENOUS FIELD SURVEY

5.1 Methodology

The archaeological survey of the subject area (95 hectares) was readily surveyed on foot. A day was set aside for the survey.

5.2 Non Indigenous Cultural Heritage Assessment

Nicole Y Davis, Archaeologist, RPS Harper Somers O'Sullivan, conducted the survey on Tuesday 10 July 2007. The survey focussed on the subject area as a whole, and inspected any remnants of agricultural / sand mining history, including structures, fencing, trails, roadways, exotic plantings, and general industrial debris. The entire subject area was subject to a detailed foot based survey.

5.3 Findings

The ground survey found no evidence of historical archaeological sites, relics or cultural heritage within the subject area.

5.4 Analysis

The results of the field based survey were combined with a thorough desk top survey, local library search and an assessment of local anecdotal evidence from both local residents, neighbours and the Port Stephens Historical Society.

The site survey revealed an area that had been subject to mining, agricultural and industrial use for some considerable time. More importantly the apparent re-working and clearing of the area through land modification for modern farming practices and sand mining activities has reduced the potential for historical cultural heritage material to remain within the subject area.

6 DISCUSSION

Survey and excavation works throughout the Newcastle Bight region has provided support for Dean-Jones (1990) conclusions that most sites were to be found on the inner stable dune area and on elevated areas. A common link was also found between swamp forest wetlands and adjacent elevated dunes for occupation sites.

The only visible archaeological evidence in the subject area are two artefact scatters located within Survey Unit 2, both of which have been previously recorded and are listed on the AHIMS Database (probable site number Williamtown 1 38-4-0301). No midden material was observed.

In assessing the results of the survey and in accord with discussions conducted with survey partners WLALC and MI the following points were made:

- The two artefact scatters were a part of the previously recorded open camp site, probably located within the subject area;
- The absence of visible cultural material across the remainder of the subject area is a result of dense ground cover and vegetation;
- In considering site predictability, it is evident that the Indigenous population would have utilised the elevated position the dune provided and its close proximity to water and food resources. (see Plates 15 and 16).
- The probable location of the pre-recorded burial site is considered most likely to occur within Survey Unit 3, the Crest Zone. It was collectively agreed by all parties present at the survey that from both a scientific cultural / landform perspective that the eastern dune face be the most viable location.

Establishment of a Conservation Area / Keeping Place was nominated by WLALC and MI as the suitable and desired outcome, and the extent and location of this area was collectively agreed in the field.

7 RECOMMENDATIONS FOR MANAGEMENT AND MITIGATION

7.1 Indigenous Cultural Heritage

The management recommendations that stem from this assessment are based on the legislation designed to address the impact of development on sites of cultural significance.

Under Section 90(1) of the *National Parks and Wildlife Act 1974* it is an offence to knowingly destroy, deface or damage, or cause or permit the defacement of or damage to, an object or Aboriginal place without first obtaining consent of the NSW National Parks and Wildlife Service.

It is the responsibility of the developer to ensure all staff, workers and contractors are aware of this statutory responsibility. If any cultural materials are uncovered all work in the immediate area should stop. NSW NPWS or an archaeologist should be informed for identification of the object and appropriate measures undertaken including consultation with the local Aboriginal community.

The following recommendations are made at the completion of:

- an archaeological survey of the subject area; and a
- detailed review of DEC AHIMS Database and relevant reports.

It is recommended that:

- A Conservation Area / Keeping Place be established on the site to accommodate the burial site, the recorded associated artefact scatter, and the landform setting within which these important features lie.

- A Conservation Plan of Management (CPOM) to be developed in partnership with WLALC and MI for the establishment of the Conservation Area / Keeping Place within the subject area. Such a CPOM will define the boundaries of the Conservation Area / Keeping Place, and outline guidelines and procedures to follow with regards to the removal and relocation of any Indigenous Cultural Heritage Material recovered within the remainder of the subject area throughout the development.

- Such a CPOM would delineate the following :

    1. Objectives and purpose of the Conservation Area / Keeping Place
    2. Legal Obligations
    3. Community Consultation and Partnership with WLALC and MI
    4. Boundaries of the Conservation Area / Keeping Place
    5. Pre, Present & Post (Ongoing Protection) Land Management Measures to Protect Aboriginal Cultural Heritage
    6. Artefact Identification and Relocation Protocols
    7. Human Skeletal Remains Monitoring and Management Protocols
    8. Aboriginal Community Access Protocols

9. Cultural Heritage Training Requirements and Protocols

- Figure 7.1 defines the Conservation Area / Keeping Place to be excluded from development. Vegetation and sand dunes in this area will not be disturbed.

- During primary earthworks in the proposed development area, this section should be cordoned off and sites officers from WLALC and MI, as well as an archaeologist, be present at all times to appropriately log and deal with any cultural material uncovered.

- A Cultural Heritage site induction for all workers that will be operating within the subject area be conducted prior to any work commencing. Such an induction will outline the nature of the archaeology of the subject area, as well as outlining the procedures to follow in the event of any additional cultural heritage material being recovered. Local indigenous representatives should be involved in this induction process.

- Prior to any work taking place an application be made to DECC under Section 90 of the *National Parks and Wildlife Act 1974* for the proposed development. The Section 90 is required for the salvage of any Aboriginal cultural heritage material in the proposed development area, and subsequent relocation into the Conservation Area / Keeping Place by the nominated Indigenous Stakeholders from WLALC and MI. The salvage work should be conducted by the Aboriginal community during earthworks as material is encountered. Aboriginal burial, open camp sites, artefact scatters and middens have previously been uncovered in dune areas and the presence of Aboriginal representatives will ensure that in the event of any finds, appropriate management procedures can be put in place. Adequate notification of proposed work should be provided to WLALC and MI.

7.2 Non Indigenous Cultural Heritage

No Non Indigenous Cultural heritage material was located during the survey of the subject area. Therefore there are no apparent impediments on heritage grounds to the rezoning and development proposal proceeding.

TITLE:
Figure 7-1 Proposed Aboriginal Conservation Area/ Keeping Place

CLIENT:
Hunter Land Pty Ltd

SCALE: 1: 8000 at A4 Size
DRAWN: M. Doherty
APPROVED: C. Anderson
DATUM: MGA Zone 56 (GDA 94)
DATE: 15/8/2007
LAYOUT REF: J:\JOBS\23k\23701 - Williamtown\Mapinfo\Arch\23701 FIGURE 7-1 B-A4.wor
CONTOUR INTERVAL: N/A
JOB REF: 23701

PLANNING SURVEYING ECOLOGY

HARPER SOMERS O'SULLIVAN

241 DENISON STREET BROADMEADOW PO BOX 428 HAMILTON NSW 2303
T: 02 4961 6500 F: 02 4961 6794 E: survey@hso.com.au W:www.hso.com.au ABN 11 093 343 858

8 CONCLUSIONS

8.1 Archaeological Management Strategies

The establishment of a Conservation Area / Keeping Place within the subject area around the probable Burial Site/s was nominated by both WLALC and MI as the most suitable and desired outcome from the consultation process. The probable location of the pre-recoded burial site was collectively agreed by all on site from both a scientific and cultural/landform perspective. The location and extent of the Conservation Area / Keeping Place was nominated by WLALC / MI, and a CPOM will be developed as recommended as the development progresses, prior to any physical earthworks activity on site. The use of the Keeping Place for relocated artefacts was endorsed by both WLALC and MI.

Mr. Andrew Smith CEO (WLALC) and Mr. Anthony Anderson, CEO Mur-Roo-Ma Incorporated (MI), will be intrinsic to the formulation and management of the Conservation Area / Keeping Place within the subject area.

Recognition of the Burial Site/s and its significance to the Worimi People is paramount throughout the cultural heritage assessment process. Furthermore, acknowledgment that such burial sites can never be interfered with is fundamental to the Worimi people. Respecting their cultural heritage and establishing the burial location as a "*Keeping Place"* would be the most viable archaeological management outcome within a site development context.

If such a Keeping Place was established within a designated Conservation Area, it could be utilised to house any other cultural heritage material that is uncovered during the development process. This would provide surety in regards to the Aboriginal heritage within the subject area being protected and preserved.

A clearly defined CPOM will need to be prepared for the Conservation Area / Keeping Place in close consultation with all relevant stakeholders. In conjunction with the CPOM process, a further set of management protocols / guidelines would need to be created that would be able to inform and guide the entire development process, suitable to all. A detailed knowledge of the local environmental context, spiritual and cultural landscape is crucial in establishing such protocols. Such information can be provided by both the WLALC and the Traditional Owners, who work closely together in partnership in the Williamtown area.

8.2 Indigenous Cultural Heritage Issues

The specific archaeological constraints and management issues of the Williamtown subject area relate primarily to the pre-recorded Burial Site/s and the associated campsites, which are already logged within the AHIMS database.

Due to the probable presence of a burial/s within the subject area, there is a strong possibility for other Indigenous Traditional Burial/s, associated Indigenous cultural heritage material sites to occur. The recorded burial/s is believed to be located on the eastern spur of the sand dune at Slades Hill, overlooking a '*spiritual place'* that is of significant importance to the Worimi People today. (Personal Communication, Anthony Anderson April 2007)

The Newcastle Bight Region is known for its rich Indigenous cultural heritage and spiritual significance to the Worimi people. Some 91 Aboriginal Sites are recorded on the Tomaree Peninsular, including 54 middens, 26 open camp sites, 5 scarred trees and 2/3 Traditional Burials. It is considered by the traditional owners a necessity that the known burial sites remain intact. Removal and relocation in any circumstances is strongly opposed.

8.3 Non Indigenous Cultural Heritage Issues

No significant non Indigenous cultural heritage material, sites or artefacts were recovered during the archaeological survey at the proposed development site.

Therefore, it is considered there are no Non Indigenous archaeological constraints associated with the proposed development.

- If historic relics are uncovered, work should cease immediately and the *NSW Heritage Council* should be notified and activity should not resume until appropriate management provisions are in place.

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APPENDIX A PHOTOGRAPHS OF THE SUBJECT SITE

Plate 1 Survey Unit 1 – Dense Pasture & CML looking east from the main sand dune.

Plate 2 Survey Unit 1 – CML looking west from the main sand dune.

Plate 3 Survey Unit 1 – Angophora Woodlands covering western portion of the subject area.

Plate 4 Survey Unit 2 – Exposed sand dune depressions opposite BAE Facility, southern boundary of the subject area, adjoining wetlands. Location of the smaller artefact scatter.

Plate 5 Survey Unit 2 – Flake of Nobby's Tuff, smaller artefact scatter.

Plate 6 Survey Unit 2 – Flake Nobby's Tuff, smaller artefact scatter.

Plate 7 Survey Unit 2 – Large Core Nobby's Tuff, apart of the second and larger artefact scatter. Located below the main sand dune, probable pre-recorded burial site above, to become a part of the Conservation Area / Keeping Place.

Plate 8 Survey Unit 2 – Larger Artefact Scatter, below main sand dune, to become a part of the Conservation Area / Keeping Place.

Plate 9 Survey Unit 2 – Location of the larger artefact scatter below the main sand dune, facing north. To become a part of the Conservation Area / Keeping Place.

Plate 10 Survey Unit 3 – Sand dune ridge line, above the larger artefact scatter, facing north, dense vegetation present, probable location of the pre-recorded Burial/s site.

Plate 11 View out over the landscape from the dune ridge line, facing south west.

Plate 12 Survey Unit 4 – Areas of exposure around access trails within Survey Unit 4.

Plate 13 Survey Unit 4 – Wetlands located within the subject area.

Plate 14 Survey Unit 2 and 3 – Main Sand Dune, probable location of the pre-recorded burial/s, eastern face. Location of the Conservation Area / Keeping Place.

Plate 15 Vegetated sand dune, looking north, probable location of the pre-recorded Burial/s site, main area to become a part of the proposed Conservation Area / Keeping Place.

Plate 16 Western section of the main sand dune, Survey Units 2 and 3.

APPENDIX B REPORTS FROM WLALC & MI

WORIMI LOCAL ABORIGINAL LAND COUNCIL

Our Ref: AS/GM/Land Issues/Archaeologists/RPS HSO/Williamtown/ Arprt Expnsn_240807.doc

24th August 2007

2 ? AUG 2007

RPS Harper Somers O'Sullivan
Attention: Nicole Y Davis
Archaeologists
PO Box 428
HAMILTON NSW 2303
VIA FACSIMILE: (02) 4961 6794

Dear Nicole,

Subject: Draft Cultural Heritage Assessment

I write in response to the draft cultural heritage assessment recently undertaken in relation to a proposed rezoning and subsequent industrial development on Lots 10 & 11 DP1036501, and Part Lots 131 & 132 DP609165, Williamtown.

It is our understanding that the assessment was undertaken to predominantly identify any cultural heritage constraints requiring serious consideration as part of any proposed development for the subject area.

Having closely examined the assessment it is our opinion that it has considered all possible impacts on the Indigenous Cultural Heritage.

In response to the recommendations for management and mitigations (outlined in Section 7 of the report), we would like to make the following comments and suggested amendments.

7 RECOMMENDATIONS FOR MANAGEMENT AND MITIGATION

7.1 Indigenous Cultural Heritage

It is recommended that:

Dot Point 1:- Please remove the word **'Probable'.**

Dot Pont 2:- It is vital that significance is given to the involvement of WLALC and MI at all times and in all stages of the development and implementation of the Conservation Plan of Management (CPOM)

Dot Point 3:- **5/** Please give emphasis to **'Pre, Present & Post'** Land Management measures. It's not only important to ensure the protection of the site throughout development, but also it's **'Ongoing Protection'**, post development

Dot Point 4:- Agreed

Dot Point 5:- It is **paramount** that this recommendation be implemented in its entirety without any deviations, unless otherwise agreed to by both WLALC & MI.

Dot Point 6:- It is important that the induction is one that educates 'ALL' stakeholders involved in the development, both (on site & off) of the significance of the area and the importance of the role that the WLALC and MI representatives will beundertaking during the primary earthworks phase.

Dot Point 7:- WLALC supports an application made to DECC under Section 90 of the NPWS Act 1974 by RPS HSO & Hunter Land Pty Ltd to undertake a rezoning and subsequent industrial development over land on Lots 10 & 11 DP1036501, and Part Lots 131 & 132 DP609165 only, subject to Dot Point 7, in it's entirety being implemented, including those recommendations as noted above.

I acknowledge and applaud that in addition to conducting a desktop study your organisation undertook to successfully implement, what is considered by Aboriginal people, adequate consultation measures and protocols with the 'Local' Aboriginal community, by directly conducting a ground survey and site inspection.

Thank you for the opportunity to review the draft assessment and we look forward to establishing a successful partnership with all stakeholders in the development of these lands.

If you have any further questions in relation to this project, please do not hesitate to contact me on the numbers listed above.

Yours sincerely,

Andrew Smith
Chief Executive Officer
Worimi Local Aboriginal Land Council

MUR - ROO - MA

INCORPORATED

MUR - ROO - MA INC

20/08/2007

To Harper Somers O'Sullivan,

Dear Nicole,

Mur-Roo-Ma Inc have read through the draft copy of the Aboriginal Heritage Assessment of the Defense Airport Related Employment Zone proposed by Hunter Land Pty Ltd. We agree with the recommendations and comments in the draft report and at this stage and have no further comments to add.

Yours truly,

Anthony John Anderson.

CEO Mur-roo-ma Inc

9 Vardon road
Fern Bay
N.S.W 2295
Australia

Phone/Fax:
02 4928 1910

Mobile:
0402827482

Email:
murroomainc1@hotmail.com