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12 January, 2010

John Sorby
Landcom
PO Box 33
NEWCASTLE NSW 2300

*Our Reference: 0092575L04JS_V2.DOC*

**Attention: John Sorby**

Dear John,

**RE: ECOLOGY ASSESSMENT OF CROWN LAND AT NORTH TUNCURRY - TUNCURRY MIDGE ORCHID SURVEY**

***Introduction***

Environmental Resources Management Australia Pty Limited (ERM) were engaged by Landcom to conduct an ecological assessment of Crown Land at North Tuncurry on the Mid-North Coast of New South Wales.

An outcome of the Ecological Assessment in early 2009 was the identification in consultation with the Department of Environment and Climate Change (DECC) of the likely occurrence of the Tuncurry Midge Orchid (*Genoplesium littorale*). At that time, the Tuncurry Midge Orchid had been given preliminary determination by the NSW Scientific Committee for listing as critically endangered under the *Threatened Species Conservation Act 1995* (TSC Act). This conservation status was finalised with gazettal of the Tuncurry Midge Orchid as critically endangered on 31 July 2009.

The purpose of this report is to describe the Tuncurry Midge Orchid and provide the results of field investigation undertaken in 2009.

**Tuncurry Midge Orchid**

The Tuncurry Midge Orchid is a terrestrial perennial orchid with a single leaf and flower spike 10 to 30 mm tall supporting between five and 30 flowers. The life-cycle is poorly understood with flowering period from March to May (DECC 2008). It has a very restricted distribution and only occurs at Tuncurry between the Wallamba River mouth at Tuncurry and the Tuncurry Tip (Paget 2008).

Preferred habitat is well-drained, open sand ridge sites in sparse shrubland of *Monotoca elliptica* and *Brachyloma daphnoides*, sparse shrubland of *Leptospermum* spp or in low dense heath dominated by *Ochrosperma lineare* (syn *Baeckea linearis*) (DECC 2008). Within these habitats, the orchid appears to grow under the shrubs in the root zone where there is little or no groundcover excepting lichen, moss and leaf litter (Paget 2008).

The Crown Land at North Tuncurry supports suitable habitat in the low dense heathland dominated by *Ochrosperma lineare* (see *Figure 1*). The Crown Land investigation area also contains the majority of the known range of the Tuncurry Midge Orchid.

***Survey Methodology and Results***

Survey methodology included consultation with Andrew Paget of Hunter Central Rivers Catchment Management Authority and field investigations over three days in the known flowering period.

Andrew Paget was consulted to identify a reference site that was readily accessible to confirm that flowering had commenced. With confirmation of the reference site, an inspection was undertaken on 19 March 2009 to verify that the orchid was flowering. This was combined with targeted searches on site to confirm that that the orchid was present and flowering on site and in sufficient numbers to be detectable. During this inspection 15 orchids were identified on site in heathland habitat.

Two day survey was conducted across the site targeting heathland vegetation. The survey technique incorporated intensive searches along transects with inspections in the root zone under low shrubs at approximately two metre intervals or where suitable microhabitat features were noted in the dense heathland. The dense structure of the heathland made it necessary for transects to be conducted parallel to the cleared transmission line easement and along the numerous sand tracks crossing the Crown Land.

Locations of *Genoplesium littorale* identified during searches over the three days are shown in *Figure 1*. In total only 47 individuals were identified in the Crown Land at varying stages of the life cycle (flowering, non-flowering stems and dying). In response to the low success rate searches were also conducted external to the site to the southeast of the Tuncurry Pit to confirm technique. In this area four locations of a total of 31 orchids of varying stages (flowering, non-flowering and buds) were readily identified within less than 30 minutes of searching. These orchids were recorded in an area of disturbed Blackbutt (*Eucalyptus pilularis*)

open forest with scattered Blackbutts and a sparse shrub strata dominated by *Monotoca elliptica* and *Leptospermum polygalifolium*. Only one of the orchid records was from within the disturbed electricity easement.

Survey effort was concentrated along four wheel drive tracks parallel to and within the electricity easement to the north of the Golf Course and along the sand track bordering the TAFE in the south of the site. Survey coverage of the site was not complete due to the slow nature of the targeted survey largely attributed to the density of the vegetation and the cryptic nature and size of the orchid hindering detection. This resulted in intensive search effort over a reduced area of the site.

### *Previous Surveys*

Surveys have previously been conducted in 2008 over the Crown Land investigation area and an area to the north of the Crown Land and east of the Tuncurry Pit by an officer of the Hunter Central Rivers Catchment Management Authority and members of the Australasian Native Orchid Society (Paget 2008). The 2008 survey within the Crown Land investigation area identified 72 individuals of *Genoplesium littorale* in 21 locations scattered throughout the heathland and one individual in *Leptospermum laevigatum* thickets to the northeast of the TAFE and south of the Golf Course (Paget 2008).

510 individuals were identified in an area east to southeast of the Tuncurry Tip and north of the Crown Land investigation area. The area to the east and southeast of Tuncurry Tip has been described as the main colony of *Genoplesium littorale*, while the area between the Tuncurry Tip and the Tuncurry TAFE is identified as the core habitat (Paget 2008).

In addition to the core habitat, investigations of suitable habitat were conducted in 2008 in Darawank Nature Reserve and Booti Booti National Park. No individuals were identified within either reserve.

### *Implications for the Proposal*

Tuncurry Midge Orchid has been confirmed within the Crown Land investigation area. *Figure 2* illustrates the distribution of known records from the survey conducted in 2009. While the number of locations of *Genoplesium littorale* was low this is largely due to the difficulty of detecting the small orchid underneath shrubs in the dense heathland where the shrub cover limits visibility. It is likely that orchid numbers are higher in the Crown Land investigation area

in particular within the heathland areas where *Ochrosperma lineare* dominates. Paget (2008) estimates that the heathland in the Crown Land is likely to support between 600 to 1200 plants.

Any development proposal over the Crown Land investigation area will be constrained by the need to protect the population and core habitat of *Genoplesium littorale*. It is likely that the development would impact on the population of *Genoplesium littorale* through clearing habitat, fragmentation of habitat and indirectly through habitat modification resultant from weed invasion of potential habitat. Development proposal would need to be designed to avoid or mitigate or offset impacts on this species by:

- protecting and managing a buffer to the main congregation of records of *Genoplesium littorale* to the north of the Crown Land investigation area; and
- protecting and managing population within the Crown Land investigation area.

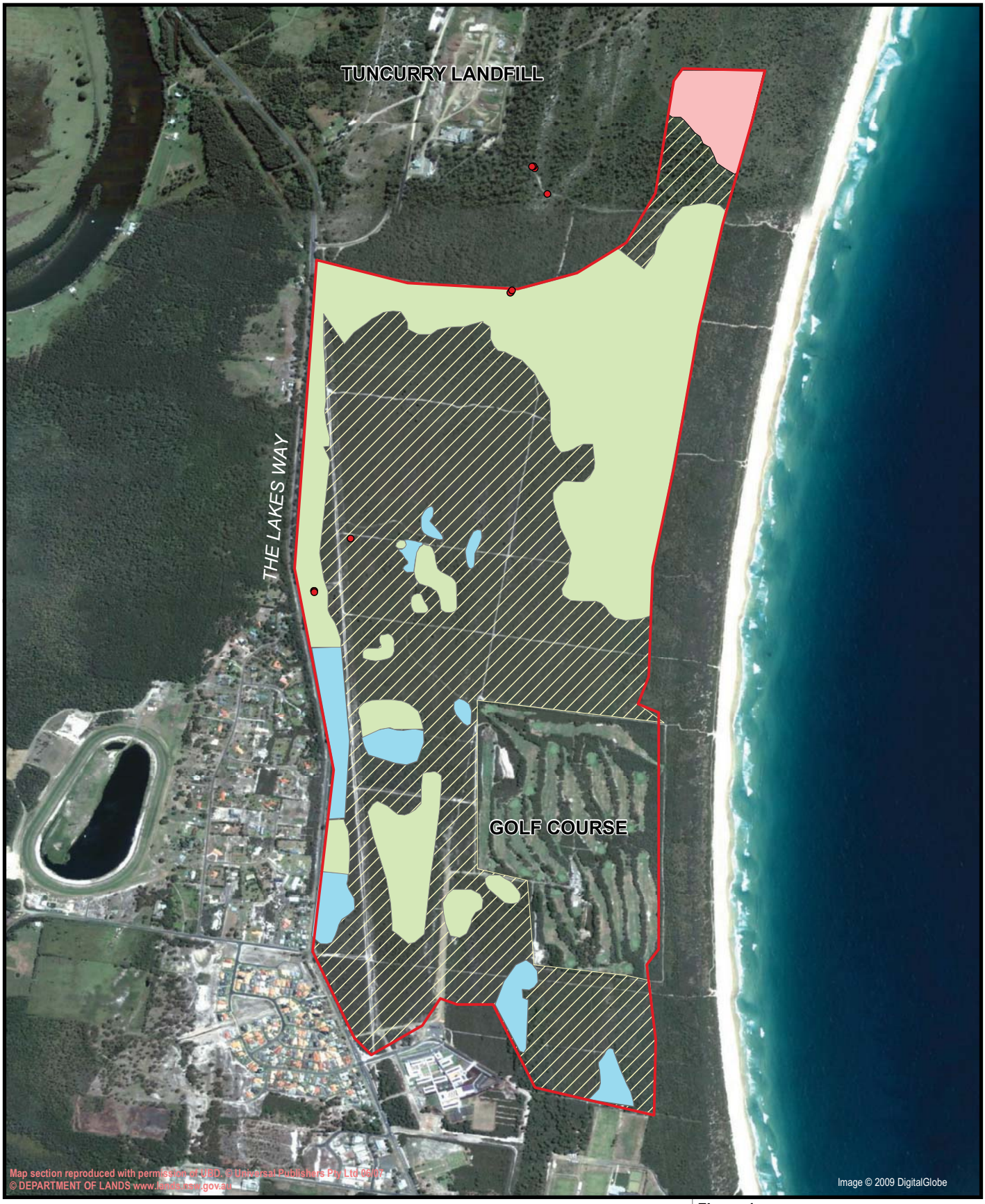
It is likely that any development application for the site would require preparation of a Species Impact Statement.

Should you have any questions please do not hesitate to contact myself or Paul Douglass on 4964 2150.

Yours sincerely,
for Environmental Resources Management Australia Pty Ltd

Naomi Buchhorn
Project Manager

Paul Douglass
Partner




**Legend**

- Genoplesium littorale Locations 2009
- Site Boundary
- Blackbutt Open Forest
- Banksia Woodland
- Conifer Stands
- Heathland

**Source:**
© 2007 Google TM

**Figure 1**
**Vegetation Communities**

| | | |
|---|---|---|
| Client: | Landcom | |
| Project: | North Tuncurry Ecology | |
| Drawing No: | 0092575Orchid_GIS01 | |
| Date: | 01/05/2009 | Drawing size: A4 |
| Drawn by: | TH | Reviewed by: NB |
| Scale: | Refer to Scale Bar | |

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0 200 400 600m

Maps and figures contained within this document may be based on third party data, may not be to scale and is intended for use as a guide only. ERM does not warrant the accuracy of any such maps or figures.

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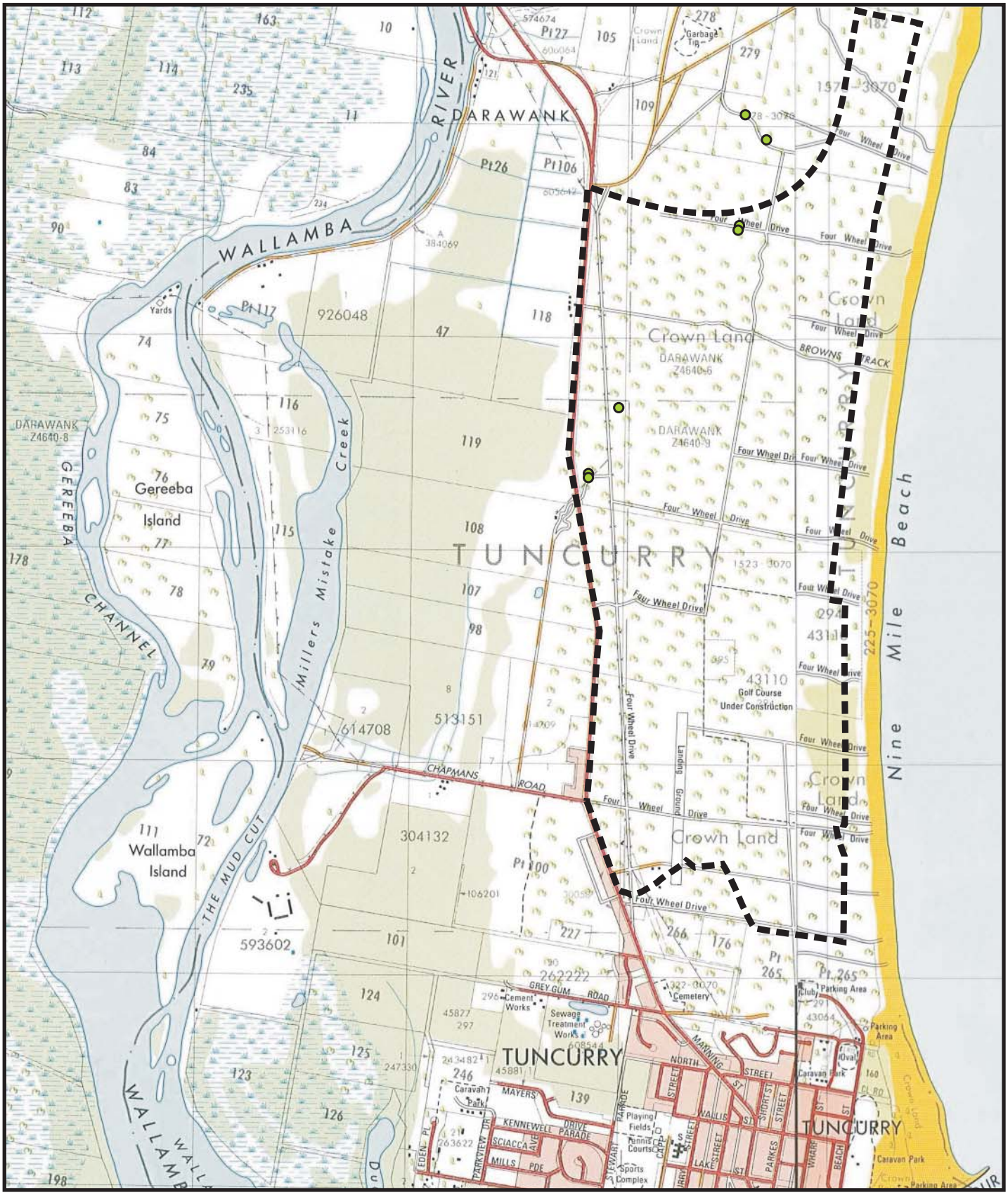


**Legend**

Site Boundary

Location of *Genoplesium littorale* ERM 2009

**Figure 2**

**Distribution of *Genoplesium littorale***

| | | | |
|---|---|---|---|
| Client: | Landcom | | |
| Project: | North Tuncurry Ecology | | |
| Drawing No: | 0092575hv_orchid_2010_02 | | |
| Date: | 08/01/2010 | Drawing size: | A4 |
| Drawn by: | JD | Reviewed by: | NB |
| Source: | 1:25000 Topo Series Coolongolook & Forster | | |
| Scale: | Refer to Scale Bar | | |

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