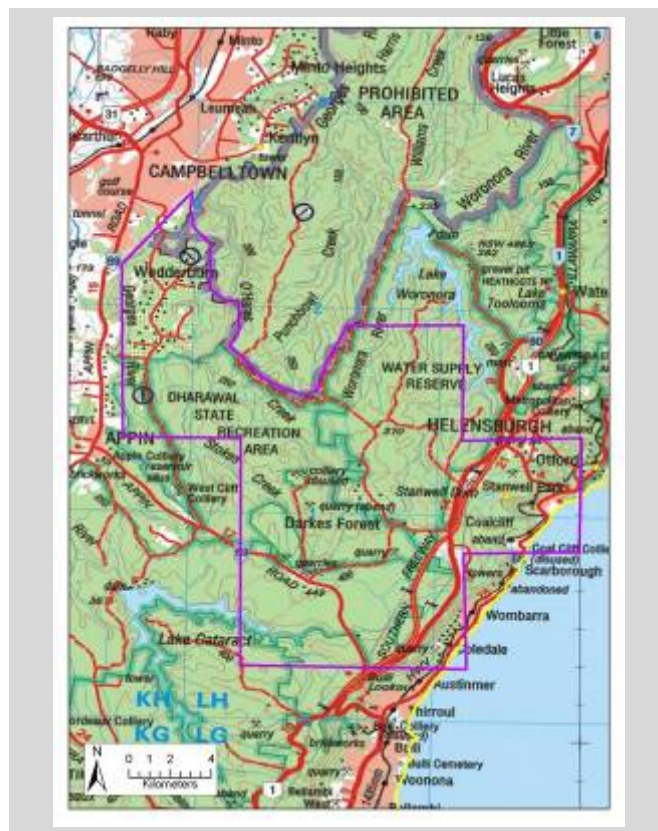


Dharawal

MAINLAND ISLAND CHARACTERISTICS

Jurisdiction	New South Wales
NRM Regions	Hawkesbury/Nepean Southern Rivers Sydney Metro
LGAs	Campbelltown, Wollondilly, Wollongong
Size	21, 000 hectares
Dominant Type	Eucalypt woodlands
Land Tenure	State Conservation Area
Surrounding Issues	Land use Pest density Weed density



Overall Priority	Conservation Value	Threat Status
Very High	Very High	Very High

Key Biodiversity Values

Key biodiversity and conservation values of DHARAWAL

- 49 threatened species
- 4 threatened communities
- 31 migratory species
- Very high species richness
- Very high endemism
- 2 nationally important aquatic ecosystems
- Native vegetation present
- Vertebrate pest species present

CONSERVATION VALUE

Categories	Ranks/Scores
1 Biodiversity values	Very High (16)
2 Uniqueness	Medium (2)
3 Representativeness	Medium (2)
4 Adjacency	Very High (4)
5 Area to perimeter ratio	Medium (2)

THREAT STATUS

Categories	Ranks/Scores
1 Density of pest species	High (6)
2 Pest impact level	Very High (8)
3 Invasion fronts/range boundaries	Very High (4)
4 Land use risk	Very High (5)
5 Weed density	Very High (4)
6 Area without statutory protection	High (3)



Key Threats and Impacts

Pest Species Present or Potentially Present

<input type="checkbox"/> Cane toad	<input checked="" type="checkbox"/> Feral cat	<input type="checkbox"/> Feral pig	<input checked="" type="checkbox"/> Rodents
<input checked="" type="checkbox"/> Carp, European carp	<input checked="" type="checkbox"/> Feral deer	<input type="checkbox"/> Feral water buffalo	<input type="checkbox"/> Tilapia, Mozambique Tilapia
<input checked="" type="checkbox"/> European red fox	<input checked="" type="checkbox"/> Feral donkey	<input checked="" type="checkbox"/> Indian Myna, Common Myna	<input type="checkbox"/> Weather loach; Oriental weather loach
<input checked="" type="checkbox"/> European wild rabbit	<input type="checkbox"/> Feral goat	<input checked="" type="checkbox"/> Mosquito fish, Plague Minnow	<input checked="" type="checkbox"/> Wild dog
<input type="checkbox"/> Feral camel	<input checked="" type="checkbox"/> Feral horse	<input checked="" type="checkbox"/> Red-eared slider turtle	<input type="checkbox"/> Other

Potential impacts of pest species on matters of National Environmental Significance

Carp, European carp <i>Litoria raniformis</i>	European red fox <i>Chelonia mydas</i> <i>Heleioporus australiacus</i> <i>Dermochelys coriacea</i> <i>Hoplocephalus bungaroides</i> <i>Gallinago hardwickii</i> <i>Isoodon obesulus obesulus</i> <i>Litoria aurea</i> <i>Petrogale penicillata</i> <i>Macronectes giganteus</i> <i>Potorous tridactylus tridactylus</i> <i>Merops ornatus</i> <i>Pterodroma leucoptera leucoptera</i> <i>Neophema chrysogaster</i> <i>Sterna albifrons</i>
Feral cat <i>Apus pacificus</i> <i>Heleioporus australiacus</i> <i>Diomedea exulans</i> <i>Hoplocephalus bungaroides</i> <i>Litoria aurea</i> <i>Isoodon obesulus obesulus</i> <i>Macronectes giganteus</i> <i>Neophema chrysogaster</i> <i>Macronectes halli</i> <i>Potorous tridactylus tridactylus</i> <i>Monarcha melanopsis</i> <i>Pterodroma leucoptera leucoptera</i> <i>Petrogale penicillata</i> <i>Pterodroma neglecta neglecta</i>	Mosquito fish, Plague Minnow <i>Litoria aurea</i> <i>Macquaria australasica</i> <i>Litoria raniformis</i> <i>Mixophyes balbus</i>
Feral deer <i>Daphnandra sp.</i> Illawarra (R.Schodde 3475) <i>Prostanthera densa</i>	European wild rabbit <i>Macronectes giganteus</i> <i>Petrogale penicillata</i> <i>Macronectes halli</i> <i>Pterodroma neglecta neglecta</i> <i>Neophema chrysogaster</i> <i>Xanthomyza phrygia</i> <i>Pterodroma leucoptera leucoptera</i>
Wild dog <i>Sterna albifrons</i> <i>Petrogale penicillata</i> <i>Merops ornatus</i> <i>Isoodon obesulus obesulus</i> <i>Potorous tridactylus tridactylus</i>	

Other threatening processes

- Situated on pest invasion front / range boundary
- High risk land use
- Increased potential for edge effects

Highest priority biodiversity issues

Pest impacts on *Petrogale penicillata*

Pest management actions listed in recovery plans for marine turtles and *Xanthomyza phrygia*

Impacts of feral cats and foxes



CRITICAL SYNOPSIS OF VERTEBRATE PEST MANAGEMENT REGIME

Need for vertebrate pest management	<p>Vertebrate pests pose a significant risk to the threatened and endemic plants and animals which occur within the Dharawal mainland island. The NSW National Parks and Wildlife Service has a legal obligation to protect the Dharawal Conservation Area from such risks under the <i>National Parks and Wildlife Act 1974</i>.</p> <p>Overall, the NSW State Plan sets out natural resource management targets, one of which is that by 2015 there is a reduction in the impacts of invasive species. Furthermore, private and public land managers within the area also have an obligation to control pests on their properties under the NSW <i>Rural Lands Protection Act 1998</i>.</p>
Planning instruments	<p>The Dharawal Nature Reserve and State Conservation Area has a Plan of Management (NSW NPWS, 2006). No vertebrate pest management plans are available for other areas within the Dharawal mainland island.</p>
Management actions	<p>The following management actions have been identified for the Dharawal Nature Reserve and State Conservation Area;</p> <ul style="list-style-type: none"> ▪ Prepare and implement annual introduced animal control programs with priority given to fox, feral dog and cat control in the northern section of the state conservation area adjacent to the core koala habitat, and to deer control. ▪ Fox control programs are regularly undertaken within the area by the Sydney Catchment Authority. <p>Campbelltown City Council, Wollondilly Shire Council and the Wollongong City Council are responsible for implementing control of feral pigs, cats, foxes and cats at key sites to ensure the conservation of threatened species, populations and communities (DECC, 2005a; DECC, 2005b; DECC, 2005c).</p>
Monitoring regimes	<p>The Dharawal Nature Reserve and State Conservation Area Plan of Management (NSW NPWS, 2006) recommends that monitoring of effectiveness of introduced animal species control plans be undertaken. There is no information available which details the extent to which this action has been carried out.</p>
Management responsibility	<p>NSW National Parks and Wildlife Service Department of Environment and Climate Change Sydney Catchment Authority Cumberland Livestock Health and Pest Management (LHPA), previously the Regional Lands Protection Board Private landholders</p>
Cost-benefit analysis	<p>The NSW Invasive Species Plan highlights that pest management will be prioritized in areas where it provides the best cost to benefit ration in protecting biodiversity, productivity and community most threatened by invasive species.</p>
Special features	<p>The Holswothy Military Area was included in the area for this mainland island. However, pest management issues are included in Defence site management where appropriate and hence the site was removed from the mainland island area.</p>
Summary / comments	<p>This area represents a significant area of intact bushland south of metropolitan Sydney. Pest management appears to be well covered by existing management arrangements.</p>

References:

Department of Environment and Climate Change (2005a) State of NSW. Viewed 1 June 2009.

http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/pas_lga_recovery_details.aspx?lga=Campbelltown%20City%20Council&type=habitat+management:+feral+control

Department of Environment and Climate Change (2005b) State of NSW. Viewed 1 June 2009.

http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/pas_lga_recovery_details.aspx?lga=Wollondilly%20Shire%20Council&type=habitat+management:+feral+control

Department of Environment and Climate Change (2005c) State of NSW. Viewed 1 June 2009.

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NSW Department of Primary Industries (DPI) (2008) *NSW Invasive Species Plan 2008-1015*, NSW DPI, Orange.

Available on-line at: <http://www.dpi.nsw.gov.au/agriculture/pests-weeds/nsw-invasive-species-plan>

NSW National Parks and Wildlife Service (2006) Dharrwal State Conservation Area Plan of Management. NSW Department of Environment and Conservation.

<http://www.environment.nsw.gov.au/resources/parks/dharawalMgmtplan.pdf>

