

ATTACHMENT 8

**Threatened Species Habitat Assessment
for Lot 1 DP 603830 No 355 Rutleys Road
Mannering Park, NSW**

by

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August 2011

WORLDATA

Environmental Information Services

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Threatened Species Habitat Assessment for Lot 1 DP 603830 No 355 Rutleys Road Mannering Park, NSW

Summary

A Threatened Species Habitat Assessment has been undertaken for a small parcel of land at 355 Rutleys Road Mannering Park, NSW.

No Threatened Species or Endangered Ecological Communities were detected on the subject property, and it has been concluded no application of Section 5A of the EP&A Act, 1979 (7-Part Tests) is required.

We consider that the entire property could continue to be used for the proposed development without any significant risk to threatened species provided that environmental protections appropriate to such industrial use were included as part of any use.

Introduction

WORLDDATA EIS was commissioned by Mr Nick Alcevski to prepare a Threatened Species habitat assessment for Lot 1 DP 603830 No 355 Rutleys Road Mannering Park, NSW in December 2006.

The applicant's proposal seeks to rezone the land from Special Uses 5(a) – Power Station to IN1 General Industrial to permit Vehicle Repair Stations including Mechanical Repairs, Tyre Fitting, Muffler Repairs, Motor Showroom and Car/Truck washing stations.

The site was found to have had a long use for industrial purposes, and although it also contained a small highly disturbed remnant of native vegetation, much of the site is covered with motor vehicles, piles of steel, tyres and other debris from the current and past industrial use of the site. The subject land is essentially now a parcel of land that has been long cleared of native vegetation. What remains free of industrial material is heavily overgrown with a wide range of weeds. The property also includes a small group of native trees (some of which appear to have been previously planted on the site many years ago) and native ground cover has been almost completely replaced by a range of exotic grasses and other introduced weeds. It would appear that the site has been also previously cleared of Pine Trees (*Pinus* sp) and some attempts have been made at regeneration of the property with native plants on a limited scale. However, the few native shrubs that have been planted in small garden beds around some of the trees, has had minimal success.

Results of Site Inspection

A threatened species habitat assessment was undertaken on 27 December 2010 and 18 February 2011 on land at No 355 Rutleys Road Mannering Park, NSW.

A small number of remnant and planted native trees were present of the site however they were not considered to be of significance as habitat for any threatened species that may be present in the general region.

Table1 (below) lists the tree species currently present on the site with their densities, and none were found to include any hollows that could be regarded as suitable roost or nesting sites for any threatened species.

Table 1 : Tree species and numbers present during our inspection of the subject property. Numbers in brackets are additional trees that were found at the front of the property (used as car park), and may not be within the boundaries of the site.

Tree Species	Number Detected
<i>Angophora costata</i>	7 (2)
<i>Eucalyptus gummifera</i>	11 (1)
<i>Eucalyptus haemastoma</i>	8 (4)
<i>Eucalyptus robustus</i>	2

Nevertheless all threatened species known from the region that could be reasonably expected to occur within a 10 km radius of the site have been considered and it has been concluded that the property does not represent any habitat suitable for those threatened entities considered. Targeted searches were undertaken for any indications of known threatened species on the subject site, and none were detected.

Table 2 (below) lists the Threatened Species/Communities considered in this assessment. A SEPP 44 assessment also concluded that the subject land cannot be regarded as Core Koala Habitat.

Table 2 : Threatened species and other entities known or predicted to occur within a 10 km radius of the subject site (excluding shorebirds and marine species). No habitat considered suitable for any of these species was detected on the subject site. "Known" indicates recorded from the Wyong-Lake Macquarie LGAs in the NSW NPWS Wildlife Atlas, and "Pred." indicates Predicted to occur because of known occurrence or habitat at a regional level.

**Relevant Threatened Fauna Known or Predicted to Occur
within the Wyong-Lake Macquarie LGAs**

Species	Common Name	TSC Status	
Birds			
<i>Anseranas semipalmata</i>	Magpie Goose	Vulnerable	Known
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Vulnerable	Known
<i>Burhinus grallarius</i>	Bush Stone-curlew	Endangered	Known
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Vulnerable	Known
<i>Calyptorhynchus lathami</i>	Glossy Black-cockatoo	Vulnerable	Known
<i>Climacteris picumnus victoriae</i>	Eastern Brown Treecreeper	Vulnerable	Known
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Endangered	Known
<i>Grantiella picta</i>	Painted Honeyeater	Vulnerable	Known
<i>Irediparra gallinacea</i>	Comb-crested Jacana	Vulnerable	Known
<i>Ixobrychus flavicollis</i>	Black Bittern	Vulnerable	Known
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Known
<i>Lophoictinia isura</i>	Square-tailed Kite	Vulnerable	Pred.
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater	Vulnerable	Known
<i>Neophema pulchella</i>	Turquoise Parrot	Vulnerable	Known
<i>Nettapus coromandelianus</i>	Cotton Pygmy-goose	Endangered	Known
<i>Ninox connivens</i>	Barking Owl	Vulnerable	Known
<i>Ninox strenua</i>	Powerful Owl	Vulnerable	Known
<i>Oxyura australis</i>	Blue-billed Duck	Vulnerable	Known
<i>Pandion haliaetus</i>	Osprey	Vulnerable	Known

Table 2 (continued)

<i>Pomatostomus t. temporalis</i>	Grey-crowned Babbler	Vulnerable	Known
<i>Ptilinopus magnificus</i>	Wompoo Fruit-dove	Vulnerable	Known
<i>Ptilinopus regina</i>	Rose-crowned Fruit-dove	Vulnerable	Known
<i>Ptilinopus superbus</i>	Superb Fruit-dove	Vulnerable	Known
<i>Pyrrholaemus saggitatus</i>	Speckled Warbler	Vulnerable	Known
<i>Rostratula benghalensis</i>	Painted Snipe	Endangered	Pred.
<i>Stagonopleura guttata</i>	Diamond Firetail	Vulnerable	Known
<i>Tyto novaehollandiae</i>	Masked Owl	Vulnerable	Known
<i>Tyto tenebricosa</i>	Sooty Owl	Vulnerable	Known
<i>Xanthomyza phrygia</i>	Regent Honeyeater	Endangered	Known
Mammals			
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	Vulnerable	Known
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable	Known
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Vulnerable	Known
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	Known
<i>Kerivoula papuensis</i>	Golden-tipped Bat	Vulnerable	Known
<i>Macropus parma</i>	Parma Wallaby	Vulnerable	Known
<i>Miniopterus australis</i>	Little Bentwing-bat	Vulnerable	Known
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	Vulnerable	Known
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	Vulnerable	Known
<i>Myotis macropus*</i>	Large-footed Myotis	Vulnerable	Known
<i>Petaurus australis</i>	Yellow-bellied Glider	Vulnerable	Known
<i>Petaurus norfolcensis</i>	Squirrel Glider	Vulnerable	Known
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Endangered	Known
<i>Phascolarctos cinereus</i>	Koala	Vulnerable	Known
<i>Planigale maculata</i>	Common Planigale	Vulnerable	Known
<i>Potorous tridactylus</i>	Long-nosed Potoroo	Vulnerable	Known
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	Vulnerable	Known
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Known
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Vulnerable	Known
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	Known
<i>Thylogale stigmatica</i>	Red-legged Pademelon	Vulnerable	Pred.
<i>Vespadelus troungtoni</i>	Eastern Cave Bat	Vulnerable	Known
Frogs			
<i>Crinia tinnula</i>	Wallum Froglet	Vulnerable	Known
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	Vulnerable	Known
<i>Litoria aurea</i>	Green and Golden Bell Frog	Endangered	Known
<i>Litoria brevipalmata</i>	Green-thighed Frog	Vulnerable	Known
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog	Vulnerable	Known
<i>Mixophyes balbus</i>	Stuttering Barred Frog	Endangered	Known
<i>Mixophyes iteratus</i>	Giant Barred Frog	Endangered	Known
<i>Pseudophryne australis</i>	Red-crowned Toadlet	Vulnerable	Known
Reptiles			
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	Vulnerable	Known
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	Endangered	Known
<i>Hoplocephalus stephensii</i>	Stephens' Banded Snake	Vulnerable	Known
<i>Varanus rosenbergi</i>	Rosenberg's Goanna	Vulnerable	Known

Table 2 (continued)

**Relevant Threatened Flora Known or Predicted to Occur
within the Wyong-Lake Macquarie LGAs**

<i>Acacia bynoeana</i>	Bynoe's Wattle	Endangered	Known
<i>Angophora inopina</i>	Charmhaven Apple	Vulnerable	Known
<i>Astrotricha crassifolia</i>	Thick-leaf Star-hair	Vulnerable	Pred.
<i>Baloskion longipes</i>	Dense Cord-rush	Vulnerable	Pred.
<i>Caladenia porphyrea</i>	No Common Name	Endangered	Known
<i>Caladenia tessellata</i>	Tessellated Spider Orchid	Endangered	Known
<i>Callistemon linearifolius</i>	Netted Bottle Brush	Vulnerable	Known
<i>Chamaesyce psammogeton</i>	Sand Spurge	Endangered	Known
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	Vulnerable	Known
<i>Cynanchum elegans</i>	White-flowered Wax Plant	Endangered	Known
<i>Darwinia glaucophylla</i>	No Common Name	Vulnerable	Known
<i>Diuris bracteata</i>	No Common Name	Endangered	Known
<i>Diuris praecox</i>	Rough Double Tail	Vulnerable	Known
<i>Epacris p. purpurascens</i>	No Common Name	Vulnerable	Known
<i>Eucalyptus camfieldii</i>	Camfield's Stringybark	Vulnerable	Known
<i>Eucalyptus parramattensis decadens</i>	No Common Name	Vulnerable	Known
<i>Genoplesium insignis</i>	Variable Midge Orchid	Endangered	Known
<i>Grevillea parviflora parviflora</i>	Small-flower Grevillea	Vulnerable	Known
<i>Hibbertia procumbens</i>	Spreading Guinea Flower	Endangered	Known
<i>Maundia triglochinosoides</i>	No Common Name	Vulnerable	Known
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	Vulnerable	Known
<i>Melaleuca groveana</i>	Grove's Paperbark	Vulnerable	Pred.
<i>Prostanthera askania</i>	Cut-leaf Mint-bush	Endangered	Known
<i>Prostanthera junonis</i>	Somersby Mintbush	Endangered	Known
<i>Rutidosis heterogama</i>	Heath Wrinklewort	Vulnerable	Known
<i>Senecio spathulatus</i>	Coast Groundsel	Endangered	Known
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	Endangered	Known
<i>Tetratheca glandulosa</i>	No Common Name	Vulnerable	Known
<i>Tetratheca juncea</i>	Black-eyed Susan	Vulnerable	Known
<i>Thelymitra sp. 'Adorata'</i>	Wyong Sun Orchid	C.Endangered	Known
<i>Zannichellia palustris</i>	No Common Name	Endangered	Known

Relevant Endangered Populations (Plants) Wyong-Lake Macquarie LGAs

<i>Eucalyptus oblonga</i> (Narrow-leaved Stringybark) population at Bateau Bay	Known
<i>Eucalyptus p. parramattensis</i> - population in Wyong and Lake Macquarie LGAs	Known

Table 2 (continued)

Relevant Endangered Ecological Communities Known or Predicted to Occur within the Wyong-Lake Macquarie LGAs		
<i>Freshwater wetlands on coastal floodplains of the NSW North Coast; Sydney Basin and South East Corner bioregions</i>	- Endangered Ecological Community	Known
<i>Hunter Lowland Redgum Forest in the Sydney Basin and NSW North Coast Bioregions</i>	- Endangered Ecological Community	Known
<i>Kincumber Scribbly Gum Forest in the Sydney Basin bioregion</i>	- Critically Endangered Ecological Community	Known
<i>Littoral Rainforest in the NSW North Coast; Sydney Basin and South East Corner Bioregions</i>	- Endangered Ecological Community	Pred.
<i>Lower Hunter Spotted Gum - Ironbark Forest in the Sydney Basin Bioregion</i>	- Endangered Ecological Community	Known
<i>Quorrobolong Scribbly Gum Woodland in the Sydney Basin Bioregion</i>	- Endangered Ecological Community	Known
<i>River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast; Sydney Basin and South East Corner bioregions</i>	- Endangered Ecological Community	Known
<i>Swamp oak floodplain forest of the NSW North Coast; Sydney Basin and South East Corner bioregions</i>	- Endangered Ecological Community	Known
<i>Swamp sclerophyll forest on coastal floodplains of the NSW North Coast; Sydney Basin and South East Corner bioregions</i>	- Endangered Ecological Community	Known
<i>Sydney Freshwater Wetlands in the Sydney Basin Bioregion</i>	- Endangered Ecological Community	Known
<i>Umina Coastal Sandplain Woodland in the Sydney Basin Bioregion</i>	- Endangered Ecological Community	Known

The Following Key Threatening Processes have been identified as operating over the region where the subject land occurs:

Predation by feral cats;
Predation by the European Red Fox;
Competition and grazing by the feral European rabbit;
Invasion of native plant communities by exotic perennial grasses;

Invasion, establishment and spread of Lantana camara;
Clearing of native vegetation;
Ecological consequences of high frequency fires;
Human-caused Climate Change;
Loss and/or degradation of sites used for hill-topping by butterflies;
Loss of Hollow-bearing Trees - key threatening process;
Removal of dead wood and dead trees;
Infection by Psittacine circoviral (beak & feather) disease affecting endangered psittacine species;
Infection of frogs by amphibian chytrid fungus causing the disease chytridiomycosis;
Infection of native plants by Phytophthora cinnamomi;
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners;

* formally *Myotis adversus*

None of the Threatened Species or Endangered Ecological Communities listed in Table 2 were detected on the subject property, and it has been concluded no application of Section 5A of the EP&A Act, 1979 (7-Part Tests) is required for the proposed development.

A remnant patch of what could be considered as dry sclerophyll woodland occurs on the subject site, but it was found to be depauperate in its biodiversity and highly disclimactic in its structure and this was probably as a consequence of past clearing of the entire property decades ago and its use in recent years for industrial purposes. In our view the original biodiversity of the subject property has been almost completely extirpated many years ago. Additionally, the general vicinity of the site is subjected to continual and ongoing disturbances from a major arterial road and the nearby operation of a power station.

The property's environmental attributes were also considered in relation to those of nearby habitats, and although the subject property is connected ecologically to largely intact native vegetation (although also in a highly disturbed state) on other lands within its immediate vicinity, this ecological connectance is not considered to be significant for any of the above listed threatened entities.

It is considered that any ecological connectance between the subject property and the less disturbed remnants of native vegetation in its immediate vicinity could be easily maintained, as part of a number of potential development options for the site – principally through the retention of any suitable remaining trees on site.

The specific value of particular trees on site was not assessed however, but their overall health appeared to be poor in any case. It is recommended that should any of the few trees on the property require removal as part of the proposed development, an arborist should be engaged to provide appropriate guidance and recommendations in this regard.

We consider that the entire property could continue to be used for the proposed development without any significant risk to threatened species provided that environmental protections appropriate to such industrial use were included as part of any use.

Experience and Qualifications of Personnel Undertaking Assessment

Richard Wells

*Owner of environmental consultancy (Worldata Environmental Information Services - ABN 608 065 653 01) that specialises in fauna and flora surveys, including the preparation of reports for proposed developments.

*Auditing of other consultant's reports and data, and provides technical support and information to Local and State Government Officers in regards to development projects as well as various Government policies;

*Previous member of Section 165 Review for the Assessment of Licence Applications under the Commonwealth EPBC Act;

*Field naturalist with over 40 years experience in observing and documenting Australian fauna. Main research interests focus on the distribution, habitat preferences and taxonomy of reptiles and amphibians;

*Have undertaken over 2000 field surveys for vertebrate fauna in NSW, Qld, NT, WA, ACT and Victoria;

*Author of hundreds of reports and articles on fauna and flora (including Threatened Species) that have appeared in a variety of publications - including the journals Herpetofauna, the Australian Journal of Herpetology, the Australian Zoologist, the Western Australian Naturalist, the Victorian Naturalist, the Northern Territory Naturalist, the Australian Herpetologist, the Sydney Basin Naturalist, and the Australian Biodiversity Record. A list can be provided if required.

*Author of an educational CD ROM "The Extinct, Endangered and Vulnerable Mammals, Birds, Reptiles and Frogs of Australia" which included over 50,000 references to the environmental literature of Australia;

*Undertaken numerous private consultancies for property developments in the Sydney Basin Bioregion, Lower North Coast Bioregion and western New South Wales. Projects have included Residential, Industrial, and Infrastructure developments. Numerous National Parks and State Forest lands have been surveyed for State Government agencies;

*Previously Contracted to Survey for fauna (including Threatened Species) by Department of Environment, Conservation and Climate Change (NSW National Parks and Wildlife Service);

*Contracted by State Forests of NSW for fauna surveys (over 30 State Forests surveyed);

*Contracted by the University of New South Wales for research into forest ecology of lower vertebrates on the far south coast of NSW;

*Contracted by Western Research Institute (Charles Sturt University) for fauna surveys of various mining operations in New South Wales - including Newcrest Mining's Cadia Valley Operations and various Hunter Valley operations;

*Contracted to survey Reptiles and Amphibians for Connell Wagner (RTA - Pacific Hwy upgrades);

*Granted unrestricted licence for studying all species of flora and fauna in NSW (including National Parks) No S10371;

Other:

*Previous Employment with NSW NPWS (Scientific Services Unit), NSW Health Commission (in charge of Medical Museum, Institute of Clinical Pathology and Medical Research), Taronga Zoo (Reptile Department), Australian Museum (Herpetology), Northern Territory Museum, Darwin (Department of Natural Sciences) and Australian Customs Service (Customs Officer);

*Has delivered numerous public lectures on Australian wildlife - including to various Rotary Clubs, Country Women's Association Meetings, the National Parks Association, Schools, Scout Groups, and various herpetological societies and naturalists' clubs over many years;

*Media interviews have included both television and radio - including the Midday Show, Ray Martin Show, 4-Corners (ABC), Bert Newton, Andrew Olle (Radio 2BL), Radio 2Triple J, Radio 2GB (Clive Robinson), Totally Wild, ABC Radio Science Show;

*Newspaper articles containing biographical info on activities and projects have also appeared in various Regional, State and National papers - including The Australian, The Age and the Sydney Morning Herald.

*The Pilbara Death Adder (*Acanthophis wellsi*) has been named in recognition of services to the study of herpetology in Australia;

*Past President of the Australian Herpetological Society;

*Editor and Founder of the Australian Journal of Herpetology;

*Editor and Founder of the Australian Herpetologist;

*Editor and Founder of the Australian Biodiversity Record;

*Founding Member of the Australian Herpetologists' League;

*Founding Member of the Hawkesbury Herpetological Society;

*Founding Member of the Northern Territory Field Naturalists' Club;

Professional Referees:

Dr Daniel Lunney - Senior Research Scientist, NSW Department of Environment, Conservation and Climate Change - 02 95856444

Ross Wellington - Molino Stewart Environmental Consultants - 0407 489489

Professor David Goldney, Charles Sturt University - 0263314807

Professor Noel Tait - Macquarie University - 02 98508198

Dr Harry Parnaby - Australian Museum - 0415 912187

Tanya Leary - Threatened Species Project Officer, DECC Parramatta - 0417 048422

Ross Wellington

Ross is an ecologist/zoologist with over 30 years experience in wildlife and environmental investigations. Since graduating with a triple major in biological sciences from Macquarie University in 1977 he has worked as a science teacher an environmental educator (NSW DET), ecological/environmental consultant (AES), technical officer within the herpetology and ornithology departments of the Australian Museum and as a senior wildlife conservation and threatened species management officer within the NSW National Parks and Wildlife Service, now Department of Environment & Climate Change 1998 - 2005.

Consequently, Ross has an extensive repertoire of skills and experience in undertaking, coordinating or reviewing outcomes of an array of projects that include: wildlife survey, plans of management, taxonomic studies and environmental planning and environmental impact assessment. He is considered a noted authority in the specialist area of herpetology.

Ross has had a wide range of roles and functions throughout his working life and these have variously included being a participant in some of the early ecological investigations into NSW

Forestry practices, undertaking fauna surveys as part of the state-wide CRA process, preparing State and National Recovery Plans for high profile endangered species such as the Green and Golden Bell Frog and Broad-headed Snake, a NSW Government representative on national working groups dealing with wildlife diseases and pest species management and contributing to various NSW wildlife conservation and management policy and plan development.

Qualifications

Bachelor of Arts (Biological Sciences), Macquarie University (1974-1977)

Diploma of Education, Macquarie University (1974-1977)

Teaching Certificate, NSW Department of Education and Training

Certificate IV Geographic Information Systems, Newcastle TAFE (2005)

Professional Associations and Memberships

NSW Declining Frog Working Group (DFWG) (1999-2008)

Royal Zoological Society of NSW Scientific Member (1991 – 2000)

Australian Herpetological Society (1980 – 1985; 1998 – 2005)

Frog and Tadpole Study Group of NSW (1998 – 2005)

Brisbane Water/Gosford Lagoons Catchment Management Committee Ministerial

Appointed Deputy Chairperson (Member 1994-1996; DC 1997-2000)

Tuggerah Lakes Catchment Management Committee Education/Research Task Group/Sub Committee Member (1995-2000)

Association for Environmental Education NSW State Executive (1995-1998)

BACKGROUND

The wide range of roles and functions Ross has had range over a number of disciplines and include:

- Environmental Impact Assessment
- Natural Resource Management
- Ecological Studies
- Environmental Education and Sustainability Education
- Environmental Training
- Facilitation
- Community Engagement
- GIS

RELEVANT PROJECT EXPERIENCE

During a seven year period as a Senior Threatened Species Officer within the Biodiversity Conservation (Threatened Species) Section of the NSW National Parks and Wildlife Service (NPWS) and Department of Environment & Conservation (DEC - now DECC) Ross either project managed or was required to provide technical expert advice or other input into the statutory roles of the leading NSW state government environment agency and included coordination, assessment and determination of numerous major projects.

A selection of his project experience is provided below.

GOVERNMENT INFRASTRUCTURE PROJECTS

- Sydney Water Cronulla STP and pipeline up grade
- Sydney Harbour and Foreshore Authority Cooks Cove redevelopment REP
- Sydney Olympic Park Coordinating Authority projects including waste water recycling scheme (WRAMS) predominantly Green and Golden Bell Frog related issues.

MAJOR INDUSTRY PROJECTS

- Dendrobium, Mt Owen, Ravensworth, Warkworth and Cumnock coal mine developments and mine expansions
- Port Warratah - Kooragang Island coal loading terminal

RESIDENTIAL AND COMMERCIAL DEVELOPMENTS

- Hunter Economic Zone (HEZ)
- Wyong Employment Zone (WEZ) at Warnervale
- Somersby Industrial Estate
- Australand's Kurnell Peninsula residential area
- Lensworth's Wallarah Peninsula residential estate
- North Lakes Residential release area
- Johnson Property Group AV Jennings and Westminster Homes Wadalba residential release
- Crighton Properties Gwandalan residential release area

THREATENED SPECIES RECOVERY PROGRAMS

Authored and/or significantly contributed to the coordination, preparation and approval of numerous recovery plans/programs prepared or undertaken to fulfil requirements of the NSW *Threatened Species Conservation Act 1995* and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*.

This included :-

- Green and Golden Bell Frog (2005)
- Broad-headed Snake (2007)
- Blue Mountains Water Skink (2001)
- Gould's Petrel (2000)
- *Grevillea caleyi* (2001)
- Southern Brown Bandicoot (2005)
- Brush-tailed Rock-wallaby (2000)
- Yellow-bellied Glider (2001)
- Giant Burrowing Frog (2007)
- Red-crowned Toadlet
- Plague Minnow *Gambusia* TAP
- European Red Fox TAP

- Frog Chytrid TAP (Cmth)
- Bitou TAP
- Bush Rock TAP

He was also required to regularly provide expert advice on technical matters relating to the conservation of threatened fauna, flora and communities to the NSW Scientific Committee, NSW Environment Minister and Senior Executive of NSW NPWS/DEC. He contributed to policy development and developed guidelines for Policy implementation and was appointed to several National committees/working groups as NSW representative - National Cane Toad Task Force and the Frog Chytrid Working Group.

The NSW NPWS/DECC Frog Hygiene Protocol Policy, that Ross prepared and presented at the 2000 Cairns conference, was acclaimed as a landmark document that put the NSW NPWS ahead of all other states, territories and the Commonwealth in its response to managing this emerging frog disease now known to have caused the likely extinction of 9 species of frogs in Australia. This Policy has been viewed as a template for other jurisdictions in Australia and internationally. Ross nominated this now listed Key Threatening Process in NSW.

A more detailed list of project experience carried out whilst employed in the public and private sector is provided below.

ENVIRONMENTAL PLANNING AND POLICY

- Green and Golden Bell Frog Recovery Plan – NSW DECC
- Broad-headed Snake Recovery Plan – NSW DECC
- Review, significant input or development of draft for: Gould's Petrel RP, Blue Mountains Water Skink RP, Barred River Frog *Mixophyes ssp* RP, Yellow-bellied Glider RP; Marine Turtle (National) RP; Giant Burrowing Frog RP; Plague Minnow *Gambusia* TAP; Bitou TAP; Fox TAP; Frog Chytrid TAP (National).
- Hygiene Protocol for disease control in amphibians – NSW NPWS/DECC
- Strategic management Plans for Key Populations of the Green and Golden Bell Frog at: Port Kembla, Greenacre, Kurnell, Arncliffe, Georges River, Parramatta River, Kooragang Island and Hexham Swamp, Maitland/Cessnock and Upper Hunter – all prepared on behalf of NSW DECC.
- Prospect Nature Reserve Plan of Management (Sydney Catchment Authority)
- Wyong Employment Zone (WEZ) Warnervale, NSW; Wildlife Conservation Plan of Management, (Wyong Shire Council) – also negotiated the strategic use of the EP&A Act Regulations 2000 to coordinate an assumed concurrence in one of the first instances of this mechanism being utilized to streamline development approvals with mutually beneficial outcomes for proponents and conservation with associated certainty.
- Biobanking Offset Tool Development – (NSW DECC) assisted in development of assessment tool
- Threatened Species Environmental Impact Assessment Guidelines – Green and Golden Bell Frog, Red-crowned Toadlet, Giant Burrowing Frog (NSW NPWS)
- Threatened Species Recovery Planning prioritization tool development – a decision support tool justify the sequence of Recovery Plan preparation.
- Priorities Action Statement development for all herpetofauna and other selected species listed under NSW TSC Act 1995 (NSW DECC)
- Property Vegetation Plan – PVP assessment tool assisted in its development (NSW DECC and CMAs)
- Threatened Species Translocation Policy (NPWS)
- Exotic Reptile Seizure Policy (Draft - NSW DECC)
- Marine Turtle Nest disturbance Policy (Draft – NSW DECC)
- Grey-headed Flying Fox camp disturbance policy (Draft – NSW DECC)

ECOLOGY

- On-site environmental management plan for the Red-crowned Toadlet, Giant Burrowing Frog and *Darwinia glaucophila* Lot 4 Piles Road, Somersby.
- Herpetofauna Survey of the Ravensworth State Forest Area for the proposed extension of the Mount Owen Coal Project, Hebdon, NSW. (Resource Planning Pty Ltd)
- Reptile and Amphibian Surveys of the Narooma Forestry District – Wandella – Dampier State Forests. (NSW. NSW State Forests)
- Morisset Forestry District Environmental Impact Statement. Supporting Document No. 7; Fauna Survey of the Morisset Forestry District Central Coast NSW - Reptiles and Amphibians, State Forests (NSW. NSW State Forests)
- Fauna surveys and habitat assessment surveys within Tania Park and Wellings reserves Manly, LGA. (Manly Council)
- Five Forests surveys and ecological investigations of wildlife on the south coast of NSW – investigations into impacts of logging and fire on forest fauna. (NSW NPWS)
- Fire Management and Ecological assessment of the Red-crowned Toadlet in Wellings Reserve and Tania Park at Balgowlah Heights, NSW. (Manly Council)
- Aquatic and Terrestrial Ecological Assessment of proposed Bellfield College Site, Rossmore NSW. (Bellfield Group)
- 'Planting the Seed' vegetation mapping and weed management along the Cooks River (Marrickville Council).
- Stormwater management and drain maintenance assessment of Davistown, NSW in relation to Green and Golden Bell Frog habitat and integration with species Plan of Management.

ENVIRONMENTAL IMPACT ASSESSMENT

- Environmental Impact Assessment Lot 4 Piles Road, Somersby NSW.
- Environmental Impact Assessment Lot 2 Piles Road, Somersby
- Pre-harvest Threatened Species habitat assessment in Doyles River SF, Enfield SF, Bulga SF, Dingo Tops SF and Mt Boss SF
- Threatened Species habitat assessment in relation to proposed road realignment and drainage works in Bulga State Forest.
- Environmental Impact Assessment and 8 Part-test Headlands development proposal Hawkeshead Drive, Killcare NSW
- Flora and Fauna Assessment and 8 Part-test for proposed dam removal and residential subdivision Greens Parade, Kellyville NSW
- Environmental Impact Assessment and 8 Part-test for subdivision proposal the Round Drive, Avoca, NSW
- Environmental Impact Assessment and 8 Part-test for a proposed crematorium at Failford Road, Failford, NSW
- Environmental Impact Assessment and 8 Part-test for proposed cinema extension at Westfield, Tuggerah, NSW
- Environmental Impact Assessment and 8 Part-test for subdivision proposal Tramway Road, North Avoca, NSW
- Flora, fauna and archaeological investigations in relation to proposed Telstra communications towers in Dharug, Yengo and Popran NPs and Mangrove Mountain area, NSW

- Environmental impact assessment and survey for the Broad-headed Snake in relation to proposed optic fibre installation between St Helens Park and Wedderburn, NSW.
- Prepared Director General Requirements for Species Impact Statements in relation to: 150 Lot subdivision Precinct 1 Northlakes, Estelville; 280 Lot subdivision Precinct 2 & 3 Northlakes, Estelville; 86 Lot subdivision Precinct 4 Northlakes, Estelville; Dendrobium Coal Mine Proposal, Appin; SEPP 5 aged development at Normanhurst, among others
- Vegetation and threatened flora species mapping for proposed sand-mining development at Somersby Fields (*Vulcan Materials*)
- Threatened Flora and Fauna assessment and 8 part-test for proposed dwelling construction at Bar Point, Hawkesbury River
- Terrestrial ecological assessment of the 132kV Botany Bay power cable installation proposal by Energy Australia from Bunnerong STS to Kurnell STS. (Energy Australia)
- Review of Environmental Factors for the Blowering Dam upgrade (State Water)
- Review of Environmental Factors for vegetation maintenance clearing along the 132kV powerline corridor at Kemps Creek between Elizabeth Dve and Gurners Rd Cecil Park, NSW (Integral Energy)
- Fishway Construction Ecological Assessment – (Rockdale Canterbury City Councils)
- Woy Woy Waste Depot expansion proposal – (Gosford City Council)
- Environmental Impact Assessment Lot 18 Balkala Rd Bayview Hts - (Walker & Walker)
- Botany Bay Cable Project (Part 3A) Referral – (Energy Australia) to Commonwealth Department of Environment and Water Resources (DEWHA)
- Statement of Environmental Effects Proposed expansion to Barker College, Hornsby
- Review of Environmental Factors proposed weir removal and rehabilitation, Gulph Creek, Nerrigundah, NSW (State Water)
- Woy Woy Waste Depot expansion proposal – (URS & Gosford City Council)

ENVIRONMENTAL LAW

- Expert witness Sutherland Shire Council and Department of Planning Vs Rocla Pty Ltd Sand Mining proposal impacts on the Green and Golden Bell Frog, Land Environment Court (NSWLEC 55 2007)
- Wadalba strategic wildlife conservation corridor Management Plan review, endorsement and assumed concurrence by the NSW DECC (Johnson Partners & A V Jennings)
- Assessment of s91 Licences – (DECC) Undertook independent assessment of section 91 licences for various applicants to the NSW DECC including proposals that potentially impacted on various Endangered Ecological Communities (EECs) including Blue Gum High Forest and Blue Mountains Hanging Swamp, threatened species including: Blue Mountains Water Skink, Squirrel Glider, Green and Golden Bell Frog, *Tetratheca juncea*, Grey-headed Flying Fox, Broad-headed Snake
- Review of licensing arrangements for vegetation management along easements running through Scheyville, Cattai, Marramarra, Popran and Brisbane water National Parks along the Alinta/Agility and Caltex pipelines from Sydney to Kooragang Island
- Breach investigations of: NSW NPWS/DEC v Forests NSW IFOA licence conditions; endangered ecological communities and threatened species habitat clearing at Redhead, NSW; NSW DEC/NPWS and Lake Macquarie City Council V Hue
- Developed a case for compensation and resolution of licensing jurisdiction issues for commercial fishers in the Queensland east coast fishing zone in response to changes to commercial fishing areas brought about by zone adjustments to the Great Barrier Reef Marine Park and establishment of the Torres Strait Protected Zone. Liaised and negotiated across the complex jurisdictional and management responsibilities of the Protected Zone Joint Authority (PZJA), Great Barrier Reef Marine Park Authority (GBRMPA), Queensland Fisheries Management Authority (QFMA) and the Australian Fisheries Management Authority (AFMA) in relation to eligibility for compensation.

TRAINING / TEACHING, STAKEHOLDER AND COMMUNITY CONSULTATION AND LIAISON

- ARTC Environmental Code Training – (Australian Track and Rail Corporation - ARTC) Environmental impact Assessment Code training for SEPP - (ARTC Rail Infrastructure) 2004
- Geographic Information Systems (GIS) training (NSW DET). Developed and delivered a two day course in the use of ESRI ArcView GIS for Geography and Science teachers.
- Lower North Coast NRM Education Strategy and Implementation Plan (Hunter-Central Rivers Catchment Management Authority). Facilitated meetings with a reference committee consisting of representatives from local councils, government agencies, environmental groups and rural landholders to develop education strategies and implementation plan linked to the CMA's Catchment Action Plan
- DPI School Education Plan (NSW Department of Primary Industries). Facilitated workshop with DPI staff to develop scope for preparation of a school education plan for NSW DPI
- Teacher Training and Development Courses (NSW DET). Planned and implemented numerous training and development courses for teachers particularly in Environmental Education, Science and Geography field work activities and techniques
- University student training (University of Newcastle). Trained several groups of university students in water quality monitoring and other environmental monitoring techniques
- Tutor in the distance education program (Charles Sturt University) – Bachelor Environmental Science (Management) Degree Course
- Guest Lecturer in the Environmental Science and Management Degree Course University of Newcastle – Ourimbah Campus
- Co-Supervisor Honours Degree project Ecology of the Green and Golden Bell Frog. University of Wollongong
- Co-supervisor PhD Degree project Disturbance ecology of the Red-crowned Toadlet and Giant Burrowing Frog. University of Technology Sydney (UTS)
- Co-supervisor PhD Degree project Genetic differentiation of the Green and Golden Bell Frog and its application to conservation management. University of NSW
- Co-supervisor Teacher Education Graduate EE project. University of Western Sydney
- Teacher and Acting Teacher in Charge Rumbalara Environmental Education Centre – DET Developed teaching resources and developed and delivered environmental education programs to over 100,000 school students and teachers over a seven year period including a year and a half as manager of the centre (1991-1998)

SELECTED PUBLICATIONS

- Wellington, R.C. and Wells, R.W. (1994) Herpetofaunal Survey of the Ravensworth State Forest Area for the proposed extension of the Mount Owen Coal Project, Hebden New South Wales. Report prepared by AES for Resource Planning Pty Ltd (incorporated into the FIS).
- Wellington, R.C. and Wells, R.W. (1994) Reptile and Amphibian Surveys of the Narooma Forestry District – Wandella – Dampier State Forests. Report Prepared by AES for SFNSW Narooma Office
- Wellington, R.C. and Wells, R.W. (1995) Morisset Forestry District Environmental Impact Statement. Supporting Document No. 7. Fauna Survey of the Morisset Forestry District Central Coast NSW. Reptiles and Amphibians. State Forests NSW
- Wells, R.W. and Wellington, R.C. (1984) A synopsis of the Class Reptilia in Australia. Aust. J. Herpetology 1(3-4): 73-129
- Wells, R.W. and Wellington, R.C. (1985) A classification of the Amphibia and Reptilia of Australia. Australian Journal Herpetology (Supp. Series) 1: 1-61
- Wells, R. W. & Wellington, C. R. (1985b). A synopsis of the Amphibia and Reptilia of New Zealand. Australian Journal of Herpetology, Supplementary Series, (1):62-64.

- Frogs of Western NSW Poster (2003) (co-produced with M Bannerman and P Sherratt). NSW Department of Environment and Conservation
- Helping Frogs Survive Poster (2002) (co-produced with Ron Haering and Judy Denby) NSW Department of Environment and Conservation
- Inventory of NSW Environmental Studies Sites (NSW Environmental Trusts) (1997). Surveyed and compiled a detailed inventory of environmental studies sites throughout NSW that could be accessed by school excursions (co-produced with A and N Dufty). Rumbalara Environmental Education Centre and the NSW Environmental Trust
- Schools Water Testing Kit (1996) (co-produced with Neil Dufty) Rumbalara Environmental Education Centre
- Teachers Guide to Local History Studies (1997) Rumbalara Environmental Education Centre
- Biodiversity Kit for Schools (1998) (co-produced with M Attwooll) Rumbalara Environmental Education Centre
