Attachment D Ford 2012 *Chalinolobus dwyeri* Habitat Suitability Report

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BALANCED SOLUTIONS FOR A HEALTHY ENVIRONMENT

Ref: Austecology_Spring Mt_Chaldwyeri_ltr.docx

12 December 2012

Mr Lindsay Agnew Austecology 5 Davinia St Taragindi QLD 4121

Dear Lindsay

RE: Spring Mountain site investigation - Chalinolobus dwyeri habitat suitability

I refer to our site investigation in the Springfield area on 6th November 6th 2012 and subsequent desk-top review for the purpose of determining potential habitat suitability for the large-eared pied bat (*Chalinolobus dwyeri*) and possible survey design for further investigation of that species' presence in the area (if required).

Investigation methods

Conducted over a period of approximately three hours, the site investigation included a vehicle based traverse and several walked traverses throughout the area between Sinnathamby Boulevard, Grande Avenue and the high-voltage transmission lines on the south-western boundary. Despite recent hot fire throughout most of the site, the inspection provided a good overview of the major vegetation communities, topography and geology of the site.

The desk-top investigation included review of the following:

- Draft Species Profile and Essential Habitat mapping for C. dwyeri in the south-eastern Queensland bioregion. These documents are being prepared by the SEQ Catchments and Burnett-Mary NRM regional bodies, with the Department of Environment and Heritage Protection. I was involved in the expert panel that reviewed and refined the Essential Habitat criteria and mapping for C. dwyeri and several other bats. My understanding is that the final draft of the Essential Habitat Map for C. dwyeri has been endorsed by all members of the expert review panel, but is not yet released for public access.
- High-resolution satellite imagery on *Google Earth* for the Springfield investigation area and Essential Habitat areas mapped for south-east Queensland in the above document.
- Department of Environment and Resource Management (2011). National recovery plan for the largeeared pied bat *Chalinolobus dwyeri*. Report to the Department of Sustainability, Environment, Water, Population and Communities, Canberra.
- Churchill, S. (2008). Australian Bats. New Holland, Sydney.
- Hoye, G. & Schulz, M. (2008). Large-eared Pied Bat Chalinolobus dwyeri. Pp. 531-532 in The Mammals of Australia Third Edition (Ed. by S. Van Dyck and R. Strahan); New Holland, Sydney.
- Schulz, M., Coles, R., Hoye, G. & Hall, L. (1999). Large-eared Pied Bat. Pp. 39-41 in *The Action Plan for Australian Bats* (Ed. by A. Duncan, G. B. Baker & N. Montgomery); Australian Government, Canberra.



Essential Habitat mapping

The draft Essential Habitat maps show areas of Known Essential Habitat (based on vegetation polygons intersected by buffered point records); as well as Possible Essential Habitat with High and Low confidence levels, based on a combination of key topographic features (e.g. cliff-lines and streams) and vegetation polygons.

The mapping shows no Known or Possible Essential Habitat for *C. dwyeri* in the immediate vicinity of the Springfield investigation area. The nearest Known Essential Habitat in the Lamington Plateau area, some 60km south of the Springfield site; whereas, Possible Essential Habitat (High confidence level) occurs about 20-30km south-west, in the hills east of Peak Crossing and extending south to Wyaralong Dam. Areas of Low confidence Possible Essential Habitat also occur in the D'Aguilar Ranges, about 20-30km north of Springfield.

A brief review of high-resolution satellite imagery on *Google Earth* was undertaken to compare the draft Essential Habitat areas with the Springfield investigation area. This revealed some considerable differences in topography (higher elevations and more steeply dissected, with obvious cliff-lines in the Essential habitat areas) and vegetation (more wet-forest types and gully/stream riparian vegetation in the Essential habitat areas).

Based on this desk-top assessment, it is considered highly unlikely that the Springfield investigation area could be considered as Essential Habitat for *C. dwyeri*. It does not, however, demonstrate conclusively that the species would not occur in the investigation area.

On-site habitat suitability - roosting and breeding

Chalinolobus dwyeri is known to roost predominantly in caves and fissures in sandstone escarpment country, where it is generally found within the 'twighlight-zone' rather than in the darker depths of the cave system. It also roosts in man-made structures (e.g. abandoned mine adits) and has occasionally been found in the abandoned mud-nests of the fairy-martin (*Petrochelidon ariel*) under culverts and bridges. Whilst individual males and small clusters of *C. dwyeri* have been found in small caves, fissures and fairy-martin nests, breeding colonies appear to be restricted to deeper caves with a more stable microclimate.

The only locality that was observed to have potential roosting habitat for *C. dwyeri* was a low rock outcrop on a ridge in the north-western portion of the investigation area. This outcrop provides several shallow overhangs as well as a number of horizontal and vertical fissures that may be suitable as temporary roosts for *C. dwyeri*. There was, however, no evidence (e.g. guano and staining) of any bats using these potential roost sites. Moreover, their proximity and connectedness to the ground, along with low ceiling heights (<1m) would provide ready-access for predators looking for an easy meal.

Several other areas of fissured outcropping rock were seen at a distance in some of the gullies; however, these also appeared to present similarly poor roosting opportunities for *C. dwyeri*.

Based on these observations, it is considered unlikely that the investigation area provides suitable roosting or breeding habitat for *C. dwyeri*.

It is possible that suitable sites exist in the rugged hills immediately south and west of the investigation area; however, views of these areas from elevated points along the high-voltage power-line easement suggest that the landscape is very similar to the investigation area and probably offers only sparse, low-quality roosting habitat.

On-site habitat suitability - foraging

Little is known of the foraging ecology of *C. dwyeri*; however, it is thought to forage within a few kilometres of roosting sites, primarily in open forest on fertile areas adjacent to escarpment country. It probably commutes and forages along water-courses leading down from elevated escarpment roosts into the more fertile valleys below.

The Springfield investigation area provides potentially suitable foraging habitat for *C. dwyeri*, with extensive open forests including moister, more fertile gully areas. The vegetation types on site are similar to those that occur in Known and Possible Essential Habitat areas; however, the apparent absence, or sparse occurrence, of suitable roosting habitat on site and in the surrounding hills means that the likelihood of *C. dwyeri* foraging in the investigation area is very low.



Conclusion and recommendation

The results of the desk-top review suggest that there is only a very low likelihood that *C. dwyeri* would occur in the Springfield investigation area. This conclusion is further supported by the on-site field inspection, which demonstrated a lack of suitable roosting habitat throughout the investigation area. Based on this investigation, it is concluded that the Springfield investigation area probably does not support a population of *C. dwyeri*.

Should the client (or regulatory authorities) require more conclusive evidence of the species' absence in the investigation area, however, I recommend an acoustic survey be undertaken using ultrasonic echolocation call detectors (e.g. Anabat and/or SM2BAT). This species has a very distinctive echolocation call structure and can be readily identified from other bats in acoustic data.

The Australian Government's *Survey guidelines for Australia's threatened bats* (DEWHA / T. Reardon; 2010) recommends a minimum survey effort of 16 detector nights (i.e. four detectors for four consecutive nights) per 50 ha study area. Applied literally, this would require a very large sample size over a site as extensive as the Springfield investigation area. Consequently, the following acoustic survey design represents a compromise whereby suitable spatial and habitat representation is achieved across the site within a reasonable sampling effort (and therefore, hopefully, a reasonable cost).

The acoustic survey should aim to achieve a minimum of 16 detector nights over the entire investigation area, ideally over a period of consecutive nights. Spatial representation would be achieved by moving detectors to a new site each night, with detectors placed in both gully lines and on ridge-top or mid-slope sites to sample the range of habitats/moisture gradients. Detectors placed on or near tracks and watercourses are likely to sample more bat calls than those placed away from such obvious fly-ways. Where potential roosting sites are known (such as the rocky outcrops described above), each should also have a detector placed nearby for at least one full night.

I trust the above information satisfies your requirements in relation to the need to address *C. dwyeri* issues for your client and the regulatory authorities. Should you wish to discuss this further, or if you require additional information on any matter discussed herein, please do not hesitate to contact me.

Yours sincerely

Greg Ford

Principal Ecologist

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Attachment E EPBC Act Protected Matters Report

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

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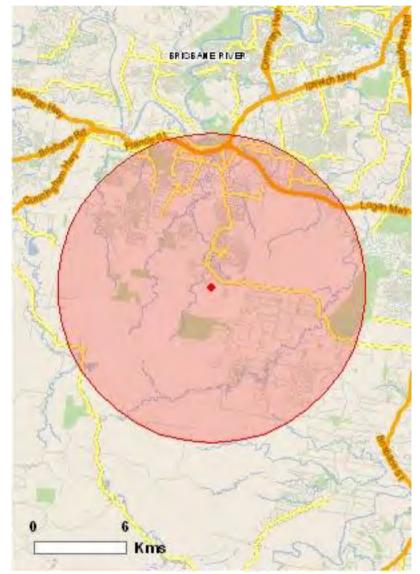
Summary

Details

Matters of NES
Other Matters Protected by the EPBC Act
Extra Information

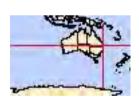
Caveat

<u>Acknowledgements</u>



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 10.0Km



Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	1
Threatened Species:	34

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.

Commonwealth Lands:	1
Commonwealth Heritage Places:	1
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

Place on the RNE:	5
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	12
Nationally Important Wetlands:	1

Details

Matters of National Environmental Significance

Wetlands of International Significance (RAMSAR)	[Resource Information]
Name	Proximity
Moreton bay	Upstream from Ramsar

Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
White Box-Yellow Box-Blakely's Red Gum Grassy	Critically Endangered	Community may occur

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

data are used to produce indicative distribution maps		•
Name	Status	Type of Presence
Woodland and Derived Native Grassland		within area
Threatened Species		[Resource Information]
Name	Status	Type of Presence
BIRDS		
Anthochaera phrygia		
Regent Honeyeater [82338]	Endangered	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Cyclopsitta diophthalma coxeni		
Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat likely to occur within area
Dasyornis brachypterus Factors Drietlahird [522]	Co do a so so d	Charies ar anasias
Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species
		habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species
	vuirierable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species
	Litaligerea	habitat likely to occur within area
Poephila cincta cincta Black-throated Finch (southern) [64447]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Vulnerable	Species or species habitat likely to occur
Turnix melanogaster		within area
Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Neoceratodus forsteri Australian Lungfish, Queensland Lungfish [67620]	Vulnerable	Species or species habitat likely to occur within area
FROGS		
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat likely to occur within area
INSECTS		
Phyllodes imperialis (southern subsp ANIC 3333) Pink Underwing Moth [67453]	Endangered	Species or species habitat likely to occur within area
MAMMALS		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll [331]	Endangered	Species or species habitat may occur within

habitat may occur within

Name	Status	Type of Presence
		area
Dasyurus maculatus maculatus (SE mainland popula Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	<u>ation)</u> Endangered	Species or species habitat may occur within area
Petrogale penicillata		
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus		
Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus	Mula analala	Deseties les sous te sesses
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
OTHER		
Cycas ophiolitica		
[55797]	Endangered	Species or species habitat likely to occur within area
PLANTS		
Arthraxon hispidus		
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
Bosistoa selwynii	V/, de e ve le le	On anima an anasima
Heart-leaved Bosistoa [13702]	Vulnerable	Species or species habitat likely to occur within area
Bosistoa transversa		
Three-leaved Bosistoa [16091]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Hydrocharis dubia		
Frogbit [3650]	Vulnerable	Species or species habitat likely to occur within area
Notelaea ipsviciensis	0 ''	
Cooneana Olive [81858]	Critically Endangered	Species or species habitat may occur within area
Notelaea Iloydii		
[15002]	Vulnerable	Species or species habitat likely to occur within area
Phebalium distans Mt Berryman Phebalium [81869]	Critically Endangered	Species or species
	Childany Endangered	habitat may occur within area
Plectranthus habrophyllus [64589]	Endangered	Species or species habitat likely to occur within area
Sophora fraseri		within alba
[8836]	Vulnerable	Species or species habitat likely to occur within area
Taeniophyllum muelleri Minute Orchid, Ribbon-root Orchid [10771]	Vulnerable	Species or species habitat may occur within area
REPTILES		arca
Coeranoscincus reticulatus		_
Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Delma torquata		.) [
Collared Delma [1656]	Vulnerable	Species or species habitat likely to occur within area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area
Migratory Species		[Resource Information]
* Species is listed under a different scientific name on		
Name	Threatened	Type of Presence
Migratory Marine Birds Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		a. • • • • • • • • • • • • • • • • • • •
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat likely to occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Breeding may occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Breeding likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Breeding may occur within area
Xanthomyza phrygia Regent Honeyeater [430]	Endangered*	Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Nettapus coromandelianus albipennis		
Australian Cotton Pygmy-goose [25979]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name

Spectacled Monarch [610]

Name		
Defence - GREENBANK TRAINING AREA		
Commonwealth Heritage Places		[Resource Information
Name	State	Status
Natural		
Greenbank Military Training Area (part)	QLD	Listed place
Listed Marine Species		[Resource Information
* Species is listed under a different scientific name on	the EPBC Act - Threa	atened Species list.
Name	Threatened	Type of Presence
Birds		
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii		0
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		Charles or anasias
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat may occur within area
<u>Lathamus discolor</u>		
Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Merops ornatus		0
Rainbow Bee-eater [670] Monarcha melanopsis		Species or species habitat may occur within area
Black-faced Monarch [609]		Breeding may occur
Monarcha trivirgatus		within area
Charteolod Manarah [610]		Dranding likely to accur

Breeding likely to occur

within area

Name	Threatened	Type of Presence
Myiagra cyanoleuca		
Satin Flycatcher [612]		Breeding likely to occur within area
Nettapus coromandelianus albipennis		
Australian Cotton Pygmy-goose [25979]		Species or species habitat may occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Breeding may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat likely to occur within area

Extra Information		
Places on the RNE		[Resource Information]
Note that not all Indigenous sites may be listed.		
Name	State	Status
Natural		
Redbank Plains Fossil Site	QLD	Indicative Place
Woogaroo Creek Environmental Park	QLD	Indicative Place
Greenbank Military Training Area (part)	QLD	Registered
Historic		
Wolston Park Hospital Cricket Pavillion	QLD	Indicative Place
St Francis Xavier Church	QLD	Registered
State and Territory Reserves		[Resource Information]
Name		State
White Rock		QLD
Invasive Species		[Resource Information]
Weeds reported here are the 20 species of national significants that are considered by the States and Territories to biodiversity. The following feral animals are reported: Goa and Cane Toad. Maps from Landscape Health Project, N	o pose a particularly signi at, Red Fox, Cat, Rabbit,	ificant threat to Pig, Water Buffalo
Name	Status	Type of Presence
Frogs		
Bufo marinus		
Cane Toad [1772]		Species or species

and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,			
Name	Status	Type of Presence	
Frogs			
Bufo marinus			
Cane Toad [1772]		Species or species habitat likely to occur within area	
Mammals			
Felis catus			
Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area	
Oryctolagus cuniculus			
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area	
Sus scrofa			
Pig [6]		Species or species habitat likely to occur within area	
<u>Vulpes vulpes</u>			
Red Fox, Fox [18]		Species or species habitat likely to occur within area	
Plants			

Name	Status	Type of Presence
Cabomba caroliniana		
Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolin Fanwort, Common Cabomba [5171] Chrysanthemoides monilifera		Species or species habitat likely to occur within area
Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Lantana camara		
Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Re Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Parkinsonia aculeata	ed	Species or species habitat likely to occur within area
Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301] Parthenium hysterophorus	,	Species or species habitat likely to occur within area
Parthenium Weed, Bitter Weed, Carrot Grass, F Ragweed [19566]	-alse	Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendro	<u>n & S.x reichardtiji</u>	
Willows except Weeping Willow, Pussy Willow a Sterile Pussy Willow [68497]	and	Species or species habitat likely to occur within area
Salvinia molesta		
Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Nationally Important Wetlands		[Resource Information]

Name Greenbank Army Training Area C QLD

Coordinates

-27.6888 152.90877

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed

- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- -Department of Environment, Climate Change and Water, New South Wales
- -Department of Sustainability and Environment, Victoria
- -Department of Primary Industries, Parks, Water and Environment, Tasmania
- -Department of Environment and Natural Resources, South Australia
- -Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
- -Environmental and Resource Management, Queensland
- -Department of Environment and Conservation, Western Australia
- -Department of the Environment, Climate Change, Energy and Water
- -Birds Australia
- -Australian Bird and Bat Banding Scheme
- -Australian National Wildlife Collection
- -Natural history museums of Australia
- -Museum Victoria
- -Australian Museum
- -SA Museum
- -Queensland Museum
- -Online Zoological Collections of Australian Museums
- -Queensland Herbarium
- -National Herbarium of NSW
- -Royal Botanic Gardens and National Herbarium of Victoria
- -Tasmanian Herbarium
- -State Herbarium of South Australia
- -Northern Territory Herbarium
- -Western Australian Herbarium
- -Australian National Herbarium, Atherton and Canberra
- -University of New England
- -Ocean Biogeographic Information System
- -Australian Government, Department of Defence
- -State Forests of NSW
- -Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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