Oaklands Ethanol Production Facility
Ecological Impact Assessment Report

Final Report

for Agri Energy Limited

February 2007

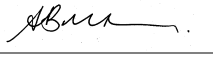
0056132

www.erm.com

AGRI ENERGY
LIMITED

ERM

Delivering sustainable solutions in a more competitive world

Prepared by:	*Amanda Bilton*
Position:	Ecologist
Signed:	
Date:	*27 February ,2007*
Approved by:	*Jacqui Coughlan*
Position:	Principal Ecologist
Signed:	
Date:	*27 February ,2007*

Environmental Resources Management Australia Pty Ltd Quality System

www.erm.com

FINAL REPORT

Agri Energy Limited

Oaklands Ethanol Production Facility

Ecological Impact Assessment

February 2007

Environmental Resources Management Australia
Building C, 33 Saunders Street
Pyrmont, NSW 2009
Telephone +61 2 8584 8888
Facsimile +61 2 8584 8800
www.erm.com

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

1.1 PURPOSE

Agri Energy Limited (AEL) seeks project approval for the development of an ethanol production facility at Oaklands, New South Wales (NSW), under Part 3A of the *Environmental Planning and Assessment Act, 1979* (EP&A Act). Environmental Resources Management Australia Pty Ltd (ERM) has been engaged by AEL to prepare an ecological impact assessment for the construction and operation of the ethanol production facility.

Specifically, this ecological assessment describes flora and fauna within and surrounding the proposed facility at Oaklands and identifies potential or known habitat for threatened species and endangered ecological communities listed under the NSW *Threatened Species Conservation Act* 1995 (TSC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). This report describes potential impacts to these ecological resources from the construction and operation of the proposed ethanol production facility and the significance of impacts is assessed by conducting an assessment of significance as described in the *Draft Guidelines for Threatened Species Assessment for developments assessed under Part 3A of the EP&A Act 1979* (DEC and DPI 2005). Safeguards and strategies to avoid, mitigate and/or ameliorate potential impacts are described.

1.2 SITE LOCATION

The site of the proposed ethanol production facility is wholly within the local government area of Urana. It is accessed from Coreen Street at a point approximately 350m north-east of Oaklands. Oaklands is situated in the Murray region of NSW, approximately 615km south-west of Sydney and 105km north-west of Albury, as shown in *Figure 1.1*. It is within the Murray Catchment Area on the boundary of the Riverina and South-west Slopes Bioregions of NSW (Thackway and Cresswell 1995).

The subject site is shown in *Figure 1.1*. It comprises three parts:

- the *property* comprising one land parcel approximately 130 hectares (ha) in size, identified as Lot 2 of Deposited Plan (DP) 861032, where the ethanol production facility and associated holding dams and irrigation area will be positioned;
- the *dam site* which occupies a portion of Lots 64 and 68 of DP 756402, adjacent to O'Dwyer Main Channel, where an offsite water storage and subsurface pipeline will be located; and
- the *pipeline corridor* within which a subsurface water pipeline is to be constructed, running across Lots 61 and 62 of DP 818505 in an east-west direction from the dam site to the property.

1.3 SITE DESCRIPTION

The site is bounded by Coreen Street, Daysdale Street, Urana Road and the Ray Brooks & Co. bulk grain storage and terminal to the west and by agricultural land to the north, east and south. The surrounding area is predominantly agricultural cropping land. Topography is generally flat, as is typical of the surrounding landscape. Nowranie Creek is located approximately 700m north of the site and the O'Dwyer Main Channel is located approximately 2.2km west of the property. *Figure 1.2* shows the subject site, surrounds and the proposed development.

The main agricultural contributors to the local economy are wheat and rice with other significant contributors being dairy, sheep, beef, barley, vegetables, pastures (for hay), oats and potatoes.

Within a 150km catchment, Oaklands produced an average of 2.6 million tonnes of grain annually between 1998 and 2006 (Neil Clark and Associates, 2006). The estimated feed grain demand from the region between 1998 and 2004 was 1.5 million tonnes, leaving an average grain surplus of over one million tonnes. Yearly surpluses would be available for use in the ethanol production process which at full capacity, requires approximately 600,000 tonnes of grain per annum.

1.3.1 Historical Landuse And Existing Environment

The subject site comprises agricultural cropping land and as such the majority of the site has been cleared of native vegetation.

The entire property is used for agricultural cropping and currently supports a crop of barley. Only a small stand of trees is located in the east of the property. There are a number of trees located around the periphery of property, however these are situated outside the property boundary. Land dedicated for the disused Oaklands-The Rock railway line runs across the site in a generally north-easterly direction. There is also a shallow farm dam positioned near to the northern boundary of the site.

The dam site and pipeline corridor also comprise cleared, agricultural cropping land.

Legend

Subject Site

Figure 1.1

Location of Subject Site

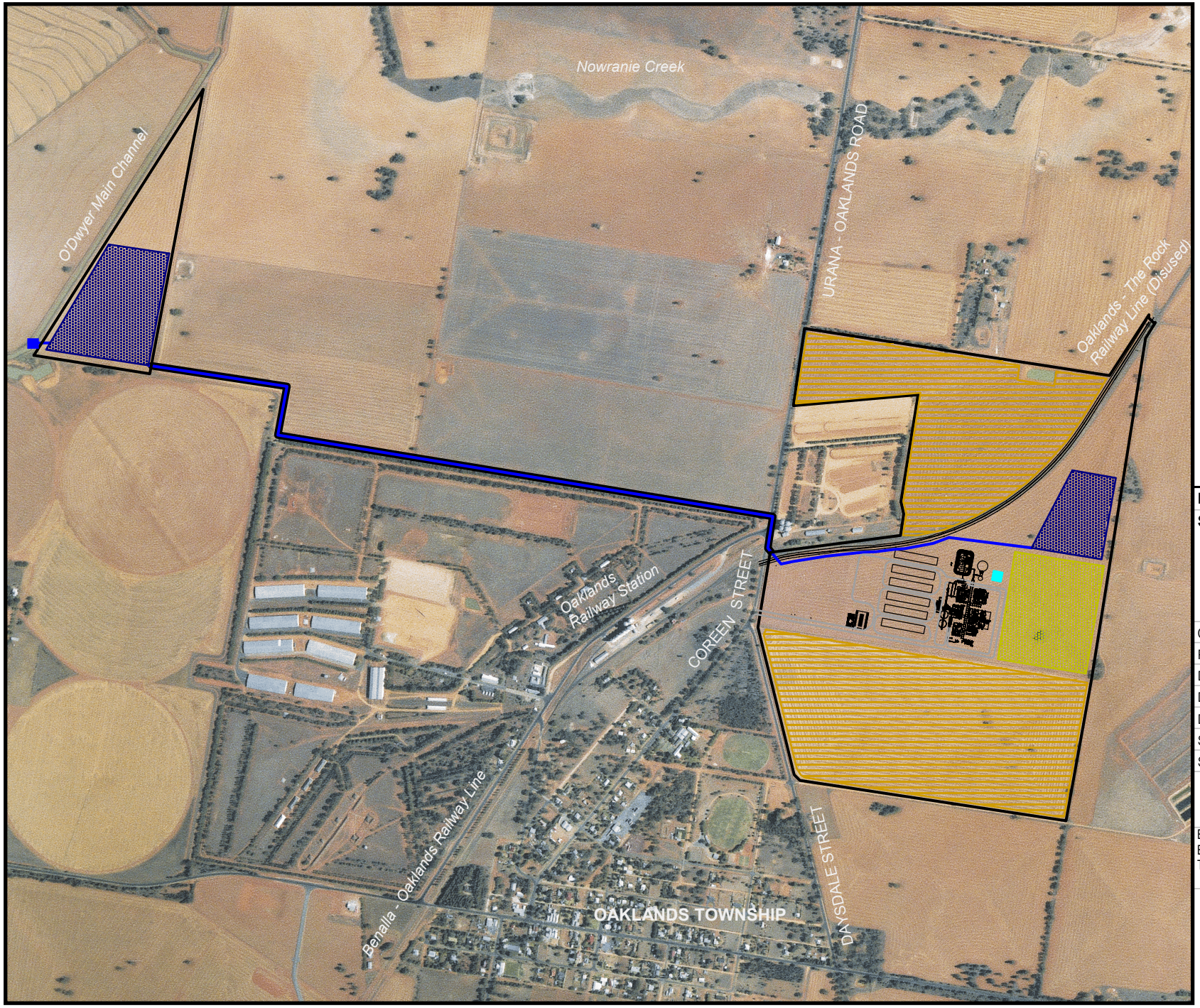
Client:	Agri Energy Limited	
Project:	Oaklands Ethanol Production Facility	
Drawing No:	0056132_ECO_GIS07	
Date:	20.02.2007	Drawing Size: A4
Drawn By:	DH	Reviewed By: -
Source:	Aerial: Department of Lands NSW	
Scale:	Refer to Scale Bar	

N

0 400 800m

Environmental Resources Management Australia Pty Ltd
Building C, 33 Saunders St, Pyrmont, NSW 2009
Telephone +61 2 8584 8888

ERM



Legend

- 200Ml Raw Water Dam
- 2Ml Stormwater Dam
- 40Ml Effluent Dam
- Irrigation Area
- Water Pump Station and Pipeline
- Subject Site
- Internal Access Road

Figure 1.2

Subject Site and Proposed Site Layout

Client:	Agri Energy Limited	
Project:	Oaklands Ethanol Production Facility	
Drawing No:	0056132_ECO_GIS06	
Date:	20.02.2007	Drawing Size: A4
Drawn By:	DH	Reviewed By: -
Source:	Aerial: Department of Lands NSW Plant Layout: PDF DWG N0: M06075-0321	
Scale:	Refer to Scale Bar	

N

0 200 400m

Environmental Resources Management Australia Pty Ltd
Building C, 33 Saunders St, Pyrmont, NSW 2009
Telephone +61 2 8584 8888

ERM

1.3.2 Landform, Soil Type And Vegetation Communities

Interpretation of the *Oaklands 1:50 000 Topographic Series Sheet 8126-N (1st Edition)* indicates that the site and surrounding area is located at an elevation of approximately 140m above the Australian Height Datum (AHD) and is generally flat.

According to the *Jerilderie 1:250 000 Geological Series Sheet S1 55-14 (2nd Edition)*, the site geology comprises predominantly Tertiary residual and colluvial deposits derived from the underlying Tertiary ferricrete, silcrete, poorly consolidated pebbly sandstones and sandstones-mudstones and claystones. Subsurface information shows the presence of thin coaly bands. This landscape grades to Quaternary unconsolidated Riverine deposits of clay, silt, sand and gravel in the northern portion of the site, inclusive of floodplains and black soil plains. These Tertiary and Quaternary deposits are underlain by boulder and pebble clays, sandstone, claystones and shales, possibly of glacial origin and some minor coal bands.

The diversity of soil landscapes in the region means that the soil has variable qualities. In general, silty sands are porous and clays are less permeable except under dry conditions where they are prone to cracking. In addition, the region may be affected by salinity and waterlogging due to intensive agriculture and irrigation.

1.4 THE PROPOSAL

The proposal includes the construction of an ethanol production plant including grain storage bunkers, water and effluent storage dams and an irrigation area on the property and a pumping station, water pipeline and water storage dam on the dam site adjacent to the O'Dwyer Main Channel. The layout of the proposed development is shown in *Figure 1.2*.

The ethanol production plant will be positioned in the central portion of the site. It will have a footprint of approximately 300m x 300m and will include:

- a bunded storage building where all chemicals and products (other than grain and ethanol) stored on the site will be kept;
- a maintenance workshop and store which also includes a crop services facility;
- two 7000 tonne grain storage silos with a maximum height of 35m (these will be the tallest buildings on the site);
- a 1300 tonne shift silo;

- a milling section including two hammermills;
- a fermentation structure;
- a liquefaction and saccharification area;
- a distillation structure and tower;
- a boiler building;
- a cooling tower;
- a two storey building which houses the ring dryer for drying WDGS to produce DDGS;
- an ethanol storage bunded area which houses two anhydrous ethanol storage tanks, an off-spec storage tank and a gasoline storage tank; and
- a bunded storage building where WDGS and DDGS are stored.

A grain storage area comprising six grain bunkers will be located adjacent to the main buildings. These bunkers will be circumnavigated by a one-way road that is surfaced with a prepared road base foundation.

The site access off Coreen Street will be upgraded and internal roads will be sealed and sufficiently wide to accommodate passing vehicles. There will be a weigh bridge, a light vehicle parking area with 40 spaces and a truck standing area. An office/ administration area will be constructed adjacent to the weighbridge and will comprise a reception area, offices, meeting rooms, bathroom facilities and a first aid room. Once the plant is operational the option of rail transportation of ethanol to the Victorian market may be investigated.

Three dams will be constructed on the property as follows:

- *2Ml stormwater dam* – located adjacent to the production buildings to hold and evaporate runoff from the buildings and hard surface areas;
- *40Ml effluent dam* - located east of the production buildings to store process wastewater from the facility, for pumping to the irrigation area; and
- *200Ml raw water dam* – located north-east of the production buildings to store water pumped from O'Dwyer Main Channel (sourced from the Murray River) and supply all plant water needs (approximately 5.6Ml per day).

A pumping station and an additional 200Ml raw water dam will be constructed adjacent to O'Dwyer Main Channel. This dam will be used to supply the facility with water during the winter months when the channel is closed for maintenance. A subsurface pipeline will be constructed from the dam site to the raw water dam on the property.

AEL proposes to establish approximately 55ha of cropping (refer *Figure 3.1*), which will be irrigated with plant wastewater. The irrigation area will provide a future crop resource and its irrigation will facilitate reuse of any plant wastewater not recycled back into the process.

Ethanol product will be transported from the site by truck to the Melbourne market.

2 METHODOLOGY

2.1 DESKTOP ASSESSMENT

Preliminary background literature reviews and database searches were undertaken to obtain information on flora and fauna species and vegetation communities likely to occur on the site or surrounding area. This included searches for threatened species listed under the TSC Act and the EPBC Act previously recorded within a 10km radius of the site (the 'locality'). Sources of information included:

- the NSW Department of Environment and Conservation (DEC) Wildlife Atlas Database;
- the Department of Environment and Heritage (DEH) online search for Matters of National Environmental Significance (NES);
- BioNet online search tool for records of threatened species locations in NSW within the DEC, Australian Museum and Department of Primary Industries databases; and
- aerial photographs.

2.2 FIELD INVESTIGATIONS

A field investigation of the subject site was undertaken by two ecologists on 12 October 2006. The entire area was traversed on foot to identify flora, fauna and fauna habitat within and surrounding the subject site.

2.2.1 *Flora*

A random meander search was used to collect information regarding species presence over the majority of the subject site.

2.2.2 *Fauna And Fauna Habitat*

The subject site was assessed for its potential to provide habitat for threatened fauna species by recording the occurrence of the following habitat characteristics:

- the presence of nesting / shelter sites such as tree hollows, litter, fallen timber and logs, and rocks;
- the cover/abundance of ground, shrub and canopy layers;
- the presence of free water or waterbodies; and
- rocks and basking sites for reptiles.

Opportunistic observations of fauna were noted and thorough searches for traces such as tracks, scats, scratches on and around trees were also conducted.

3 RESULTS

3.1 DESKTOP ASSESSMENT

3.1.1 Threatened Species

Database searches revealed eight threatened fauna species listed under the TSC Act have been recorded within the locality. These are all bird species and include the Grey-crowned Babbler (*Pomatostomus temporalis temporalis*), Painted Honeyeater (*Grantiella picta)*, Superb Parrot (*Polytelis swainsonii),* Brolga *(Grus rubicunda),* Bush Stone-curlew *(Burhinus grallarius),* Hooded Robin *(Melanodryas cucullata),* Major Mitchell's Cockatoo *(Cacatua leadbeateri),* and the Australian Painted Snipe *(Rostratula australis)*. The Superb Parrot and Australian Painted Snipe are also listed as vulnerable under the EPBC Act. One threatened flora species, the Slender Darling Pea (*Swainsona marrayana*) has also been recorded within the locality. This species is also listed as vulnerable under the EPBC Act. The location of these threatened species within the locality is shown in *Figure 3.1.*

The DEH search for matters of NES listed under the EPBC Act revealed a further seven threatened fauna species, three threatened flora species, and four migratory species, or their habitat, as having the potential to occur within the locality. These species are shown in *Table 3.1.*

Table 3.1 EPBC Act Listed Flora and Fauna Species or Their Habitat Considered Likely to Occur in the Locality.

Species name	Common name	Status
Threatened Flora		
Diuris sheaffiana	Tricolour Diuris	Vu
Goodenia macbarronii	Narrow Goodenia	Vu
Stipa wakoolica		En
Threatened Fauna		
Birds		
Pedionomus torquatus	Swift Parrot	Vu
Xanthomyza phrygia	Regent Honeyeater	En, Mi
Mammals		
Dasyurus maculatus maculatus	Spotted-tailed Quoll	En
Nyctophilus timoriensis (South-eastern form)	Eastern Long-eared Bat	Vu
Amphibians		
Litoria raniformis	Southern Bell Frog	Vu
Fish		
Maccullochella peelii peelii	Murray Cod	Vu
Macquaria australasica	Macquarie Perch	En

Species name	Common name	Status
Migratory Species		
Haliaeetus leucogaster	White-bellied Sea-Eagle	Mi
Hirundapus caudacutus	White-throated Needletail	Mi
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Mi
Rostratula benghalensis s. lat.	Painted Snipe	Mi

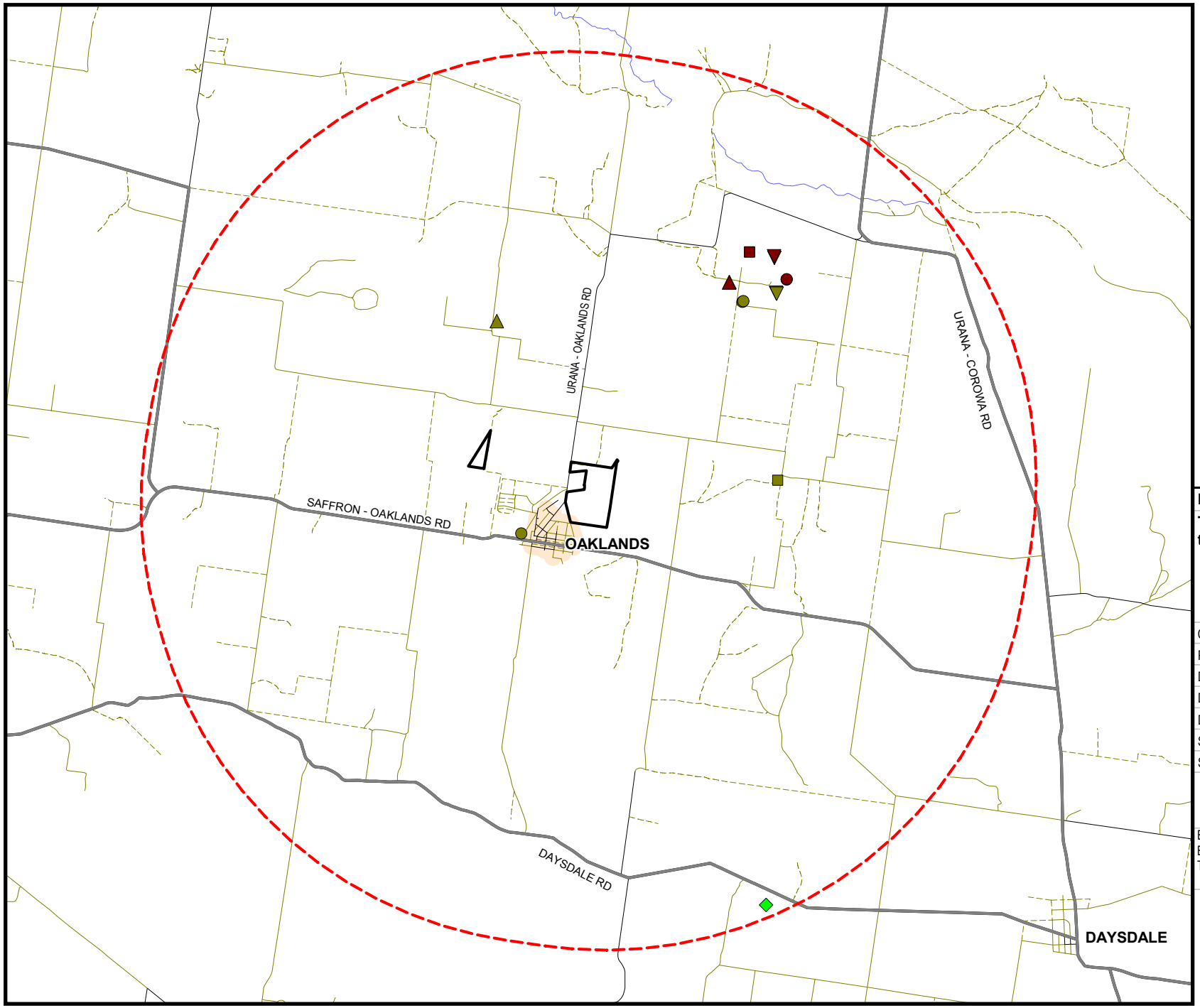
Vu = vulnerable, En = endangered, Mi = migratory

The likelihood of these threatened and migratory species occurring at the subject site was assessed by comparing the known habitat requirements of these species with habitat availability at the subject site, following the results of the field investigation. The results of this assessment are presented in *Table 3.3*.

3.1.2 Endangered Ecological Communities

The DEH and DEC database searches indicated the potential presence of the following four endangered ecological communities (EECs) within the locality:

- *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* - critically endangered (EPBC Act; TSC Act);
- *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* (EPBC Act);
- *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South-Western Slopes* (TSC Act). *Weeping Myall Open Woodlands of the Riverina, NSW South-Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions* is also currently nominated for listing under the EPBC Act; and
- *Fuzzy Box on alluvials of South West Slopes, Darling Riverine Plains & the Brigalow Belt South* (TSC Act).



Legend

- Site Boundary
- Approximate 10km Radius
- Swainsona murrayana
- Brolga
- Bush Stone-curlew
- Grey-crowned Babbler (eastern subspecies)
- Hooded Robin
- Major Mitchell's Cockatoo
- Painted Honeyeater
- Painted Snipe (Australian subspecies)
- Superb Parrot

Figure 3.1

Threatened Species Recorded within the Locality (DEC)

Client:	Agri Energy Limited	
Project:	Oaklands Ethanol Production Facility	
Drawing No:	0056132_ECO_GIS01	
Date:	19.02.2007	Drawing Size: A4
Drawn By:	DH	Reviewed By: -
Source:	-	
Scale:	Refer to Scale Bar	

N

0 1 2 3km

Environmental Resources Management Australia Pty Ltd
Building C, 33 Saunders St, Pyrmont, NSW 2009
Telephone +61 2 8584 8888

ERM

3.2 FIELD INVESTIGATIONS

3.2.1 Flora

The subject site was dominated by exotic species and virtually devoid of any native vegetation.

The majority of the property supported sown barley crops (refer to *Photograph A.1*). There was a small isolated stand of approximately 20 trees located in the east of the property, which were all *Callitris* sp. The majority of these trees were mature, a few were dead, and a number of them appeared to be in poor health (refer to *Photograph A.2*).

A number of ground cover exotic species including Patterson's Curse, Skeleton Weed, Pademelon and Oats were also present along the boundaries of the property.

Trees located adjacent to the eastern property boundary were native Eucalypt species Yellow-Box (*Eucalyptus melliodora*). These were outside the property and included a stand of approximately 15 trees located centrally along the eastern boundary (refer to *Photograph A.3*). Trees located on the northern side of the northern property fence were tall, mature *Callitris* sp. and appeared to be farm plantings.

The land within the proposed dam site adjacent to O'Dwyer Main Channel and along the pipeline corridor was cleared ploughed agricultural land and consisted of exotic groundcover species common to the property(refer to *Photograph A.4*).

No threatened flora species were recorded during the site inspection.

3.2.2 Endangered Ecological Communities

No endangered ecological communities were located within the subject site.

3.2.3 Fauna

A list of fauna species recorded on the subject site is provided in *Table 3.2*.

No reptile or amphibian species were observed on the subject site during the field investigation. The Eastern Grey Kangaroo was the only native mammal species recorded on the subject site and its presence was determined through the identification of scats.

A total of seven bird species were recorded on the subject site. The majority of these were common woodland species including Magpies, Apostlebirds, Ravens, Crested Pigeon and the Brown Songlark. The majority of these birds were recorded within the patches of trees on and adjacent to the property.

One threatened fauna species, the Grey-crowned Babbler was heard calling within the vicinity of the subject site during the site inspection.

Table 3.2 Fauna Species Recorded on the Subject Site.

Common Name	Species Name	Subject Site	Yellow-Box stand adjacent to eastern boundary of property	Within immediate vicinity of subject site
Birds				
Apostlebird	*Struthidea cinerea*	x		
Australian Kestrel	*Falco cenchroides*	x		
Australian Magpie	*Gymnorhina tibicen*			x
Australian Raven	*Corvus coronoides*			x
Brown Songlark	*Cinclorhamphus cruralis*	x		
Crested Pigeon	*Ocyphaps lophotes*	x		
Feral Pigeon	*Columba livia*	x		
Galah	*Cacatua roseicapilla*		x	x
Grey-crowned Babbler	***Pomatostomus temporalis temporalis***			**x**
Noisy Miner	*Manorina melaocephala*		x	
Peaceful Dove	*Geopelia striata*			x
Quail *sp.*	-	x		
White-winged Chough	*Corcorax melanorhamphos*	x		
Mammals				
Eastern Grey Kangaroo*	*Macropus giganteus*	x		

* identified from scats

Bold = threatened species (TSC Act)

3.2.4 *Fauna Habitat*

Given that the majority of the site has been cleared of native vegetation and is currently used to grow agricultural crops, there is little to no habitat for native fauna. Fauna habitat at the subject site was primarily present in the form of the relatively depauperate stand of approximately 20 *Callitris* trees located in the east of the property. The majority of these trees were mature, a few were dead, and a number of them appeared to be in poor health. These trees may provide shelter and foraging resources, and be used as a stepping–stone connecting habitat, for highly mobile species such as birds and bats.

The majority of the Yellow-Box trees adjacent to the eastern boundary of the property were mature and a number contained hollows. Numerous stick nests were also located in this stand of trees indicating that the trees provide nesting and shelter habitat for birds. Almost all of the bird species recorded at the subject site were located within this stand of trees.

Leaf litter, ground debris, logs or fallen trees that may provide shelter and foraging habitat for ground-dwelling native reptiles and mammals and foraging habitat for insectivorous birds was absent from the subject site.

One water body, in the form of a small, shallow farm dam was located in the north of the property (refer to *Photograph A.5*). The dam was completely exposed and had earthen banks with little or no emergent, trailing or surrounding vegetation or shelter sites. For this reason it is considered unlikely to provide suitable habitat for aquatic species such as native frog species, and possibly only marginal habitat for waterbirds.

3.2.5 Likely Occurrence Of Threatened And Migratory Species

Table 3.3 provides an assessment of the likely occurrence of threatened and migratory species (identified from the database searches as recorded or potentially occurring within the locality) within the subject site. The requirement to undertake an assessment of significance of potential impacts from the proposal was determined based on the likelihood of occurrence of the threatened species at the site and the extent of the proposed development.

The likely occurrence of threatened and migratory species on the subject site was considered to be low for all species based on lack of suitable habitat. Thus assessments to determine the significance of potential impacts of the proposal to these species were not required.

Table 3.3 Assessment of Likely Occurrence of Threatened and Migratory Species within the Subject Site and Requirement for Impact Assessment.

Scientific Name	Common Name	Conservation Status		Preferred Habitat	Likelihood of Occurrence	Assessment of Significance Required?
		TSC Act	EPBC Act			
Flora						
Diuris sheaffiana	Tricolour Diuris	Vu	Vu	Associated species include *Callitris glaucophylla, Eucalyptus populnea, E. intertexta*, Ironbark and Acacia shrubland. Understorey often grassy with herbaceous plants such as Bulbine species. Sclerophyll forest among grass, often with native Cypress Pine (*Callitris* spp.). Sandy soils, either on flats or small rises. Also recorded from a red earth soil in a Bimble Box community (DEC 2006).	Low. Lack of suitable habitat on subject site.	No
Goodenia macbarronni	Narrow Goodenia	Vu	Vu	Ephemerally damp or wet sites; often common at sites after good winter-rainfall periods. It favours moist, shaded, sandy sites, soils with impeded drainage, damp muddy areas of winter inundation, spring-fed paddocks and open areas where water is more available (DEC 2006).	Low. Lack of suitable habitat on subject site.	No
Austrostipa wakoolica		En	En	Floodplains of the Murray River tributaries in open woodland on grey, silty clay or sandy loam soils. Edges of lignum swamps with Box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open cypress Pine forest on low sandy range, low rocky rise. Associated species include *Callitris glaucophylla, Eucalyptus microcarpa, E. populnea, Austrostipa eremophila, A. drummondii, Austrodanthonia eriantha, Einadia nutan*s (DEC 2006).	Low. Lack of suitable habitat on subject site.	No

Scientific Name	Common Name	Conservation Status		Preferred Habitat	Likelihood of Occurrence	Assessment of Significance Required?
Swainsona murrayana	Slender Darling-pea, Slender Swainson, Murray Swainson-pea	Vu	Vu	Clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with Maireana species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated (DEC 2006).	Low. Due to disturbed nature of subject site. Lack of suitable habitat on subject site.	No
Fauna						
Birds						
Grus rubicunda	Brolga	Vu	-	Freshwater swamps, flooded grasslands, margins of billabongs, lagoons, dry grasslands, floodplains, irrigated pastures (Morcombe 2004). Often feed in dry grassland, ploughed paddocks, desert claypans but also dependant on wetlands, especially shallow freshwater swamps for foraging and breeding habitat (DEC 2006).	Low. Lack of suitable habitat on subject site.	No
Pomatostomus temporalis temporalis	Grey-crowned Babbler	Vu	-	Open woodlands (Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains) dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs for foraging.	Low. Lack of habitat on subject site.	No
Burhinus grallarius	Bush Stone-curlew	En	-	Open woodlands, lightly timbered country, mallee and mulga - anywhere with groundcover of small sparse shrubs, grass or litter of twigs (Morcombe 2004).	Low. Lack of habitat on subject site.	No

Scientific Name	Common Name	Conservation Status		Preferred Habitat	Likelihood of Occurrence	Assessment of Significance Required?
Melanodryas cucullata cucullata	Hooded Robin	Vu	-	Dry, arid open woodlands and semi-cleared farmlands (Morcombe 2004).	Low. Lack of habitat on subject site.	No
Cacatua leadbeateri	Major Mtichell's Cockatoo	Vu	-	Open sparsely timbered grasslands, drier farmlands with well-treed paddocks, never far from water (Morcombe 2004).	Low. Lack of habitat on subject site.	No
Grantiella picta	Painted Honeyeater	Vu	-	Boree (*Acacia pendula*) Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema (DEC 2006).	Low. Lack of suitable foraging and nesting habitat on site.	No
Polytelis swainsonii	Superb Parrot	Vu	Vu	Box-Gum, Box-Cypress-Pine, Borree Woodlands and River Red Gum Forest. In Riverina - nest in hollows of large trees mainly in tall riparian River Red Gum Forest. In South-west Slopes region - nest in Box-Gum Woodland or isolated paddock trees. Known nest trees include Blakeley's Red Gum, Yellow Box, Apple Box and Red Box (DEC 2006).	Low. Lack of suitable foraging and nesting habitat on site.	No
Rostratula australis	Australian Painted Snipe	Vu	Vu	Prefers fringes of swamps, dams and marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on ground amongst tall vegetation, such as grasses, tussocks or reeds (DEC 2006).	Low. Lack of suitable habitat on subject site.	No

Scientific Name	Common Name	Conservation Status		Preferred Habitat	Likelihood of Occurrence	Assessment of Significance Required?
Xanthomyza phrygia	Regent Honeyeater	En	En, Mi	Dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Woodlands that support a significantly high abundance and species richness of birds and significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. Also utilise; *E. microcarpa, E. punctata, E. polyanthemos, E. mollucana, Corymbia robusta, C. maculata, E. crebra, E. caleyi, E.mckieana, E. macrorhyncha, E. laevopinea* and *Angophora floribunda*. Nectar and fruit from the mistletoes *A. miquelii, A. pendula, A. cambagei* are also eaten during the breeding season (DEC 2006).	Low. Lack of suitable habitat on subject site.	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	-	Mi	Usually coastal. Also occur within seasonally flooded inland swamps, lagoons and floodplains; inland on large pools of major rivers.	Low. Lack of suitable habitat on subject site.	No
Hirundapus caudacutus	White-throated Needletail	-	Mi	High open spaces above almost any habitat. Breeds in northern Asia (Morcombe 2004).	Low	No. Subject site unlikely to provide area of significant habitat.
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	-	Mi	Low vegetation around wetlands in shallows, sedges, reeds, heaths, saltmarsh, irrigated crops. Breeds in Japan (Morcombe 2004).	Low. Lack of suitable habitat on subject site.	No

Scientific Name	Common Name	Conservation Status		Preferred Habitat	Likelihood of Occurrence	Assessment of Significance Required?
Rostratula benghalensis	Painted Snipe	-	Mi	Prefers fringes of swamps, dams and marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on ground amongst tall vegetation, such as grasses, tussocks or reeds (DEC 2006).	Low. Lack of suitable habitat on subject site.	No
Mammals						
Dasyurus maculatus maculatus	Spotted-tailed Quoll	Vu	En	Rainforest, open forest, woodland, coastal heath and inland riparian forest. Use hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites (DEC 2006).	Low. Lack of suitable habitat at subject site.	No
Nyctophilus timoriensis (South-eastern form)	Eastern Long-eared Bat	Vu	Vu	Variety of vegetation types, including mallee, bulloke (*Allocasuarina leuhmanni)* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation (DEC 2006).	Low. Lack of suitable habitat at subject site.	No
Amphibians						
Litoria raniformis	Southern Bell Frog	En	Vu	Permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. Also inhabit irrigated rice crops, particularly where there is no available natural habitat.	Low. Lack of suitable habitat at subject site.	No

Scientific Name	Common Name	Conservation Status		Preferred Habitat	Likelihood of Occurrence	Assessment of Significance Required?
Fish						
Maccullochella peelii peelii	Murray Cod, Cod, Goodoo	-	Vulnerable	Waterways of the Murray–Darling Basin in a wide range of warm water habitats that range from clear, rocky streams to slow flowing turbid rivers and billabongs. The upper reaches of the Murray and Murrumbidgee Rivers are considered too cold to contain suitable habitat (DEH 2006).	Low. Lack of suitable habitat at subject site.	No
Macquaria australasica	Macquarie Perch	Vu	E	Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers (DEC 2006). A riverine, schooling species. It prefers deep, rocky holes with considerable cover. Spawning occurs just above riffles (shallow running water). Populations may survive in impoundments if able to access suitable spawning sites.	Low. Lack of suitable habitat at subject site.	No

Vu = vulnerable, En = endangered, Mi = migratory

4 IMPACT ASSESSMENT

Impacts from the proposed facility to flora and fauna within the subject site are likely to be minimal due to the already highly disturbed nature of the subject site and lack of habitat for native species. The proposal will require the removal of the small stand of *Callitris* trees in the east of the property, however, this stand of trees appeared in relatively poor health, the trees did not have any hollows that may be used as nesting resources and thus it is considered unlikely to provide significant habitat for native fauna.

Construction and operation of the facility has the potential to impact on the native fauna, notably birds, which may utilise the trees immediately surrounding and adjacent to the subject site which were observed to provide suitable foraging and nesting resources for native fauna.

Potential noise, dust and lighting generated by construction and operation of the facility may deter birds from utilising the stands of mature, hollow-bearing trees adjacent to the subject site. These trees represent important foraging and particularly breeding resources for mobile fauna in a landscape that has been largely cleared of native vegetation, and where native vegetation is highly fragmented. For example these trees may be utilised by the threatened Grey-crowned Babbler, and other threatened bird species that have been recorded within the locality.

Mitigation measures have been incorporated into the proposal to reduce the potential noise and air quality impacts on surrounding landuses, while lighting of the facility will use structures that will direct light away from adjoining land. Furthermore, the plant is positioned away from the native vegetation adjacent to the property.

Construction of the dam adjacent to the O'Dwyer Main Channel will have minimal impact, if any, on native flora and fauna due to the highly disturbed nature of the existing environment. Similarly, the proposed water pipeline runs along highly disturbed and weedy farm boundaries and will not require the removal of mature trees.

5 MITIGATION MEASURES

As discussed in *Section 4*, mitigation measures incorporated into the proposal including directional lighting and noise and air quality mitigation measures, will mitigate potential impacts of construction and operation of the ethanol plant on off-site flora and fauna.

The potential for any adverse impacts resulting from introduction of new weed species to the site from imported building materials (such as sand and gravel) can be minimised by use of certified weed-free building materials.

6 CONCLUSION

The proposed ethanol plant at Oaklands is situated within a highly disturbed and modified environment. There is little to no habitat for native fauna on the property, within the proposed dam site adjacent to the O'Dwyer Main Channel or along the pipeline corridor.

The proposal will require the removal of the small stand of *Callitris* trees in the east of the property, however, this stand of trees appeared in relatively poor health, the trees did not have any hollows that may be used as nesting resources and thus they are considered unlikely to provide significant habitat for native fauna.

Impacts to native flora and fauna are thus considered to be minimal and limited to potential off-site impacts such as disturbance from construction and operation of the facility (such and noise, dust and lighting) that may deter birds from utilising the native trees surrounding the subject site. The plants position away from the boundary trees, directional lighting and noise and air quality mitigation measures should appropriately mitigate such impacts.

Therefore, in regards to addressing the key thresholds for assessing potential impacts of the proposal on threatened species or ecological communities (DEC and DPI 2005), it is concluded that the proposed development:

- will not significantly impact on biodiversity values of the subject site;
- will not reduce the long-term viability of a local population of any threatened species, population or endangered ecological community;
- will not accelerate the extinction of threatened species, populations or ecological communities; and
- will not adversely affect critical habitat.

REFERENCES

DEC (2006) **Threatened Species Profiles in Threatened Species: species, populations and ecological communities of NSW** *http://threatenedspecies.environment.nsw.gov.au/tsprofile/*

DEC and DPI (2005) **Draft Guidelines for Threatened Species Assessment for development applications assessed under Part 3A of the Environmental Planning and Assessment Act 1979.** Department of Environment and Conservation Hurstville NSW.

Neil Clark and Associates (2006) **Supply and Demand Analysis – Coleambally, Condobolin and Oaklands.** Prepared for Agri Energy Limited, June 2006.

Harden G (2000) **Flora of New South Wales** University of New South Wales Press Ltd Sydney

Morcombe M (2004) **Field Guide to Australian Birds** Steve parish Publishing Pty Ltd Queensland Australia.

Thackway and Cresswell (1995) **An interim biogeographic regionalisation for Australia: a framework for setting priorities in the National Reserves System Cooperative Program Version 4.0** Australian Nature Conservation Agency Canberra.

Annex A

Site Photographs

Photograph A.1

Looking east across Property

Photograph A.2

Stand of Callitris trees in east of Property

Photograph A.3

Stand of Yellow-Box trees adjacent to eastern boundary of the Property

Photograph A.4

Land within the proposed dam site adjacent to O'Dwyer Main Channel

Photograph A.5

Farm dam on the Property

ERM consulting services worldwide **www.erm.com**

Environmental Resources Management Australia
Building C, 33 Saunders Street
Pyrmont NSW 2009
Telephone (02) 8584 8888
Facsimile (02) 8584 8800