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Memorandum

To	Andrew Stannard	From	Jane Stark c/o Aurecon
Copy		Reference	225678
Date	24 July 2012	Pages (including this page)	6
Subject	Ecological Assessment Report - Roma Lot 23 on WV432		

Mr Stannard

This memorandum documents the results of an ecological investigation of a proposed development area on Lot 23 on WV432 (refer Figure 1).

Ecological investigations of the area were conducted on 14 June by two (2) Aurecon ecologists (Cassandra Arkinstall and John Lynn).

A report specific to additional proposed development areas on Lot 23 on WV432 has been previously prepared and submitted to Santos (Ecological Assessment Report - Roma Lots 22,23 and 24 on WV432; Document Reference: 0020-GLNG-4-1.3-0062).

This memorandum should be treated as an addendum to the report listed above. This memorandum is specific to the ecology of the proposed additional development area illustrated in Figure 1.

Ecological Assessment

General

The proposed development area is located south of the RM02-20-2 Well Pad and contains two (2) sections. The larger section (approximately 2000 m by 40 m) is aligned north-west to south-east, while the smaller section (approximately 180 m by 40 m) is perpendicular to the larger section and is orientated in a north-south direction. The proposed development area is situated within a landscape which has been highly modified as a result of historical vegetation clearing and agricultural activities (ie grazing of livestock).

There are no mapped Regional Ecosystems (REs) on the certified Department of Environment and Heritage Protection (DEHP) RE mapping located within the proposed development area. There are no Environmentally Sensitive Areas (ESAs) mapped within either section of the proposed development area. The nearest is a 'Category C' ESA located approximately 1.14 km to the south resulting from a mapped 'Of Concern' RE.

There are no DEHP mapped watercourses traversing or within close proximity to the proposed development area. The nearest mapped watercourse is a 'stream order 1' 'watercourse' situated approximately 140 m to the south.



Legend

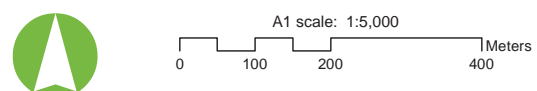
- ☆ EVNT and Type A Species
 - Additional Areas Assessed
 - Corridors - Ground Truth
 - Watercourse
- Amended Regional Ecosystem (Biodiversity Status)**
- Endangered - Dominant
 - Endangered - Sub-dominant
 - Of Concern - Dominant
 - Of Concern - Sub-dominant
 - Not of Concern
- ESA Mapping**
- ▨ Category A
 - ▨ Category B
 - ▨ Category C

Source:
 Cadastre: DERM, 2011.
 Regional Ecosystems: Version 6.1, The State of Queensland (Department of Environment and Resource Management), Sept 2011. As amended by Aurecon, 2011.
 ESAs: Coordinator-General's Evaluation Report for an Environmental Impact Statement – Gladstone Liquefied Natural Gas GLNG Project (May 2010) and the Santos GLNG Project CSG Fields – Environmental Protocol for Constraints Planning and Field Development (September 2011). Note: No ESA buffers have been included on this figure.

Date: 24/07/2012

Version: 1

Map by: JPC P:\GIS\Projects\215648_Fairview_Eco_Assessment\215648_Fairview_143.mxd 24/07/2012 09:36



Job No: 225678
 Coordinate system: GDA_1994_MGA_Zone_55

Floristics

The landscape of the proposed development area has been extensively disturbed due to clearing for agricultural activities (mainly grazing). Woody vegetation in the proposed development area is limited to small stands of shrubby regrowth and isolated sub-canopy layer trees. There was no canopy stratum present throughout the proposed development area.

The sub-canopy stratum was comprised of sporadic *Brachychiton populneus* (Kurrajong) trees with heights ranging between 4 and 20 m. Overall, the sub-canopy stratum covered less than 5% of the proposed development area.

There was a sparse shrub layer that covered approximately 5% of the proposed development area and ranged in height from 0.5 m to 2.5 m (refer Photograph 1). The species recorded in the shrub stratum included *Grevillia striata* (Beefwood), *Eucalyptus populnea* (Poplar Box), *Atalaya hemiglauca* (Whitewood), *Psydrax oleifolia* (Hatstand), *Apophyllum anomalum* (Warrior Bush) and *Carissa ovata* (Currant Bush).



Photograph 1 - Landscape facing south-east depicting typical low, sparse shrub layer of the proposed development area

The ground stratum covered approximately 90% of the proposed development area and was dominated by *Pennisetum ciliare* (Buffel Grass). Other ground stratum species included exotic grasses (eg *Urochloa mosambicensis* [Sabi Grass]), native grasses (eg *Themeda triandra* [Kangaroo Grass]) and other forb species that are typical of disturbed areas; (eg *Verbena tenuisecta* [Mayne's Curse]).

Species of conservation significance (ie 'endangered', 'vulnerable' and 'near threatened' species as listed under the provisions of the Queensland *Nature Conservation Act 1992* [NC Act] or 'critically endangered', 'endangered' and 'vulnerable' species as listed under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act]) were not recorded within the proposed development area.

Nine (9) 'Type A restricted plant' species were recorded within or directly adjacent to the proposed development area as listed in Table 1 below and illustrated in Figure 1.

Table 1 'Type A restricted species' recorded with the proposed development area

Scientific Name	Common Name	Easting (GDA 94, Zone 55) (Grid: UTM)	Northing (GDA 94, Zone 55) (Grid: UTM)
<i>Brachychiton populneus</i>	Kurrajong	700910	7082951
<i>Brachychiton populneus</i>	Kurrajong	701070	7082792
<i>Brachychiton populneus</i>	Kurrajong	701135	7082845
<i>Brachychiton populneus</i>	Kurrajong	701167	7082747
<i>Brachychiton populneus</i>	Kurrajong	701158	7082715
<i>Brachychiton populneus</i>	Kurrajong	701140	7082839
<i>Brachychiton populneus</i>	Kurrajong	701332	7082656
<i>Brachychiton populneus</i>	Kurrajong	701289	7082616
<i>Brachychiton populneus</i>	Kurrajong	701715	7082024

A list of botanical species observed is provided in Table 2.

Table 2 Botanical species recorded within the proposed development area

Family	Scientific Name	Common Name	Notes
Apocynaceae	<i>Alstonia constricta</i>	Bitter Bark	
Apocynaceae	<i>Carissa ovata</i>	Currant Bush	
Asteraceae	<i>Cirsium vulgare</i>	Black Spear Thistle	Non-native
Asteraceae	<i>Conyza bonariensis</i>	Fleabane	Non-native
Asteraceae	<i>Pterocaulon sphacelatum</i>	Apple Bush	
Capparaceae	<i>Apophyllum anomalum</i>	Warrior Bush	
Capparaceae	<i>Capparis lasiantha</i>	Nipan	
Chenopodiaceae	<i>Maireana microphylla</i>	Small-leaf Bluebush	
Cupressaceae	<i>Callitris glaucophylla</i>	White Cypress Pine	
Cyperaceae	<i>Fimbristylis dichotoma</i>	Fimbristylis	
Fabaceae	<i>Indigofera australis</i>	Forest Indigo	
Malvaceae	<i>Sida hackettiana</i>	Spiked Sida	
Meliaceae	<i>Owenia acidula</i>	Emu Apple	
Myrtaceae	<i>Eucalyptus populnea</i>	Poplar Box	

Family	Scientific Name	Common Name	Notes
Pittosporaceae	<i>Pittosporum undulatum</i>	Pittosporum	
Poaceae	<i>Aristida caput-medusae</i>	Curly Head Wire Grass	
Poaceae	<i>Chloris truncata</i>	Windmill Chloris	
Poaceae	<i>Cymbopogon refractus</i>	Barbwire Grass	
Poaceae	<i>Dichanthium sericeum</i>	Queensland Blue Grass	
Poaceae	<i>Eragrostis brownii</i>	Browns Lovegrass	
Poaceae	<i>Eragrostis fallax</i>	Tall Lovegrass	
Poaceae	<i>Heteropogon contortus</i>	Black Spear Grass	
Poaceae	<i>Megathurus maximus</i>	Green Panic	Non-native
Poaceae	<i>Panicum decompositum</i>	Hairy Panic	
Poaceae	<i>Panicum effusum</i>	Inquisitive Grass	
Poaceae	<i>Pennisetum ciliare</i>	Buffel Grass	Non-native
Poaceae	<i>Sporobolus creber</i>	Western Rat's Tail Grass	
Poaceae	<i>Themeda triandra</i>	Kangaroo Grass	
Poaceae	<i>Urochloa mosambicensis</i>	Sabi Grass	Non-native
Portulacaceae	<i>Portulaca pilosa</i>	Hairy Pigweed	
Proteaceae	<i>Grevillea striata</i>	Beefwood	
Rubiaceae	<i>Psydrax oleifolia</i>	Hat stand	
Rutaceae	<i>Geijera parviflora</i>	Wilga	
Sapindaceae	<i>Alectryon diversifolius</i>	Scrub Boonaree	
Sapindaceae	<i>Atalaya hemiglauca</i>	Whitewood	
Sterculiaceae	<i>Brachychiton populneus</i>	Kurrajong	Type A Species
Verbenaceae	<i>Verbena officinalis</i>	Common Verbena	
Verbenaceae	<i>Verbena tenuisecta</i>	Mayne's Curse	Non-native

Habitat Values

Nine (9) incidental fauna species were recorded within the proposed development area as listed in Table 3 below. Eight (8) birds and one (1) mammal species were observed within the proposed development area. These species are considered to be habitat generalists that are capable of persisting and utilising disturbed/modified environments (Pizzey & Knight 1997; Menkhorst & Knight 2010).

Table 3 Fauna species observed in the proposed development area

Class	Common Name	Scientific Name
Birds	Australian Magpie	<i>Gymnorhina tibicen</i>
	Australian Raven	<i>Corvus coronoides</i>
	Nankeen Kestrel	<i>Falco cenchroides</i>
	Noisy Miner	<i>Manorina melanocephala</i>
	Pale-headed Rosella	<i>Platycercus adscitus</i>
	Red-backed Fairy-wren	<i>Malurus melanocephalus</i>
	Striated Pardalote	<i>Pardalotus striatus</i>
	Weebill	<i>Smicromnis brevirostris</i>
Mammals	Eastern Grey Kangaroo	<i>Macropus giganteus</i>

Overall, the habitat value of the proposed development area was considered to be low-medium. Habitat opportunities available for utilisation by fauna in the proposed development area included woody debris, dense groundcover and limited amounts of fissured tree bark and leaf litter. There was a moderate amount of fallen/felled timber present in the proposed development area, some of which contained hollows. The hollows have the potential to provide nesting and shelter sites for small mammals and detritus insects in the decaying timber could provide feeding opportunities for insectivorous fauna. The dense groundcover and limited amounts of leaf litter in the ground stratum may also provide shelter/nesting/feeding opportunities for small mammals or reptiles.

The canopy cover is severely limited and fragmented and is unlikely to provide nesting/shelter opportunities for fauna.

No fauna species of conservation significance under the NC Act and/or the EPBC Act were recorded within the proposed development area.

References

Pizzey G and Knight F, 1997, *Field Guide to the Birds of Australia*, Harper Collins Publishers, Australia
 Menkhorst P and Knight F, 2010, *A Field Guide to the Mammals of Australia*, Oxford University Press, United Kingdom