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Memorandum

To	**Andrew Stannard**	From	**Jane Stark c/o Aurecon**
Copy		Reference	**225678**
Date	**5 October 2012**	Pages (including this page)	**8**
Subject	**Roma Ecological Assessment Report – Addendum Lot 89 on WV456**		

Mr Stannard

This memorandum documents the results of an ecological investigation of the proposed development area located on Lot 89 WV456, as shown on Figure 1.1.

The proposed development area was assessed by two (2) Aurecon ecologists (Hayley Poole and Sandra Walters) on the 18 September 2012.

A report specific to other proposed development areas on Lot 89 WV456 has been previously prepared and submitted to Santos (Roma Ecological Assessment Report – Lots 88 & 89 WV456; Document Reference 0020-GLNG-4-1.3-0060).

This memorandum should be treated as an addendum to the report listed above. This memorandum is specific to the ecology of the proposed development area illustrated in Figure 1.1.

1 Ecological Assessment

1.1 General

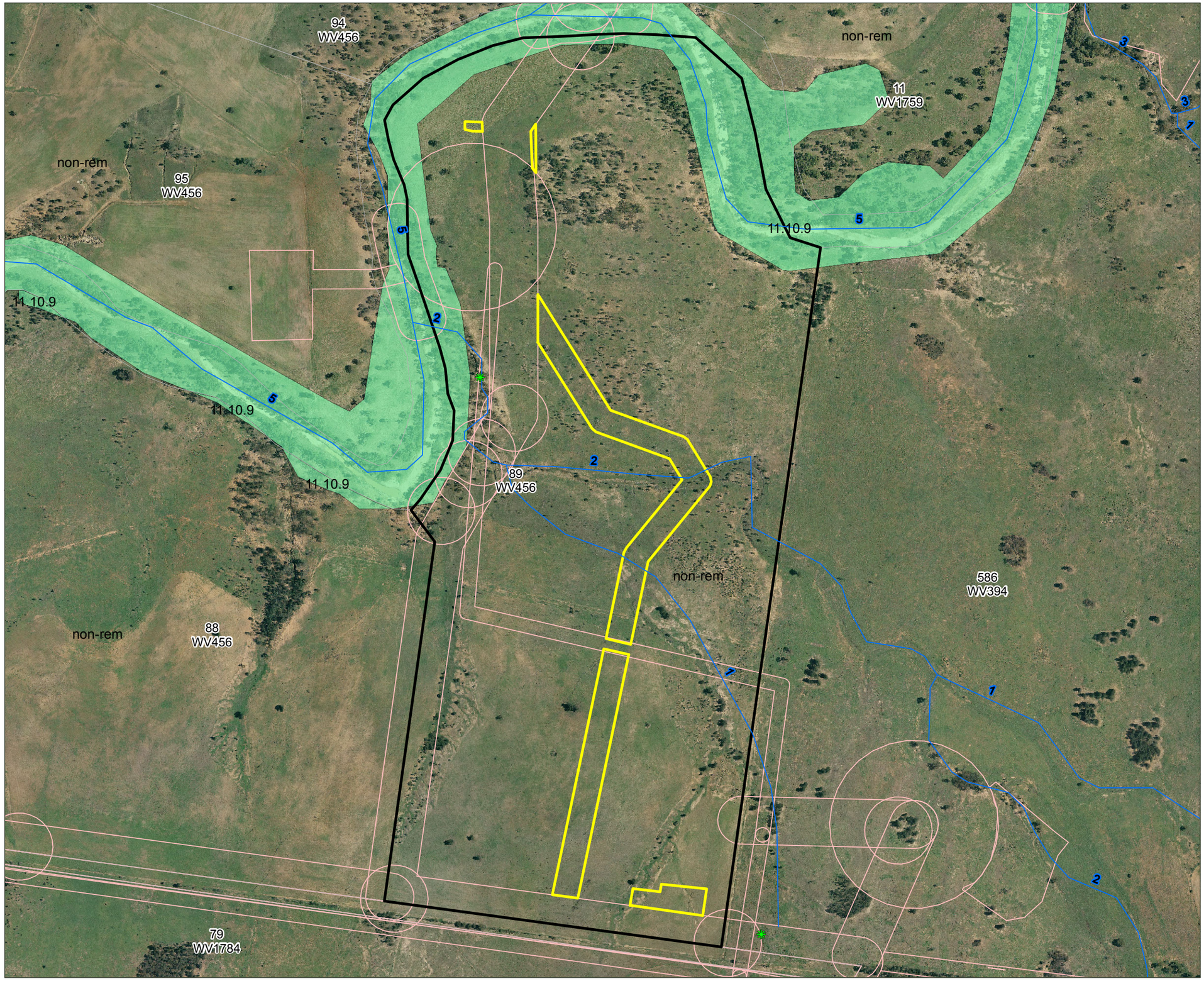
The proposed development area is located on Lot 89 on WV456 and includes a corridor for the purpose of a new road and areas for well site expansion. The proposed development area is currently mapped as non-remnant vegetation on the Regional Ecosystem (RE) mapping, which is certified by the Department of Environment and Heritage Protection (DEHP). There are no Environmentally Sensitive Areas (ESA) mapped within the proposed development area.

There are two (2) mapped watercourses which intersect the proposed road corridor. These watercourses are mapped as a ‘stream order 1’ and ‘steam order 2’.

The proposed development area has been extensively cleared. The landscape was flat to gently undulating.

1.2 Floristics

The proposed development area was generally devoid of canopy vegetation and contained only scattered shrubs. One large *Eucalyptus populnea* (Poplar box) approximately 25 m high was noted within the northern end of the corridor. Apart from this one mature tree, the scattered woody vegetation located within the proposed development area had a height range of 1 to 5 m. Shrubs present within the area included *Eremophila mitchellii* (False sandalwood), *Eucalyptus populnea* (Poplar box), *Psydrax oleifolia* (Hatstand), *Geijera parviflora* (Wilga), *Alectryon diversifolius* (Scrub boonaree), *Citrus glauca* (Limebush), *Acacia excelsa* (Ironwood), *Acacia decora* (Pretty wattle) and *Alectryon oleifolius* (Boonaree). The shrub layer had less than 5% cover and had an average height of 1.5 m.



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Legend

- Type A and EVNT's
- Watercourses V2.1
- Ground Truthed Areas
- Upstream ground truth areas
- ESA Category A
- ESA Category B
- ESA Category C

Regional Ecosystem (Biodiversity Status)

- Endangered - Dominant
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- Not of Concern

Notes:

Date: 28/09/2012 Version: 1

Map by: Moore NK P:\Aurecon\215648 Santos\Mapping\89WV456_Overview.mxd 28/09/2012 3:45:39 PM

A3 scale: 1:8,000

0 250m

Job No: 225678

Coordinate system: GDA 1994 MGA Zone 55

Santos Ecological Assessment Report Lot 89 on WV456

Figure 1.1: Lot Overview Map

The ground layer species diversity varied across the site. In the south-eastern corner, the proposed development area was dominated by *Dichanthium sericeum* (Queensland bluegrass). At the southern end of the corridor, *Sorghum halepense* (Johnson grass) dominated in large patches, which graded into areas of *Pennisetum ciliare* (Buffel grass), *Panicum decompositum* (Hairy panic), *Chloris pectinata* (Comb chloris), *Chloris divaricata* (Slender chloris), *Heteropogon contortus* (Black spear grass) and *Aristida jerichoensis* (Jericho wiregrass) as the corridor extended further north. Other common ground layer species present throughout the proposed development area included *Maireana microphylla* (Small-leaf bluebush), *Medicago polymorpha* (Burr medic), *Verbena tenuisecta* (Mayne's curse), *Salsola kali* (Soft roly poly), *Calotis cuneifolia* (Purple burr daisy) and *Cirsium vulgare* (Spear thistle). In low-lying areas, *Themeda triandra* (Kangaroo grass), *Juncus usitatus* (Juncus) and *Lomandra* (Mat rush) species were evident. The ground layer had a height range of 0.2 m to 0.8 m, with an average height of 0.5 m. The ground cover was approximately 80% with a significant proportion of native species (greater than 70% overall).

Photo 1.1 shows an example of the vegetation present within the proposed development area.

Photo 1.1 **A photograph showing the typical vegetation located within the proposed development area**

Opuntia tomentosa (Velvety tree pear), *Opuntia stricta* (Prickly pear) and *Lycium ferocissimum* (African boxthorn) were observed within the proposed development area. These species are listed as 'Class 2 pests' declared under the provisions of the *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act).

No species of conservation significance as listed under the provisions of the NC Act and/or the EPBC Act were recorded during site investigations. No Type A restricted plant species as listed under the provisions of the NC Act were recorded in the proposed development areas.

A list of botanical species recorded within the development area is provided in Appendix A.

1.3 Habitat Value

The overall habitat value of the proposed development area was considered to be low. The area has been extensively cleared, and as a result, is relatively devoid of canopy vegetation. One large *Eucalyptus populnea* (Poplar box) tree was identified as a significant habitat tree at the northern end of the corridor. The tree contained an active Wedge-tailed Eagle (*Aquila audax*) nest (Refer Photo 1.2), which appeared to have been used this season with evidence of fresh nest material and clusters of droppings on the ground below. The tree also contained numerous hollowed branches and a smaller nest in the lower branches. The location of this significant habitat tree is outlined in Table 1.1.

Table 1.1 Location of Significant Habitat Features

Significant habitat feature	Easting (GDA 94, Zone 55J)	Northing (GDA 94, Zone 55J)
Active Wedge-tailed eagle *(Aquila audax)* nest and significant habitat tree (refer Photo 1.2)	703018	7070118

Photo 1.2 A Wedge-tailed eagle *(Aquila audax)* nest which was identified in the upper branches of a mature *Eucalyptus populnea* (Poplar box) tree at the northern end of the corridor

There was evidence of natural drainage in the location of the mapped watercourses, however there were no defined bed and banks or pools of water that might provide significant habitat value for aquatic species.

The overall habitat value was considered low for the following reasons:

- Lack of canopy vegetation for shelter, foraging and perching purposes
- Lack of fissured bark
- Lack of woody debris, including hollow logs for shelter of small mammals and reptiles
- Very little leaf litter evident
- No rocky crevices or significant watercourse habitat located within the proposed development area

Incidental fauna recorded during the site investigation are outlined in Table 1.2.

Table 1.2 Incidental fauna recorded during the site investigation

Common name	Scientific name
Birds	
Acanthagenys rufogularis	Spiny-cheeked honeyeater
Cincloramphus cruralis	Brown songlark
Cisticola exilis	Golden-headed cisticola
Corvus orru	Torresian crow
Cracticus nigrogularis	Pied butcherbird
Grallina cyanoleuca	Magpie-lark
Malurus lamberti	Variegated fairy-wren
Nymphicus hollandicu	Cockatiel
Ocyphaps lophotes	Crested pigeon
Platycercus adscitus	Pale-headed rosella
Rhipidura leucophrys	Willie wagtail
Smicrornis brevirostris	Weebill
Taeniopygia bichenovii	Double-barred finch
Mammals	
Macropus rufogriseus	Red-necked wallaby

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

2 Conclusion

The proposed development areas have been extensively cleared and as a result of this, are mapped as non-remnant vegetation. There are two mapped ‘watercourses’ which intersect the proposed road corridor. These ‘watercourses’ are mapped as a ‘stream order 1’ and ‘steam order 2’.

No ESA’s are mapped within the proposed development area.

One significant habitat tree (ie nests, hollow branches) was recorded at the northern end of the proposed development corridor.

No flora or fauna species of conservation significance under the NC Act and/or the EPBC Act were observed within the proposed development area. The overall habitat value was considered to be low.

3 References

Eyre, T.J., Kelly, A.L, Neldner, V.J., Wilson, B.A., Ferguson, D.J., Laidlaw, M.J. and Franks, A.J. (2011). *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland. Assessment Manual*. Version 2.1. Department of Environment and Resource Management (DERM), Biodiversity and Ecosystem Sciences, Brisbane.

Pizzey G and Knight F, 1997, *Field Guide to the Birds of Australia*, Harper Collins Publishers, Australia

Appendix A

Botanical species recorded within the proposed development areas on Lot 89 on WV456

Family name	Scientific name	Common name	Notes
Fabaceae - mimosoideae	*Acacia decora*	Pretty wattle	
Fabaceae - mimosoideae	*Acacia excelsa*	Iron wood	
Euphorbiaceae	*Acalypha eremorum*	Turkey bush	
Sapindaceae	*Alectryon diversifolius*	Scrub boonaree	
Sapindaceae	*Alectryon oleifolius*	Boonaree	
Primulaceae	*Anagallis arvenis*	Pimpernel	Non-native
Poaceae	*Aristida calycina*	Dark wiregrass	
Poaceae	*Aristida jerichoensis*	Jericho wire grass	
Poaceae	*Austrostipa verticillata*	Slender bamboo grass	
Asteraceae	*Bidens pilosa*	Cobblers pegs	Non-native
Asteraceae	*Calocephalus platycephalus*	Billy buttons	
Asteraceae	*Calotis cuneifolia*	Purple burr daisy	
Asteraceae	*Calotis scabiosifolia*	Rough daisy burr	
Casuarinaceae	*Casuarina cristata*	Belah	
Asteraceae	*Centaurea melitensis*	Maltese cockspur	Non-native
Chenopodiaceae	*Chenopodium desertorum*	Desert goosefoot	
Poaceae	*Chloris divaricata*	Windmill chloris, slender chloris	
Poaceae	*Chloris gayana*	Common rhodes grass	
Poaceae	*Chloris pectinata*	Comb chloris	
Poaceae	*Chloris ventricosa*	Tall chloris	
Asteraceae	*Chrysocephalum apiculatum*	Yellow buttons	
Asteraceae	*Cirsium vulgare*	Spear thistle, black thistle	Non-native
Rutaceae	*Citrus glauca*	Lime bush	
Asteraceae	*Conyza bonariensis*	Fleabane	Non-native
Poaceae	*Cynodon dactylon*	Green couch	Non-native
Cyperaceae	*Cyperus difformis*	Dirty dora	
Apiaceae	*Daucus glochidatus*	Wild carrot	
Phormiaceae	*Dianella longifolia*	Dianella	
Poaceae	*Dichanthium sericeum*	Queensland blue grass	
Sapindaceae	*Dodonaea viscosa*	Sticky hopbush	
Poaceae	*Enteropogon ramosus*	Twirly windmill grass	
Poaceae	*Eragrostis alveiformis*	Granite lovegrass	
Poaceae	*Eragrostis elongata*	Clustered lovegrass	

Family name	Scientific name	Common name	Notes
Poaceae	*Eragrostis lacunaria*	Purple lovegrass	
Poaceae	*Eragrostis sororia*	Woodland lovegrass	
Myoporaceae	*Eremophila mitchellii*	False sandalwood	
Myrtaceae	*Eucalyptus populnea*	Poplar box	
Santalaceae	*Evolvulus alsinoides*	Tropical speedwell	
Cyperaceae	*Fimbristylis dichotoma*	Fimbristylis	
Rutaceae	*Geijera parviflora*	Wilga	
Goodeniaceae	*Goodenia glabra*	Smooth goodenia	
Proteaceae	*Grevillea striata*	Beefwood	
Poaceae	*Heteropogon contortus*	Black spear grass	
Fabaceae - faboideae	*Indigofera hirsuta*	Hairy indigo	
Juncaceae	*Juncus usitatus*	Juncus	
Brassicaceae	*Lepidium sagittulatum*	Pepper cress	
Lomandraceae	*Lomanda leucocephala*	Lomandra	
Lomandraceae	*Lomandra longifolia*	Lomandra	
Lomandraceae	*Lomandra multiflora*	Lomandra	
Solanaceae	*Lycium ferocissimum*	African boxthorn	Non-native , LP Act Class 2 Weed
Chenopodiaceae	*Maireana microphylla*	Small-leaf bluebush	
Malvaceae	*Malvastrum americanum*	Spiny malvastrum	Non-native
Fabaceae - faboideae	*Medicago laciniata*	Cut-leaf medic	Non-native
Fabaceae - faboideae	*Medicago polymorpha*	Burr medic	Non-native
Fabaceae - faboideae	*Medicago scutellata*	Snail medic	Non-native
Poaceae	*Megathurus maximus*	Green panic	Non-native
Cactaceae	*Opuntia stricta*	Prickly pear	Non-native , LP Act Class 2 Weed
Cactaceae	*Opuntia tomentosa*	Velvety tree pear	Non-native , LP Act Class 2 Weed
Poaceae	*Panicum decompositum*	Hairy panic	
Poaceae	*Pennisetum ciliare*	Buffel grass	Non-native
Plantaginaceae	*Plantago cunninghamii*	Sago weed	
Asteraceae	*Podolepis jaceoides*	Showy copper wire daisy	
Rubiaceae	*Psydrax oleifolia*	Canthium	
Asteraceae	*Pycnosorus globosus*	Drumsticks	
Chenopodiaceae	*Salsola kali*	Roly poly	
Chenopodiaceae	*Sclerolaena birchii*	Galvanised burr	

Family name	Scientific name	Common name	Notes
Asteraceae	*Senico lautus*	Fireweed	
Malvaceae	*Sida hackettiana*	Queensland hemp	
Malvaceae	*Sida rohlenae*	Shrub sida	
Poaceae	*Sorghum halepense*	Johnson grass	Non-native
Poaceae	*Sporobolus caroli*	Fairy grass	
Poaceae	*Sporobolus creber*	Western rats tail grass	
Verbenaceae	*Stachytarpheta jamaicensis*	Blue snakeweed	Non-native
Poaceae	*Themeda avenacea*	Wild oats grass	Non-native
Poaceae	*Themeda triandra*	Kangaroo grass	
Araliaceae	*Tracymene ochracea*	White parsnip	
Asteraceae	*Tridax procumbens*	Tridax daisy	Non-native
Poaceae	*Urochloa mosambicensis*	Urochloa, sabi grass	Non-native
Verbenaceae	*Verbena litoralis*	Tall verbena	Non-native
Verbenaceae	*Verbena tenuisecta*	Mayne's curse	Non-native
Campanulaceae	*Wahlenbergia communis*	Large bluebells	
Asteraceae	*Xanthium occidentale*	Noogoora burr	Non-native