

APPENDIX 4

Ecology Study Jaeckeli Creek



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Project No. 087661002 005 L Rev0

Mr Aaron Steinhart
Penrice, Quarry and Minerals
Penrice Road
ANGASTON SA 5353

JAECKELI CREEK FLORA AND FAUNA ASSESSMENT

Dear Aaron

This letter report presents an assessment of the existing remnant vegetation along Jaeckeli creek (the site) as undertaken by Golder Associates Pty Ltd (Golder) on 23 April 2008. The site is located in the proposed north-west overburden expansion area of the Penrice Quarry, Angaston, SA. Golder understands that the proposed intent of the expansion into this area is to place waste rock in the areas immediately to the north and south of the creek line in areas currently under intensive viticulture.

Floristic Associations

The site is dominated by Jaeckeli creek, which flows in a north westerly direction from the quarry where it joins the North Para River approximately one kilometre from the site. The extent of the creek on the site is approximately 300 m long, and is flanked by remnant, riverine vegetation varying in width from 30 to 45 m.

This remnant vegetation is dominated by old growth River Red Gums (*Eucalyptus camaldulensis*) to a height of between 15 and 22 m (Figure 1), with a mid-storey of South Australian Blue-gum (*E. leucoxylon leucoxylon*), Peppermint Box (*E. odorata*) and Drooping She-oak (*Allocasuarina verticillata*) varying in height from seven to 20 m. The understorey is very sparse (Figure 2), primarily due to impacts from the modification of the creek bed through sand extraction and minor damming. Understorey species consist of juvenile South Australian Blue-gum, Peppermint Box and Drooping She-oak. Groundcover is dominated by non-native Foxtail Grass (*Alopecurus* sp.), Oat Grasses (*Avena* sp.) and native Panic Grass (*Digitaria* sp.). A section of the creek has been planted with a selection of non-native fruit and nut trees (Figure 3).

A patch of planted South Australian Blue-gums, with an average height of nine metres, occurs to the north of the creek on the eastern side (Figure 4).

Conservation Status

The vegetation along the creek is consistent with the definition of native vegetation as prescribed in the *Native Vegetation Act 1991* (NV Act). Additionally, all native vegetation within South Australia, with the exception of certain metropolitan areas, is protected in accordance with the NV Act, as administered by the Native Vegetation Council, unless subject to an exemption. As such, the vegetation on the site is protected under the NV Act for the purposes of meeting an objective of that Act, which is the conservation, protection and enhancement of native vegetation. Therefore, this can be construed as formal conservation status wherein a consent to clear (harm) the vegetation would need to be sought from the Native Vegetation Council. However, as the intention of the project is not to clear the area, but rather to place waste rock to the

north and south of the vegetation, such consent may not be needed – provided none of the vegetation is subject to clearance as defined under the NV Act.

No threatened plants, listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) were observed on the site. Neither does the site support the critically endangered Peppermint Box grassy woodland community; although species common to this community are present on the site, the site is dominated by River Red Gums, which are not a feature of that particular community.

Habitat Values

The vegetation provides significant resources, in the form of pollen, nectar, roost and nest sites for local fauna within a landscape that is largely devoid of significant patches of such resources as a result of intensive viticulture and other land management practices. The age and size of the trees also provides numerous hollows that are an important, yet limited resource. Indeed, loss of such hollows is recognised as one of the greatest threats to biodiversity (Gibbons, P and Lindenmayer, D 2002. *Tree Hollows and Wildlife Conservation in Australia*. CSIRO Publishing, Collingwood). This is especially the case of the vegetation on the site, which forms a significant resource in a highly fragmented landscape. Such mature vegetation in the region tends to be confined to watercourses, with the nearest stand located approximately one kilometre distant from the site.

Weeds and Pathogens

Weeds typical of the area are scattered through the understorey of the vegetation. In particular, the declared Soursobs (*Oxalis pes-caprae*) and Olive (*Olea europaea*) were observed. Other weeds observed included Fennel (*Foeniculum vulgare*), Foxtail Grass and Oat grass. Management of these weed species will be required in the long-term. It should be noted that, given the extremely dry conditions on the site, other weed species may be present but were not detected due to lack of vegetative parts. It is recommended that weeds, particularly the declared species be controlled on the site using herbicide treatment.

Historical Impacts

The current state of the vegetation cannot be considered pristine; as mentioned above, the creek line has been dammed in the past at three separate points along its reach, sand has been extracted at one location (Figure 2), fruit and nut trees have been planted on the southern bank (Figure 3), intensive grazing has impacted the bed and banks, and disused farm equipment has been placed in the creek line (Figure 4).

The upper reaches of the creek have been cut off by the expanding quarry. The implications of this on the long-term flows in the creek are unknown.

Fauna

The vegetation supports a range of fauna species typical of an intensively managed, viticultural area in the Barossa Valley. The dominant faunal group are birds, with evidence of Rabbit (*Oryctolagus cuniculus*) common across the site and unidentified Macropods. Those species encountered on the site are listed in Table 1. No rare or threatened species were encountered during the survey and no such federally protected species (i.e., as listed under the EPBC Act) are expected to occur on the site. However, the potential for state listed rare and threatened species (i.e., as prescribed under the *National Parks and Wildlife Act 1972*) to be supported on the site, should not be precluded. Specifically, the site does support habitat for the endangered Little Bent-wing Bat (*Miniopterus schreibersii bassanii*) and Square-tailed Kite (*Lophoictinia isura*), as well as, the rare Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*) and Common Brushtail Possum (*Trichosurus vulpecula*).

Table 1: Fauna Species Encountered on the Site

Common Name	Species
Australian Magpie	<i>Gymnorhina tibicen</i>
Red Wattlebird	<i>Anthochaera carunculata</i>
New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>
White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>
Singing Honeyeater	<i>Lichenostomus virescens</i>
Crested Pigeon	<i>Ocyphaps lophotes</i>
Peaceful Dove	<i>Geopelia striata</i>
Willy Wagtail	<i>Rhipidura leucophrys</i>
Adelaide Rosella	<i>Platycercus elegans</i>
White-cheeked Rosella	<i>Platycercus eximius</i>
Purple-crowned Lorikeet	<i>Glossopsitta porphyrocephala</i>
Australian Raven	<i>Corvus coronoides</i>
Little Crow	<i>Corvus bennetti</i>

Potential Impacts

The location of the proposed waste rock dumps to the north and to the south of the creek line may impact upon the existing vegetation in a number of ways. These include:

- Altered flow regimes in the creek – the upper reaches of the creek have been eliminated by the advancing quarry; hence, the flow in the creek may be severely diminished during flow events. Typically, River Red Gums require periodic flooding to survive. The reduced flows in the creek may impact upon the long-term health of these trees.
- Dusting of vegetation – given the close proximity of the waste rock dumps to the vegetation, the potential exists for the smothering of the vegetation by dust. This may lead to decreased photosynthetic capacity, which, in the long-term, may affect the health of the vegetation.
- Impacts to groundwater – an unknown impact may result from the surcharge of the waste rock causing a rise in the groundwater into the creek. This will need further investigation.
- Noise – noise from the construction and operation of the waste rock dumps may impact upon local bird species; however, typically, birds habituate to noisy environments rapidly.

Generally, the long-term health of the vegetation may be impacted, with the senescing of the vegetation potentially occurring in the medium to long-term (10 to 20 years).

Recommendations

With the anticipated impacts listed above, and given that the vegetation along the creek line is a significant resource in a highly fragmented landscape, the following recommendations are suggested.

- The long-term effects of the rock dumps on the health of the vegetation may be mitigated by off-setting a similar area nearby to create a significant environmental benefit (SEB). The eastern corner of the site near the town of Penrice and the northern corner of the property are two possible locations for off-setting vegetation on the site.
- A buffer zone of at least 25 m on the north and south banks of the creek should be created, as well as, the regular wetting down of the dumps to prevent dust migrating off them.

With the implementation of these recommendations, the long-term health of the vegetation may still be compromised; therefore, the identification and enhancement of suitable off-set areas will need to be conducted as soon as possible.



Figure 1 : River Red Gum dominated riverine, vegetation



Figure 2 : Sand extraction site in the creek bed



Figure 3 : Planted, non-native fruit and nut trees



Figure 4 : Revegetated area with South Australian Blue-gum



Figure 5 : Agricultural equipment on banks of creek

Yours faithfully

GOLDER ASSOCIATES PTY LTD

Mervyn Mason
Senior Ecologist

MM/AMB/mm

Alexandra Blood
Senior Environmental Consultant

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