APPENDIX 1-3

GDE Memo
30 January 2017
Our ref: 11133-3397-15L

Lara Jefferson
Environment Manager
Hastings Technology Metals
C/- Wave International
306 Murray Street, Perth
Western Australia 6000

Dear Lara

IMPACT OF POST MINING GROUNDWATER DRAWDOWN ON GROUNDWATER DEPENDANT ECOSYSTEMS

During 2015, Ecoscape conducted Level 2 Flora, Vegetation and Fauna assessments within Hastings’ Yangibana study area, in the Gascoyne region of Western Australia. Since then, the post mining groundwater drawdown modelling has been conducted. This document presents the results of this modelling with regards to the potential impacts to Groundwater Dependant Ecosystems (GDEs).

As outlined by Ecoscape (2016), vegetation types with the phreatophytic species *Eucalyptus camaldulensis* were considered to represent a GDE whilst vegetation characterised by *Eucalyptus victrix* were considered potentially representative of a GDE. The EcMgCc vegetation type was dominated by *Eucalyptus camaldulensis* and is therefore considered as a GDE. The EvCc and EvReMg vegetation types were characterised by *Eucalyptus victrix* whilst the AcEt and AcAsCc occasionally contained this species and may therefore represent a GDE.

The modelled post mining groundwater drawdown is presented in the maps attached (Figure 4, Figure 5, Figure 6 and Figure 7). This mapping demonstrates that, of the GDEs (or potential GDEs) identified within the Yangibana study area, only the AcEt vegetation type intersects the modelled post mining drawdown. This includes 19.05 ha at ‘Bald Hill’, 22.09 ha at ‘Frasers’ and 100.61 ha at ‘Yangibana’ (total of 141.74 ha).

The AcEt vegetation type is primarily dominated by *Acacia cyperophylla* which is not known or considered to be a groundwater dependant species. This vegetation type was only occasionally observed to contain scattered or isolated individuals of *Eucalyptus victrix*, more commonly this species was absent. Therefore, it is considered unlikely that the AcEt vegetation type represents a groundwater dependant, at least in most cases. The potential impact of post mining groundwater drawdown on GDE’s is therefore considered likely to be negligible or nil.

Yours sincerely

Ecoscape (Australia) Pty Ltd

STEPHEN KERN
Senior Botanist, Team Leader

QA Approved by: Lyn Atkins
Associate Environmental Scientist

Date: 30/01/2017

[Signature]
LEGEND
- Flora and Fauna Survey Area
- Development Envelope
- Indicative Footprint
- Pits
- Other Infrastructure
- Groundwater Drawdown Areas
- Potential GDEs
  - Vadophytic to Weakly Phreatophytic

AcEt

FRASERS POST MINING GROUNDWATER DRAWDOWN

YANGIBANA RARE EARTHS PROJECT

CLIENT: HASTINGS

FIGURE 04