



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6961/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hamersley Iron Pty Ltd

1.3. Property details

Property: Iron Ore (Hamersley Range) Agreement Act 1963, Mineral Lease 4SA (AML 70/4)
Local Government Area: Shire of Ashburton
Colloquial name: Brockman Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
500		Mechanical Removal	Mineral Exploration, Hydrogeological and Geotechnical Investigation and Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 19 May 2016

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia. Four Beard vegetation association have been mapped within the application area (GIS Database):

- 18: Low woodland; mulga (*Acacia aneura*)
- 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;
- 174: Short bunch grassland – savannah/grass plain (Pilbara); and
- 567: Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & *Triodia basedowii* (Government of Western Australia, 2011; GIS Database).

Numerous vegetation surveys have been undertaken over the application area and its surrounds (Rio Tinto, 2016). These surveys have been consolidated into one report, and have identified a total of 128 vegetation associations being present within the application area (Hamersley Iron, 2016; Rio Tinto, 2016).

Aa-hp	<i>Acacia aneura</i> and <i>Eucalyptus leucophloia</i> scattered low trees / low open woodland, over <i>Acacia aneura</i> var. <i>pilbarana</i> , tall shrubland, over <i>Acacia aneura</i> and <i>Acacia hamersleyensis</i> open shrubland, over <i>Triodia wiseana</i> open hummock grassland.
AapAciTeTw	<i>Acacia aptaneura</i> , <i>A. citrinoviridis</i> tall shrubland over <i>Triodia epactia</i> , <i>T. wiseana</i> open hummock grassland
AbAexAaTw	<i>Acacia bivenosa</i> , <i>A. exigua</i> , <i>A. ancistrocarpa</i> tall open shrubland over <i>Triodia wiseana</i> hummock grassland
AbTw	<i>Acacia bivenosa</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>Maireana georgei</i> low open shrubland over <i>Triodia wiseana</i> scattered hummock grasses.
AfAxTw	Scattered low trees of <i>Acacia fuscaneura</i> over tall open shrubland of <i>Acacia xiphophylla</i> over scattered shrubs of <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>Senna glutinosa</i> subsp. <i>x luerssenii</i> over very open hummock grassland of <i>Triodia wiseana</i>
AmDp-rs	Isolated <i>Eucalyptus leucophloia</i> low trees, over Scattered <i>Astrotricha hamptonii</i> and <i>Acacia aneura</i> tall shrubs, over open shrubland / low shrubland of <i>Acacia marramamba</i> , <i>Dodonaea pachyneura</i> , and <i>Astrotricha hamptonii</i> , over <i>Triodia wiseana</i> very open hummock grassland
AmoApyCAgTw	<i>Acacia monticola</i> , <i>A. pyrifolia</i> tall shrubland to tall open shrubland over <i>Cassia glutinosa</i> open shrubland over <i>Triodia wiseana</i> hummock grassland
ApDpTw	Tall open shrubland of <i>Acacia pteraneura</i> , <i>Acacia aptaneura</i> and <i>Acacia pruinocarpa</i> over scattered shrubs of <i>Dodonaea pachyneura</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> over very open hummock grassland of <i>Triodia wiseana</i> over scattered tussock grasses of <i>Cymbopogon ambiguus</i> over very open bunch grassland of <i>Eriachne mucronata</i> , <i>Paspalidium basicladum</i> and <i>Paraneurachne muelleri</i> over scattered herbs of <i>Dysphania rhadinostachya</i>
AxAapTssp	<i>Acacia xiphophylla</i> , (<i>A. aptaneura</i>) tall shrubland over <i>Triodia</i> spp. very open hummock grassland

AxSITpTw	<i>Acacia xiphophylla</i> tall open shrubland over <i>Triodia pungens</i> and <i>Triodia wiseana</i> open hummock grassland occurring on flat plains.
BR01	<i>Eucalyptus leucophloia</i> scattered trees to low open woodland over <i>Senna glutinosa</i> subsp. <i>glutinosa</i> , <i>Acacia bivenosa</i> and/ or <i>A. synchronicia</i> scattered shrubs over <i>Triodia epactia</i> open hummock grassland.
CD	Completely Degraded
CD1	<i>Eucalyptus camaldulensis</i> , <i>E. victrix</i> open woodland over <i>Acacia citrinoviridis</i> tall shrubland over mixed open tussock grassland
CD12	<i>Eucalyptus xerothermica</i> , <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia bivenosa</i> , <i>A. cowleana</i> , <i>A. elachantha</i> , <i>A. exilis</i> tall shrubland over <i>Triodia epactia</i> hummock grassland and <i>Eulalia aurea</i> open tussock grassland
CD16	<i>Eucalyptus xerothermica</i> low woodland over <i>Acacia bivenosa</i> , <i>A. atkinsiana</i> , <i>A. maitlandii</i> shrubland to closed heath over <i>Triodia epactia</i> hummock grassland
CD19	<i>Eucalyptus leucophloia</i> low woodland over <i>Acacia citrinoviridis</i> , <i>Acacia monticola</i> , <i>Dodonaea pachyneura</i> tall shrubland over <i>Triodia epactia</i> hummock grassland
CD24	<i>Corymbia hamersleyana</i> , <i>Eucalyptus leucophloia</i> low woodland over <i>Grevillea wickhamii</i> tall shrubland over <i>Gossypium robinsonii</i> open shrubland over <i>Themeda</i> sp. Mt. Barricade, <i>Eulalia aurea</i> , <i>Paraneurachne muelleri</i> open tussock grassland or <i>Triodia epacti</i>
CD28	<i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia bivenosa</i> , <i>Petalostylis labicheoides</i> shrubland over <i>Triodia epactia</i> hummock grassland
CD31	<i>Acacia monticola</i> , <i>A. maitlandii</i> , <i>A. atkinsiana</i> , <i>A. exilis</i> , <i>A. ancistrocarpa</i> tall shrubland over <i>Triodia epactia</i> , <i>T. wiseana</i> open hummock grassland
CD32	<i>Petalostylis labicheoides</i> shrubland over <i>Triodia epactia</i> hummock grassland
CD33	<i>Stylobasium spathulatum</i> shrubland over <i>Triodia epactia</i> hummock grassland
CD4	<i>Eucalyptus victrix</i> scattered low trees to open woodland over <i>Goodenia lamprosperma</i> , <i>Pluchea dentex</i> very open herbland
CD5	<i>Eucalyptus victrix</i> , <i>E. xerothermica</i> open woodland over <i>Acacia citrinoviridis</i> tall open scrub over mixed tussock grassland
CD6	<i>Eucalyptus xerothermica</i> low open woodland over <i>Acacia citrinoviridis</i> tall open scrub over <i>Triodia epactia</i> open hummock grassland and/or mixed tussock grassland
CD7	<i>Acacia citrinoviridis</i> tall shrubland over mixed tussock grassland or <i>Triodia epactia</i> hummock grassland
CD9	<i>Acacia citrinoviridis</i> , <i>A. aneura</i> tall open shrubland over mixed open hummock grassland
CdTw	<i>Corymbia deserticola</i> subsp. <i>deserticola</i> scattered low trees over <i>Triodia wiseana</i> and <i>Triodia schinzii</i> very open hummock grassland.
CD	Completely Degraded
CD1	<i>Eucalyptus camaldulensis</i> , <i>E. victrix</i> open woodland over <i>Acacia citrinoviridis</i> tall shrubland over mixed open tussock grassland
CD12	<i>Eucalyptus xerothermica</i> , <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia bivenosa</i> , <i>A. cowleana</i> , <i>A. elachantha</i> , <i>A. exilis</i> tall shrubland over <i>Triodia epactia</i> hummock grassland and <i>Eulalia aurea</i> open tussock grassland
CD16	<i>Eucalyptus xerothermica</i> low woodland over <i>Acacia bivenosa</i> , <i>A. atkinsiana</i> , <i>A. maitlandii</i> shrubland to closed heath over <i>Triodia epactia</i> hummock grassland
CD19	<i>Eucalyptus leucophloia</i> low woodland over <i>Acacia citrinoviridis</i> , <i>Acacia monticola</i> , <i>Dodonaea pachyneura</i> tall shrubland over <i>Triodia epactia</i> hummock grassland
CD24	<i>Corymbia hamersleyana</i> , <i>Eucalyptus leucophloia</i> low woodland over <i>Grevillea wickhamii</i> tall shrubland over <i>Gossypium robinsonii</i> open shrubland over <i>Themeda</i> sp. Mt. Barricade, <i>Eulalia aurea</i> , <i>Paraneurachne muelleri</i> open tussock grassland or <i>Triodia epacti</i>
CD28	<i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia bivenosa</i> , <i>Petalostylis labicheoides</i> shrubland over <i>Triodia epactia</i> hummock grassland
CD31	<i>Acacia monticola</i> , <i>A. maitlandii</i> , <i>A. atkinsiana</i> , <i>A. exilis</i> , <i>A. ancistrocarpa</i> tall shrubland over <i>Triodia epactia</i> , <i>T. wiseana</i> open hummock grassland
CD32	<i>Petalostylis labicheoides</i> shrubland over <i>Triodia epactia</i> hummock grassland
CD33	<i>Stylobasium spathulatum</i> shrubland over <i>Triodia epactia</i> hummock grassland
CD4	<i>Eucalyptus victrix</i> scattered low trees to open woodland over <i>Goodenia lamprosperma</i> , <i>Pluchea dentex</i> very open herbland
CD5	<i>Eucalyptus victrix</i> , <i>E. xerothermica</i> open woodland over <i>Acacia citrinoviridis</i> tall open scrub over mixed tussock grassland
CD6	<i>Eucalyptus xerothermica</i> low open woodland over <i>Acacia citrinoviridis</i> tall open scrub over <i>Triodia epactia</i> open hummock grassland and/or mixed tussock grassland
CD7	<i>Acacia citrinoviridis</i> tall shrubland over mixed tussock grassland or <i>Triodia epactia</i> hummock grassland
CD9	<i>Acacia citrinoviridis</i> , <i>A. aneura</i> tall open shrubland over mixed open hummock grassland
CdTw	<i>Corymbia deserticola</i> subsp. <i>deserticola</i> scattered low trees over <i>Triodia wiseana</i> and <i>Triodia schinzii</i> very open hummock grassland.
CfDpTw	Scattered low trees of <i>Corymbia ferritcola</i> and <i>Acacia aptaneura</i> over open shrubland of <i>Dodonaea pachyneura</i> , <i>Astrotricha hamptonii</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>Acacia marramamba</i> over open hummock grassland of <i>Triodia wiseana</i> and <i>Triodia epatica</i> over very open tussock grassland of <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i>
ChAaAmAp	<i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia ancistrocarpa</i> , <i>Acacia monticola</i> , <i>Acacia pruinocarpa</i> tall open shrubland over <i>Triodia pungens</i> mid-

	dense hummock grassland
ChAaTe	Scattered low trees of <i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over scattered tall shrubs of <i>Acacia aptaneura</i> and <i>Acacia atkinsiana</i> over open shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> and <i>Acacia synchronicia</i> over scattered low shrubs of <i>Senna glutinosa</i> subsp. <i>×luerssenii</i> over open hummock grassland of <i>Triodia epatica</i> over scattered herbs of <i>Ptilotus calostachyus</i> and <i>Ptilotus nobilis</i> over scattered bunch grasses of <i>Eriachne pulchella</i>
ChAiGsTw	Scattered low trees of <i>Corymbia hamersleyana</i> , and <i>Eucalyptus leucophloia</i> and <i>Hakea chordophylla</i> over tall open shrubland of <i>Acacia inaequilatera</i> , <i>Acacia atkinsiana</i> , <i>Acacia pruinocarpa</i> and <i>Acacia trudgeniana</i> over scattered low shrubs of <i>Goodenia stobbsiana</i> and <i>Ptilotus calostachyus</i> over open hummock grassland of <i>Triodia wiseana</i> and <i>Triodia epatica</i> over scattered bunch grasses of <i>Amphipogon sericeus</i> and <i>Eriachne pulchella</i>
ChEgAiSg	<i>Corymbia hamersleyana</i> and <i>Eucalyptus gamophylla</i> scattered low trees (or mallee) over <i>Acacia inaequilatera</i> and <i>Senna glutinosa</i> subsp. <i>pruinosa</i> tall scattered shrubs over <i>Triodia pungens</i> hummock grassland occurring on plains.
ChEIACPIGr	<i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered trees over <i>Acacia citrinoviridis</i> , <i>Petalostylis labicheoides</i> and <i>Gossypium robinsonii</i> open shrubland over <i>Triodia pungens</i> open hummock grassland
ChEIAhAbAprTe	<i>Corymbia hamersleyana</i> , <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees to low open woodland over <i>Acacia hamersleyensis</i> , <i>A. bivenosa</i> , <i>A. pruinocarpa</i> scattered shrubs to open shrubland over <i>Triodia epactia</i> hummock grassland
ChEIAhAbAprTp	<i>Corymbia hamersleyana</i> , <i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia hamersleyensis</i> , <i>A. bivenosa</i> , <i>A. pruinocarpa</i> scattered shrubs over <i>Triodia pungens</i> hummock grassland
CfDpTw	Scattered low trees of <i>Corymbia ferritcola</i> and <i>Acacia aptaneura</i> over open shrubland of <i>Dodonaea pachyneura</i> , <i>Astrotricha hamptonii</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>Acacia marramamba</i> over open hummock grassland of <i>Triodia wiseana</i> and <i>Triodia epatica</i> over very open tussock grassland of <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i>
ChAaAmAp	<i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia ancistrocarpa</i> , <i>Acacia monticola</i> , <i>Acacia pruinocarpa</i> tall open shrubland over <i>Triodia pungens</i> mid-dense hummock grassland
ChAaTe	Scattered low trees of <i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over scattered tall shrubs of <i>Acacia aptaneura</i> and <i>Acacia atkinsiana</i> over open shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> and <i>Acacia synchronicia</i> over scattered low shrubs of <i>Senna glutinosa</i> subsp. <i>×luerssenii</i> over open hummock grassland of <i>Triodia epatica</i> over scattered herbs of <i>Ptilotus calostachyus</i> and <i>Ptilotus nobilis</i> over scattered bunch grasses of <i>Eriachne pulchella</i>
ChAiGsTw	Scattered low trees of <i>Corymbia hamersleyana</i> , and <i>Eucalyptus leucophloia</i> and <i>Hakea chordophylla</i> over tall open shrubland of <i>Acacia inaequilatera</i> , <i>Acacia atkinsiana</i> , <i>Acacia pruinocarpa</i> and <i>Acacia trudgeniana</i> over scattered low shrubs of <i>Goodenia stobbsiana</i> and <i>Ptilotus calostachyus</i> over open hummock grassland of <i>Triodia wiseana</i> and <i>Triodia epatica</i> over scattered bunch grasses of <i>Amphipogon sericeus</i> and <i>Eriachne pulchella</i>
ChEgAiSg	<i>Corymbia hamersleyana</i> and <i>Eucalyptus gamophylla</i> scattered low trees (or mallee) over <i>Acacia inaequilatera</i> and <i>Senna glutinosa</i> subsp. <i>pruinosa</i> tall scattered shrubs over <i>Triodia pungens</i> hummock grassland occurring on plains.
ChEIACPIGr	<i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered trees over <i>Acacia citrinoviridis</i> , <i>Petalostylis labicheoides</i> and <i>Gossypium robinsonii</i> open shrubland over <i>Triodia pungens</i> open hummock grassland
ChEIAhAbAprTe	<i>Corymbia hamersleyana</i> , <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees to low open woodland over <i>Acacia hamersleyensis</i> , <i>A. bivenosa</i> , <i>A. pruinocarpa</i> scattered shrubs to open shrubland over <i>Triodia epactia</i> hummock grassland
ChEIAhAbAprTp	<i>Corymbia hamersleyana</i> , <i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia hamersleyensis</i> , <i>A. bivenosa</i> , <i>A. pruinocarpa</i> scattered shrubs over <i>Triodia pungens</i> hummock grassland
CfDpTw	Scattered low trees of <i>Corymbia ferritcola</i> and <i>Acacia aptaneura</i> over open shrubland of <i>Dodonaea pachyneura</i> , <i>Astrotricha hamptonii</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> and <i>Acacia marramamba</i> over open hummock grassland of <i>Triodia wiseana</i> and <i>Triodia epatica</i> over very open tussock grassland of <i>Cymbopogon ambiguus</i> and <i>Eriachne mucronata</i>
ChAaAmAp	<i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia ancistrocarpa</i> , <i>Acacia monticola</i> , <i>Acacia pruinocarpa</i> tall open shrubland over <i>Triodia pungens</i> mid-dense hummock grassland
ChAaTe	Scattered low trees of <i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over scattered tall shrubs of <i>Acacia aptaneura</i> and <i>Acacia atkinsiana</i> over open shrubland of <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> and <i>Acacia synchronicia</i> over scattered low shrubs of <i>Senna glutinosa</i> subsp. <i>×luerssenii</i> over open hummock grassland of <i>Triodia epatica</i> over scattered herbs of <i>Ptilotus calostachyus</i> and <i>Ptilotus nobilis</i> over scattered bunch grasses of <i>Eriachne pulchella</i>
EIAciAprTe	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia</i>

	<i>pruinocarpa</i> , <i>A. citrinoviridis</i> tall open shrubland over <i>Triodia epactia</i> open hummock grassland
EIAcTe	Scattered <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> over tall shrubland of <i>Acacia citrinoviridis</i> and <i>Acacia pruinocarpa</i> over open shrubland of <i>Acacia marramamba</i> , <i>Acacia atkinsiana</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> over open hummock grassland of <i>Triodia epatica</i> and <i>Triodia wiseana</i>
EIAcTe	Scattered low trees of <i>Eucalyptus leucophloia</i> over tall open shrubland of <i>Acacia citrinoviridis</i> and <i>Acacia pruinocarpa</i> over open shrubland of <i>Acacia marramamba</i> , <i>Acacia atkinsiana</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> over open hummock grassland of <i>Triodia epatica</i> and <i>Triodia wiseana</i>
EIAiT	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia inaequilatera</i> scattered tall shrubs over <i>Triodia wiseana</i> hummock grassland
EIAmAatAexTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia maitlandii</i> , <i>A. atkinsiana</i> , <i>A. exigua</i> open shrubland over <i>Triodia wiseana</i> hummock grassland
EIAmAmAatTe	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia monticola</i> , <i>A. maitlandii</i> , <i>A. atkinsiana</i> tall open scrub over <i>Triodia epactia</i> , <i>T. wiseana</i> open hummock grassland
EIAmTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia maitlandii</i> shrubland over <i>Triodia wiseana</i> open hummock grassland
EIAAbSEn spp	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Acacia synchronicia</i> , <i>A. bivenosa</i> , <i>Senna</i> spp. scattered shrubs over <i>Triodia brizoides</i> open hummock grassland
EICdEgAatAex	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia deserticola</i> subsp. <i>deserticola</i> scattered low trees over <i>E. gamophylla</i> scattered low mallees over <i>Acacia atkinsiana</i> , <i>A. exigua</i> open shrubland over <i>Triodia wiseana</i> open hummock grassland
EICdTpTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and occasionally <i>Corymbia deserticola</i> subsp. <i>deserticola</i> scattered low trees over <i>Triodia pungens</i> and <i>Triodia wiseana</i> hummock grassland
EICfAciAapGb	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferritcola</i> , <i>Acacia citrinoviridis</i> , <i>A. aptaneura</i> , (<i>Grevillea berryana</i>) low woodland over <i>Dodonaea pachyneura</i> tall open shrubland over <i>Triodia epactia</i> very open hummock grassland
EICfAprAapDp	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferritcola</i> , <i>Acacia pruinocarpa</i> , <i>A. aptaneura</i> low open woodland over <i>Dodonaea pachyneura</i> scattered tall shrubs over <i>Triodia epactia</i> very open hummock grassland with <i>Eriachne mucronata</i> open tussock grassland
EICfAprApyHcTeTht	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferritcola</i> low open woodland over <i>Acacia pruinocarpa</i> , <i>A. pyrifolia</i> , <i>Hakea chordophylla</i> tall open shrubland over <i>Triodia epactia</i> hummock grassland and <i>Themeda triandra</i> open tussock grassland
EICHaAtp	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia hamersleyana</i> scattered low trees over <i>Acacia aptaneura</i> open shrubland over <i>Triodia pungens</i> hummock grassland occurring on flat plains and low rises.
EICHapyAinAmTeTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia hamersleyana</i> low open woodland over <i>Acacia pyrifolia</i> , <i>A. inaequilatera</i> , <i>A. maitlandii</i> tall open shrubland over <i>Triodia epactia</i> , <i>T. wiseana</i> hummock grassland
EICHtw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia hamersleyana</i> low open woodland over <i>Triodia wiseana</i> hummock grassland
EICHtw	<i>Eucalyptus leucophloia</i> , <i>Corymbia hamersleyana</i> low open woodland over scattered mixed tall shrubs over <i>Triodia wiseana</i> hummock grassland
EI-ck/Rg	<i>Eucalyptus leucophloia</i> low open woodland, over <i>Hakea chordophylla</i> , <i>Gossypium robinsonii</i> , and <i>Acacia pruinocarpa</i> scattered tall shrubs (to tall open shrubland), over <i>Gossypium robinsonii</i> , <i>Acacia bivenosa</i> , <i>Jasminum didymum</i> , and <i>Acacia maitlandii</i> open shrubland
EIEgAaTw	Scattered low trees of <i>Eucalyptus leucophloia</i> over tall open (mallee) shrubland of <i>Eucalyptus gamophylla</i> over scattered shrubs of <i>Acacia atkinsiana</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> over low open shrubland of <i>Goodenia stobbsiana</i> over open hummock grassland of <i>Triodia wiseana</i> over scattered herbs of <i>Ptilotus</i> spp.
EIEgAmTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>E. gamophylla</i> low open mallee woodland over <i>Acacia maitlandii</i> open shrubland over <i>Triodia wiseana</i> hummock grassland
EIGrTe	Scattered low trees of <i>Eucalyptus leucophloia</i> and <i>Corymbia hamersleyana</i> over tall open shrubland of <i>Gossypium robinsonii</i> and <i>Petalostylis labicheoides</i> over open shrubland of <i>Acacia bivenosa</i> , <i>Acacia maitlandii</i> , <i>Acacia monticola</i> , <i>Acacia pyrifolia</i> var. <i>pyrifolia</i> , <i>Senna glutinosa</i> subsp. <i>glutinosa</i> , <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen) over open hummock grassland of <i>Triodia epatica</i> and <i>Triodia wiseana</i> over very open tussock grassland of <i>Themeda</i> sp. Mt Barricade (M.E. Trudgen 2471), <i>Themeda triandra</i> and <i>Cymbopogon ambiguus</i> over very open bunch grassland of <i>Eriachne mucronata</i> and <i>Paraneurache muelleri</i> .
EIGwTp	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>Acacia citrinoviridis</i> , <i>Grevillea wickhamii</i> and <i>Gossypium robinsonii</i> shrubland over <i>Triodia pungens</i> hummock grassland.
EIIAmTp	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> and <i>Corymbia ferritcola</i> scattered low trees over <i>Acacia monticola</i> , <i>Acacia hamersleyana</i> and <i>Dodonaea pachyneura</i> open shrubland over <i>Triodia pungens</i> , <i>Triodia brizoides</i> and <i>Triodia epactia</i> open hummock grasslands
EIIApTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Eucalyptus</i>

	<i>gamophylla</i> open mallees over <i>Acacia pruinocarpa</i> scattered shrubs over <i>Triodia wiseana</i> and <i>Triodia brizoides</i> hummock grassland over <i>Eriachne mucronata</i> scattered tussock gras
EIIeGTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Eucalyptus gamophylla</i> open mallees over <i>Acacia maitlandii</i> and <i>Acacia monticola</i> scattered shrubs over <i>Triodia wiseana</i> open hummock grassland over <i>Eriachne mucronata</i> and <i>Cymbopogon ambiguus</i>
EIIHcTw	<i>Eucalyptus leucophloia</i> and <i>Corymbia hamersleyana</i> low open woodland over <i>Hakea chordophylla</i> scattered tall shrubs over <i>Acacia maitlandii</i> and <i>Senna glutinosa</i> subsp. <i>glutinosa</i> shrubland over <i>Triodia wiseana</i> open hummock grassland.
EI-low	<i>Eucalyptus leucophloia</i> low open woodland, over <i>Acacia pruinocarpa</i> , <i>Acacia bivenosa</i> , and <i>Acacia ancistrocarpa</i> scattered shrubs, over <i>Triodia wiseana</i> hummock grassland.
EIISgTw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Senna glutinosa</i> subsp. <i>glutinosa</i> , <i>Acacia maitlandii</i> and <i>Acacia ancistrocarpa</i> open shrubland over <i>Triodia wiseana</i> open hummock grassland over <i>Eriachne mucronata</i> , <i>Paraneurachne mueller</i>
EI-lsw	<i>Eucalyptus leucophloia</i> scattered low trees, over <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i> , and <i>Acacia marramamba</i> scattered shrubs, over <i>Triodia wiseana</i> hummock grassland.
EII TwEm	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> , <i>Corymbia ferritcola</i> and <i>Corymbia hamersleyana</i> scattered low trees over <i>Triodia wiseana</i> very open hummock grassland over <i>Eriachne mucronata</i> , <i>Themeda triandra</i> and <i>Cymbopogon ambiguus</i> very open tussock grassland
EITaTlo	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia angusta</i> , <i>T. longiceps</i> hummock grassland
EITbr	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia brizoides</i> hummock grassland
EITbr/EITe	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia brizoides</i> hummock grassland/ <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>Triodia epactia</i> open hummock grassland
EITe	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>Triodia epactia</i> open hummock grassland
EITe/EITw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> low open woodland over <i>Triodia epactia</i> open hummock grassland/ <i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia wiseana</i> open hummock grassland
EITw	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia wiseana</i> open hummock grassland
EITwTspm	<i>Eucalyptus leucophloia</i> subsp. <i>leucophloia</i> scattered low trees over <i>Triodia wiseana</i> , (<i>T. sp.</i> Millstream (A.A. Mitchell PRP 207)) open hummock grassland
EvAcTt	Open woodland of <i>Eucalyptus victrix</i> with scattered <i>Eucalyptus camaldulensis</i> over scattered low trees of <i>Eucalyptus xerothermica</i> and <i>Corymbia hamersleyana</i> over tall open shrubland of <i>Acacia citrinoviridis</i> and <i>Gossypium robinsonii</i> over open tussock grassland of * <i>Cenchrus ciliaris</i> and <i>Themeda triandra</i>
ExMeTl	Scattered low trees of <i>Eucalyptus xerothermica</i> and <i>Eucalyptus leucophloia</i> over scattered low shrubs of <i>Melaleuca eleuterostachya</i> over open hummock grassland of <i>Triodia longiceps</i> and <i>Triodia wiseana</i>
GG01	<i>Corymbia ferritcola</i> low open woodland over <i>Acacia pruinocarpa</i> scattered tall shrubs to tall open shrubland over <i>Triodia epactia</i> very open hummock grassland and <i>Cymbopogon ambiguus</i> , <i>Aristida burbidgeae</i> scattered tussock grasses.
GG02	<i>Eucalyptus leucophloia</i> low open woodland over <i>Indigoera monophylla</i> scattered low shrubs over <i>Triodia epactia</i> very open hummock grassland and <i>Cymbopogon ambiguus</i> scattered tussock grasses.
H1	<i>Acacia aneura</i> low open woodland over <i>Triodia wiseana</i> , <i>T. epactia</i> hummock grassland
H12	<i>Acacia bivenosa</i> , <i>A. exilis</i> , <i>A. synchronicia</i> scattered shrubs to open shrubland over <i>Triodia longiceps</i> , <i>T. wiseana</i> open hummock grassland
H14	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Triodia epactia</i> and/or <i>T. wiseana</i> hummock grassland
H2	<i>Acacia aneura</i> low woodland over <i>Triodia epactia</i> hummock grassland
H3	<i>Acacia aneura</i> , <i>Corymbia ferritcola</i> low woodland over <i>Triodia epactia</i> hummock grassland or <i>Cymbopogon ambiguus</i> , <i>Themeda triandra</i> open tussock grassland
H5	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia maitlandii</i> shrubland over <i>Triodia wiseana</i> hummock grassland
H6	<i>Acacia hamersleyensis</i> tall open shrubland over <i>Triodia wiseana</i> closed hummock grassland
H7	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia pruinocarpa</i> open shrubland over <i>Triodia epactia</i> or <i>T. wiseana</i> hummock grassland
H8	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia atkinsiana</i> , <i>A. exilis</i> , <i>A. bivenosa</i> , <i>A. ancistrocarpa</i> open shrubland over <i>Triodia wiseana</i> or <i>T. epactia</i> hummock grassland
H9	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia inaequilatera</i> tall shrubland over <i>Triodia wiseana</i> hummock grassland
HD-BG	Scattered very low shrubs, tussock grasses and hummock grasses in some places. Essentially devoid of vegetation for the most part.
HD-RG-Ash	Mixed acacia shrublands typically dominated by <i>Acacia pruinocarpa</i> , <i>Acacia maitlandii</i> , <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> , <i>Acacia monticola</i> , and

	<i>Acacia synchronicia</i> , with isolated emergent <i>Eucalyptus leucophloia</i> and <i>Corymbia hamersleyana</i> low trees
HG1	<i>Corymbia ferritcola</i> , <i>Eucalyptus leucophloia</i> low open woodland over <i>Acacia hamersleyensis</i> , <i>A. pruinocarpa</i> scattered tall shrubs over <i>Dodonaea pachyneura</i> open shrubland over <i>Triodia epactia</i> or <i>T. wiseana</i> open hummock grassland and mixed open tussock grassland
HG2	<i>Eucalyptus leucophloia</i> low open woodland over <i>Acacia hamersleyensis</i> open shrubland over <i>Triodia brizoides</i> , <i>T. epactia</i> hummock grassland and <i>Themeda triandra</i> , <i>Eriachne mucronata</i> open tussock grassland
HG3	<i>Eucalyptus leucophloia</i> low open woodland over <i>Acacia bivenosa</i> open shrubland over <i>Triodia brizoides</i> , <i>T. epactia</i> hummock grassland and <i>Themeda</i> sp. Mt. Barricade, <i>Cymbopogon ambiguus</i> open tussock grassland
HG4	<i>Eucalyptus leucophloia</i> scattered low trees to low open woodland over <i>Astrotricha hamptonii</i> , <i>Ficus brachypoda</i> scattered tall shrubs over <i>Themeda</i> sp. Mt Barricade, <i>Eriachne mucronata</i> open tussock grassland and <i>Triodia brizoides</i> , <i>T. epactia</i> open hummock
HS01	<i>Eucalyptus leucophloia</i> and/ or <i>Corymbia deserticola</i> subsp. <i>deserticola</i> low open woodland over <i>Triodia wiseana</i> , <i>T. epactia</i> open hummock grassland.
HS02	<i>Eucalyptus gamophylla</i> low open woodland over <i>Acacia maitlandii</i> scattered shrubs to open shrubland over <i>Triodia wiseana</i> open hummock grassland.
I-IG-EFw	<i>Eucalyptus leucophloia</i> scattered trees, over <i>Corymbia ferritcola</i> low open woodland to open woodland, over <i>Acacia pruinocarpa</i> and <i>Gossypium robinsonii</i> and <i>Acacia monticola</i> tall open shrubland, over <i>Acacia monticola</i> , <i>Acacia pruinocarpa</i> , <i>Senna glutinos</i>
I-LS-EIAp	<i>Eucalyptus leucophloia</i> scattered trees, over <i>Eucalyptus leucophloia</i> and <i>Corymbia ferritcola</i> low open woodland, over <i>Acacia pruinocarpa</i> tall open shrubland, over <i>Acacia pruinocarpa</i> open shrubland / scattered low shrubs, over <i>Eriachne mucronata</i>
I-MS-Eflow	Scattered <i>Eucalyptus leucophloia</i> trees, over and <i>Corymbia ferritcola</i> low open woodland (with scattered <i>Eucalyptus leucophloia</i> low trees), over <i>Grevillea wickhamii</i> and <i>Hakea chordophylla</i> , and <i>Acacia pruinocarpa</i> scattered tall shrubs
I-SF-Ash	Scattered <i>Eucalyptus leucophloia</i> low trees, over <i>Acacia maitlandii</i> , and <i>Acacia bivenosa</i> scattered tall shrubs, over mixed acacia shrubland typically dominated by, <i>Acacia maitlandii</i> , <i>Acacia ancistrocarpa</i> , <i>Acacia bivenosa</i> , and <i>Acacia monticola</i>
I-SF-Ch/Ash	<i>Corymbia hamersleyana</i> and <i>Eucalyptus leucophloia</i> scattered trees, over <i>Corymbia hamersleyana</i> and <i>Hakea chordophylla</i> low open woodland, over <i>Hakea chordophylla</i> and <i>Acacia bivenosa</i> scattered tall shrubs, over <i>Senna glutinosa</i> subsp. <i>glutinosa</i>
MA-Te	<i>Eucalyptus leucophloia</i> scattered low trees, over <i>Hakea chordophylla</i> and <i>Grevillea wickhamii</i> scattered tall shrubs, over mixed <i>Acacia</i> spp. open shrubland (to low open shrubland) typically dominated by <i>Acacia bivenosa</i> , <i>Acacia ancistrocarpa</i>
MCK-Aas	<i>Eucalyptus leucophloia</i> scattered low trees, over <i>Acacia atkinsiana</i> and <i>Acacia pachyacra</i> tall open shrubland, over <i>Acacia atkinsiana</i> shrubland, over <i>Triodia epactia</i> hummock grassland with scattered <i>Themeda triandra</i> tussock grasses.
mD01	<i>Corymbia hamersleyana</i> and/ or <i>Eucalyptus leucophloia</i> scattered low trees to low open woodland over <i>Acacia monticola</i> (<i>Grevillea wickhamii</i> subsp. <i>hispidula</i>) tall shrubland over <i>Triodia wiseana</i> , <i>T. epactia</i> hummock grassland.
PI01	<i>Eucalyptus leucophloia</i> low open woodland over <i>Acacia exilis</i> and <i>Acacia sibirica</i> scattered tall shrubs to tall open shrubland over <i>Triodia wiseana</i> hummock grassland.
PL2	<i>Eucalyptus socialis</i> and/or <i>E. leucophloia</i> low open woodland over <i>Acacia bivenosa</i> , <i>A. exilis</i> scattered shrubs over <i>Triodia wiseana</i> , <i>T. angusta</i> hummock grassland
PL3	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia bivenosa</i> scattered shrubs over <i>Triodia longiceps</i> , <i>T. wiseana</i> hummock grassland
PL5	<i>Melaleuca eleuterostachya</i> open shrubland over <i>Triodia wiseana</i> , (<i>T. angusta</i>) hummock grassland
PL6	<i>Acacia synchronicia</i> scattered shrubs over <i>Triodia angusta</i> hummock grassland on calcareous plains
PS1	<i>Acacia aneura</i> , <i>A. ayersiana</i> tall open shrubland over <i>Triodia epactia</i> , <i>T. wiseana</i> hummock grassland
PS1/PS6	<i>Acacia aneura</i> , <i>A. ayersiana</i> tall open shrubland over <i>Triodia epactia</i> , <i>T. wiseana</i> hummock grassland/ <i>Acacia synchronicia</i> scattered shrubs over <i>Triodia angusta</i> hummock grassland
PS10	<i>Acacia synchronicia</i> , <i>A. bivenosa</i> , <i>Senna</i> spp. shrubland over <i>Triodia brizoides</i> hummock grassland
PS13	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Acacia exilis</i> open shrubland to shrubland over <i>Triodia brizoides</i> hummock grassland
PS16	<i>Eucalyptus leucophloia</i> scattered low trees over <i>Triodia longiceps</i> , <i>T. angusta</i> hummock grassland
PS3	<i>Acacia xiphophylla</i> , <i>A. aneura</i> low woodland to tall open shrubland over <i>Triodia wiseana</i> , (<i>T. epactia</i>) open hummock grassland
PS4	<i>Acacia xiphophylla</i> tall open shrubland over <i>Triodia epactia</i> , <i>T. longiceps</i> hummock grassland
PS5	<i>Acacia xiphophylla</i> , <i>A. aneura</i> tall shrubland over <i>Triodia brizoides</i> , <i>T. epactia</i> open hummock grassland
PS6	<i>Eucalyptus leucophloia</i> , (<i>E. gamophylla</i> , <i>Corymbia deserticola</i> , <i>C. hamersleyana</i>) scattered low trees over <i>Acacia atkinsiana</i> , <i>A. exilis</i> , <i>A.</i>

	<i>bivenosa</i> , <i>A. ancistrocarpa</i> , <i>Senna</i> spp. shrubland over <i>Triodia epactia</i> and/or <i>T. wiseana</i> hummock grassland
PS7	<i>Eucalyptus leucophloia</i> , (<i>Corymbia hamersleyana</i>) scattered low trees over <i>Acacia inaequilatera</i> scattered shrubs to tall open shrubland over <i>Triodia wiseana</i> , (<i>T. epactia</i>) hummock grassland

Clearing Description	Brockman Project Hamersley Iron Pty Ltd proposes to clear up to 500 hectares of native vegetation within a total boundary area of approximately 9,035.145 hectares for the purpose of mineral exploration, hydrogeological and geotechnical investigation and associated activities. The proposal is located approximately 33 kilometres north-west of Tom Price in the Shire of Ashburton.
Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994); To Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).
Comment	The vegetation condition was based on the consolidation of several vegetation surveys by Rio Tinto (2016).

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments	<p>Proposal may be at variance to this Principle</p> <p>The application area occurs within the Hamersley (PIL3) subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by mulga low woodland over bunch grasses on fine textured soils in valley floors and <i>Eucalyptus leucophloia</i> over <i>Triodia brizoides</i> on skeletal soils of the ranges (CALM, 2002).</p> <p>The vegetation within the application area is broadly mapped as Beard vegetation associations 18, 82, 174 and 567 which have approximately 99% of their pre-European vegetation extents remaining in the bioregion (Government of Western Australia, 2014; GIS Database). Numerous on-ground flora and vegetation surveys have been undertaken over the application areas (Rio Tinto, 2016). A number of vegetation units present within the application area have been identified as being of significance. These are predominately gorges and gullies, free faces, major drainage and units supporting Priority flora. None of these units are restricted to the application area and all are considered to be well represented both locally and throughout the Hamersley subregion (Rio Tinto, 2016).</p> <p>According to available databases there are no known records of Threatened flora or Threatened Ecological Communities (TEC) within the application area or within a 50 kilometre radius of the application area (GIS Database). The application area is also not within the buffer of any known Priority Ecological Communities (PEC) (GIS Database). The vegetation surveys undertaken over the application areas have not identified any Threatened flora, TECs or PECs (Rio Tinto, 2016).</p> <p>Previous flora surveys conducted in the study area have recorded between 69 (Rio Tinto, 2010) and 358 (Rio Tinto, 2016) taxa. A total of 16 Priority flora species have been recorded within the application areas, including three Priority 1 species, four Priority 2 species, six Priority 3 species and three Priority 4 species (Rio Tinto, 2016). These Priority flora species are:</p> <ul style="list-style-type: none"> • <i>Eremophila</i> sp. Hamersley Range P1; • <i>Hibiscus</i> sp. Mt Brockman (E. Thoma ET 1354) P1; • <i>Sida</i> sp. Hamersley Range (K. Newbey 10692) P1; • <i>Hibiscus</i> sp. Gurinbiddy Range (M.E. Trudgen MET 15708) P2; • <i>Ipomoea racemigera</i> P2; • <i>Oxalis</i> sp. Pilbara P2; • <i>Pentalepis trichodesmoides</i> subsp. <i>hispida</i> P2; • <i>Eremophila magnifica</i> subsp. <i>velutina</i> P3; • <i>Indigofera gilesii</i> P3; • <i>Indigofera</i> sp. Bungaroo Creek (S. van Leeuwen 4301) P3; • <i>Ptilotus subspinescens</i> P3; • <i>Sida</i> sp. Barlee Range (S. van Leeuwen 1642) P3; • <i>Triodia basitricha</i> P3; • <i>Acacia bromilowiana</i> P4; • <i>Eremophila magnifica</i> subsp. <i>vagnifica</i> P4; and • <i>Lepidium catapycnon</i> P4. <p>The assessing officer sought advice from the Department of Parks and Wildlife regarding potential impacts to these Priority flora species. DPaW (2016) advised that all Priority 1 and 2 species are considered to be of high conservation significance and that Priority 3 and 4 species are still conservation significant, however they are known from relatively more sites. The advice provided (DPaW, 2016) also indicated that many of these Priority flora populations represent range extensions of known populations, or are considered important for</p>
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conservation purposes. There has also been the discovery of a potential new flora species, *Tetratheca butcheriana*, within the Brockman Syncline area in 2015. Advice provided by DPaW (2016) indicates that this species is restricted to the Hamersley subregion of the Pilbara, Western Australia. *Tetratheca butcheriana* is geographically restricted, currently only known from 170 plants located along a 500 metre stretch of ironstone breakaways and cliffs and is still in need of further survey. Given it is only known from a single, small population, any clearing to this species would be considered highly significant to the conservation of the species (DPaW, 2016). Potential impacts to these flora may be minimised by the implementation of a flora management condition.

Eleven introduced flora species have been identified within the application area (Rio Tinto, 2016). None of these species are listed as Declared Pests under the *Biosecurity and Agriculture Management Act 2007* (Rio Tinto, 2016). The presence of weed species would lower the biodiversity value of the application area. Care must be taken to ensure that the proposed clearing activities do not spread or introduce weed species to non-infested areas. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were eight faunal habitats identified within the application areas based on vegetation mapping by Rio Tinto (2016). The faunal habitats within the application areas are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to that found in similar habitat located elsewhere in the region (Rio Tinto, 2016). The clearing of 500 hectares of native vegetation within a 9,035 hectare boundary is unlikely to have a significant impact on faunal diversity in a regional and local context.

The application area is not likely to comprise a greater diversity than nearby and similar areas within the bioregion and local area.

Based on the above, the proposed clearing may be at variance to this Principle.

Methodology CALM (2002)
DPaW (2016)
Government of Western Australia (2014)
Rio Tinto (2010)
Rio Tinto (2016)

GIS Database:
- IBRA WA (Regions - Sub Regions)
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments Proposal not likely to be at variance to this Principle

Several subterranean/stygofauna and targeted fauna surveys have been conducted over sections of the application areas (Rio Tinto, 2016). Based on the previous surveys in the region, the following habitat types have been identified within the application area (Rio Tinto, 2016):

- Mulga woodlands;
- Stony plains;
- Hills;
- Free faces;
- Gorges;
- Gullies;
- Major creeklines;
- Minor drainage lines.

None of the fauna habitats occurring within the application areas correspond to ecosystems listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* and none are consistent with ecosystems listed as Threatened Ecological Communities by the Department of Parks and Wildlife (DPaW) (Rio Tinto, 2016). None of the fauna habitats occurring within the study area are representative of listed terrestrial or subterranean Priority Ecological Communities by DPaW (Rio Tinto, 2016).

All habitats within the application area have the potential to support a range of conservation listed fauna species passing through the site on an occasional basis, or using the site as foraging habitat (Rio Tinto, 2016).

However, all of these habitats are extensive outside the application area in the locality and broader Pilbara Region (Rio Tinto, 2016).

The gorges, gullies and major creeklines within the application area are considered to be of local significance as they contain important foraging habitat and could potentially support species of conservation significance, including the Pilbara Leaf-nosed Bat, Ghost Bat and Pilbara Olive Python. Potential disturbance to riparian

habitat types may be minimised by the implementation of a restricted clearing condition.

Although the vegetation within the application area potentially supports a rich array of fauna species, the vegetation is well represented on a regional scale and is unlikely to represent significant habitat to the fauna species in a regional context (Government of Western Australia, 2014; Rio Tinto, 2016).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Government of Western Australia (2014)
Rio Tinto (2016)

GIS Database:
- Imagery

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments Proposal is not likely to be at variance to this Principle

According to available databases there are no known records of Threatened Flora within the application areas (GIS Database). A search of the Department of Parks and Wildlife's Declared Rare and Priority Flora databases identified no Threatened Flora species as occurring within a 20 kilometre radius of the application areas (GIS Database).

None of the vegetation surveys over the application areas have identified any Threatened Flora (Rio Tinto, 2016).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Rio Tinto (2016)

GIS Database:
- Threatened and Priority Flora

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments Proposal is not likely to be at variance to this Principle

A search of available databases revealed there are no known Threatened Ecological Communities (TECs) within the application areas (GIS Database). The flora surveys conducted over the application areas have not identified any TEC's (Rio Tinto, 2016). The nearest TEC buffer is located approximately 23 kilometres north-east of the application areas and identified as the 'Themeda Grassland' complex (GIS Database). The vegetation units mapped within the application areas do not match the vegetation units which comprise the TEC (Rio Tinto, 2016).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Database:
- Threatened Ecological Sites Buffered

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not at variance to this Principle

The application areas fall within the Pilbara IBRA bioregion (GIS Database). The vegetation within the application areas are recorded as:

Beard vegetation association 18: Low woodland; mulga (*Acacia aneura*)

Beard vegetation association 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*;

Beard vegetation association 174: Short bunch grassland – savannah/grass plain (Pilbara); and

Beard vegetation association 567: Hummock grasslands, shrub steppe; mulga & kanji over soft spinifex & *Triodia basedowii* (GIS Database; Government of Western Australia, 2014).

According to the Government of Western Australia (2014), Beard vegetation associations 18, 82 and 567 retain approximately 99% of their pre-European extent. Therefore, the areas proposed to be cleared are not a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPAW Managed Lands
IBRA Bioregion - Pilbara	17,808,657	17,733,584	~99	Least Concern	~8.4

Beard vegetation associations - State					
18	19,892,305	19,843,727	~99	Least Concern	~6.29
82	2,565,901	2,553,217	~99	Least Concern	~11.52
174	1,575,547	1,573,860	~99	Least Concern	~0
567	777,507	774,896	~99	Least Concern	~22.5
Beard vegetation associations - Bioregion					
18	676,557	672,424	~99	Least Concern	~17.16
82	2,563,583	2,550,899	~99	Least Concern	~10.53
174	36,014	36,012	~99		~0
567	776,824	774,213	~99	Least Concern	~22.52

* Government of Western Australia (2014)

** Department of Natural Resources and Environment (2002)

Based on the above, the proposed clearing is not at variance to this Principle.

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2014)

GIS Database:
- IBRA WA (regions – subregions)
- Pre-European Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments Proposal is at variance to this Principle

According to the available databases, there are numerous ephemeral drainage lines present within the application areas (GIS Database). Several of the vegetation units have previously been identified as 'ephemeral watercourse vegetation' (Rio Tinto, 2016). CALM (2002) lists 'all major ephemeral watercourses' within the Hamersley subregion as ecosystems that are 'at risk - vulnerable'. Clearing of areas which contain riparian vegetation have the potential to cause localised erosion to the creek habitat, however Hamersley Iron Pty Ltd do not expect to significantly impact the hydrological functions of these drainage systems (Rio Tinto, 2016). Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.

Based on the above, the proposed clearing is at variance to this Principle.

Methodology CALM (2002)
Rio Tinto (2016)

GIS Database:
- Geodata, Lakes
- Hydrography, linear
- Imagery

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments Proposal is not likely to be at variance to this Principle

According to available datasets the application areas are located within the Boolgeeda, Newman, Platform, Robe, Rocklea and Table Land Systems (GIS Database).

The Boolgeeda Land System consists of stony lower slopes and plains below hill systems supporting hard and soft spinifex grasslands and Mulga shrublands (Van Vreeswyk *et al.* 2004). This unit is not susceptible to degradation or erosion (Rio Tinto, 2016).

The Newman Land System is characterised by rugged jaspilite plateaux, ridges and mountains supporting hard spinifex grasslands (Van Vreeswyk *et al.*, 2004). Each of the landforms in the land system have a mantle of abundant pebbles of ironstone and other rocks, which translates to a low soil erosion risk (Van Vreeswyk *et al.*,

2004).

The Platform Land System is characterised by dissected slopes and raised plains supporting hard spinifex grasslands (Van Vreeswyk *et al.*, 2004). The land forms in this land system generally have surface mantles of very abundant pebbles and cobbles and the system is not susceptible to erosion (Van Vreeswyk *et al.*, 2004).

The Robe Land System consists of low limonite mesas and buttes supporting soft spinifex (and occasionally hard spinifex) grasslands. This unit is not susceptible to erosion (Rio Tinto, 2016).

The Rocklea Land System consists of basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands (van Vreeswyk *et al.* 2004). This unit is not susceptible to degradation or erosion (Rio Tinto, 2016).

The Table Land System consists of low calcrete plateaux, mesas and lower plains supporting mulga and senna shrublands and minor spinifex grasslands. This unit is not susceptible to erosion (Rio Tinto, 2016).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology Rio Tinto (2016)
Van Vreeswyk *et al.* (2004)

GIS Database:
- Rangelands

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments Proposal is not likely to be at variance to this Principle

The application areas are not located within any conservation areas (GIS Database). The nearest conservation area is Karijini National Park, located approximately 48 kilometres east of the application areas (GIS Database). Given the distance separating Karijini National Park and the application area, the proposed clearing is not likely to impact the environmental values of the conservation area.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Database:
- DPaW Tenure

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments Proposal may be at variance to this Principle

The application areas are not located within a Public Drinking Water Source Area (GIS Database). The application areas are located within the proclaimed Pilbara groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purposes other than domestic and/or stock watering is subject to licence by the Department of Water.

Several drainage tracts transect the application areas (GIS Database). The drainage patterns in the surrounding area have been impacted by previous disturbance and infrastructure (GIS Database). These drainage tracts are dry for most of the year and only flow and hold surface water for short durations following significant rainfall events (CALM, 2002).

Sediment loads are typically high in flowlines in the Pilbara following large rainfall events and any increase to the sediment load caused by the proposed clearing is likely to be negligible (Rio Tinto, 2016). If clearing of riparian vegetation is required there may be some localised short term sedimentation during the clearing process, however, this is not likely to be an ongoing issue. Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition. The clearing of vegetation as a result of this proposal is therefore unlikely to result in any further deterioration in surface or groundwater quality in the local area.

The application areas have a groundwater salinity that ranges from potable to marginal (500 - 1,000 milligrams/Litre Total Dissolved solids (TDS) (GIS Database). The proposed clearing of 500 hectares of native vegetation over an application area of 9,035 hectares is unlikely to further deteriorate the quality of underground water (GIS Database).

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology CALM (2002)
Rio Tinto (2016)

GIS Database:
- Geodata, Lakes

- Hydrography, Linear
- Public Drinking Water Source Areas
- RIWI Act, Groundwater Areas
- Groundwater Salinity, Statewide

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments Proposal is not likely to be at variance to this Principle

The application areas experience a semi-desert tropical climate with summer cyclonic or thunderstorm events, with an annual average rainfall of approximately 324 millimetres per year (CALM, 2002; BoM, 2016). Based on an average annual evaporation rate of 3,200 - 3,600 millimetres (BoM, 2016), any surface water resulting from rainfall events is likely to be relatively short lived.

Given the size of the area to be cleared (500 hectares) compared to the size of the Ashburton catchment area (7,877,743 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

Based on the above, the proposed clearing is not likely to be at variance to this Principle.

Methodology BoM (2016)
CALM (2002)

GIS Database:
- Hydrographic Catchments – Catchments
- Hydrography, Linear

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments

There are three native title claims (WC 01/05; WC10/16; WC 97/89) over the areas under application (DAA, 2016). However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

According to available databases, there are several registered Aboriginal Sites of Significance within the application areas (DAA, 2016). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, Department of Parks and Wildlife and the Department of Water to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 14 March 2016 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received raising objections to the proposed clearing.

Methodology DAA (2015)

GIS Database:
- Aboriginal Sites of Significance

4. References

- BoM (2016) Climate Statistics for Australian Locations. A Search for Climate Statistics for Paraburdoo, Australian Government Bureau of Meteorology, <http://www.bom.gov.au/climate/averages/tables/cw_012046.shtml> accessed 17 May 2016.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Carnarvon 2 (CAR2 ? Wooramel Subregion). Department of Conservation and Land Management, Western Australia.
- DAA (2016) Aboriginal Heritage Inquiry System, Government of Western Australia, Department of Aboriginal Affairs, Perth <<http://maps.dia.wa.gov.au/AHIS2/>> accessed 17 May 2016.
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DPaW (2016) Advice to Assessing Officer for Clearing Permit Application CPS 6961/1 Relating to Potential Impacts to Priority Flora. Department of Parks and Wildlife, May 2016.
- Government of Western Australia (2014) 2014 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). WA Department of Environment and Conservation, Perth.
- Hamersley Iron (2016) Brockman Vegetation Complexes – Email responding to requested advice regarding flora at the Brockman location. Provided by Hamersley Iron, April 2016.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Rio Tinto. 2010a. *Flora and Vegetation of the Brockman 2, South West Detritals Study Area*. Unpublished report prepared for

Rio Tinto 2010.

Rio Tinto (2016) Desktop Flora, Vegetation and Fauna Habitat Assessment at Brockman. Native Vegetation Clearing Permit – Supporting Report. Prepared by Rio Tinto Iron Ore March 2016.

Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) Technical Bulletin - An Inventory and Condition Survey of the Pilbara Region, Western Australia, No. 92. Department of Agriculture, Government of Western Australia, Perth, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2015) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

T

Threatened species:

Published as Specially Protected under the *Wildlife Conservation Act 1950*, listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR

Critically endangered species

Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EN

Endangered species

Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

VU

Vulnerable species

Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation

(Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

- EX Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
- IA Migratory birds protected under an international agreement**
Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- CD Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- OS Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
- P3 Priority Three - Poorly-known species:**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
- P4 Priority Four - Rare, Near Threatened and other species in need of monitoring:**
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.