



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7374/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: BHP Billiton Iron Ore Pty Ltd

1.3. Property details

Property: Iron Ore (Mount Newman) Agreement Act 1972, Mineral Lease 244SA (AML 70/244)
Iron Ore (McCamey's Monster) Agreement Act 1972, Mining Lease 266SA (AM 70/266)
Miscellaneous Licence 47/92
Local Government Area: Shire of East Pilbara
Colloquial name: Eastern Ridge Exploration Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
700		Mechanical Removal	Geotechnical investigations, the construction of access tracks, drill pads, mineral exploration and hydrogeological drilling, water bores, safety bunds and potential flyrock damage, borrow pits and other associated activities.

1.5. Decision on application

Decision on Permit Application: 23 February 2017
Decision Date: Grant

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description The application area has been mapped as the following three Beard vegetation associations (GIS Database).

- 18: Low woodland; mulga (*Acacia aneura*);
- 29: Sparse low woodland; mulga, discontinuous in scattered groups; and
- 82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

Extensive flora and vegetation surveys of the broader Eastern Ridge Exploration Project area were undertaken by Onshore Environmental in 2014 and 2016 (Onshore Environmental, 2014; 2016). Additional mapping around the north of Kurra Village was undertaken by ENV Australia in 2009 and Onshore Environmental in 2015 (ENV Australia, 2009; Onshore Environmental, 2015).

Onshore Environmental (2014) identified the following 37 vegetation associations from the flora survey:

Cenchrus Tussock Grassland

MA CcCs EvAciAh: Tussock Grassland **Cenchrus ciliaris* and **Cenchrus setiger* with Low Woodland of *Eucalyptus victrix*, *Acacia citrinoviridis* and *Atalaya hemiglauca* on brown sandy loam on major drainage lines and adjacent flood plains.

MA CcTtEa ChCa AbAtpAsc: Tussock Grassland of **Cenchrus ciliaris*, *Themeda triandra* and *Eulalia aurea* with Low Open Woodland of *Corymbia hamersleyana* and *Corymbia aspera* over High Open Shrubland of *Acacia bivenosa*, *Acacia tumida* var. *pilbarensis* and *Acacia sclerosperma* subsp. *sclerosperma* on brown loamy sand on levee banks of major drainage lines.

Acacia High Shrubland

FP AaAscAan Tp - High Shrubland of *Acacia aptaneura*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia ancistrocarpa* over Very Open Hummock Grassland of *Triodia pungens* on red brown sandy loam on floodplains and drainage lines.

Acacia Low Open Forest

HS AcaAaApr SaEIIAb TbrTw: Low Open Forest of *Acacia catenulata* subsp. *occidentalis*, *Acacia aptaneura* and *Acacia pruinocarpa* over Open Shrubland of *Scaevola acacioides*, *Eremophila latrobei* subsp. *latrobei* and *Acacia bivenosa* over Open Hummock Grassland of *Triodia brizoides* and *Triodia wiseana* on red brown clay loam on breakaways and steep hill slopes.

SP AaApr TmTwTp TtCfAin: Low Open Forest of *Acacia aptaneura* and *Acacia pruinocarpa* over Open Hummock Grassland of *Triodia melvillei*, *Triodia wiseana* and *Triodia pungens* over Tussock Grassland of *Themeda triandra*,

Chrysopogon fallax and *Aristida inaequiglumis* on red brown loam on plains.

Acacia Low Open Woodland

FP AaAciApr AsyAscAb Tp: Low Open Woodland of *Acacia aptaneura*, *Acacia citrinoviridis* and *Acacia pruinocarpa* over Open Shrubland of *Acacia synchronicia*, *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia bivenosa* over Very Open Hummock Grassland of *Triodia pungens* on red brown clay loam on floodplains and medium drainage lines.

SP AaAprAx Eff Tp: Low Open Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia xiphophylla* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii* over Open Hummock Grassland of *Triodia pungens* on red brown sandy clay loam on stony plains.

Acacia Low Woodland

FP AaAprAca EffDpeSe AcoDamAin: Low Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia catenulata* subsp. *occidentalis* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Dodonaea petiolaris* and *Sida ectogama* over Open Tussock Grassland of *Aristida contorta*, *Digitaria ammophila* and *Aristida inaequiglumis* on red orange clay loam on floodplains.

FP AcaAaEx Eff Tp: Low Woodland of *Acacia catenulata* subsp. *occidentalis*, *Acacia aptaneura* and *Eucalyptus xerothermica* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii* over Open Hummock Grassland of *Triodia pungens* on red sandy loam on floodplains.

Acacia Shrubland

MI AmoAanPI ChEl TtAin: Shrubland of *Acacia monticola*, *Acacia ancistrocarpa* and *Petalostylis labicheoides* with Scattered Low Trees of *Corymbia hamersleyana* and *Eucalyptus leucophloia* subsp. *leucophloia* over Open Tussock Grassland of *Themeda triandra* and *Aristida inaequilatera* on red loamy sand on minor drainage lines.

Corymbia Low Open Woodland

MI CcAa CcCs Tb: Low Open Woodland of *Corymbia candida* subsp. *dipsodes* and *Acacia aptaneura* over Open Tussock Grassland of **Cenchrus ciliaris* and **Cenchrus setiger* and Very Open Hummock Grassland of *Triodia basedowii* on red brown loam on floodplains and minor drainage lines.

Corymbia Low Woodland

GG CfeEIFb AhDvmAha CaEmuTmb: Low Woodland of *Corymbia ferritcola*, *Eucalyptus leucophloia* subsp. *leucophloia* and *Ficus brachypoda* over Open Shrubland of *Acacia hamersleyensis*, *Dodonaea viscosa* subsp. *mucronata* and *Astrotricha hamptonii* over Open Tussock Grassland of *Cymbopogon ambiguus*, *Eriachne mucronata* and *Themeda* sp. Mt Barricade on red brown loam along cliff lines and gorges.

Eucalyptus Low Open Forest

MA EcEvEx ApyAtpGr TtEaCp: Low Open Forest of *Eucalyptus camaldulensis* subsp. *refulgens*, *Eucalyptus victrix* and *Eucalyptus xerothermica* over High Shrubland of *Acacia pyrifolia* var. *pyrifolia*, *Acacia tumida* var. *pilbarensis* and *Gossypium robinsonii* over Open Tussock Grassland of *Themeda triandra*, *Eulalia aurea* and *Cymbopogon procerus* on red brown clay loam on major drainage lines.

Eucalyptus Low Woodland

ME TtEaEte ApyAtpPI EvCh: Tussock Grassland of *Themeda triandra*, *Eulalia aurea* and *Eriachne tenuiculmis* with High Shrubland of *Acacia pyrifolia* var. *pyrifolia*, *Acacia tumida* var. *pilbarensis* and *Petalostylis labicheoides* and Open Woodland of *Eucalyptus victrix* and *Corymbia hamersleyana* on red brown silty loam on medium drainage lines and flood plains.

Eucalyptus Woodland

MA EcEv AciApyMg CcEaTt: Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over High Open Shrubland of *Acacia citrinoviridis*, *Acacia pyrifolia* var. *pyrifolia* and *Melaleuca glomerata* over Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown clay loam on banks of major drainage lines.

MA EvAciEc TrcCcrApy CcEaTt: Woodland of *Eucalyptus victrix*, *Acacia citrinoviridis* and *Eucalyptus camaldulensis* subsp. *refulgens* over Low Open Shrubland of *Tephrosia rosea* var. *clementii*, *Corchorus crozophorifolius* and *Acacia pyrifolia* var. *pyrifolia* over Very Open Tussock Grassland of **Cenchrus ciliaris*, *Eulalia aurea* and *Themeda triandra* on brown loamy sand on channels of major drainage lines.

Themeda Tussock Grassland

FP TtEaCc ChEx AdAaAmc: Tussock Grassland of *Themeda triandra*, *Eulalia aurea* and **Cenchrus ciliaris* with Low Open Woodland of *Corymbia hamersleyana* and *Eucalyptus xerothermica* over High Open Shrubland of *Acacia dictyophleba*, *Acacia ancistrocarpa* and *Acacia macraneura* on brown silty clay loam on floodplains.

ME TtCfEa ExEvCh PIAPApy: Tussock Grassland of *Themeda triandra*, *Chrysopogon fallax* and *Eulalia aurea* with Low Open Woodland of *Eucalyptus xerothermica*, *Eucalyptus victrix* and *Corymbia hamersleyana* and Shrubland of *Petalostylis labicheoides*, *Acacia pachyacra* and *Acacia pyrifolia* var. *pyrifolia* on red sandy loam on medium drainage lines.

Triodia Hummock Grassland

CP TwTa Es AbPIApy: Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Open Mallee of *Eucalyptus socialis* subsp. *eucentrica* and Open Shrubland of *Acacia bivenosa*, *Petalostylis labicheoides* and *Acacia pyrifolia* var. *pyrifolia* on light brown clay loam on calcrete plains and rises.

FP Tb AaApr Eff: Hummock Grassland of *Triodia basedowii* with Low Open Woodland of *Acacia aptaneura* and *Acacia pruinocarpa* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii* on red sandy loam on floodplains.

GG Tp EICfe Dpa: Hummock Grassland of *Triodia pungens* with Low Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia ferritcola* over Open Shrubland of *Dodonaea pachyneura* on red brown sandy clay loam

in gullies.

HC TpTs EI AaAkAsi: Hummock Grassland of *Triodia pungens* and *Triodia* sp. Shovelanna Hill with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* over Scattered Tall Shrubs of *Acacia aptaneura*, *Acacia kempeana* and *Acacia sibirica* on red brown loam on hill crests, hill slopes and breakaway slopes.

HC Tw AiAb IrSao: Hummock Grassland of *Triodia wiseana* with High Open Shrubland of *Acacia inaequilatera* and *Acacia bivenosa* over Low Open Shrubland of *Indigofera rugosa* and *Senna artemisioides* subsp. *oligophylla* on red silty loam on dolerite hill crests.

HC TwTbrTp EICH AmaGwAb: Hummock Grassland of *Triodia wiseana*, *Triodia brizoides* and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over High Open Shrubland of *Acacia maitlandii*, *Grevillea wickhamii* subsp. *hispidula* and *Acacia bivenosa* on red brown sandy loam on hill crests and upper hill slopes.

HS TpTs CdEI AanAbAte: Hummock Grassland of *Triodia pungens* and *Triodia* sp. Shovelanna Hill with Low Open Woodland of *Corymbia deserticola* subsp. *deserticola* and *Eucalyptus leucophloia* subsp. *leucophloia* over Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia tenuissima* on red loamy sand on hill slopes and footslopes.

HS TsTwTp EICH AhiAad: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *Triodia wiseana* and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* over Low Open Shrubland of *Acacia hilliana* and *Acacia adoxa* var. *adoxo* on red brown sandy loam on hill slopes.

HS Tw EICHc AanAbAa: Hummock Grassland of *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Hakea chordophylla* and Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia aptaneura* on red sandy loam on hill slopes.

ME TpTI ExAciCh PIAPyGr: Hummock Grassland of *Triodia pungens* and *Triodia longiceps* with Low Woodland of *Eucalyptus xerothermica*, *Acacia citrinoviridis* and *Corymbia hamersleyana* over High Shrubland of *Petalostylis labicheoides*, *Acacia pyrifolia* var. *pyrifolia* and *Gossypium robinsonii* on red brown clay loam on medium drainage lines and surrounding floodplains.

SA Tb ChEg SpBeKp: Hummock Grassland of *Triodia basedowii* with Low Open Woodland of *Corymbia hamersleyana* and *Eucalyptus gamophylla* over Low Open Shrubland of *Scaevola parvifolia*, *Bonamia erecta* and *Kennedia prorepens* on red loamy sand on sand plains.

SP TSAi: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with High Open Shrubland of *Acacia inaequilatera* on red brown loamy sand on hill slopes and stony plains.

SP TpTb Eg PIAbAan: Hummock Grassland of *Triodia pungens* and *Triodia basedowii* with Open Mallee of *Eucalyptus gamophylla* and Shrubland of *Petalostylis labicheoides*, *Acacia bivenosa* and *Acacia ancistrocarpa* on red brown loamy sand on stony plains and footslopes.

SP TsTwTp EgEt AbApaApr: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *Triodia wiseana* and *Triodia pungens* with Very Open Mallee of *Eucalyptus gamophylla* and *Eucalyptus trivalva* over Open Shrubland of *Acacia bivenosa*, *Acacia pachyacra* and *Acacia pruinocarpa* on red brown sandy loam and clay loam on stony plains.

Triodia Open Hummock Grassland

GG Tp CfeFbAca DpaAh: Open Hummock Grassland of *Triodia pungens* with Low Open Woodland of *Corymbia ferritcola*, *Ficus brachypoda* and *Acacia catenulata* subsp. *occidentalis* over High Open Shrubland of *Dodonea pachyneura* and *Acacia hamersleyensis* on red sandy clay loam in gullies and on breakaways.

HS TbTs AsyAaAte EcuMgSI: Open Hummock Grassland of *Triodia basedowii* and *Triodia* sp. Shovelanna Hill with Open Shrubland of *Acacia synchronica*, *Acacia aptaneura* and *Acacia tetragonophylla* over Low Open Shrubland of *Eremophila cuneifolia*, *Maireana georgei* and *Solanum lasiophyllum* on red sandy loam on floodplains and lower hill slopes.

HS TsTpTb AaAprAw AteEexEII: Open Hummock Grassland of *Triodia* sp. Shovelanna Hill, *Triodia pungens* and *Triodia basedowii* with Low Open Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia wanyu* and Open Shrubland of *Acacia tetragonophylla*, *Eremophila exilifolia* and *Eremophila latrobei* subsp. *latrobei* on red sandy loam on hill slopes.

SA TI AanApa ApaAprCh: Open Hummock Grassland of *Triodia lanigera* with Open Shrubland of *Acacia ancistrocarpa* and *Acacia pachyacra* and Scattered Low Trees of *Acacia paraneura*, *Acacia pruinocarpa* and *Corymbia hamersleyana* on red sandy loam on stony plains.

Typha Sedges

MA TdCv EcEv AciAcp: Sedges of *Typha domingensis* and *Cyperus vaginatus* with Open Woodland of *Eucalyptus camaldulensis* subsp. *refulgens* and *Eucalyptus victrix* over Low Open Woodland of *Acacia citrinoviridis* and *Acacia coriacea* subsp. *pendens* on brown clayey sand on permanent pools along major drainage lines.

Onshore Environmental (2016) identified the following 24 vegetation associations from the flora survey:

Cenchrus Tussock Grassland

GG CcCyaSopi EcEv MgApyGoro: Tussock Grassland of **Cenchrus ciliaris*, *Cymbopogon ambiguus* (riverine form) and *Sorghum plumosum* with Woodland of *Eucalyptus camaldulensis* and *Eucalyptus victrix* over High Open Shrubland of *Melaleuca glomerata*, *Acacia pyrifolia* and *Gossypium robinsonii* in major drainage lines surrounded by cliffs.

SP CcAriaChf AaCoas AbAsy: Tussock Grassland of **Cenchrus ciliaris*, *Aristida latifolia* and *Chrysopogon fallax* with Low Woodland of *Acacia aptaneura* and *Corymbia aspera* and High Open Shrubland of *Acacia bivenosa* and *Acacia synchronicia* on stony plains.

Acacia Closed Scrub

MI AmPIAnI Tp EICh: Closed Scrub of *Acacia monticola*, *Petalostylis labicheoides* and *Androcalva luteiflora* over Hummock Grassland of *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* in minor drainage lines.

Acacia Low Open Forest

SP AcaoAayAa TpTm ErffPsiPI: Low Open Forest of *Acacia catenulata* subsp. *occidentalis*, *Acacia ayersiana* and *Acacia aptaneura* over Open Hummock Grassland of *Triodia pungens* and *Triodia melvillei* with Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Psyrax latifolia* and *Petalostylis labicheoides* on plains.

Acacia Low Woodland

SP AaAay AteAsy ErcuSesSegl: Low Woodland of *Acacia aptaneura* and *Acacia ayersiana* over High Shrubland of *Acacia tetragonophylla* and *Acacia synchronicia* over Shrubland of *Eremophila cuneifolia*, *Senna stricta* and *Senna glutinosa* subsp. *x luerssenii* on stony plains.

Acacia Open Scrub

MI AbAancAten Tp Eg: Open Scrub *Acacia bivenosa*, *Acacia ancistrocarpa* and *Acacia tenuissima* with Open Hummock Grassland of *Triodia pungens* and Very Open Mallee of *Eucalyptus gamophylla* in minor drainage lines.

Corymbia Low Woodland

GG CfAprAa CyaErnu DopErffPI: Low Woodland of *Corymbia ferritcola*, *Acacia pruinoscarpa* and *Acacia aptaneura* over Open Tussock Grassland of *Cymbopogon ambiguus* and *Eriachne mucronata* with High Open Shrubland of *Dodonaea pachyneura*, *Eremophila forrestii* subsp. *forrestii* and *Petalostylis labicheoides* on cliff lines.

Cymbopogon Tussock Grassland

MA CyaCcErt EvAciEx GoroApyPI: Tussock Grassland of *Cymbopogon ambiguus* (riverine form), **Cenchrus ciliaris* and *Eriachne tenuiculmis* with Low Open Woodland of *Eucalyptus victrix*, *Acacia citrinoviridis* and *Eucalyptus xerothermica* and High Open Shrubland of *Gossypium robinsonii*, *Acacia pyrifolia* and *Petalostylis labicheoides* in major drainage lines.

Eulalia Open Tussock Grassland

FP EuaTtCc ExChAci PIAPyAb: Open Tussock Grassland of *Eulalia aurea*, *Themeda triandra* and **Cenchrus ciliaris* with Low Open Woodland of *Eucalyptus xerothermica*, *Corymbia hamersleyana* and *Acacia citrinoviridis* and High Open Shrubland of *Petalostylis labicheoides*, *Acacia pyrifolia* and *Acacia bivenosa* on floodplains.

Gossypium Shrubland

ME GoroAnIAb BoeTtCya Ev: Shrubland of *Gossypium robinsonii*, *Androcalva luteiflora* and *Acacia bivenosa* over Open Tussock Grassland of *Bothriochloa ewartiana*, *Themeda triandra* and *Cymbopogon ambiguus* (riverine form) with Low Open Woodland of *Eucalyptus victrix* in medium drainage lines.

Triodia Hummock Grassland

FS TsTp EgvAbAancAi: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Very Open Mallee of *Eucalyptus gamophylla* and High Open Shrubland of *Acacia bivenosa*, *Acacia ancistrocarpa* and *Acacia inaequilatera* on footslopes.

HS TsTp EIChHc AhiAaaGoo: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Hakea chordophylla* and Low Open Shrubland of *Acacia hilliana*, *Acacia adoxa* var. *adoxo* and *Gompholobium oreophilum* on hillslopes.

SA Tp EgEx ApaAb: Hummock Grassland of *Triodia pungens* with Very Open Mallee of *Eucalyptus gamophylla* and *Eucalyptus xerothermica* and High Open Shrubland of *Acacia pachyacra* and *Acacia bivenosa* on sand plains.

FS TsTp CdEI AiAancAads: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Low Open Woodland of *Corymbia deserticola*, *Eucalyptus leucophloia* subsp. *leucophloia* and High Open Shrubland of *Acacia inaequilatera*, *Acacia ancistrocarpa* and *Acacia adsurgens* on footslopes.

HS TpTbTw EI AbSeglErpl: Hummock Grassland of *Triodia pungens*, *Triodia brizoides* and *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and High Open Shrubland of *Acacia bivenosa*, *Senna glutinosa* subsp. *luerssenii* and *Eremophila platycalyx* on steep hillslopes.

HS TsTp ArAaxr AaEI: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with High Shrubland of *Acacia rhodophloia* and *Acacia adsurgens* x *rhodophloia* with Low Open Woodland of *Acacia aptaneura* and *Eucalyptus leucophloia* subsp. *leucophloia* on hillslopes.

HS Ts AspAhiGoo EI: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Shrubland of *Acacia spondylophylla*, *Acacia hilliana* and *Gompholobium oreophilum* and Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* on hillslopes and crests.

CP TwTa Ese PIAb: Hummock Grassland of *Triodia wiseana* and *Triodia angusta* with Very Open Mallee of *Eucalyptus socialis* subsp. *eucentrica* and High Open Shrubland of *Petalostylis labicheoides* and *Acacia bivenosa* on calcrete low rises and hills.

HC TsTw EIHCCh AaaPtro: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Hakea chordophylla* and *Corymbia hamersleyana* and Low Open Shrubland of *Acacia adoxa* var. *adoxo* and *Ptilotus rotundifolius* on

hillcrests.

HC TsTp AptYAhi HcEll: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Low Open Shrubland of *Acacia ptychophylla* and *Acacia hilliana* and Scattered Low Trees of *Hakea chordophylla* and *Eucalyptus leucophloia* subsp. *leucophloia* on hillcrests.

HS TbTw Ai AspAaaHete: Hummock Grassland of *Triodia brizoides* and *Triodia wiseana* with High Open Shrubland of *Acacia inaequilatera* and Low Open Shrubland of *Acacia spondylophylla*, *Acacia adoxa* var. *adoxo* and *Heliotropium tenuifolium* on ironstone/dolerite screeslopes.

HS TpTb Inr Ai: Hummock Grassland of *Triodia pungens* and *Triodia brizoides* with Low Shrubland of *Indigofera rugosa* and High Open Shrubland of *Acacia inaequilatera* on hillslopes.

HS TaTwTb Ell AsyAb: Hummock Grassland of *Triodia angusta*, *Triodia wiseana* and *Triodia brizoides* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and High Open Shrubland of *Acacia synchronicia* and *Acacia bivenosa* on hillslopes.

Triodia Open Hummock Grassland

SA Tp CyocCpamu ApaAbPl: Open Hummock Grassland of *Triodia pungens* over Open Tussock Grassland *Cymbopogon obtectus*, **Cenchrus ciliaris* and *Paraneurachne muelleri* with High Open Shrubland of *Acacia pachyacra*, *Acacia bivenosa* and *Petalostylis labicheoides* on sandy plains.

Onshore Environmental (2015) identified the following six vegetation associations from the flora survey:

Cenchrus Tussock Grassland

9b: Tussock Grassland of **Cenchrus ciliaris*, **Cenchrus setiger* and *Enneapogon polyphyllus* with High Open Shrubland of *Acacia synchronicia*, *Acacia tetragonophylla* and *Acacia bivenosa* and Open Shrubland of *Rhagodia eremaea* on stony plains and rises.

Acacia High Shrubland

4: High Shrubland of *Acacia tetragonophylla*, *Acacia synchronicia* and *Acacia pachyacra* over Open Hummock Grassland of *Triodia angusta* over Open Tussock Grassland of **Cenchrus ciliaris* and *Themeda triandra* on stony calcrete plains.

Acacia Low Open Forest

1a: Low Open Forest of *Acacia aptaneura*, *Acacia ayersiana* and *Acacia pruinocarpa* over Tussock Grassland of **Cenchrus ciliaris* and *Chrysopogon fallax* with High Shrubland of *Acacia tetragonophylla*, *Acacia sibirica* and *Acacia kempeana* on flats.

Acacia Low Woodland

2: Low Woodland of *Acacia aptaneura*, *Acacia ayersiana* and *Acacia pruinocarpa* over Open Hummock Grassland of *Triodia pungens* over Open Tussock Grassland of **Cenchrus ciliaris* and *Chrysopogon fallax* on stony plains.

Aristida Closed Tussock Grassland

7: Closed Tussock Grassland of *Aristida latifolia* and **Cenchrus ciliaris* with Low Shrubland of *Sida fibulifera*, *Neptunia dimorphantha* and *Maireana villosa* and High Open Shrubland of *Acacia synchronicia* on stony gilgai plains.

Triodia Hummock Grassland

6: Hummock Grassland of *Triodia* sp. Shovelanna Hill and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Acacia aptaneura* and *Acacia pruinocarpa* and High Open Shrubland of *Acacia tetragonophylla*, *Acacia kempeana* and *Acacia bivenosa* on stony hill slopes.

ENV Australia (2009) identified the following two vegetation associations from the flora survey:

Triodia Hummock Grassland

1a: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) and *Triodia pungens* with Open Shrubland of *Acacia bivenosa* and *Acacia aneura* var. *aneura* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia*.

1d: Open Hummock Grassland of *Triodia pungens* with Open Shrubland of *Acacia aneura* var. *aneura*, *Acacia bivenosa* and *Acacia synchronicia* with Scattered Trees of *Corymbia aspera*.

Clearing Description

Eastern Ridge Exploration Project
BHP Billiton Iron Ore Pty Ltd proposes to clear up to 700 hectares of native vegetation within a total boundary of approximately 14,177.46 hectares for the purposes of mineral exploration, hydrogeological and geotechnical investigations, water bores, borrow pits and associated infrastructure. The project is located immediately north and east-west of the town of Newman within the Shire of East Pilbara.

Vegetation Condition

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994);

to:

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

Comment

The vegetation condition was assessed by botanists from Onshore Environmental (2014; 2015) and ENV Australia (2009).

Clearing permit CPS 7473/1 was granted by the Department of Mines and Petroleum (DMP) on 19 January 2017 and authorised the clearing of up to 700 hectares of native vegetation within a clearing permit boundary of approximately 14,177.46 hectares for the purpose of consolidating seven existing native vegetation clearing

permits into one strategic native vegetation clearing permit. The clearing was authorised for the purpose of mineral exploration, hydrogeological and geotechnical investigations, water bores, borrow pits and associated infrastructure.

3. Assessment of application against clearing principles

Comments This amendment is to correct an administrative error regarding the clearing purpose described in Condition 2 of CPS 7374/1 granted on 19 January 2017. The clearing permit purpose identified in Condition 2 of CPS 7374/2 is to be amended to include clearing for the purposes of geotechnical investigations, the construction of access tracks, drill pads, mineral exploration and hydrogeological drilling, water bores, safety bunds and potential flyrock damage, borrow pits and other associated activities.

The proposed amendment is unlikely to result in any significant change to the environmental impacts of the proposed clearing. The assessment against the clearing principles remains consistent with the assessment contained in decision report CPS 7374/1.

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

Comments There is one Native Title Claim (WC05/6) over the area under application (DAA, 2017). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. 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*.

There are numerous registered Aboriginal sites of significance within the application area (DAA, 2017). 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.

Methodology DAA (2017)

4. References

- DAA (2017) Aboriginal Heritage Inquiry System, Government of Western Australia, Department of Aboriginal Affairs, Perth <http://maps.dia.wa.gov.au/AHIS2/> Accessed 12 January 2017.
- ENV Australia (2009) Orebody 25 to Newman Flora and Vegetation Assessment. Internal Report for BHP Billiton Iron Ore prepared by ENV Australia, 2009.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Onshore Environmental (2014) Consolidation of Regional Vegetation Mapping BHP Billiton Iron Ore Pilbara Tenure. Internal Report for BHP Billiton Iron Ore prepared by Onshore Environmental, 2014.
- Onshore Environmental (2015) *Kurra Village Targeted Flora, Vegetation and Fauna Survey*. Internal Report for BHP Billiton Iron Ore prepared by Onshore Environmental, 2015.
- Onshore Environmental (2016) *Cathedral Gorge Level 2 Flora and Vegetation Survey*. Internal Report for BHP Billiton Iron Ore by Onshore Environmental, 2016.

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
DotEE	Department of the Environment and Energy, 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 DotEE)
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.