



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7009/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: BHP Billiton Iron Ore Pty Ltd

1.3. Property details

Property:

Mining Lease 47/281;
Mining Lease 47/282;
Mining Lease 47/283;
Mining Lease 47/284;
Mining Lease 47/289;
Mining Lease 47/290;
Mining Lease 47/291;
Miscellaneous Licence 45/129;
Miscellaneous Licence 45/130;
Miscellaneous Licence 45/131;
Miscellaneous Licence 45/132;
Miscellaneous Licence 45/133;
Miscellaneous Licence 45/134;
Miscellaneous Licence 45/135;
Miscellaneous Licence 45/136;
Miscellaneous Licence 45/147;
Miscellaneous Licence 45/190;
Miscellaneous Licence 45/194;
Miscellaneous Licence 47/92;
Miscellaneous Licence 47/95;
Iron Ore (Mount Newman) Agreement Act 1964, Mineral Lease 244SA (AML 70/244);
Iron Ore (Marillana Creek) Agreement Act 1991, Mining Lease 270SA (AM 70/270);
Iron Ore (Mount Newman) Agreement Act 1964, Special Lease for Mining Operations Lease 3116/6038, Document I123402L, Lot 135 on Deposited Plan 48926, F 963074 EL;
Lease 3116/3690, Document I123403L, Lot 6254 on Deposited Plan 035659;
Lease 3116/6301, Document I123595L, Lot 48 on Deposited Plan 048928, F 963074 EL;
Lease 3116/6300, Document I123596L, Lot 143 on Deposited Plan 048927, F 963074 EL;
Lease 3116/6298, Document I123599L, Lot 141 on Deposited Plan 048923, F 963074 EL;
Lease 3116/6400, Document I123701L, Lots 86, 87 on Deposited Plan 213620;
Lease 3116/6329, Document I123720L, Lot 49 on Deposited Plan 048931, F 963074 EL;
Lease 3116/6068, Document I150309L, Lot 136 on Deposited Plan 048924;
Lease 3116/6297, Document 150310L, Lot 140 on Deposited Plan 048922, F 963074 EL;
Lease 3116/4028, N105667L, Lot 92 on Deposited Plan 60351, Lot 93 on Deposited Plan 60352, Lot 94 on Deposited Plan 60707, Lot 95 on Deposited Plan 60708, Lot 96 on Deposited Plan 60709, Lot 24 on Deposited Plan 60348, Lot 25 on Deposited Plan 60349, Lot 26 on Deposited Plan 60350;
Lease 3116/3687, Document I154279L, Lot 65 on Deposited Plan 048920, Lot 19 on Deposited Plan 048921;
Lease 3116/6299, Document I163678L, Lot 142 on Deposited Plan 048925, F 963074 EL;
Lease 3116/3684, N88235L, Lot 351 on Deposited Plan 74327;
Iron Ore (Marillana Creek) Agreement Act 1991 pursuant to *Land Administration Act 1997*, K843924L, Lots 145 on Deposited Plan 243202, 146 on Deposited Plan 243202 and 243203, 147 on Deposited Plan 243202, 149 on 243203, 150 on Deposited Plan 243203, 155 on Deposited Plan 220067, 156 on Deposited Plan 194001, 220 on Deposited Plan 243202;
K843925L, Lot 148 on Deposited Plan 93544;
Iron Ore (Mount Goldsworthy) Agreement Act 1964, Special Lease for Mining Operations, Lease 3116/5999, Document I126342L, Lot 125 on Deposited Plan 219861, M653978L pursuant to *Land Administration Act 1997*, Lots 321, 322, 323, 324, 325 on Deposited Plan 74344

Local Government Area: Shires of Ashburton and East Pilbara, and Town of Port Hedland
Colloquial name: Newman Mainline Project

1.4. Application

Clearing Area (ha) 2,928	No. Trees	Method of Clearing Mechanical Removal	For the purpose of: Railway Construction, maintenance and associated activities
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1.5. Decision on application

Decision on Permit Application:	8 August 2019
Decision Date:	Grant

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. 17 Beard vegetation associations are located within the application area (GIS Database):

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

Beard vegetation association 29: Sparse low woodland; mulga, discontinuous in scattered groups;

Beard vegetation association 43: Low forest; mangroves (Kimberley) or thicket; mangroves (Pilbara);

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

Beard vegetation association 93: Hummock grasslands, shrub steppe; kanji over soft spinifex;

Beard vegetation association 111: Hummock grasslands, shrub steppe; *Eucalyptus gamophylla* over hard spinifex;

Beard vegetation association 117: Hummock grasslands, grass steppe; soft spinifex;

Beard vegetation association 127: Bare areas; mud flats;

Beard vegetation association 157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana*;

Beard vegetation association 173: Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt;

Beard vegetation association 175: Short bunch grassland - savanna/grass plain (Pilbara);

Beard vegetation association 216: Low woodland; mulga (with spinifex) on rises;

Beard vegetation association 562: Mosaic: Low woodland; mulga in valleys / Hummock grasslands, open low tree-steppe; snappy gum over *Triodia wiseana*;

Beard vegetation association 589: Mosaic: Short bunch grassland - savanna / grass plain (Pilbara) / Hummock grasslands, grass steppe; soft spinifex;

Beard vegetation association 619: Medium woodland; river gum (*Eucalyptus camaldulensis*);

Beard vegetation association 647: Hummock grasslands, dwarf-shrub steppe; *Acacia translucens* over soft spinifex; and

Beard vegetation association 676: Succulent steppe; samphire.

There have been numerous flora and vegetation surveys undertaken over the Newman mainline railway and surrounding area since 2008 (Onshore Environmental, 2014).

Based on those surveys, five broad floristic communities with 12 vegetation associations have been identified within the application area from Port Hedland to Chainage 38 (BHP Billiton, 2016; ENV, 2011):

Drainage

Drainage A (DA): A low open *Eucalyptus victrix* woodland over a high open *Acacia ampliceps* and *Acacia trachycarpa* shrubland over a low open *Acacia stellaticeps*, *Pluchea ferdinandi-muelleri* and *Corchorus incanus* subsp. *incanus* shrubland over a *Triodia epactia* hummock grassland over an *Aristida holathera* var. *latifolia*, *Eriachne obtuse* and **Cenchrus ciliaris* tussock grassland;

Major Drainage Line A (MDLA): Scattered low *Eucalyptus victrix* trees over a high open *Melaleuca argentea*, *Acacia ampliceps* and *Acacia trachycarpa* shrubland over scattered *Adriana tomentosa* var. *tomentosa* and *Pluchea ferdinandi-muelleri* shrubs over open *Triodia epactia* hummock grassland;

Major Drainage Line B (MDLB): Low open *Eucalyptus victrix* woodland over an *Acacia tumida* var. *pilbarensis* and *Acacia colei* var. *colei* shrubland over very open *Triodia epactia* hummock grassland;

Dune

Dune C (DC): Low open *Acacia stellaticeps*, *Acacia bivenosa* and *Acacia ampliceps* shrubland over a *Spinifex longifolius* and **Cenchrus ciliaris* open grassland over scattered *Gomphrena canescens* herbs.

Grassland

Grassland A (GA): *Triodia secunda* and *Triodia epactia* hummock grassland.

Hill/Rocky Outcrop

Rock Outcrop (RO): Scattered *Acacia colei* var. *colei* and *Acacia inaequilatera* shrubs over scattered herbs over scattered *Triodia* spp. hummock grasses.

Sandplain

Sandplain A (SA): Low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/ *Triodia epactia* and *Triodia secunda* hummock grasslands mosaic;

Sandplain B (SB): An open *Acacia colei* var. *colei* shrublands over low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands/low *Acacia stellaticeps* shrublands over *Triodia epactia* and *Triodia secunda* hummock grasslands mosaic;

Sandplain O (SO): Scattered low *Eucalyptus victrix* and *Corymbia hamersleyana* trees over an open *Acacia ancistrocarpa*, *Acacia tumida* var. *pilbarensis*, *Acacia inaequilatera* and *Acacia trudgeniana* shrubland over a low open *Acacia stellaticeps* shrubland over a *Triodia epactia* and *Triodia lanigera* hummock grassland;

Sandplain P (SP): Low open *Eucalyptus victrix*, *Corymbia hamersleyana* and *Corymbia flavescens* woodland over an open *Acacia colei* var. *colei* shrubland over a low open *Acacia stellaticeps* and *Pluchea tetranthera* shrubland over *Triodia epactia* hummock grassland;

Sandplain Q (SQ): Scattered low *Corymbia flavescens* trees over open *Acacia ancistrocarpa* and *Acacia bivenosa* shrubland over scattered low *Acacia stellaticeps* shrubs over a *Triodia epactia* and *Triodia lanigera* hummock grassland; and

Sandplain R (SR): Low open *Corymbia candida* subsp. *laetifolia* and *Corymbia hamersleyana* over *Acacia colei* var. *colei* and *Acacia tumida* var. *pilbarensis* open shrubland over *Triodia epactia* and *Triodia lanigera* hummock grassland.

Based on numerous surveys, 39 broad floristic communities with 107 vegetation associations have been identified within the application area from Chainage 14 to 313 and Chainage 401 to Newman (BHP Billiton, 2016; Onshore Environmental, 2014):

***Cenchrus Closed Tussock Grassland**

FP CcCs ChAa AtpAan: Closed Tussock Grassland of **Cenchrus ciliaris* and **Cenchrus setiger* with Low Open Woodland of *Corymbia hamersleyana* and *Acacia aptaneura* and Open Shrubland of *Acacia tumida* var. *pilbarensis* and *Acacia ancistrocarpa* on red brown silty loam on floodplains.

***Cenchrus Open Tussock Grassland**

GP CcCs AaApr AsyAa: Open Tussock Grassland of **Cenchrus ciliaris* and **Cenchrus setiger* with Low Open Woodland of *Acacia aptaneura* and *Acacia pruinocarpa* over High Open Shrubland of *Acacia synchronicia* and *Acacia aptaneura* on red sandy clay loam on gilgai plains.

***Cenchrus Scattered Tussock Grasses**

FP Cc Sco: Scattered Tussock Grasses of **Cenchrus ciliaris* over Scattered Herbs of *Sclerolaena cornishiana* on pale brown silty clay on floodplains.

***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; and

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 Open Shrubland

GP Asy AsySaoEla CcCsCf: High Open Shrubland of *Acacia synchronicia* over Low Open Shrubland of *Acacia synchronicia*, *Senna artemisioides* subsp. *oligophylla* and *Eremophila lanceolata* over Very Open Tussock Grassland of **Cenchrus ciliaris*, **Cenchrus setiger* and *Chrysopogon fallax* on red light clay on gilgai plains; and

GR Atp Te TloAcoSau: High Open Shrubland of *Acacia tumida* subsp. *pilbarensis* over Very Open Hummock Grassland of *Triodia epactia* and Very Open Tussock Grassland of *Tripogon loliiformis*, *Aristida contorta* and *Sporobolus australasicus* (with Scattered Low Trees of *Terminalia canescens* and *Ficus brachypoda*) on skeletal brown sandy loam on granite plateaux / sheet outcrops.

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;

MA AtpApyAse Ec TmbTtCpr: High Shrubland of *Acacia tumida* var. *pilbarensis*, *Acacia pyrifolia* var. *pyrifolia* and *Acacia sericophylla* with Scattered Trees of *Eucalyptus camaldulensis* subsp. *refulgens* over Open Tussock Grassland of *Themeda* sp. Mt Barricade (M.E. Trudgen 2471), *Themeda triandra* and *Cymbopogon procerus* on brown loam and gravels on major drainage channels;

ME AamAtrAcp CcEb Cv: High Shrubland of *Acacia ampliceps*, *Acacia trachycarpa* and *Acacia coriacea* subsp. *pendens* over Open Tussock Grassland of **Cenchrus ciliaris* and *Eriachne benthamii* with Very Open Sedges of *Cyperus vaginatus* on brown sand along medium drainage lines; and

MI AccAbAtp TITe AstPfmPt: High Shrubland of *Acacia colei* var. *colei*, *Acacia bivenosa* and *Acacia tumida* var. *pilbarensis* over Open Hummock Grassland of *Triodia lanigera* and *Triodia epactia* with Low Open Shrubland of *Acacia stellaticeps*, *Pluchea ferdinandi-muelleri* and *Pluchea tetranthera* on orange sand on minor drainage lines and floodplains.

Acacia Low Woodland

FP ApaAaApr AsyEffPo CcAinAco: Low Woodland of *Acacia paraneura*, *Acacia aptaneura* and *Acacia pruinocarpa* over Open Shrubland of *Acacia synchronicia*, *Eremophila forrestii* subsp. *forrestii* and *Ptilotus obovatus* over Open Tussock Grassland of **Cenchrus ciliaris*, *Aristida inaequiglumis* and *Aristida contorta* on red brown loam on floodplains.

Acacia Low Closed Woodland

FP Aa CfCc PlaEla: Low Closed Woodland of *Acacia aptaneura* over Very Open Tussock Grassland of *Chrysopogon fallax* and **Cenchrus ciliaris* with Scattered Shrubs of *Psydrax latifolia* and *Eremophila lanceolata* on red/brown clay loam on plains.

Acacia Low Open Forest

FP AciAa Cc Bb: Low Open Forest of *Acacia citrinoviridis* and *Acacia aptaneura* over Tussock Grassland of **Cenchrus ciliaris* over Open Herbs of **Bidens bipinnata* on red brown loamy sand on floodplains;

SP AaAanApr TeTs EffGbDpe: Low Open Forest of *Acacia aptaneura*, *Acacia aneura* x *ayersiana* and *Acacia pruinocarpa* over Hummock Grassland of *Triodia epactia* and *Triodia* sp. Shovelanna Hill with Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Grevillea berryana* and *Dodonaea petiolaris* on red brown loamy sand on stony plains;

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;

SP Ax SggSbSg ApeEobEx: Low Open Forest of *Acacia xiphophylla* over Low Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa*, *Streptoglossa bubakii* and *Senna glaucifolia* over Scattered Tussock Grasses of *Astrebala pectinata*, *Eriachne obtusa* and *Eragrostis xerophila* on red brown medium clay on basalt plains; and

SP AxAa EffAteAsy CfAcoSau: Low Open Forest of *Acacia xiphophylla* and *Acacia aptaneura* over Open Shrubland of *Eremophila forrestii* subsp. *forrestii*, *Acacia tetragonophylla* and *Acacia synchronicia* over Very Open Tussock Grassland of *Chrysopogon fallax*, *Aristida contorta* and *Sporobolus australasicus* on red brown sandy clay loam on stony plains.

Acacia Low Open Heath

HS AbAsy TseTaTb: Low Open Heath of *Acacia bivenosa* and *Acacia synchronicia* over Hummock Grassland of *Triodia secunda*, *Triodia angusta* and *Triodia basedowii* on brown sandy loam on stony lower slopes and plains; and

SA Ast Tsc AtpAccMI: Low Open Heath of *Acacia stellaticeps* over Hummock Grassland of *Triodia schinzii* with High Open Shrubland of *Acacia tumida* var. *pilbarensis*, *Acacia colei* var. *colei* and *Melaleuca lasiandra* on red brown loamy sand on sandplains.

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;

FP AaAprCh EfrAteDpe AinCfAco: Low Open Woodland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Corymbia hamersleyana* with Open Shrubland of *Eremophila fraseri*, *Acacia tetragonophylla* and *Dodonaea petiolaris* over Tussock Grassland of *Aristida inaequiglumis*, *Chrysopogon fallax* and *Aristida contorta* on red sandy loam on floodplains; and

FP Ax AsyRe MpMtScu: Low Open Woodland of *Acacia xiphophylla* over High Open Shrubland of *Acacia synchronicia* and *Rhagodia eremaea* over Low Open Shrubland of *Maireana pyramidata*, *Maireana triptera* and *Sclerolaena cuneata* on red brown sandy clay loam on floodplains.

Acacia Low Woodland

FP AaAprAca EffDpeSe AcoDamAin: Low Woodland of *Acacia aptanera*, *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.

Acacia Open Heath

MI AadAluDpa Tp EICH: Open Heath of *Acacia adsurgens*, *Androcalva luteiflora* and *Dodonaea pachyneura* over Open Hummock Grassland of *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and *Corymbia hamersleyana* on brown loamy sand on minor drainage lines.

Acacia Open Scrub

ME AtpAanAcc TeTI Ch: Open Scrub of *Acacia tumida* var. *pilbarensis*, *Acacia ancistrocarpa* and *Acacia colei* var. *colei* over Hummock Grassland of *Triodia epactia* and *Triodia lanigera* with Scattered Low Trees of *Corymbia hamersleyana* on brown sandy loam along minor and medium drainage lines;

MI AtpGwApy TpTb CcCs: Open Scrub of *Acacia tumida* var. *pilbarensis*, *Grevillea wickhamii* subsp. *hispidula* and *Acacia pyrifolia* var. *pyrifolia* over Hummock Grassland of *Triodia pungens* and *Triodia basedowii* over Open Tussock Grassland of **Cenchrus ciliaris* and **Cenchrus setiger* on brown sandy loam on minor drainage lines and floodplains; and

MI AtpPIAmo TpTs ChEI: Open Scrub of *Acacia tumida* var. *pilbarensis*, *Petalostylis labicheoides* and *Acacia monticola* over Open Hummock Grassland of *Triodia pungens* and *Triodia* sp. Shovelanna Hill (S.van Leeuwen 3835) with Low Open Woodland of *Corymbia hamersleyana* and *Eucalyptus leucophloia* subsp. *leucophloia* on red brown sandy loam on minor drainage lines.

Astrebla Tussock Grassland

SP ApeAinSau SfiCtrTbc Oa: Tussock Grassland of *Astrebla pectinata*, *Aristida inaequiglumis* and *Sporobolus australasicus* with Low Open Shrubland of *Sida fibulifera*, *Corchorus trilocularis* and *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601) and Open Herbs of *Operculina aequisejala* on brown medium clay on basalt plains.

Corymbia Low Open Woodland

MI CcAa CcCs Tb: Low Open Woodland of *Corymbia candida* subsp. *dipsodes* and *Acacia aptanera* 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

FP CcaCa AtpAcc Tp: Low Woodland of *Corymbia candida* and *Corymbia aspera* over Shrubland of *Acacia tumida* var. *pilbarensis* and *Acacia colei* var. *colei* over Open Hummock Grassland of *Triodia pungens* on brown medium clay on floodplains.

Eriachne Open Tussock Grassland

MI EbEfCf Ca AtrAcc: Open Tussock Grassland of *Eriachne benthamii*, *Eriachne flaccida* and *Chrysopogon fallax* with Scattered Low Trees of *Corymbia aspera* over High Open Shrubland of *Acacia trachycarpa* and *Acacia colei* var. *colei* on brown loamy sand along minor drainage lines.

Eriachne Tussock Grassland

FP EbEa HI Acc: Tussock Grassland of *Eriachne benthamii* and *Eulalia aurea* with High Open Shrubland of *Hakea lorea* subsp. *lorea* over Open Shrubland of *Acacia colei* var. *colei* on brown medium clay on floodplains; and

ME EbEf Ev Te: Tussock Grassland of *Eriachne benthamii* and *Eriachne flaccida* with Low Woodland of *Eucalyptus victrix* over Hummock Grassland of *Triodia epactia* on brown grey silty loam on drainage depressions.

Eucalyptus Low Open Forest

MA EcEvEx ApyAtpGr TtEaCpr: 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 EvAcp AtpAtrApy Tp: Low Woodland of *Eucalyptus victrix* and *Acacia coriacea* subsp. *pendens* over Shrubland of *Acacia tumida* var. *pilbarensis*, *Acacia trachycarpa* and *Acacia pyrifolia* var. *pyrifolia* over Open Hummock Grassland of *Triodia pungens* on brown loamy sand along minor and medium drainage lines; and

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; and

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.

Eulalia Open Tussock Grassland

MI EaTt AxAcP AanAtp: Open Tussock Grassland of *Eulalia aurea* and *Themeda triandra* with Low Open Woodland of *Acacia xiphophylla* and *Acacia coriacea* subsp. *pendens* and Open Shrubland of *Acacia ancistrocarpa* and *Acacia tumida* var. *pilbarensis* on red brown clay on minor drainage lines.

Frankenia Low Open Shrubland

SF Fs Cc: Low Open Shrubland of *Frankenia setosa* with Scattered Tussock Grasses of **Cenchrus ciliaris* on red brown clay loam on saline flats.

Glinus Herbs

ME GI Ev Sn: Herbs of *Glinus lotoides* with Low Open Woodland of *Eucalyptus victrix* and Scattered Low Shrubs of *Senna notabilis* on pale brown loam on medium drainage lines.

Maireana Low Open Shrubland

FP MtPoSc AxAsy AinCc: Low Open Shrubland of *Maireana triptera*, *Ptilotus obovatus* and *Sclerolaena cuneata* with Scattered Low Trees of *Acacia xiphophylla* and *Acacia synchronicia* and Scattered Tussock Grasses of *Aristida inaequiglumis* and **Cenchrus ciliaris* on red sandy clay loam on wind scalded plains.

Melaleuca High Open Forest

MA MaEcEv MgAcpAtr Cv: High Open Forest of *Melaleuca argentea*, *Eucalyptus camaldulensis* var. *refulgens* and *Eucalyptus victrix* over High Open Shrubland of *Melaleuca glomerata*, *Acacia coriacea* subsp. *pendens* and *Acacia trachycarpa* over Very Open Sedges of *Cyperus vaginatus* on alluvial gravelly soils on major drainage channels with seasonal pools.

Mosaic: Acacia Low Open Woodland/Acacia Low Woodland

FP Mosaic mulga snakewood: Mosaic: Low Woodland of *Acacia paraneura*, *Acacia aptaneura* and *Acacia pruinocarpa* over Open Shrubland of *Acacia synchronicia*, *Eremophila forrestii* subsp. *forrestii* and *Ptilotus obovatus* over Very Open Tussock Grassland of **Cenchrus ciliaris*; Low Open Woodland of *Acacia xiphophylla* over High Open Shrubland of *Acacia synchronicia* and *Rhagodia eremaea* over Low Open Shrubland of *Maireana pyramidata*, *Maireana triptera* and *Sclerolaena cuneata* on red loamy sand on plains.

Mosaic: Triodia Hummock Grassland/Acacia High Open Shrubland

HS Mosaic low granite hills: Mosaic: Hummock Grassland of *Triodia epactia*, *Triodia basedowii* and *Triodia wiseana* with High Shrubland of *Acacia orthocarpa* and *Acacia inaequilatera* in brown loamy sand on low undulating granite hills; High Open Shrubland of *Acacia tumida* var. *pilbarensis* with Scattered Low Trees of *Terminalia canescens* and *Ficus brachypoda* over Very Open Hummock Grassland of *Triodia epactia* over Very Open Tussock Grassland of *Tripogon loliiformis*, *Aristida contorta* and *Sporobolus australasicus* on skeletal brown sandy loam on granite plateau/sheet outcrops;

SA Mosaic granitic plains: Mosaic: Hummock Grassland of *Triodia lanigera* with High Open Shrubland of *Acacia ancistrocarpa* over Low Open Shrubland of *Acacia stellaticeps*; High Open Shrubland of *Acacia tumida* subsp. *pilbarensis* with Scattered Low Trees of *Terminalia canescens* and *Ficus brachypoda* over Very Open Hummock Grassland of *Triodia epactia* (and Very Open Tussock Grassland of *Tripogon loliiformis*) on orange loamy sand on undulating granitic plains with granitic outcrops; and

SP Mosaic granite / calcrete: Mosaic: Hummock Grassland of *Triodia longiceps*, *Triodia angusta* and *Triodia wiseana* with Low Open Shrubland of *Acacia bivenosa*, *Acacia stellaticeps* and *Pluchea ferdinandi-muelleri* on brown sandy clay loam on stony calcrete plains; High Open Shrubland of *Acacia tumida* var. *pilbarensis* with Very Open Hummock Grassland of *Triodia epactia* over Very Open Tussock Grassland of *Tripogon loliiformis* on skeletal brown sandy clay loam on granite plateau / sheet outcrops.

Mosaic: Triodia Hummock Grassland

SA Mosaic sand plains: Mosaic: Hummock Grassland of *Triodia secunda* and *Triodia epactia* with Low Open Shrubland of *Acacia stellaticeps* over Scattered Tussock Grasses of *Sporobolus australasicus*; Hummock Grassland of *Triodia epactia* and *Triodia lanigera* with Scattered Low Trees of *Corymbia hamersleyana* over High

Open Shrubland of *Acacia inaequilatera*, *Acacia ancistrocarpa* and *Acacia colei* var. *colei* on red orange sandy clay loam on plains.

Mosaic: *Triodia* Open Hummock Grassland/*Triodia* Hummock Grassland

HS Mosaic hill crests and slopes: Mosaic: Open Hummock Grassland of *Triodia lanigera*, *Triodia basedowii* and *Triodia epactia* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* over Low Open Shrubland of *Acacia atkinsiana* and *Acacia bivenosa* in brown sandy loam on hill crests and hill slopes; Hummock Grassland of *Triodia basedowii* and *Triodia pungens* with Low Woodland of *Acacia aptaneura* on brown sandy clay loam in drainage basins and on plains.

***Pluchea* Low Shrubland**

FP PfmPrCI Ta SauCpePd: Low Shrubland of *Pluchea ferdinandi-muelleri*, *Pluchea rubelliflora* and *Carrissa lanceolata* over Open Hummock Grassland of *Triodia angusta* and Very Open Tussock Grassland of *Sporobolus australasicus*, *Chloris pectinata* and *Panicum decompositum* on grey medium clay on crusting plains.

***Tecticornia* Low Open Heath**

SF TdcTibMf Ep: Low Open Heath of *Tecticornia* sp. Dennys Crossing (K.A. Shepherd & J English KS552), *Tecticornia indica* subsp. *bidens* and *Muehlenbeckia florulenta* over Very Open Tussock Grassland of *Eragrostis pergracilis* on brown medium clay on saline flats and marsh.

***Themeda* Open Tussock Grassland**

ME TtAinCa ChEl AmoPIAlu: Open Tussock Grassland of *Themeda triandra*, *Aristida inaequiglumis* and *Cymbopogon ambiguus* with Low Open Woodland of *Corymbia hamersleyana* and *Eucalyptus leucophloia* subsp. *leucophloia* over Open Shrubland of *Acacia monticola*, *Petalostylis labicheoides* and *Androcalva luteiflora* on red brown alluvium on minor and medium 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;

GG TtEmuTmb ElChCfe AtpGrPl: Tussock Grassland of *Themeda triandra*, *Eriachne mucronata* and *Themeda* sp. Mt Barricade with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Corymbia hamersleyana* and *Corymbia ferriticola* over High Shrubland of *Acacia tumida* var. *pilbarensis*, *Gossypium robinsonii* and *Petalostylis labicheoides* on red brown sandy loam in narrowly incised rocky drainage lines; and

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* Closed Hummock Grassland**

FP TITp AscAbMg: Closed Hummock Grassland of *Triodia longiceps* and *Triodia pungens* with Shrubland of *Acacia sclerosperma* subsp. *sclerosperma*, *Acacia bivenosa* and *Melaleuca glomerata* on brown sandy clay loam on undulating floodplains; and

SA TbTI AsyAscElo Aa: Closed Hummock Grassland of *Triodia basedowii* and *Triodia longiceps* with High Shrubland of *Acacia synchronicia*, *Acacia sclerosperma* subsp. *sclerosperma* and *Eremophila longifolia* and Low Open Woodland of *Acacia aptaneura* on red brown clay loam on plains.

***Triodia* Hummock Grassland**

CP TITe AbAstPfm: Hummock Grassland of *Triodia longiceps* and *Triodia epactia* with Low Open Shrubland of *Acacia bivenosa*, *Acacia stellaticeps* and *Pluchea ferdinandi-muelleri* on brown sandy clay loam on stony calcrete plains;

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;

FP TbTp AaGb Go: Hummock Grassland of *Triodia basedowii* and *Triodia pungens* with Low Woodland of *Acacia aptaneura* and *Grevillea berryana* over Low Open Shrubland of *Gompholobium oreophilum* on brown sandy clay loam on drainage depressions;

FP TsTI AbAsPfm: Hummock Grassland of *Triodia secunda* and *Triodia longiceps* with Low Open Shrubland of *Acacia bivenosa*, *Acacia stellaticeps* and *Pluchea ferdinandi-muelleri* on orange sandy clay loam on stony floodplains;

FS Ts CdHc AanAiGw: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of *Corymbia deserticola* subsp. *deserticola* and *Hakea chordophylla* over Open Shrubland of

Acacia ancistrocarpa, *Acacia inaequilatera* and *Grevillea wickhamii* subsp. *hispidula* on red brown sandy loam on footslopes and stony plains;

FS TsTpTw El AbApaAan: Hummock Grassland of *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835), *Triodia pungens* and *Triodia wiseana* with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* and Open Shrubland of *Acacia bivenosa*, *Acacia pachyachra* and *Acacia ancistrocarpa* on red brown loam on footslopes and low undulating hills;

HC Te AdCc Gw: Hummock Grassland of *Triodia epactia* with Open Shrubland of *Abutilon* sp. Dioicum and *Cajanus cinereus* and Scattered Tall Shrubs of *Grevillea wickhamii* subsp. *hispidula* on brown silty loam on dolerite ridges;

HC Te AiAanAarr: Hummock Grassland of *Triodia epactia* with High Open Shrubland of *Acacia inaequilatera* and *Acacia ancistrocarpa* over Low Open Shrubland of *Acacia arrecta* on brown sandy loam on low undulating hills;

HC TeTI ArAiAb: Hummock Grassland of *Triodia epactia* and *Triodia lanigera* with Open Shrubland of *Acacia robeorum*, *Acacia inaequilatera* and *Acacia bivenosa* on brown sandy loam on low dolerite/basalt hills;

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 ElCh 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 TbrTw El AbPoSgg: Hummock Grassland of *Triodia brizoides* and *Triodia wiseana* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* over Scattered Low Shrubs of *Acacia bivenosa*, *Ptilotus obovatus* and *Senna glutinosa* subsp. *glutinosa* on brown silty loam on scree slopes;

HS TbTeTw AtpGw AanAbAac: Hummock Grassland of *Triodia basedowii*, *Triodia epactia* and *Triodia wiseana* over High Open Shrubland of *Acacia tumida* subsp. *pilbarensis* and *Grevillea wickhamii* over Low Open Shrubland of *Acacia ancistrocarpa*, *Acacia bivenosa* and *Acacia acradenia* on red brown silty/sandy loam on undulating low hills and stony plains;

HS TeTbTw AorAi: Hummock Grassland of *Triodia epactia*, *Triodia basedowii* and *Triodia wiseana* with High Open Shrubland of *Acacia orthocarpa* and *Acacia inaequilatera* on brown loamy sand on low undulating granite hills;

HS TeTw Ch AiAan: Hummock Grassland of *Triodia epactia* and *Triodia wiseana* with Low Open Woodland of *Corymbia hamersleyana* over High Open Shrubland of *Acacia inaequilatera* and *Acacia ancistrocarpa* on red brown sandy loam on granite and quartz hill slopes and footslopes;

HS TITwTe AtpAerAcc AiAor: Hummock Grassland of *Triodia lanigera*, *Triodia wiseana* and *Triodia epactia* with High Shrubland of *Acacia tumida* var. *pilbarensis*, *Acacia eriopoda* and *Acacia colei* var. *colei* in swales with High Open Shrubland of *Acacia inaequilatera* and *Acacia orthocarpa* on rises on red brown silty clay/sandy loam on undulating hills and swales;

HS Tp Ir Gp: Hummock Grassland of *Triodia pungens* with Low Shrubland of *Indigofera rugosa* and Scattered Low Trees of *Grevillea pyramidalis* on brown sandy loam on quartz and granite hill;

HS TpTbTe Ch Ai: Hummock Grassland of *Triodia pungens*, *Triodia basedowii* and *Triodia epactia* with Scattered Low Trees of *Corymbia hamersleyana* over Scattered Tall Shrubs of *Acacia inaequilatera* on brown sandy clay loam on dolerite hill slopes;

HS TsTp AaAprAci AaElISgl: Hummock Grassland of *Triodia* sp. Shovelanna Hill and *Triodia pungens* with High Open Shrubland of *Acacia aptaneura*, *Acacia pruinocarpa* and *Acacia citrinoviridis* and Open Shrubland of *Acacia aptaneura*, *Eremophila latrobei* subsp. *latrobei*, *Senna glutinosa* subsp. *x luerssenii* on red loamy sand on upper hill slopes;

HS TsTwTp ElCh 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 hillianiana* and *Acacia adoxa* var. *adoxo* on red brown sandy loam on hill slopes;

HS Tw Cd AarAsiAb ArhAprAa: Hummock Grassland of *Triodia wiseana* with Low Open Woodland of *Corymbia deserticola* subsp. *deserticola* over Low Shrubland of *Acacia arrecta*, *Acacia sibirica* and *Acacia bivenosa* in red loamy sand on hill slopes with Low Open Woodland of *Acacia rhodophloia*, *Acacia pruinocarpa* and *Acacia aptaneura* on red sandy loam on rocky hill crests;

HS Tw ElChHc 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;

HS TwTbrTs ElExCh PcaPasAhi: Hummock Grassland of *Triodia wiseana*, *Triodia brizoides* and *Triodia* sp. Shovelanna Hill with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia*, *Eucalyptus xerothermica* and *Corymbia hamersleyana* over Low Open Shrubland of *Ptilotus calostachyus*, *Ptilotus astrolasius* and *Acacia hillianiana* on brown loam on eroded outcropping upper slopes and crests;

HS TwTpTs El AprAaAan: Hummock Grassland of *Triodia wiseana*, *Triodia pungens* and *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) with Low Open Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over Open Shrubland of *Acacia pruinocarpa*, *Acacia aptaneura* and *Acacia ancistrocarpa* on red brown loam on plains and low hills;

ME TpTb Ch AtpAcc: Hummock Grassland of *Triodia pungens* and *Triodia basedowii* with Low Open Woodland of *Corymbia hamersleyana* over High Open Shrubland of *Acacia tumida* var. *pilbarensis* and *Acacia colei* var. *colei* on red brown loamy sand on levee banks and floodplains;

ME TpTI ExAcCh 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;

MI TITe Ch AtrAanAac: Hummock Grassland of *Triodia longiceps* and *Triodia epactia* with Scattered Low Trees of *Corymbia hamersleyana* over High Shrubland of *Acacia trachycarpa*, *Acacia ancistrocarpa* and *Acacia acradenia* on brown loamy sand on minor drainage lines;

SA Tb AaApr Aan: Hummock Grassland of *Triodia basedowii* with Scattered Tall Trees of *Acacia aptaneura* and *Acacia pruinocarpa* over High Open Shrubland of *Acacia ancistrocarpa* on red sand on sand plains;

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;

SA TeTI Ai Aco: Hummock Grassland of *Triodia epactia* and *Triodia lanigera* with Open Shrubland of *Acacia inaequilatera* over Open Tussock Grassland of *Aristida contorta* on red brown sandy clay loam on raised plains and quartz hills;

SA TI AiAan Ast: Hummock Grassland of *Triodia lanigera* with High Open Shrubland of *Acacia inaequilatera* and *Acacia ancistrocarpa* over Low Open Shrubland of *Acacia stellaticeps* on red orange sandy loam on sandy plains;

SA Tp Ev AccAst: Hummock Grassland of *Triodia pungens* with Low Woodland of *Eucalyptus victrix* over Low Shrubland of *Acacia colei* var. *colei* and *Acacia stellaticeps* on grey brown sandy loam on sandy plains;

SD TscTb Ad CtCcuSc: Hummock Grassland of *Triodia schinzii* and *Triodia basedowii* with High Open Shrubland of *Acacia dictyophleba* over Low Open Shrubland of *Corchorus tectus*, *Crotalaria cunninghamii* and *Sida cardiophylla* on red sand on linear sand dunes;

SP Tb AaApr AwAanAi: Hummock Grassland of *Triodia basedowii* with Low Open Woodland of *Acacia aptaneura* and *Acacia pruinocarpa* over Open Shrubland of *Acacia wanyu*, *Acacia ancistrocarpa* and *Acacia inaequilatera* on red brown silty loam on stony plains;

SP TbTp HIAanAi Ch: Hummock Grassland of *Triodia basedowii* and *Triodia pungens* with High Open Shrubland of *Hakea lorea* subsp. *lorea*, *Acacia ancistrocarpa* and *Acacia inaequilatera* and Scattered Low Trees of *Corymbia hamersleyana* on red brown loamy sand on stony plains;

SP TITe Ai AanAb: Hummock Grassland of *Triodia lanigera* and *Triodia epactia* with High Open Shrubland of *Acacia inaequilatera* over Low Open Shrubland of *Acacia ancistrocarpa* and *Acacia bivenosa* on orange loamy sand on sandy plains;

SP TpTb AccAi AccAan: Hummock Grassland of *Triodia pungens* and *Triodia basedowii* with High Open Shrubland of *Acacia colei* var. *colei* and *Acacia inaequilatera* over Shrubland of *Acacia colei* var. *colei* and *Acacia ancistrocarpa* on red brown sandy loam on 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 Ts Ai: 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; and

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

GR Te AdTmaCci PclCc: Open Hummock Grassland of *Triodia epactia* with Open Shrubland of *Abutilon* sp. *Dioicum*, *Triumfetta maconochieana* and *Cajanus cinereus* over Very Open Tussock Grassland of *Paspadium clementii* and **Cenchrus ciliaris* on skeletal brown loamy sand on granite rockpiles;

HC TbTp El AatAmmAma: Open Hummock Grassland of *Triodia basedowii* and *Triodia pungens* with Scattered Low Trees of *Eucalyptus leucophloia* subsp. *leucophloia* over Open Shrubland of *Acacia atkinsiana*, *Acacia marramamba* and *Acacia maitlandii* on brown sandy loam on hill crests and hill slopes;

HC TbTp ElCh AmoApy: Open Hummock Grassland of *Triodia basedowii* and *Triodia pungens* with Low Open Woodland of *Eucalyptus leucophloia* and *Corymbia hamersleyana* over Open Shrubland of *Acacia monticola* and *Acacia pyrifolia* var. *pyrifolia* on brown sandy loam on hill slopes and hill crests;

MI TeTb Ch CciApy: Open Hummock Grassland of *Triodia epactia* and *Triodia basedowii* with Scattered Low Trees of *Corymbia hamersleyana* over Open Shrubland of *Cajanus cinereus* and *Acacia pyrifolia* var. *pyrifolia* on red sandy loam on minor drainage lines;

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;

SA TI CzCh Ai lalmTbc: Open Hummock Grassland of *Triodia lanigera* with Low Open Woodland of *Corymbia zygophylla* and *Corymbia hamersleyana* over Open Shrubland of *Acacia inaequilatera* over Low Open Shrubland of *Isotropis atropurpurea*, *Indigofera monophylla* and *Tephrosia* sp. Bungaroo Creek (M.E. Trudgen 11601) on orange red loamy sand on sand plains; and

SP TpTm AaExAca ApaEffAad: Hummock Grassland of *Triodia pungens* and *Triodia melvillei* with Low Open Woodland of *Acacia aptaneura*, *Eucalyptus xerothermica* and *Acacia catenulate* subsp. *occidentalis* and Open Shrubland of *Acacia pachyacra*, *Eremophila forrestii* subsp. *forrestii* and *Acacia adsurgens* on red brown clay loam or silty loam on stony plains and floodplains.

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.

Based on ENV (2008a), a total of 14 broad floristic communities with 14 vegetation associations have been identified within the application area from Chainage 313 to 401:

Acacia aneura open woodland

AaAnTp/*Cc: *Acacia aneura* (mixed subspecies) low open woodland over *Acacia ancistrocarpa* shrubland over *Triodia pungens* open hummock grassland over **Cenchrus ciliaris* tussock grassland.

Acacia aneura shrubland

AaAsCf/*Cc: *Acacia aneura* (mixed subspecies), *Acacia ancistrocarpa*, *Acacia pruinocarpa* and *Acacia synchronicia* shrubland over *Triodia pungens* very open hummock grassland over *Chrysopogon fallax* and **Cenchrus ciliaris* tussock grassland.

Acacia citrinoviridis woodland/shrubland - drain / riparian

AcAs*Cc: *Acacia citrinoviridis* and mixed *Acacia* species high shrubland over **Cenchrus ciliaris* tussock grassland.

Acacia dictyophleba shrubland

AdAnTp/*Cc: *Acacia dictyophleba* high open shrubland over mixed *Acacia* shrubland over *Triodia pungens* open hummock grassland over **Cenchrus ciliaris* tussock grassland.

Acacia dictyophleba and Acacia ancistrocarpa high shrubland – drain/riparian

AdTp: *Acacia dictyophleba*, *Acacia marramamba* and *Acacia ancistrocarpa* high shrubland over *Triodia pungens* very open hummock grassland over **Cenchrus ciliaris*, *Chrysopogon fallax* tussock grassland.

Acacia pruinocarpa low woodland

ApAsCf/*Cc: *Acacia pruinocarpa* low woodland over mixed *Acacia* shrubland over *Chrysopogon fallax* and **Cenchrus ciliaris* tussock grassland.

Acacia pruinocarpa shrubland over Senna artemisioides scrub

ApSaCf: *Acacia pruinocarpa* and mixed *Acacia* species shrubland over *Senna artemisioides* (mixed subspecies) low shrubland over *Chrysopogon fallax* and **Cenchrus ciliaris* tussock grassland.

Acacia synchronicia shrubland

AsTp*Cc: *Acacia synchronicia* and mixed *Acacia* species shrubland over *Triodia pungens* hummock grassland over **Cenchrus ciliaris* and *Chrysopogon fallax* tussock grassland.

Corymbia aspera low open woodland

CaAn*Cc: *Corymbia aspera* low open woodland over mixed *Acacia* species shrubland over *Triodia pungens* open hummock grassland over **Cenchrus ciliaris* open tussock grassland.

Corymbia hamersleyana woodland - plains

ChAp*Cc: *Corymbia hamersleyana*, *Corymbia semiclara* and *Corymbia* aff. *opaca* scattered low trees over mixed *Acacia* shrubland over *Triodia basedowii* and *Triodia pungens* very open hummock grassland over **Cenchrus ciliaris* tussock grassland.

Eucalyptus gamophylla low open mallee woodland

EgApTp: *Eucalyptus xerothermica* low open woodland over *Eucalyptus gamophylla* low open mallee woodland over mixed *Acacia* shrubland over *Triodia pungens* open hummock grassland over **Cenchrus ciliaris* tussock grassland.

Eucalyptus leucophloia subsp. leucophloia low open woodland on hill slopes

EIAaT wTp: *Eucalyptus leucophloia* subsp. *leucophloia* low open woodland over *Acacia aneura* var. *aneura*, *Acacia bivenosa*, *Senna glutinosa* subsp. *glutinosa* shrubland over *Triodia wiseana*, *Triodia pungens*, *Triodia* sp. Shovelanna Hill (S. van Leeuwen 3835) hummock grassland over **Cenchrus ciliaris* open tussock grassland.

Eucalyptus victrix low woodland - drains/riparian

EvAc*Cc: *Eucalyptus victrix* low woodland over mixed *Acacia* species shrubland over *Triodia pungens* very open hummock grassland over **Cenchrus ciliaris* tussock grassland.

Eucalyptus xerothermica low open woodland - riparian

ExAa*Cc: *Eucalyptus xerothermica* low open woodland over mixed *Acacia citrinoviridis* and other *Acacia* species shrubland over *Triodia pungens* open hummock grassland over **Cenchrus ciliaris* open tussock grassland.

ENV (2008a) mapped a total of 12 broad floristic communities with 12 vegetation associations within the application area between Chainage 334 to 336:

Maireana triptera low shrubland

AsMtTp: *Acacia synchronicia* scattered tall shrubs scattered over *Maireana triptera* and *Eremophila cuneifolia* low shrubland over *Triodia pungens* and **Cenchrus ciliaris* scattered tussock grasses.

Corymbia candida subsp. dipsodes low open woodland – drainage line

CcGwTb: *Corymbia candida* subsp. *dipsodes*, *Corymbia hamersleyana* and *Eucalyptus gamophylla* low open woodland over *Grevillea wickhamii* subsp. *hispidula*, *Acacia dictyophleba* and *Eremophila longifolia* open shrubland over *Keraudrenia velutina* subsp. *elliptica* over *Triodia basedowii* open hummock grassland.

Highly degraded * Vachellia farnesiana open shrubland

Ch*Vf*Cc: *Eucalyptus camaldulensis* var. *obtusa* and *Corymbia hamersleyana* low open woodland over *Acacia pruinocarpa*, *A. sclerosperma* subsp. *sclerosperma* and *A. synchronicia* high shrubland over *A. tetragonophylla* and **Vachellia farnesiana* open shrubland over **Cenchrus ciliaris* open tussock grassland.

Highly degraded – former quarry works

ChApTb: *Corymbia hamersleyana* scattered low trees over *Acacia pruinocarpa* scattered shrubs over *Triodia basedowii* very open hummock grassland over *Aristida inaequiglumis*, *A. contorta* and **Cenchrus ciliaris* tussock grassland.

Acacia pruinocarpa high shrubland

ChAp*Tp: *Corymbia hamersleyana* scattered low trees over *Acacia pruinocarpa* and mixed *Acacia* spp. high shrubland over *Triodia pungens* open hummock grassland.

Corymbia hamersleyana open woodland

ChGwTb/Tw: *Corymbia hamersleyana* and *Eucalyptus gamophylla* low open woodland over *Grevillea wickhamii* subsp. *hispidula*, *Acacia pyrifolia* and *A. pruinocarpa* high shrubland over *Keraudrenia velutina* subsp. *elliptica* low scattered shrubs over *Triodia basedowii* and *T. wiseana* open hummock grassland.

Former drainage line

EcAa*Cc: *Eucalyptus camaldulensis* var. *obtusa*, *Corymbia hamersleyana* low open woodland over *Acacia aneura* var. *pilbarana* scattered shrubs over **Cenchrus ciliaris* and *Aristida inaequiglumis* very open tussock grassland.

Acacia ancistrocarpa shrubland floodplain

EgAaTp: *Eucalyptus gamophylla* and *E. xerothermica* low open woodland over mixed *Acacia* spp. shrubland over *Triodia pungens* very open hummock grassland over **Cenchrus ciliaris* tussock grassland.

Eucalyptus xerothermica and Acacia aneura var. pilbarana high shrubland

Ex/AaAsTp: *Eucalyptus xerothermica* and *Acacia aneura* var. *pilbarana* over *Acacia* spp., *Eremophila* spp. *Ptilotus obovatus* var. *obovatus*, *Psyrax latifolia* and *Anthobolus leptomerioides* open shrubland over *Maireana triptera* low open shrubland over *Triodia pungens* and **Cenchrus ciliaris* hummock/tussock grassland.

Acacia paraneura low woodland

Ex/ApTp: *Acacia paraneura* low woodland over *A. sclerosperma* subsp. *sclerosperma*, *A. aneura* and *A. synchronicia* and *Eremophila* spp. shrubland over *Triodia pungens* hummock grassland over **Cenchrus ciliaris* scattered grasses.

Eucalyptus xerothermica and *E. gamophylla* woodland

Ex/EgAsTp: *Eucalyptus xerothermica* and *E. gamophylla* low woodland over *Acacia sclerosperma* subsp. *sclerosperma* and other mixed *Acacia* spp. open shrubland over *Triodia pungens* hummock grassland.

Triodia angusta hummock grassland

ExAsTa: *Eucalyptus xerothermica* scattered low trees over *Acacia sclerosperma* subsp. *sclerosperma* and other *Acacia* spp. shrubland over *Triodia angusta* hummock grassland.

Three additional vegetation associations have been recorded within the amendment boundary by ENV (2011):

SP TpTb AccAi AccAan: Hummock Grassland of *Triodia pungens* and *Triodia basedowii* with High Open Shrubland of *Acacia colei* var. *colei* and *Acacia inaequilatera* over Shrubland of *Acacia colei* var. *colei* and *Acacia ancistrocarpa* on red brown sandy loam on stony plains;

ME EbEf Ev Te: Tussock Grassland of *Eriachne benthamii* and *Eriachne flaccida* with Low Woodland of *Eucalyptus victrix* over Hummock Grassland of *Triodia epactia* on brow grey silty loam on drainage depressions; and

FP TpEvAooCAsT: Hummock Grassland of *Triodia pungens* with Low Woodland of *Eucalyptus victrix* over Low Shrubland of *Acacia colei* var. *colei* and *Acacia stellaticeps* on grey brown sandy loam on floodplains.

* denotes weed species.

Clearing Description	Newman Mainline Project. BHP Billiton Iron Ore Pty Ltd proposes to clear up to 2,928 hectares of native vegetation within a total boundary of approximately 14,363 hectares, for the purposes of railway construction, maintenance and associated activities. The project is located between Port Hedland and Newman, through the Shires of Ashburton and East Pilbara, and Town of Port Hedland.
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	A number of flora and vegetation surveys have been conducted within and surrounding the application area (BHP Billiton, 2016). Given the large size of the application area, a vegetation consolidation exercise was undertaken by Onshore Environmental (2014). Vegetation associations identified as occurring within the application area have been based on the results of selected surveys that were deemed to provide the best overall coverage of the application area (BHP Billiton, 2016). The proposed clearing is for the construction and maintenance of the Newman mainline railway (BHP Billiton, 2016). The application area covers 26 clearing permits that are in the area, some of which have expired. Clearing Permit CPS 7009/1 replaced these existing permits. Clearing permit CPS 7009/1 was granted by the Department of Mines and Petroleum (now the Department of Mines, Industry Regulation and Safety) on 21 July 2016 and was valid from 13 August 2016 to 30 November 2026. The permit authorised the clearing of up to 2,928 hectares of native vegetation within a boundary of approximately 14,363 hectares, for the purposes of railway construction, maintenance and associated activities. On 27 May 2019, the Permit Holder applied to amend CPS 7009/2 to increase the permit boundary by 41.8 hectares and to remove Condition 5 from the Permit. The area approved to clear remains unchanged.

3. Assessment of application against Clearing Principles

Comments

BHP Billiton Iron Ore Pty Ltd has applied to increase the permit boundary by 41.8 hectares to approximately 14,404.8 hectares, and to remove Condition 5 from the Permit.

There were three additional vegetation associations identified within the amendment boundary. These vegetation associations were not considered significant on a local or regional scale (Onshore Environmental, 2014; GIS Database).

No Threatened or Priority Ecological Communities, Threatened or Priority Flora species were identified within the amendment boundary (Onshore Environmental, 2014; GIS Database).

ENV (2011) mapped one fauna habitat within the amendment area; Sandplain habitat. This habitat type consists of low *Acacia* shrublands over *Triodia* hummock grasslands. This faunal habitat contains a moderate diversity of microhabitats, and includes shrubs, grass hummocks and leaf litter. The soils within the faunal habitat were suitable for digging and burrowing animals (ENV, 2011). The Northern Quoll (*Dasyurus hallucatus*) was recorded adjacent to the amendment boundary (ENV, 2011). Potential impacts to the Northern Quoll may be minimised by the existing exclusion zone, a restricted clearing condition, a fauna management condition and vegetation management condition.

Condition 5 on the permit does not allow the clearing of native vegetation within an exclusion area in the permit boundary. This exclusion area is Northern Quoll habitat, as identified within Decision Report CPS 7009/1. Given that the proponent has removed this area from the application, Condition 5 will be removed from the permit.

Several non-perennial drainage lines intersect the application area with riparian vegetation occurring in association with these areas (GIS Database). As these drainage lines are only likely to inundate following significant rainfall or cyclonic events, the proposed clearing is unlikely to result in any significant impact to the drainage lines provided natural surface water flow patterns are not disturbed. Potential impacts to riparian vegetation may be minimised through the implementation of the existing vegetation management condition.

Clearing activities have the potential to result in an increase in the incidence of weed species, which may negatively impact on the biodiversity of the local area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of the existing weed management conditions.

The amendment application has been assessed against the clearing principles, planning instruments and other matters in accordance with s.51O of the *Environmental Protection Act 1986*. Environmental information has been reviewed, and the assessment of the proposed clearing against the clearing principles remains consistent with the assessment contained in decision report CPS 7009/1.

Methodology ENV (2011)
Onshore Environmental (2014)

GIS Database:

- DPaW Tenure
- Hydrography, Lakes
- Hydrography, Linear
- IBRA Australia
- Imagery
- Landsystem Rangelands
- Pre-European Vegetation
- Public Drinking Water Source Areas
- Soils, Statewide
- Threatened and Priority Ecological Communities boundaries
- Threatened and Priority Ecological Communities buffers
- Threatened and Priority Flora
- Threatened Fauna

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

There are two native title claims over the area under application (DPLH, 2019). These claims have been determined by the Federal Court on behalf of the claimant groups. 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 several registered Aboriginal Sites of Significance within the application area (DPLH, 2019). 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 Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, 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 amendment application was advertised on 24 June 2019 by the Department of Mines, Industry Regulation and Safety inviting submissions from the public. No submissions were received in relation to this application.

Methodology DPLH (2019)

4. References

- BHP Billiton (2016) Application for a Strategic NVCP for the Newman Mainline. Native Vegetation Clearing Permit Application Supporting Document. BHP Billiton Iron Ore Pty Ltd, Western Australia, March 2016.
- DPLH (2019) Aboriginal Heritage Enquiry System. Department of Planning, Lands and Heritage. <http://maps.daa.wa.gov.au/AHIS/> (Accessed 10 July 2019).
- ENV (2008) Rapid Growth Project 5: Jimblebar Junction to Yandi Junction Railway Reserve Flora and Vegetation Assessment. Report prepared for BHP Billiton Iron Ore Pty Ltd, by ENV Australia Pty Ltd, 2008.

ENV (2011) Port Hedland Regional Fauna Assessment. Report prepared for BHP Billiton Iron Ore Pty Ltd, by ENV Australia Pty Ltd, 2008.

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. Report prepared for BHP Billiton Iron Ore Pty Ltd, by Onshore Environmental, 2014.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
DEE	Department of the Environment and Energy, Australian Government
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DSEWPac	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
DWER	Department of Water and Environmental Regulation, Western Australia
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:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T Threatened species:

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of ‘Specially Protected Fauna’ listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of ‘Rare Flora’ listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

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 in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX Extinct species

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that “*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes 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 fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

P **Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species 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.

Principles for clearing native vegetation:

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare 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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

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