

1. Application details

1.1. Permit application details				
Permit application No.:	7023/1			
Permit type:	Purpose Permit			
1.2. Proponent details				
Proponent's name:	Boral Resources (WA) Ltd			
1.3. Property details				
Property:	Mining Lease 45/295, Mining Lease 45/402			
Local Government Area:	Town of Port Hedland			
Colloquial name:	Turner River Project			
1.4. Application				
Clearing Area (ha) No. Th	rees Method of Clearing For the purpose of:			
17.4	Mechanical Removal Sand and shingle mining.			
1.5. Decision on application				
Decision on Permit Application:	Granted			
Decision Date:	16 June 2016			

2. Site Information

Description

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation The application area has been mapped as the following two Beard vegetation associations:

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

619: Medium woodland; river gum (Eucalyptus camaldulensis).

A Level 1 Flora and Vegetation Survey of the application area was undertaken by GHD (2009) during the period 10 - 11 December 2008. However, the flora survey of M45/402 was not the same area as the current proposal. The flora survey undertaken by GHD (2009) was inclusive of the current application area over M45/295. The vegetation survey identified the following five vegetation types of the application area over M45/295:

- 1. **MaLsTpCv:** Scattered tall shrubs of *Melaleuca argentea* over low scattered mixed shrubs over scattered bunch grasses of *Triodia pungens* and *Aristida* sp. (insufficient material) over scattered sedges of *Cyperus vaginatus* and *Cyperus* sp. (insufficient material),
- EcAtTcTp: Scattered trees of Eucalyptus camaldulensis over high open shrubland of Acacia trachycarpa and Crotalaria cunninghamii over low scattered shrubs of Triumfetta chaetocarpa, Corchorus walcottii and Cajanus cinereus over scattered bunch grasses of Triodia pungens, Triodia basedowii and *Cenchrus ciliaris,
- 3. TcTb: Low scattered shrubs of *Triumfetta chaetocarpa*, *Corchorus walcottii* and *Solanum phlomoides* over closed hummock grassland of *Triodia basedowii*,
- 4. EcAtCc*Cc: open forest of *Eucalyptus camaldulensis* over scattered shrubs of *Acacia trachycarpa*, *Triumfetta chaetocarpa* and *Cajanus cinereus* over low scattered shrubs of *Crotalaria cunninghamii*, *Sida rohlenae* subsp. *rohlenae* and *Corchorus* species over scattered tussock grasses of *Cenchrus ciliaris, *Triodia pungens* and *Aristida holathera* var. *holathera*,
- AtSn*Cc: Scattered tall shrubs of Acacia trachycarpa and Acacia tumida var. pilbarensis over scattered low shrubs of Senna notabilis, Waltheria indica and Acacia pyrifolia over open tussock grassland of *Cenchrus ciliaris and Triodia basedowii.

Clearing Turner River Project

Description Boral Resources (WA) Ltd proposes to clear up to 17.4 hectares within an application area of approximately 17.4 hectares for the purposes of sand and shingle mining. The project is located approximately 18 kilometres south-west of Port Hedland within the Town of Port Hedland.

Vegetation Condition	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-agressive (Keighery, 1994).
Comment	The proposed clearing is required for the purpose of sand and shingle mining. Clearing of isolated areas of riparian vegetation within the river bed will be undertaken (360 Environmental, 2016). Minimal native vegetation is located in the application area (GIS Database). The clearing permit application and supporting information confirms Boral Resources (WA) Ltd (Boral) commits to retaining large areas of riparian vegetation. No riparian vegetation along the river bank will be cleared as part of the proposal. Boral will maintain a three metre buffer beyond the canopy/drip line of trees to minimise the environmental impacts associated

3. Assessment of application against Clearing Principles

with the proposal (360 Environmental, 2015).

Comments The application area occurs within the Roebourne subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by quaternary alluvial and older colluvial coastal and subcoastal plains with a grass savannah of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia stellaticeps* or *A. pyrifolia* and *A. inaequilatera*. Uplands are dominated by *Triodia* hummock grasslands and ephemeral drainage lines support *Eucalyptus victrix* or *Corymbia hamersleyana* woodlands (CALM, 2002).

A flora survey of the application area identified five vegetation types within the application area (GHD, 2009). According to available databases, there are no Threatened Ecological Communities (TEC's) or Priority Ecological Communities (PEC's) occurring within or near the application area (GIS Database). GHD (2009) reported no vegetation communities considered to be a Threatened Ecological Community (TEC) within or near the application area.

A total of 63 flora species were identified within the larger survey area representing 25 families (GHD, 2009). A search of available databases was undertaken and no records of Threatened or Priority flora were recorded within the application area (GIS Database). The flora and vegetation survey undertaken in 2009 of the application area did not record any Threatened flora species (GHD, 2009). One Priority flora species *Dentella pulvinata* (P1) was recorded within mining tenement M45/295 during the 2009 flora survey. However, this species is no longer listed as Priority flora (DPaW, 2016) and the species has been redetermined as *Dentella asperata* Airy Shaw (DPaW, 2016). The flora survey revealed the application area was low in flora diversity (GHD, 2009).

The introduced (weed) species *Cenchrus cilliaris* was also identified throughout the application area (GHD, 2009). Weed invasion has the potential to alter the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

GHD (2009) identified four bird, 27 reptile two amphibian and 13 mammal species potentially occurring within 10 kilometres of the application area. However, the on ground fauna survey revealed only five reptile, six mammal and 20 bird species within the application area. Three introduced mammal species were also identified in the application area. These introduced species include a cow, cat and one of the canid members (either dog or dingo) (GHD, 2009).

Important habitat of the application area was identified within mining tenement M45/295 (GHD, 2009). This area contained large stands of *Eucalyptus camaldulensis* and *Melaleuca argentea* and was considered by GHD (2009) to supply ecological linkages to the west and east of this area. The habitat value of M45/295 was therefore considered to be more important at this location (GHD, 2009).

A search of available biological databases was undertaken and no Threatened fauna were located within the application area (GIS Database). The fauna survey undertaken over the application area recorded the potential for one conservation significant fauna species to occur within the application area (GHD, 2009). This species is the Bilby (*Macrotis lagotis* – Threatened). A suspected burrow which may be utilised by a Bilby was recorded in the application area within M45/295, however, no Bilby individuals were recorded as part of the fauna survey (GHD, 2009). A more recent and targeted survey of the application area undertaken by 360 Environmental (2016) in December 2015 did not locate any Bilby individuals. A number of burrows were recorded in river banks in the application area during the 2016 fauna survey (360 Environmental, 2016). 360 Environmental considered these burrows to be utilised by Sand Goannas (360 Environmental, 2016). As sand mining will occur in the river bed it is unlikely mining will impact these species. The Bush Stone Curlew (*Burhinus grallarius* – formerly Priority 4) was also recorded in the application area during the GHD (2009) fauna survey. However, this species is no longer listed as a conservation significant fauna species.

Clearing for the proposal is small and temporary in nature. Mining of sand will occur when water has receded from the Turner River. Given the minimal areas of vegetation existing in the application area and the small amount of clearing proposed, the application area is not likely to contain significant habitat for fauna species indigenous to Western Australia.

The application area falls within the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.44% of the pre-European vegetation remains (Government of Western Australia, 2014; GIS Database). The vegetation associations are considered to be of 'Least Concern' in the bioregion as greater than 50% of the pre-European extent of native vegetation exists (Department of Natural Resources and Environment, 2002). The application area is neither a remnant nor does it form part of any remnants within the local area (GIS Database).

The Turner River is located within the application area (GIS Database). Minimal native vegetation exists in the application area (GIS Database) and clearing activities will be restricted to clearing of isolated areas of riparian vegetation within the river bed (360 Environmental, 2016). No mining activities will occur on the riverbank (360 Environmental, 2016). The clearing permit application and supporting information confirms the applicant will retain large areas of riparian vegetation and no riparian vegetation along the river bank will be cleared as part of the proposal. The vegetation proposed to be cleared is considered to be in association with a watercourse (360 Environmental, 2015; GIS Database).

While the proposed clearing will impact riparian vegetation, the amount of riparian vegetation to be cleared is limited to small areas within the river bed. Information provided by 360 Environmental (2016) confirmed the clearing proposed within mining tenement M45/295 is estimated to be 1.30 hectares and the clearing amount

proposed within mining tenement M45/402 is estimated to be 2.25 hectares (360 Environmental, 2016). A number of areas containing riparian vegetation (*Eucalyptus camaldulensis* and/or *Melaleuca argentea*) within both tenements have been identified as avoidance areas as part of the clearing permit application (360 Environmental, 2016). The applicant has also committed to retaining a 3 metre buffer beyond the drip line of trees to minimise the environmental impacts associated with the proposal (360 Environmental, 2015). Potential impacts to riparian trees as a result of the proposed clearing may be minimised by the implementation of a vegetation management condition. Based on the above, the proposed clearing is at variance to clearing Principle f. However, the amount of vegetation to be cleared is small and clearing activities are of low impact and unlikely to adversely impact the watercourse.

The Department of Water (DoW) provided comment on the mining proposal for the Turner River Project (Reg ID 59028) (DoW, 2016). The DoW noted that stockpiling and storage of topsoil material within tenement M45/295 may have the potential to redirect or obstruct the flow of water within the Turner River (Dow, 2016). The DoW requested the size and extent of stockpiles are managed to reduce the likelihood of and potential increase in flooding or erosion risk (DoW, 2016). The detailed management of vegetative material and topsoil, including storage and timing, for use in future rehabilitation will be detailed as part of the mining proposal (DoW, 2016).

The application area falls within the Yamerina and River Land Systems (GIS Database). The Yamerina land system supports tussock grasses (including extensive areas of the introduced buffel grass) and saltbush shrubs (Van Vreeswyk, et al., 2004). Parts of the system have been invaded by mesquite forming dense shrublands with poor accessibility. The more saline parts of flood plains are highly susceptible to erosion if vegetative cover is lost and most of the land system is prone to flooding (Van Vreeswyk, et al., 2004). The River land system consists of active flood plains and major rivers supporting grassy Eucalypt woodlands, tussock grasslands and soft spinifex grasslands (Van Vreeswyk, et al., 2004). Flood plains and river terraces located in this area are subject to regular overbank flooding from major channels, watercourses, sandy banks and poorly defined levees. The River land system is also susceptible to erosion if vegetative cover is seriously depleted (Van Vreeswyk, et al., 2004).

The proposed clearing is unlikely to cause large scale land degradation. However, given the land systems located in the application area are susceptible to erosion when vegetation is removed, there may be an increased risk of wind and water erosion. Excavation activities will disturb the ground but flooding of the river will refill and rehabilitate these areas with sand deposits and replenish the seed source. Potential impacts from wind erosion as a result of the proposed clearing may be minimised by a staged clearing condition. Based on the above, the proposed clearing may be at variance to clearing Principle g.

No Public Drinking Water Source Areas are located within or in the vicinity of the application area (GIS Database). Although, the Turner River is located within the application area it is unlikely that clearing required for the proposal will cause deterioration in the quality of surface water, including sedimentation, erosion, turbidity or eutrophication of water bodies on-site or off-site (GIS Database).

The application area receives low mean annual rainfall (317 millimetres) and very high average annual evaporation rate (approximately 3,200 millimetres) (BoM, 2016). The Turner River is subject to seasonal flooding. Whilst large, annual rainfall events may result in the flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s.510 of the *Environmental Protection Act* 1986, and the proposed clearing is at variance to Principle (f), may be at variance to Principle (g), not likely to be at variance to Principles (a), (b), (c), (d), (h), (i), and (j) and is not at variance to Principle (e).

Methodology BoM (2016)

CALM (2002) DAA (2016) Department of Natural Resources and Environment (2002) DoW (2016) DPaW (2016) GHD (2009) Government of Western Australia (2014) Van Vreeswyk et al. (2004) 360 Environmental (2015) 360 Environmental (2016a) 360 Environmental (2016b)

GIS Database:

- DPaW Tenure
- Hydrography, linear
- IBRA WA (Regions Sub Regions)
- Pre-European Vegetation
- Public Drinking Water Source Areas
- Rangeland Land System Mapping

- TEC/PEC Boundaries
- TEC/PEC Buffer
- Threatened Fauna
- Threatened and Priority Flora

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

S There is one native title claim (WC1999/003) over the application area (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant groups (GIS Database). However, the 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 no registered Aboriginal sites of significance within the application area (DAA, 2016). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

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

The clearing permit application was advertised on 16 May 2016 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

Methodology DAA (2016)

4. References

BoM (2016) Bureau of Meteorology Website - Climate Data Online, Port Hedland Airport. Bureau of Meteorology. http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_stn_num=0 04032. (Accessed 23 May 2016).

- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara (PIL4 Roebourne subregion) Department of Conservation and Land Management, Perth, Western Australia.
- DAA (2016) Aboriginal Heritage Inquiry System. Department of Aboriginal Affairs. http://maps.dia.wa.gov.au/AHIS2 (Accessed 23 May 2016).
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- DoW (2016) Advice received in relation to Mining Proposal Reg ID 59028. Pilbara Region Department of Water, Western Australia, 14 June 2016.
- DPaW (2016) Florabase the Western Australian Flora. Flora Species Search, Department of Parks and Wildlife, Western Australian Herbarium. http://florabase.dpaw.wa.gov.au/ (Accessed 27 May 2016).
- GHD (2009) Boral Resources (WA) Ltd, Flora and Fauna Assessment Report, Flora and Fauna Survey, Tenements 45/295 and 45/402. GHD, Perth Western Australia, January 2009.
- Government of Western Australia (2014) 2014 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Western Australian Department of Parks and Wildlife, Perth, Western Australia.
- 360 Environmental (2015) Turner River Clearing Permit Application, Prepared for Peter Male, Boral Resources, Perth, Western Australia, March 2015.
- 360 Environmental (2016a) Riparian Flora Mapping and Targeted Bilby and Mulgara Survey Along the Turner River, Report Prepared for Boral Resources. 360 Environmental Pty Ltd, Perth, Western Australia, January, 2016.
- 360 Environmental (2016b) Additional Information received in relation to Clearing Permit Application CPS7023/1. 360 Environmental Pty Ltd, Perth, Western Australia, 4 April, 2016.
- Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) Technical Bulletin An Inventory and Condition Survey of the Pilbara Region, Western Australia, No. 92. Department of Agriculture, Government of Western Australia, Perth, Western Australia.

5. Glossary

Acronyms:

ВоМ	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)

EPA EP Act EPBC Act GIS ha IBRA IUCN PEC RIWI Act TEC	Environmental Protection Authority, Western Australia Environmental Protection Act 1986, Western Australia Environment Protection and Biodiversity Conservation Act 1999 (Federal Act) Geographical Information System Hectare (10,000 square metres) Interim Biogeographic Regionalisation for Australia International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union Priority Ecological Community, Western Australia <i>Rights in Water and Irrigation Act 1914</i> , Western Australia Threatened Ecological Community	
Definitions: {DPaW (2015) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife. Western Australia}:-		
Т	Threatened species: Published as Specially Protected under the <i>Wildlife Conservation Act 1950,</i> 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).	
	<i>Threatened fauna</i> is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the Wildlife Conservation Act.	
	<i>Threatened flora</i> 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 <i>Wildlife Conservation Act 1950,</i> 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 <i>Wildlife Conservation Act 1950,</i> 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 <i>Wildlife Conservation Act 1950</i> , 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 <i>Wildlife Conservation Act 1950</i> , 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 <i>Wildlife</i> <i>Conservation Act 1950,</i> 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 <i>Wildlife Conservation Act 1950,</i> 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 <i>Wildlife Conservation Act 1950,</i> in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.	

Priority species

Ρ

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.

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.