



1. Application details

1.1. Permit application details

Permit application No.: 365/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: Tuma Holdings Pty Ltd T/A Action Sand Supply

1.3. Property details

Property: M70/836
Local Government Area: Shire Of Northam
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
2		Mechanical Removal	Extractive Industry

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Association 3003: Medium forest; jarrah & marri on laterite with wandoo in valleys, sandy swamps with tea-tree and banksia (Hopkins et al 2001, Shepherd et al 2001).	The vegetation is dominated by regrowth open jarrah (<i>Eucalyptus marginata</i>) forest with sparse understorey and it is located high in the landscape. There would appear to be a slight gradient running to the north west and the soil type is predominantly that of a deep yellow sand (Site inspection 14.4.05).	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The area under application is adjacent to an existing sand mining operation to the west and is located within the broad expanse of native vegetation within the Mundaring Weir Catchment. The condition of native vegetation under application was assessed during the site inspection (14.4.05).
Mattiske Pindalup (Pn) Vegetation Complex: Open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica-Corymbia calophylla</i> on slopes and open woodland of <i>Eucalyptus wandoo</i> with some <i>Eucalyptus patens</i> on the lower slopes in semiarid and arid zones (Mattiske Consulting 1998).	On 19 May 2007 a prescribed burn was conducted by the DEC in the local area, including the area under application (Site inspection 8.06.07).		
Mattiske Yalanbee (Y5) Vegetation Complex: Mixture of open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica-Corymbia calophylla</i> and woodland of <i>Eucalyptus wandoo</i> on lateritic uplands in semiarid to perarid zones (Mattiske Consulting 1998).			

3. Assessment of application against clearing principles

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

Comments **Proposal is not likely to be at variance to this Principle**
The area under application is part of a large expanse of native vegetation that is located in the Mundaring State Forest (>2000 ha) and within the western part of the catchment of the Mundaring Weir (>120,000 ha).

While the forest and most of the catchment area are well vegetated, the area under application was burnt in a wildfire in 1996. A site inspection conducted in April 2005 determined the vegetation to be regrowth jarrah forest with minimal understorey that includes young *Xanthorrhoea* spp. Given the age of the regrowth, no logs or tree hollows of sufficient size for fauna such as cockatoos and phascogales were observed during the site inspection (14.04.05).

In May of this year (2007) DEC conducted a prescribed burn of the entire area under application.

Given the above the area under application is not likely to comprise a high level of biodiversity.

Methodology References;
- Site Inspection (14.04.05)
- Site Inspection (07.06.07) TRIM Ref. No 27535

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

Comments **Proposal is not likely to be at variance to this Principle**
The area under application is part of a large expanse of native vegetation that is located in the Mundaring State forest (>2000 ha) and is immediately to the east of an existing quarry of approximately 12 ha.

There are nine Specially Protected and Priority listed fauna known to occur within a 10 km radius of the area under application (CALM 2005a) .

CALM (2005b) advise the predominantly regrowth *Eucalyptus marginata* (jarrah) that are not likely to provide suitable nesting habitat for either of the black cockatoo taxa (Carnaby's and Baudin's Cockatoo). Similarly the Forest Red-tailed Black Cockatoo and the Southern Brush-tailed Phascogale, both needing similar sized tree hollows, are therefore unlikely to be affected by the proposed clearing. The Numbat and the Western Brush Wallaby, being shy creatures, are unlikely to be found near the current sand pit operations that are immediately adjacent to the area under application. The Chuditch has a large range; given the extensive expanse of native vegetation in the vicinity of the proposal, it is unlikely to be affected by the proposed clearing.

The Crested Shrike Tit favours lighter timbers such as Wandoo and Salmon Gum rather than the more heavily timbered Jarrah forest (CALM 2005c). The Western False Pipistrell is usually found in wet sclerophyll forest dominated by Karri and in high rainfall areas of Jarrah and Tuart forests. Although the area under application is suitable habitat for this species they prefer Wandoo and Salmon Gums or wet sclerophyll forests.

Given the above, and the proximity of the area under application to nearby large stands of remnant vegetation, the proposed clearing is considered not likely to be at variance to this principle.

Methodology References;
- CALM (2005a) (DoE TRIM Ref HD 24993)
- CALM (2005b) (DoE TRIM Ref ND 777)
- CALM (2005c) (DoE TRIM Ref ND 785)
- Site Inspection (14.04.05)
GIS Databases:
- SAC bio datasets accessed 2 July 2007
- Northam 1m Orthomosaic - DLI 12/03

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no known occurrences of Declared Rare Flora (DRF) taxa within a 10 km radius of the area with the nearest recorded DRF (*Dryandra aurantia* & *Leschenaultia laricina*) being 16km to the east (CALM 2005a). *Dryandra aurantia* is found on white/grey sand and seasonally waterlogged plains and *Leschenaultia laricina* is found on sand and gravelly loam. Given that the area under application is predominantly free draining coarse sand, the identified DRF taxa are considered unlikely to be present.

Methodology References;
- CALM (2005a) (DoE TRIM Ref HD 24993)

GIS database;
- SAC bio datasets accessed 2 July 2007

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

Comments **Proposal is not likely to be at variance to this Principle**
There is no evidence to suggest that any EPBC Act listed TEC's or State listed TEC's are present on the site of the proposed clearing. The nearest recorded TEC is 32km west of the current proposal (CALM 2005a).

Methodology Reference;
- CALM (2005a) (DoE TRIM Ref HD 24993)

GIS Databases:
- SAC bio datasets accessed 2 July 2007
- Environmentally Sensitive Areas - DOE 22/10/04

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

Comments **Proposal is not likely to be at variance to this Principle**
The State Government is committed to the National Objectives Targets for Biodiversity Conservation which includes a target that prevents a clearance of ecological communities with an extent below 30% of that present pre-European settlement (Department of Natural Resources and Environment 2002, EPA 2000).

reserves/CALM	Pre-European (ha)*	Current extent (ha)*	Remaining (%)*	Conservation**% status	In managed land
IBRA Bioregions					
Jarrah Bioregion	4,544,335	2,665,480	59%	Least concern	
Shire of Northam	141,410	31,229	22%	Vulnerable	
Mattiske: Pindalup and Yalanbee	1,666,912 1,583,884	1,343,956 814,609	80.6 51.4	Least concern Least concern	
Beard Vegetation Association: 3003	78,358	51,943	66.3	Least concern	5.9

* (Shepherd et al. 2001)
** (Department of Natural Resources and Environment 2002)

Although the extent of native vegetation in the Shire of Northam is below the 30% threshold, given that the area under application is located at the western extent of the Shire, and that it is surrounded by the broad expanse of native vegetation within the Mundaring Weir Catchment, it is not likely to be significant as a remnant in an area that has been extensively cleared.

Methodology References;
- Shepherd et al. (2001)
- Hopkins et al. (2001)
- Department of Natural Resources and Environment (2002)

GIS Databases:
- Pre-European Vegetation - DA 01/01
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Mattiske Vegetation - CALM 24/03/98

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

Comments **Proposal is not likely to be at variance to this Principle**
Wariin Brook is 260 m north of the proposal, however the vegetation associated with the area under application is not influenced by the watercourse (Site inspection 14.04.05).

Several multiuse and resource management wetlands are located within 5 km from the area under application. Martyn Reserve Wetland is situated 4 km away from the proposed area under application. Given the distance to the nearest wetland it is considered unlikely the proposed clearing will impact on these wetlands.

As the vegetation applied to be cleared is not growing in or in association with any of these wetlands or any watercourse, the clearing is not likely to be at variance to this Principle.

Methodology References;
- Site inspection (14.04.05)

GIS Databases:
- Hydrography, linear - DOE 01/02/04
- Geomorphic Wetlands (Mgt Categories) Swan Coastal Plain DEC
- Hydrographic Catchments - Catchments DOE 3/4/03

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

Comments **Proposal may be at variance to this Principle**

The area applied to be cleared is surrounded by native vegetation, apart from the western side where current extractive operation is occurring. Revegetation has taken place on this land and the proponent has advised that revegetation will continue to occur in a similar manner within the area subject to the application. There are no apparent wind erosion problems within the existing site immediately to the west, which based upon the soil profile exposed on the eastern face of the existing pit, would appear to be of a similar soil type to the current proposal (Site inspection 14.04.05). However due to the sandy nature of the soils, there is a potential risk wind erosion.

As the proposed clearing is likely to increase recharge, this may be expressed as saline seepages down gradient of the area under application. Department of Water (formally Land Use Impacts Branch (DoE, 2005)) advise that saline seepages are likely to cause tree deaths down gradient of both the existing sand mining pit and a closed pit to the west.

Therefore the clearing may be at variance to this Principle.

Methodology References;
- Site inspection (14.04.05)
- DoE (2005) (DoE TRIM Ref ND 748)

GIS Databases:
- Acid Sulphate Soil risk map, SCP DOE 01/02/04
- Salinity Mapping LM 25m - DOLA 00
- Salinity Monitoring LM 50m - DOLA 00
- Salinity Risk LM 25m - DOLA 01
- Topographic Contours, Statewide - DOLA 12/09/02

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

Comments **Proposal may be at variance to this Principle**

There are several nature reserves within the local area with the closest being Woottating Nature Reserve (>500 ha), approximately 6km north-east from the proposed clearing site. Others within 10km include Beechina Nature Reserve, Beechina North Nature Reserve, Inkpen Road Nature Reserve and Keaginine Nature Reserve.

CALM (2005a, 2006) advise the proposed clearing is located approximately 2km from a Phytophthera risk area to the east, approximately 3km from a risk area to the south and between 3-5km from a risk area to the west. Furthermore the disease risk area may be more extensive than that which has been mapped given that there are not always indicator species present. Therefore, the proposed clearing may be at variance to this Principle.

Methodology References;
- CALM (2005a) (DoE TRIM Ref HD 24993)
- CALM (2006) (DoE TRIM Ref ND 818)

GIS Databases:
- CALM Managed Lands and Water - CALM 01/08/04

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

Comments **Proposal is seriously at variance to this Principle**

The area under application is located within the Country Area Water Supply Act 1947 Zone A area of the Mundaring Weir catchment. Zone A areas are recognised as having a high salinity risk. Water and Rivers Commission (1996) identifies that licences for broadacre clearing within Zone A areas are not normally granted. Clearing within these areas is minimised to decrease in stream salinity caused through the removal of indigenous vegetation, thereby providing water of good quality in reservoirs and conserving the quality of supplies for future consumers or beneficial uses.

The Mundaring Reservoir supplies the Goldfields and Agricultural areas and is one of the larger surface water resources in the south-west of Western Australia, with a capacity of 63.6 gigalitres (GL) and a mean annual flow of 17.1 GL. This water resource has always been sensitive to even small areas of clearing, and recovery to potable salinity has required series of revegetation.

The Mundaring Weir Catchment is approximately 150 000ha of which 25% -33% of flow comes from the Helena River sub-catchment, within which this proposal is located (DoW, formally Salinity and Land Use Impacts Branch of DoE (2005; 2006)). Salinity from groundwater within the Helena River sub-catchment is up to 16,000 mg/L whilst surface water flow varies to 4,000 mg/L. The salinity of water entering the weir from the Helena River is approximately 1,500 mg/L while the average in the weir, at 550 mg/l, is above the target level of 500mg/L. The target level of 500 mg/L is project as being exceeded in seven out of ten years given that no further clearing in the catchment occurs.

A significant threat to the quality of water within the Mundaring Weir Catchment is the 'mixing' of saline groundwater with relatively fresh surface water. This is most likely to occur at or down gradient of sand mining operations where the removal of deep rooted perennial native vegetation and removal of significant resources of sand create conditions that bring ground and surface water resources closer together (DoW formally Salinity and Land Use Impacts Branch 2005). Tree plantations have been used to disconnect surface water from groundwater in bedrock at nearby Flynns Farm experimental sites over the last 30 years (DoE et al. 2004).

DoW (formally Land Use Impacts Branch of DoE (2005))further advised that "clearing 2ha would have a likely increase of salinity in the order of <1 mg/L for an average rainfall year". Given the delicate balance of the local hydrology within both the Helena River Sub-Catchment and the greater Mundaring Weir Catchment, the impact from this proposal is likely to have an incrementally adverse effect upon a public drinking water source that contains salt levels exceeding the targeted 500 mg/L.

The proposed clearing will sustain or even increase brackish-to-saline groundwater discharge into Wariin Brook and ultimately increase the salt load to Lake CY O'Connor (Mundaring Reservoir). These are highly adverse impacts on both groundwater and surface water resources (Salinity and Water Resource Recovery Branch, DoW 2007).

The proposed area is situated within the highest salinity risk part of the Mundaring Weir catchments. Clearing in a high salinity hazard zone, in a public drinking water source catchments that already has its reservoir salinity elevated by clearing impacts therefore carries an unacceptable risk (Water Corporation 2005).

- Methodology** References;
- DoE (2006) (DoE TRIM Ref ND 819)
 - DoE (2005) (DoE TRIM Ref ND 748)
 - DoE et al. (2004) (DoE TRIM Ref NI 1248)
 - Site inspection (14.04.05)
 - Water and Rivers Commission (2003) (DoE TRIM Ref ND 805)
 - Water and Rivers Commission (1996)
 - Salinity and Water Resource Recovery Branch, DoW (2007) TRIM Ref No. DOC27390
 - Water Corporation (2005) TRIM Ref No DOC27462.

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

- Comments** **Proposal is not likely to be at variance to this Principle**
The soil type within the area subject to this proposal is primarily deep porous yellow sand. The site is on a slight gradient and given that the proposal is limited to the clearing of 2ha, it is considered unlikely to result in an increase in either peak flood height or duration.

- Methodology** Reference;
- Site inspection (14.04.05)

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

- Comments** The proponent provided additional advice (TRIM Ref No.15742) on salinity and rehabilitation.

It is noted that Tuma's groundwater monitoring and analyses are inadequate, indicating neither hydraulic gradient nor salinity distribution. The bore immediately northwest of the present pit does not have recorded construction details, any surveyed level or a specified sampling procedure. The farm bore to the southeast has no construction details, does intersect saline groundwater, but is much farther from the pit than is marked on the consultant's report. The groundwater exposed in the pit floor is fresh and this simply confirms it is from direct recharge in the pit and sheds no light on the amount of salt in the sands beneath.

The current tenement area totals 35 ha on Mining lease 70/836 and is valid for 21 years to 14/08/2015 (DoIR

1994). While Grid Coordinates have been provided for the extent of the mining lease, a request to survey the tenement was issued to the proponent on 30 March 2007.

Tuma Holdings have been issued with Ministerial Refusal for more mining to occur within the Crown reserve.

Further, Mr van Beelan submitted a request to the Minister for an 'alternative approach' in which 15 ha of the existing mining lease which has poor sand resource would be surrendered in exchange for an additional 12 ha. The Minister has not supported this alternative suggestion (Letter from the Hon McGowan, Minister for the Environment; Racing and Gaming to Mr van Beelen 2006).

Methodology

4. Assessor's comments

Purpose	Method	Applied area (ha)/ trees	Comment
Extractive Industry	Mechanical Removal	2	The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986, and the proposed clearing is seriously at variance to Principle (i), may be at variance to Principles (g) and (h) and is not likely to be at variance to the remaining principles.

5. References

- AGPS (2001) The national objective and targets for biodiversity conservation 2001-2005. Commonwealth of Australia, Canberra.
- CALM (2005a) Land clearing proposal advice. Advice to A/Director General, Department of Environment (DoE). Department of Conservation and Land Management, Western Australia. DoE TRIM ref HD 24993.
- CALM (2005b) Correspondence. Department of Conservation and Land Management, Western Australia. DoE TRIM ref ND 777.
- CALM (2005c) Correspondence. Department of Conservation and Land Management, Western Australia. DoE TRIM ref ND 785.
- CALM (2006) Correspondence. Department of Conservation and Land Management, Western Australia. DoE TRIM Ref ND 818.
- 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.
- DoE (2005) Hydrological advice. Salinity and Land Use Impacts Branch, Department of Environment, Western Australia. DoE TRIM Ref ND 748.
- DoE (2006) Salinity of Mundaring Reservoir Inflow. Salinity and Land Use Impacts Branch, Department of Environment, Western Australia. DoE TRIM Ref ND 819.
- DoE et al. (2004) Saline Groundwater Sustains Summer Flow in a Surface Water Supply Catchment. Unpublished Paper. Department of Environment & Curtin University of Technology, Western Australia. DoE TRIM ref NI 1248.
- DOIR (1994) Mining Lease 70/836.
- Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- JANIS Forests Criteria (1997) Nationally agreed criteria for the establishment of a comprehensive, Adequate and Representative reserve System for Forests in Australia. A report by the Joint ANZECC/MCFFA National Forest Policy Statement Implementation Sub-committee. Regional Forests Agreement process. Commonwealth of Australia, Canberra.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Mattiske Consulting (1998) Mapping of vegetation complexes in the South West forest region of Western Australia, CALM. Salinity and Water Resource Recovery Branch, DoW (2007). Tuma Holdings Sand Quarry Goods Road and CPS Principle i. TRIM Ref No DOC27391
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Site Inspection (2007). Site Inspection Report, Department of Environment and Conservation (DEC). Perth, Western Australia. TRIM Ref No. 27535
- Water and Rivers Commission (1996) Policy and Guidelines: Granting of Licences to Clearing Indigenous Vegetation in Catchments Subject to Clearing Control Legislation.
- Water and Rivers Commission (2003) Groundwater Conditions at the Action Sand Quarry. Hydrogeological Report 212. Resource Science Division, Water and Rivers Commission, Western Australia. DoE TRIM ref ND 805.
- Water Corporation (2005) correspondence. Infrastructure Planning Branch, Water Corporation. DoE TRIM Ref NI 1269.

6. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)

