Department of
Environment and Conservation
Our environment, our future

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3014/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: **Smargiassi Nominees Pty Ltd T/A Collie Steel Supply**

1.3. Property details

Property: LOT 519 ON PLAN 50783 (STAKE HILL 6181)
Local Government Area: Shire Of Murray
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
5		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: 998 - Medium woodland; tuart (Shepherd 2007; SAC Bio datasets 19/03/2009). 1001 - Medium very sparse woodland; jarrah, with low woodland; Banksia & Casuarina. (Shepherd 2007; SAC Bio datasets 19/03/2009). Heddle Complex: Yoongarillup Complex - Woodland to tall woodland of E. gomphocephala with Agonis flexuosa in the second storey. Less consistently an open forest of E. gomphocephala - E. marginata - E. calophylla. (Heddle et al 1980).	The proposal is to clear up to 5 hectares of native vegetation for the purpose of sand extraction. The vegetation under application comprises mixed Eucalyptus and Banksia woodland, over Allocasuarina fraseriana, Xylomelum occidentalis, Kunzea glabrescens, Macrozamia riedlei, Xanthorrhoea preisii, Hibbertia hypericoides, Acacia pulchella, Stirlingia latifolia and Dasypogon bromeliifolius.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	The vegetation clearing description is based on a site inspection by DEC officers on 3 March 2009 and a flora and vegetation survey conducted by Bennett (2004).

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 at variance to this Principle

The vegetation under application is described as Eucalyptus and Banksia woodland over shrubland in very good to excellent (Keighery, 1994)condition (DEC, 2009a) The vegetation includes Eucalyptus marginata, E. marri, Banksia attenuata, B. menziesii, Allocasuarina fraseriana and Xylomelum occidentale over a dense understorey comprising Kunzea glabrescens, Hibbertia hypericoides, Macrozamia riedlei, Xanthorrhoea preissii, Acacia pulchella, Dasypogon bromeliifolius and Stirlingia latifolia. This dense understorey is likely to provide suitable habitat for a range of ground dwelling fauna, including the Quenda and Kangaroo.

A flora and vegetation survey conducted by Bennett (2004) identified a total of 97 flora taxa, including 89 native species and 8 weed species. No rare flora species were recorded within the applied area. One priority flora species (Acacia benthamii, P2) was recorded within Lot 519; with Bennett (2004) advising that Caladenia

speciosa (P4) may also occur on site. This survey was conducted outside of the optimal identification times for Drakaea elastica and Caladenia speciosa; therefore these species would not have been in flower at the time of the survey. The proponent supplied additional information on the survey (Natural Area Management and Services 2009b) however, the methodology for the survey was not adequate and as a result DEC cannot be confident that these species do not occur on site.

Within the local area (5km radius) there are three records of rare flora (Drakaea elastica), the closest is located within Lot 519, approximately 150 metres north-east of the area under application (DEC 2009c). In addition there are 17 recorded occurrences of 8 priority flora species, the closest of which, Acacia benthamii (P2) has been recorded within the area under application (Natural Area Management and Services 2009a).

The local area (10km radius) is highly clearing with approximately 30% vegetated. The proposed clearing will further fragment the ecological linkage of which it is a part, particularly isolating vegetation to the south. The vegetation is part of a 1b ecological linkage as identified by the South West Regional Ecological Linkages project, endorsed by the EPA (Molloy et al. 2009, EPA 2009). Clearing of this vegetation would affect the integrity of the linkage.

Given the relatively large area proposed to be cleared (5ha), the excellent vegetation condition, and that the vegetation under application may comprise rare and/or priority flora, the area under application is considered to represent an area of high biological diversity and is therefore considered to be at variance to this Principle.

Methodology

References:
- Bennett (2004)
- DEC (2009a)
- DEC (2009c)
- EPA (2009)
- Keighery (1994)
- Molloy et al. (2009)
- Natural Area Management and Services (2009a)
- Natural Area Management and Services (2009b)

GIS Databases:
- SAC BIO datasets - accessed 26/03/2009
- Swan Coastal Plain South 20cm Orthomosaic - Landgate 2006

(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 at variance to this Principle

There are three fauna species of conservation significance which have been recorded within the local area (5km radius) including the Quenda (Isoodon obesulus fusciventer, P5), Lined skink (Lerista lineata, P3) and the Black-striped snake (Neelaps calonotos, P5), the closest being the Quenda which was recorded 3.2km north-west of the applied area.

The area under application is located within the distribution range of the Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) (EPBC Act, Endangered, threatened fauna Wildlife Conservation Act 1950). These birds inhabit uncleared or remnant Eucalyptus and Banksia woodlands and coastal scrub foraging on the seeds and nectar from the flowers of Eucalypts, Banksia, Grevillea and Hakea species (Burbidge, 2004). Although the vegetation under application includes suitable feeding habitat and hollows for a range of local bird species ranging from small insectivores through to the larger parrot species (DEC, 200a), due to the closed canopy of the vegetation on site it is not considered to be significant habitat for the Carnaby's Black-Cockatoo (DEC, 2009b).

The vegetation under application is in very good to excellent condition with an intact understorey. Areas comprising a dense leaf litter understorey and woody debris would provide suitable habitat for ground dwelling fauna such as the Quenda, snakes and lizards. During the DEC site inspection Quenda diggings were observed and numerous kangaroo scats were found throughout the applied area (DEC, 2009).

The local area (10km radius) is highly clearing with approximately 30% vegetated. The proposed clearing will further fragment the ecological linkage of which it is a part, particularly isolating vegetation to the south. This is likely to affect fauna movement throughout the area. The vegetation is part of a 1b ecological linkage as identified by the South West Regional Ecological Linkages project, endorsed by the EPA (Molloy et al. 2009, EPA 2009). Clearing of this vegetation would affect the integrity of the linkage.

Given the potential for the vegetation under application to provide suitable habitat for a range of fauna species, including species of conservation significance, it is considered that the vegetation under application comprises part of a significant habitat for indigenous fauna.

Methodology

References:
- Burbidge (2004)
- DEC (2009a)

- DEC (2009b)
- EPA (2009)
- Molloy et al. (2009)

GIS Databases:
- SAC BIO datasets - accessed 27/03/2009

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

Comments

Proposal may be at variance to this Principle

Within the local area (5km radius) there are three known records of the rare flora species Drakaea elastica, the closest of which is located approximately 145 metres north-east from the area under application. This particular population of D. elastica is situated near the eastern boundary of Lot 519 and was discovered in 2006 during survey work associated with the Kwinana Freeway extension, in the Perth to Mandurah alignment.

D. elastica is described as a small orchid which has a distinctive glossy, round to heart shaped leaf 1-2cm in diameter (Brown et al. 1998). "The leaf emerges in May and starts to wither by the time the orchid flowers in September, with the plant dying back to a dormant underground tuber over the summer months." (DEC, 2008).

Due to the distinctive leaf of D. elastica, "this species can be adequately surveyed in June to early September or during the spring flowering time between late September to October, dependent on seasonal conditions" (DEC, 2008).

Drakaea elastica is generally found in Banksia woodland, particularly under thickets of Kunzea glabrescens located near winter-wet areas, but has also occasionally been found near the tops of sandy rises (DEC, 2008). The nearby population of Drakaea elastica is located within the same vegetation complex and soil type, and is at the same elevation as the area under application.

A flora survey undertaken on 31 March 2004 did not identify any rare flora within the area under application (Bennett, 2004). However, this survey was conducted outside the optimal times for Drakaea elastica.

A site visit undertaken by DEC (2009c) on 27 July 2009 targeted habitat within Lot 519 considered suitable for the rare flora Drakaea elastica. A population of Drakaea elastica was identified on the eastern side of the property, however the purpose of the site visit was not to conduct a full flora survey. In reviewing the Bennett Vegetation and Flora Report (2004), suitable habitat for Drakaea elastica was considered to be present within the property, including the area under application. In particular, given the presence of Kunzea glabrescens on site, it is considered the area under application is likely to provide habitat for rare flora species, including D. elastica.

A spring flora survey of Lot 519 conducted on 26 and 27 October 2009 did not identify Drakaea elastica or any other rare flora species within the property (Natural Area Management and Services, 2009a). This report is not consistent with flora reporting and surveying detailed by the Environmental Protection Authority's Guidance Statement No 51. In particular the report failed to provide the methodology used to survey the targeted flora species. The proponent provided additional information on the report (Natural Area Management and Services, 2009b) which detailed a description of the vegetation habitat found on site. The report concluded that the site may be suitable habitat for Caladenia speciosa (though it was not found during surveys site) but not for D. elastica.

The October flora survey is considered to have been conducted quite late for Drakaea elastica (DEC, 2009e) and given that the survey was not conducted at the optimal survey time and did not relocate the D. elastica plants that had been recorded on site in July 2009, this greatly reduces the confidence in the reports null result for D. elastica (DEC, 2009f).

In addition, it is also noted that the survey was conducted several weeks too late to find the priority target species Caladenia speciosa (DEC, 2009e).

Given the above and the close proximity of Drakaea elastica, it is considered that the vegetation under application may include, or be necessary for the maintenance of, rare flora.

Methodology

References:
- Bennett (2004)
- Brown (1998)
- DEC (2008)
- DEC (2009c)
- DEC (2009d)
- DEC (2009e)
- DEC (2009f)
- Bennett (2004)
- Natural Area Management and Services (2009a)
- Natural Area Management and Services (2009b)

GIS Databases:
- Heddle Vegetation Complexes
- Perth Metropolitan Area South 20cm Orthomosaic - Landgate 2007
- Soils, Statewide - DA 11/99
- SAC BIO datasets - accessed 26/03/2009

(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 are four known occurrences of Threatened Ecological Communities (TEC) within a 5km radius of the area under application, which are identified as Floristic Community Type: FCT19 - Sedgelands in Holocene dune swales of the southern Swan Coastal Plain and FCT24 - Northern Spearwood shrublands and woodlands; the closest, FCT24 is located approximately 2.3km north west of the applied area. These TECs are found within a different vegetation complex and soil type to that found on site.

During the flora and vegetation survey (Bennett, 2004) the vegetation under application was inferred as FCT21a - Central Banksia attenuata - Eucalyptus marginata woodlands, which is not identified as either a TEC or Priority Ecological Community (PEC) (Government of Western Australia, 2000).

Given the distance to the closest TEC and that a flora survey conducted of the applied area did not identify the vegetation under application as a TEC (Bennett, 2004), it is not considered likely that the vegetation under application comprises, or is necessary for the maintenance of a TEC.

Methodology

References:
- Bennett (2004)
- DEC (2009a)
- Government of Western Australia (2000)

GIS Databases:
- Heddle Vegetation Complexes
- Soils, Statewide - DA 11/99
- SAC BIO datasets - accessed 25/03/2009

(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 may be at variance to this Principle

Heddle et al. (1980) defines the vegetation under application as Yoongarillup Complex of which there is 45.0% of pre-European extent remaining (EPA 2006). The vegetation under application is also described as Beard vegetation association 998 and 1001 of which there is respectively 41.61% and 25.34% of pre-European extent remaining (Shepherd 2007). In addition, the Heddle vegetation complex is identified as having 13.9ha representation within secure tenure (EPA 2006).

The area under application is located within the Shire of Murray, within which there is 56.08% of pre-European extent remaining.

The Environmental Protection Authority (EPA) supports the retention of remnant native vegetation to a 30% threshold level as recommended in the National Objectives Targets for Biodiversity Conservation below which, species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000). However, the EPA (2006) recognises the Perth Metropolitan Region as a 'constrained area,' providing for the reduction of vegetation complexes to a minimum of 10% of the Pre-European extent.

The vegetation types under application retain more than this 10% threshold level.

The local area (10km radius) is highly clearing with approximately 30% vegetated. The proposed clearing will further fragment the ecological linkage of which it is a part, particularly isolating vegetation to the south. The vegetation is part of a 1b ecological linkage as identified by the South West Regional Ecological Linkages project, endorsed by the EPA (Molloy et al. 2009, EPA 2009). Clearing of this vegetation would affect the integrity of the linkage. Therefore the proposed clearing may be at variance to this principle.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	In secure tenure (%)
IBRA Bioregion*				
Swan Coastal Plain^	1,501,208	583,140	38.84	32.55
Shire of Murray*	177,618	99,614	56.08	
Heddle Vegetation complex**				

Yoongarilup Complex	24,767	11,140	45.0	13.9
Beard Vegetation complex*				
998	51,015	21,225	41.61	38.1
1001	57,410	14,545	25.34	5.13

* (Shepherd, 2007)
** (EPA, 2006)
^ Area within Intensive Land Use Zone

Methodology

References:
- Commonwealth of Australia (2001)
- EPA (2006)
- EPA (2009)
- Government of Western Australia (2000)
- Molloy et al. (2009)
- Shepherd et al (2007)

GIS Databases:
- Pre-European Vegetation
- Heddle Vegetation Complexes
- Interim Biogeographic Regionalisation of Australia

(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

There are no wetlands or watercourses mapped within the vegetation under application. However, there are numerous wetlands located within a 5km radius of the area under application; the closest a Conservation Category Wetland (Pagononi Swamp) is located approximately 480m west of the applied area. In addition, the nearest EPP Lake is located approximately 450m west of the area under application.

The nearest watercourse is the Serpentine River which is located approximately 1km north-east of the area under application.

Given the distance to the nearby wetland and watercourse and that the applied area is located higher in the landscape than the CCW and EPP Lake, the vegetation under application is not considered likely to be growing in, or in association with, an environment associated with a watercourse or wetland.

Methodology

References:
- DEC (2009a)

GIS Databases:
- EPP, Lakes
- Geomorphic Wetlands (Classification), Swan Coastal Plain
- Hydrography, linear (hierarchy)

(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 soils within the area under application are identified as part of the Spearwood S 1b Phase, which are described as deep siliceous yellow brown sands or pale sands. These soils have a nil to low risk of salinity and a low risk of water logging due to the high infiltration rates associated with sands.

The main land degradation risk associated with the removal of vegetation on the identified soil type is considered to be a high risk of phosphorous export and wind erosion (Department of Agriculture, 2005). The proposed clearing of native vegetation is not considered likely to impact on the export of nutrients.

The high wind erosion potential is due to the sandy nature of the soil and without appropriate vegetation cover, windbreaks or adequate dust suppression on exposed surfaces the proposal may result in appreciable land degradation. However, if the land clearing is completed in a 'cell clearing' manner and is subsequently rehabilitated, it is considered likely that the risk of wind erosion would be minimised.

Given that the proposed land use of the area under application is for sand extraction and has a high risk of wind erosion, the proposal may be at variance to this Principle.

Methodology Refernces:
- Northcote et al. (1960-68)
- Department of Agriculture (2005)

GIS Databases:
- Salinity Risk LM 25m - DOLA 00
- Soils, Statewide - DA 11/99

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

Comments

Proposal is at variance to this Principle

There are six areas reserved for conservation purposes within a 5km radius of the area under application, the closest being Bush Forever site 395 (Pagononi Swamp and Adjacent Bushland, Karnup) is located approximately 600 metres north of the applied area and is listed on the Register of National Estate (id. 19648).

In addition, Bush Forever site 379 (Anstey Swamp, Karnup) and Bush Forever site 394 (Lake Amarillo, Serpentine River and Adjacent Bushland, Karnup) are respectively located approximately 3km north and 1.3km north-east of the area under application; and an Un-named A Class Reserve (id. 44986) is situated approximately 900m to the east of the applied area. Furthermore, Bush Forever sites 395 and 379 form part of the Rockingham Lakes Regional Park which is located approximately 600m north of the applied area.

The local area (10km radius) is highly clearing with approximately 30% vegetated. The proposal clearing will further fragment the ecological linkage of which it is a part, particularly isolating vegetation to the south. The vegetation is part of a 1b ecological linkage as identified by the South West Regional Ecological Linkages project, endorsed by the EPA (Molloy et al. 2009, EPA 2009). Clearing of this vegetation would affect the integrity of the linkage. Therefore the proposed clearing is at variance to this principle.

Methodology References:
- DEC (2008)
- EPA (2009)
- Molloy et al. (2009)

GIS Databases:
- Bushforever
- CALM Regional Parks
- CALM Managed Lands and Waters
- Perth Metropolitan Area South 20cm Orthomosaic - Landgate 2007
- Register of National Estate

(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 not likely to be at variance to this Principle

The closest wetland is a Conservation Category Wetland which is located approximately 480m west of the area under application and the Serpentine Rive which is located approximately 1km north-east of the applied area. The area under application is situated within the Peel Harvey Catchment Area, but is not located within a Public Drinking Water Source Area (PDWSA).

Given the high infiltration rates of the sandy soils identified within the area under application, and the distance to the nearest wetland and watercourse, it is not considered likely that the proposed clearing would cause water erosion resulting in deterioration in surface water quality.

The area under application has a nil to low risk of salinity. Given the low salinity risk, it is not considered likely that the proposed clearing would cause salinity resulting in the deterioration in the quality of underground water.

Given the above, it is therefore not considered likely that the proposed clearing would cause deterioration in the quality of surface or underground water.

Methodology References:
- DEC (2008)

GIS Databases:
- EPP, Areas
- Geomorphic Wetlands (Classification), Swan Coastal Plain
- Hydrographic Catchments - Catchments - DOW
- Hydrography, linear (hierarchy) - DOW
- Public Drinking Water Source Areas (PDWSAs)
- Salinity Risk LM 25m - DOLA 00

(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 area under application is located approximately 480 metres east of a Conservation Category Wetland and approximately 1km south-west of the Serpentine River, at an elevation of 10-20 metres.

Given the distance to the nearest wetland and watercourse and the high infiltration of the sandy soils on site, it is not considered likely that the proposed removal of vegetation would impact on peak flood height or duration.

Methodology

References:
- DEC (2008)

GIS Databases:
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DEC
- Hydrography, linear (hierarchy) - DOW
- Topographic Contours, Statewide - DOLA

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

Comments

Lot 519 is zoned rural under the Town Planning Scheme.

The Shire of Murray advice that Smargiassi Nominees Pty Ltd has current planning approval valid until 28/04/2010, but do not have an Extractive Industry Licence.

Lot 203 on Diagram 67405 Stock Road, Stake Hill was formerly assessed under CPS 227/1. Lot 203 was changed in 2006 to Lot 519 on Plan 50783 Stock Road, Stake Hill.

Mr Smargiassi submitted a Notice of Intention to Clear land (NOIC) for Lot 203 Stock Road, Stake Hill on 14/10/2002 (CRN185833). Advice received that the proposed land clearing was unlikely to cause appreciable on site and off site land degradation.

The Shire of Murray referred the Extractive Industry Licence for Lot 203 Stock Road, Stake Hill to the EPA (CRN 185833).

An Appeal (No. 207/04) was lodged by the Conservation Council of Western Australia in objection to the level of assessment as set at 'Not Assessed - Public Advice Given' by the Environmental Protection Authority (CRN185833). Appeal was dismissed.

An Appeal (No. 208/04) was lodged by the Southern Peel-Harvey Landcare Project in objection to the level of assessment as set at 'Not Assessed - Public Advice Given' by the Environmental Protection Authority (CRN185833). Appeal was dismissed.

A population of the rare flora species Drakaea elastica was recorded in 2006 near the eastern boundary of Lot 519 during survey work associated with the Kwinana Freeway extension, in the Perth to Mandurah alignment.

Drakaea elastica was referred to the WA Threatened Species Committee to reconsider its status, and as a consequence it was re-ranked from Endangered to Critically Endangered on the basis of population decline across its range.

In a submission the Shire of Murray supported the clearing application subject to the following requirements being met:

- a spring flora survey be conducted to identify any rare or priority flora on site;
- any identified rare or priority flora on site be protected by a fenced 50m buffer;
- a fauna survey be conducted by a fauna specialist and any fauna impacted by the proposed clearing be relocated;
- any clearing be limited to 1 hectare blocks in front of the working face; and
- the site be progressively rehabilitated back to bushland using seed collected on site.

Methodology

References:
- Extraction of Sand, Lot 203 Stock Road, Stake Hill, CRN185833.
- Submission.

GIS Databases:
- Town Planning Scheme Zones

4. Assessor's comments

Comment

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 at variance to Principles (a),(b) and (h), may be at variance to Principles (c),

(e) and (g) and is not likely to be at variance to the remaining Principles.

5. References

Bennett Environmental Consulting Pty Ltd (2004) Vegetation and Flora of Lot 203 Stock Road, Stake Hill. unpublished report prepared for N. Smargiassi.

Brown A., Thomson-Dans C. and Marchant N.(1998). Western Australia's Threatened Flora, Department of Conservation and Land Management, Western Australia.

Burbidge, A. (2004) Threatened Animals of Western Australia, Department of Conservation and Land Management, Perth, Western Australia.

Commonwealth of Australia (2001) National Targets and Objectives for Biodiversity Conservation 2001-2005, AGPS, Canberra.

DEC (2009a) Site Inspection Report for Clearing Permit Application CPS 3014/1, Sand Extraction. Site inspection undertaken 3/03/2009. Department of Environment and Conservation, Western Australia (TRIM Ref. DOC 80581).

DEC (2009b) Fauna advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 10/08/2009. Department of Environment and Conservation, Western Australia (TRIM 98859)

DEC (2009c) Site Inspection Report Targeting Rare Flora Species Drakaea Elastica for Clearing Permit Application CPS 3014/1, Sand Extraction. Site inspection undertaken 27/07/2009. Department of Environment and Conservation, Western Australia (TRIM Ref. DOC92603).

DEC (2009d) Flora advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 2/11/2009. Department of Environment and Conservation, Western Australia (TRM DOC104020).

DEC (2009e) Flora advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 5/11/2009. Department of Environment and Conservation, Western Australia (TRM DOC104683).

DEC (2009f) Flora advice for land clearing application. Advice to Assessing Officer, Native Vegetation Assessment Branch, received 5/11/2009. Department of Environment and Conservation, Western Australia (TRM DOC104705).

Department of Environment and Conservation (2008). Glossy-leafed Hammer Orchid (Drakaea elastica) Recovery Plan. Department of Environment and Conservation, Western Australia.

EPA (2006) Guidance for the Assessment of Environmental Factors - Level of Assessment for Proposals Affecting Natural Areas Within the System 6 Region and Swan Coastal Plain Portion of the System 1 Region. Guidance Statement No 10. Environmental Protection Authority, Western Australia.

EPA (2009) EPA Bulletin No 8 South West Regional Ecolgical Linkages

Extraction of Sand, Lot 203 Stock Road, Stake Hill. CRN185833

Government of Western Australia (2000) Bush Forever Volumes 1 and 2. Western Australian Planning Commission, Perth WA

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.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Molloy S, Wood J, Hall S, Wallrodt S and Whission G. (2009) South West Regional Ecological Linkages

Natural Area Management and Services (2009a) Priority Flora Survey Lot 203/No. 480 Stock Road, Stakehill, unpublished report prepared for Smargiassi Nominees Pty Ltd.

Natural Area Management and Services (2009b) Additional information on Priority Flora Survey Lot 203/No. 480 Stock Road, Stakehill, unpublished report prepared for Smargiassi Nominees Pty Ltd.

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.

Shepherd, D.P. (2007). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124

Submission, Direct Interest Submission, 31 March 2009, TRIM DOC 88042.

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 (now DEC)
DMP	Department of Mines and Petroleum (ex DoIR)
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)