Department of Environment and Conservation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3284/1

Permit type: Area Permit

1.2. Proponent details

Proponent's name: Qube Hammond Park Development Pty Ltd

1.3. Property details

Property: LOT 45 ON DIAGRAM 45174 (House No. 183 FRANKLAND HAMMOND PARK 6164)
LOT 40 ON DIAGRAM 38044 (House No. 40 GAEBLER HAMMOND PARK 6164)
LOT 37 ON DIAGRAM 33785 (House No. 50 GAEBLER HAMMOND PARK 6164)

Colloquial name: Hammond Park Residential Development

1.4. Application

Clearing Area (ha)	Method of Clearing	For the purpose of:
4.2	Mechanical Removal	Building or Structure

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: 1001 - Medium very sparse woodland; jarrah, with low woodland; banksia and casuarina.	The vegetation under application consists of 4.2ha of native vegetation and is proposed to be cleared for 'residential development.' Approximately 38% of the vegetation is considered to be in 'very good' (Keighery, 1994) condition with the rest being 'degraded' or 'completely degraded' (Keighery, 1994). The vegetation comprises predominantly Banksia woodland (Banksia attenuata and Banksia menziesii) over Xanthorrhoea preissii, Jacksonia sternbergiana, Allocasuarina humilis, Stirlingia latifolia, Hibbertia hypericoides, Hibbertia sp., Burchardia sp., Drosera spp., Philotheca spicatus, Mesomelaena pseudostygia, Mesomalaena sp., Lomandra sp., Conostylis sp., Lyginia sp. and assorted grassy and herbaceous weeds (DEC, 2009). The more degraded areas of the site that would have also been Banksia woodland have become dominated by Adenanthos cygnorum over Xanthorrhoea preissii, Eremaea pauciflora and scattered mixed shrubs. Eucalyptus marginata is also evident in the overstorey in the south eastern corner of Lot 45 (DEC, 2009).	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	The condition of the vegetation was confirmed during site visits undertaken by DEC Officers on the 14th September 2009 and 7th July 2008. A vegetation and flora survey of the site was also conducted by Ecoscape in October 2007 and July 2009 which mapped the vegetation condition across the site (Ecoscape, 2009).
Heddle Vegetation Complex: Bassendean Complex - Central and South - Vegetation ranges from woodland of Eucalyptus marginata (Jarrah) - Allocasuarina fraseriana (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites. This area includes the transition of Eucalyptus marginata (Jarrah) to Eucalyptus todtiana (Pricklybark) in the vicinity of Perth.		Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	

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 comprises predominantly Banksia woodland (Banksia attenuata and Banksia menziesii) over Xanthorrhoea preissii, Jacksonia sternbergiana, Allocasuarina humilis, Stirlingia latifolia, Hibbertia hypericoides, Hibbertia sp., Burchardia sp., Drosera spp., Philotheca spicatus, Mesomelaena pseudostygia, Mesomalaena sp., Lomandra sp., Conostylis sp., Lyginia sp. and assorted grassy and herbaceous weeds (DEC, 2009a).

The more degraded areas of the site that would have also been Banksia woodland have become dominated by Adenanthos cygnorum over Xanthorrhoea preissii, Eremaea pauciflora and scattered mixed shrubs. Eucalyptus marginata is also evident in the overstorey in the south eastern corner of Lot 45 (DEC, 2009a).

The vegetation under application ranges from 'completely degraded' to 'very good' (Keighery, 1994) condition across the site (DEC, 2009a). Approximately 38% of the site is considered to be in 'very good' condition with the rest being 'completely degraded' or 'degraded' (DEC, 2009a & Ecoscape 2009). One area to the eastern side of Lot 45 has been recently burnt (likely to be within the last 2 years) which would have been in 'good' to 'very good' (Keighery, 1994) condition prior to fire and is regenerating well with native plant species including Xanthorrhoea preissii (DEC, 2009a). Disturbance is evident throughout the site including recent fire, tracks, previous clearing, feral herbivore impact (rabbits) and some dead Banksia trees which may be attributed to drought or aerial canker (DEC, 2009a & Ecoscape, 2009).

The vegetation under application lies approximately 340m east of Bushforever Site 392 (Harry Waring Marsupial Reserve) and is part of a largely contiguous corridor of bushland and would be supporting ecological processes of a regionally significant linkage in the Perth Metropolitan Region (Government of Western Australia, 2000).

The vegetation is part of a local vegetated corridor, linking conservation areas (Harry Waring Marsupial Reserve) to other remnants of vegetation. The vegetation is therefore likely to be utilised by indigenous fauna for movement across the local area. The vegetation is within close proximity to known roosting sites for Carnaby's Black-Cockatoo (Calyptorhynchus latirostris) and the vegetation under application comprises Banksia woodland, a preferred food source for this species and therefore is critical foraging habitat for this species (DEC, 2009c). At least one tree with small multiple hollows was identified in the south east corner of Lot 45 Frankland Avenue which may be used by smaller birds for breeding (DEC, 2009a).

One declared rare flora species, Caladenia huegelii, may occur within the applied clearing as it has been recorded approximately 3.3km east within similar vegetation and soil types. Previous flora surveys undertaken by Ecoscape in July 2009 on Lot 37 Gaebler Road did not find any Caladenia species at this site however, the survey was not undertaken at an appropriate time of year. During the DEC site visit on September 2009, two Caladenia species were noted on site and therefore Caladenia huegelii has potential to occur at this site.

Twenty three priority flora species have been recorded within the local area (10km radius) of the applied clearing area, with the closest record being Dodonaea hackettiana (Priority 4), approximately 420m north. Of these twenty three species, five have been recorded within similar vegetation and soil types to that of the applied clearing area - Eremaea asterocarpa subsp. brachyclada (P1), Jacksonia gracillima (P3), Cyathochaeta teretifolia (P3), Dodonaea hackettiana (P4) and Verticordia lindleyi subsp. lindleyi (P4). These species should have been recognisable during surveys without flowering and were not recorded during the vegetation and flora surveys, it is therefore concluded that these species are unlikely to be at this site.

Given that the applied clearing area is supporting a regional ecological linkage, provides local connectivity important for flora and fauna dispersal and comprises approximately 38% of Banksia woodland in 'very good' (Keighery, 1994) condition which is critical foraging habitat for Carnaby's Black-Cockatoo, it is considered that this application is at variance to this principle.

Methodology

References:
- DEC (2009a)
- DEC (2009c)
- Ecoscape (2009)
- Keighery (1994)
- Government of Western Australia (2000)

GIS Databases:
- Bushforever
- CALM Managed Lands and Waters - DEC
- Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007
- SAC Biodatasets - Accessed 14/09/2009

(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

Eighteen threatened and priority fauna species have been recorded within the local area (10km radius) of the applied clearing area with the closest record being the Tammar Wallaby (Macropus eugenii, Priority 5), approximately 1.2km north-west of the applied clearing area.

Carnaby's Black-Cockatoo (classed as Endangered under the EPBC Act) has been recorded within the local area (10km radius) of the applied clearing area and is known to roost in conservation areas nearby (DEC, 2009c). The preferred food sources for the Carnaby's Black-Cockatoo are Proteaceae species and they are known to feed on "seeds of hakeas, banksias, grevilleas and eucalypts" (Burbidge, 2004). The vegetation under application comprises Banksia woodland with approximately 38% of the vegetation in 'very good' (Keighery, 1994) condition (DEC, 2009a & Ecoscape, 2009).

DEC recognises that there are neighbouring and nearby reserves and private property comprising native vegetation in better condition than the vegetation under application however, current foraging habitat may not be able to sustain the Carnaby population and given the close proximity of this area to known roosting sites and that the vegetation comprises species which Carnaby's are known to feed upon, the vegetation under application is considered significant foraging habitat for this species (DEC, 2009c).

Cardno (2009d) consider that there is only a small amount of foraging habitat in relatively degraded condition within the applied clearing area and due to 271ha of Banksia attenuata woodland existing within the Harry Waring Marsupial Reserve nearby, it is not considered that Carnaby's Black Cockatoo will depend upon the Banksia habitat within the applied clearing area. DEC remain of the view that the habitat is still considered significant for this species.

Evidence of two fauna species of conservation significance have been recorded on site during opportunistic surveys undertaken by Ecoscape in October 2007, these were Quenda (Isoodon obesulus fusciventer, Priority 5) diggings and the Rainbow Bee-eater (Merops ornatus, locally significant species) (Ecoscape, 2009).

Quenda exist prolifically throughout the local area and prefer habitat consisting of dense scrubby understorey vegetation up to one metre high, particularly around swamps and adjacent to watercourses (DEC Fauna Habitat Notes, 2007, DEC, 2007 and DEC, 2009c). As there are no watercourses or wetlands within the applied clearing area it is unlikely that this vegetation would be the preferred habitat for this species but given the close proximity to a conservation category wetland, the vegetation may provide supporting habitat for Quenda utilising the wetlands in the local area.

The Rainbow bee-eater is a migratory bird listed under the EPBC Act 1999 and are generally opportunistic breeders and will nest in burrows in sand slopes (DEC, 2009c). For this reason, degraded vegetation with opportunities for constructing sandy burrows may provide more habitat for this species and therefore clearing between the summer months may impact upon this species during their breeding season.

Ecoscape also reported New Holland Honeyeaters (Phylidonyris novaehollandiae), Yellow-rumped Thornbills (Acanthiza chrysorrhoa) and Weebills (Smicrornis brevirostris) occurring at the site, all recognised as locally significant bird species on the Swan Coastal Plain and have noted that suitable nesting and foraging habitat was found throughout and nearby the site (Ecoscape, 2009 & Government of Western Australia, 2000).

A moth was collected from the site during the site visit (DEC, 2009a) towards the centre of the site near Hibbertia and Drosera species and was later identified as a Western Australian endemic referred to as a 'forester moth' from the Zygaenidae family and has been found to be quite common in early spring (DEC, 2009b).

Although approximately 60% of the site is either 'degraded' or 'completely degraded' (Keighery, 1994) in condition (DEC, 2009a) the vegetation is still important as a wildlife corridor within the local area linking conservation areas and other vegetation remnants and provides critical foraging habitat for Carnaby's Black-Cockatoo and may provide nesting habitat for smaller bird species.

It is therefore concluded that the proposed clearing is at variance to this principle.

Methodology

References:

- Burbidge (2004)
- Cardno (2009d)
- DEC (2007)
- DEC (2009a)
- DEC (2009b)
- DEC (2009c)
- DEC Fauna Habitat Notes (2007)
- Ecoscape (2009)
- Government of Western Australia (2000)
- Keighery (1994)

GIS Databases:
- CALM Managed Lands and Waters - DEC
- Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007
- SAC Biodatasets - Accessed 14/09/2009

(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

Seven declared rare flora species have been recorded within the local area (10km radius) of the applied clearing area with the closest being Diuris micrantha, approximately 3.2km south west.

A flora survey was undertaken by Ecoscape in October 2007 on Lot 45 Frankland Avenue and a survey on an additional 0.58ha within Lot 37 Gaebler Road was undertaken in July 2009. Neither of these surveys recorded declared rare or priority flora species on the site (Ecoscape, 2009). However, the July survey would not have been an appropriate time of year to record some flora of conservation significance known to occur within the local area.

Of the seven rare flora species only Caladenia huegelii is likely to occur within the applied clearing area as the other species have been found within different vegetation and/or soil types to the applied clearing area or prefer to inhabit seasonally inundated areas which are not evident at this site (Brown et al, 1998, DEC, 2009a & WA Herbarium, 1998-).

Cardno (2009d) have stated that the flora surveys undertaken within the applied clearing area, although "not the correct flowering time for orchidaceous species, the distinctive leaves of Caladenia sp. are still visible at this time" and "no Caladenia sp. leaves were observed" within the traversed portions of the bushland. Cardno also state that Caladenia huegelii was therefore searched for and was not present" (Cardno, 2009d).

Caladenia huegelii inhabits areas of deep sandy soil below Eucalyptus marginata (jarrah) and Banksia woodland and tends to favour areas of lush undergrowth (Brown et al, 1998). The flora survey undertaken in July 2009 did not identify any Caladenia leaves within Lot 37 (Ecoscape, 2009) however, two Caladenia species were recorded during the DEC site visit in September 2009. Therefore potential exists for Caladenia huegelii to occur in the area under application.

DEC remain of the opinion that an appropriately timed and targeted flora survey (September - early October) will be required to confirm the presence/absence of this species at this site, as two Caladenia species were recorded during the brief site visit undertaken by DEC and due to the species of Caladenia not being able to be identified from the leaf alone.

Methodology

References:
- Brown et al (1998)
- Cardno (2009d)
- DEC (2009a)
- Ecoscape (2009)
- Keighery (1994)
- WA Herbarium (1998-) - Accessed 5/10/2009

GIS Databases:
- Heddle Vegetation Complexes - DEP
- SAC Biodatasets - Accessed 14/09/2009
- Soils, Statewide - DA

(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

Four threatened ecological communities have been recorded within the local area (10km radius) of the applied clearing area with the closest being the floristic community type Swan Coastal Plain 26a - Melaleuca huegelii - Melaleuca acerosa shrublands on limestone ridges approximately 5.5km south-west.

A vegetation survey conducted in October 2007 by Ecoscape did not find any threatened ecological communities at this site (Ecoscape, 2009). Approximately 60% of the applied clearing area is also 'degraded' or 'completely degraded' (Keighery, 1994) in condition and the vegetation under application being Banksia attenuata and Banksia menziesii woodland differs substantially from any TEC's recorded within the local area (10km radius) (DEC, 2009a).

Therefore, the area under application is not considered likely to comprise the whole or a part of, a threatened ecological community.

Methodology References:
- DEC (2009a)
- Ecoscape (2009)
- Keighery (1994)

GIS Databases:
- Heddle Vegetation Complexes - DEP
- SAC Biodatasets - Accessed 14/09/2009

(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 is not likely to be at variance to this Principle

The vegetation has been mapped as the Beard Vegetation Association 1001 - Medium very sparse woodland; jarrah, with low woodland; banksia and casuarina of which there is 25.3% of the pre-European extent remaining within the Swan Coastal Plain IBRA region (Shepherd, 2007).

The area under application also comprises the Heddle Vegetation Complex - Bassendean Complex Central and South with vegetation ranging from woodland of Eucalyptus marginata (Jarrah) - Allocasuarina fraseriana (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites and includes the transition of Eucalyptus marginata (Jarrah) to Eucalyptus todtiana (Pricklybark) in the vicinity of Perth (Heddle et al, 1980).

The property lies within the City of Cockburn in the Swan Coastal Plain IBRA region which have 33.7% and 38.8% of their pre-European extent remaining respectively (Shepherd, 2007).

The Beard Vegetation Association 1001 and the current extent of the Heddle Bassendean Complex Central and South are both less than 30% of their pre-European extent. However, the EPA recognises the Perth Metropolitan Region as a 'constrained area' providing for the reduction of vegetation complexes to a minimum of 10% of their pre-European extent (EPA, 2000 & EPA, 2006). According to 1998 Bush Forever (BF) data, 23.6% of the Bassendean Complex Central and South remains within the Perth Metropolitan Region Scheme (PMRS) constrained area (Government of Western Australia, 2000), however, due to increased development within this area this value is likely to have decreased within the last 11 years.

The vegetation under application has just over 60% in 'degraded' or 'completely degraded' (Keighery, 1994) condition and although it is a component of a significant regional and local linkage, due to there being adjoining vegetation and larger remnants in close proximity to the applied clearing area, the area under application would not be deemed significant as a remnant in an extensively cleared area.

	Pre-European (ha)	Current extent (ha)	Remaining (%)	In secure tenure (%)
IBRA Bioregion*				
Swan Coastal Plain	1,501,209	583,141	38.8	32.55
Shire*				
City of Cockburn	17,088	5,753	33.7	14.55
Beard vegetation type*				
1001 (within Swan Coastal Plain)	57,410	14,546	25.3	5.13
Heddle vegetation complex**				
Bassendean Complex				
Central and South	87,477	23,624	27.0	0.70
Heddle vegetation complex***				
Bassendean Complex				
Central and South (within MRS)	46,220	10,919	23.6	12.70

*Shepherd (2007)
**EPA (2006)
***Government of Western Australia (2000)

Methodology References:
- DEC (2009a)
- EPA (2000)
- EPA (2006)
- Government of Western Australia (2000)
- Heddle et al (1980)
- Keighery (1994)
- Shepherd (2007)

GIS Databases:
- Heddle Vegetation Complexes - DEP
- Metropolitan Region Scheme - DPI
- Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007
- SAC Biodatasets - Accessed 11/09/2009

(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

The closest wetland is a Conservation Category dampland approximately 190m north west of the applied clearing area. The nationally recognised Gibbs Road Swamp System runs south east to north east of the applied clearing area with the closest point approximately 1.1km south east of the applied clearing area.

The closest EPP Lake is approximately 1.5km west of the applied clearing area.

A major drain lies approximately 1.9km south east of the applied clearing area but there are no other watercourses mapped within the local area (10km radius) of the applied clearing area.

There have been no wetlands or watercourses recorded on site and there were no wetland dependent species noted during either the DEC site visit or during vegetation and flora surveys undertaken by Ecoscape in October 2007 and July 2009 (DEC, 2009a & Ecoscape, 2009).

Given the distance to watercourses and wetlands in the local area (10km radius) and the upland community type present within the applied clearing area, the vegetation under application is not considered to be growing in, or in association with a wetland and therefore is unlikely to be at variance to this principle.

Methodology

References:
- DEC (2009a)
- Ecoscape (2009)

GIS Databases:
- ANCA, Wetlands - EA
- EPP, Lakes - DEP
- Geomorphic wetlands (Mgmt Categories), Swan Coastal Plain - DEC
- Hydrography, linear - DoW
- Hydrography, linear (hierarchy) - DoW
- SAC Biodatasets - Accessed 11/09/2009

(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 at this site have been described by Northcote et al (1960-68) as subdued dune-swale terrain with chief soils being leached sands. A site visit undertaken by DEC officers in September 2009 confirmed the soils to be pale grey sands (DEC, 2009a).

Soils within the applied area are consistent with the Bassendean Dune System, with the higher areas of this system being described as well drained bleached grey sands. These soils have a high to very high risk of wind erosion, phosphorus export and acid sulphate soils (Department of Agriculture 2005).

The purpose of the clearing is for 'residential development' and subdivision approval is yet to be obtained. There is concern that the site will be left bare post clearing until the relevant external approvals are obtained. If appropriate management of the site is not undertaken appreciable land degradation through wind erosion may occur.

The clearing of native vegetation from this site may also result in an increase in nutrients exported to neighbouring areas, including the Conservation Category wetland 190m from the applied clearing area, which could subsequently result in eutrophication of this wetland.

Given that the proposal is to clear 4.2ha of native vegetation on loose, sandy soils with low nutrient retention capabilities, the proposed clearing is considered likely to lead to land degradation in the form of wind erosion and may increase the export of nutrients off-site therefore enhancing the risk of eutrophication in nearby wetlands. It is therefore concluded that the proposal may be at variance to this principle.

Cardno (2009d) have advised that water management at the site will be dealt with through the development of a local water management strategy, approved by the Department of Water and control measures will be implemented to control wind and water erosion as a matter of complying with conditions that are likely to be imposed through a bulk earthworks approval from the City of Cockburn. If these measures are appropriately implemented then the risk of the clearing of vegetation causing appreciable land degradation is considered low.

Methodology References:
- Cardno (2009d)
- DEC (2009a)
- Department of Agriculture (2005)
- Northcote et al (1960-68)

GIS Databases:
- Geomorphic Wetlands (Mgmt Categories), Swan Coastal Plain - DEC
- SAC Biodatasets - Accessed 14/09/2009
- Soils, Statewide
- Topographic Contours, Statewide

(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

Nine nature reserves occur within the local area (10km radius) of the applied clearing area including the Harry Waring Marsupial Reserve (also a System 6 Conservation Reserve and Bushforever Site No. 392), approximately 340m west.

The Beeliar Regional Park and Adjacent Areas (encompassing Thompsons Lake Nature Reserve) interim listed on the Register of National Estate also lies approximately 350m west of the applied clearing area.

Despite the applied clearing area having just over 60% of the vegetation in 'degraded' or 'completely degraded' (Keighery, 1994) condition (DEC, 2009a), the vegetation still provides a local linkage between conservation areas and other remnants of vegetation in the local area. It is therefore likely to assist in maintaining the ecological processes associated with this linkage and the removal of vegetation in this location will fragment the linkage decreasing its existing condition.

Although the Harry Waring Marsupial Reserve is fenced to exclude introduced predators, which also limits some fauna movement between the reserve and neighbouring vegetation (Ecoscape, 2009), the fencing is not considered likely to be a barrier to the movement of invertebrates, small mammals and reptiles or birds. Given the close proximity and vegetated connectivity to the Harry Waring Marsupial Reserve, it is considered that clearing may impact on the values of this nearby conservation area by limiting fauna and flora dispersal between the conservation area and nearby remnant vegetation.

Cardno (2009d) consider that based on the definition of linkage or corridor that "any remnant bushland that forms some connectivity with surrounding native vegetation can be considered a local vegetation corridor" and "therefore this bushland is not of any particular significance or value in the local context." Cardno also state that given the small degraded portion of vegetation in Lot 45 Frankland Avenue that is considered to be part of Regional Biodiversity linkage "the subject site is not regarded as being integral to any linkage."

DEC remain of the view that the removal of native vegetation from this site will reduce the effectiveness of the linkage between conservation areas and vegetated areas on freehold land through further fragmentation of native vegetation in the local area.

It is therefore concluded that the proposed clearing may be at variance to this principle.

Methodology References:
- Cardno (2009d)
- DEC (2009a)
- Ecoscape (2009)
- Keighery (1994)

GIS Databases:
- Bushforever
- CALM Managed Lands and Waters - DEC
- System 6 Conservation Areas - DEC
- Perth Metropolitan Area Central 20cm Orthomosaic - Landgate 2007
- Register of National Estate - EA

(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 may be at variance to this Principle

The applied clearing area lies within the Bartram Road Catchment within the Murray River Basin.

The salinity risk across the majority of the site is low however, small patches towards the south and south east are mapped as high risk. The groundwater salinity for the site is less than 500mg/L total dissolved solids.

The closest wetland is a Conservation Category dampland approximately 190m north west of the applied clearing area. The nationally recognised Gibbs Road Swamp System runs south east to north east of the applied clearing area with the closest point approximately 1.1km south east.
This area has shallow aquifers with the historic maximum for groundwater levels at this site being as high as 4m below ground level (bgl) near Frankland Avenue.

Soils at this site are derived from the Bassendean Dune System with chief soils being well drained bleached grey sands. These soils have a high to very high risk of wind erosion, phosphorus export and acid sulphate soils (Department of Agriculture 2005). The clearing of 4.2ha of native vegetation at this site may result in some increased surface water run-off and release of nutrients into water resources due to these soils having poor nutrient retention. It is therefore concluded that the proposed clearing may be at variance to this principle.

Cardno (2009d) have advised that water management at the site will be dealt with through the development of a local water management strategy which has been approved by the Department of Water. If appropriate measures are implemented to ensure that high levels of nutrients are not leached into the environment through surface water run-off and into groundwater sources, then the risk of the clearing of vegetation causing deterioration in the quality of water sources would be reduced.

Methodology

References:
- Cardno (2009d)
- Department of Agriculture (2005)

GIS Databases:
- Groundwater Salinity, Statewide - DoW
- Public Drinking Water Source Areas - DoW
- Salinity Risk LM 25m - DOLA
- Hydrographic Catchments - Catchments - DoW
- Geomorphic Wetlands (Mgmt Categories), Swan Coastal Plain - DEC

(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 closest wetland is a conservation category dampland approximately 190m north west of the applied clearing area.

A major drain lies approximately 1.9km south east of the applied clearing area but there are no other watercourses mapped within the local area (10km radius).

The area under application ranges in topography from 25-30m AHD and is of a medium relief supporting pale grey sands (DEC, 2009a). The maximum groundwater levels at this site reach approximately 4m below ground level (bgl) close to Frankland Avenue but may be as deep as 9m bgl in some points across the applied clearing area.

Given the distance to the drain and wetlands within the local area, the siliceous soils and that much of the vegetation under application is in a 'degraded' (Keighery, 1994) condition (DEC, 2009a) it is unlikely that the proposal will cause, or exacerbate, the incidence or intensity of flooding.

Methodology

References:
- DEC (2009a)
- Keighery (1994)

GIS Databases:
- Geomorphic wetlands (Mgmt categories, Swan Coastal Plain)
- Groundwater Contours, Historic Maximum
- Hydrograph, linear - DoW
- Hydrography, linear (hierarchy) - DoW
- Topographic Contours, Statewide

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

Comments

The area under application is zoned 'Urban' under the Metropolitan Region Scheme and 'Development' under the City of Cockburn's Town Planning Scheme No.3 (Cardno, 2009a).

As the proposed clearing is for a residential development, associated subdivision and development approvals through the Western Australian Planning Commission and the Local Government Authority will be required prior to the applicant clearing the land. The applicant is still yet to obtain these approvals and an application for subdivision approval is proposed to be lodged early 2010 (Cardno, 2009b). There is an endorsed local structure plan for the development and district structure plan approved by the City of Cockburn and WAPC however, the applicant is yet to obtain a bulk earthworks approval from the City of Cockburn but has advised that they will be lodging the application to the City on Friday 13th November 2009 (Cardno, 2009d & QUBE, 2009).

The applied clearing area lies within the Jandakot Groundwater Area proclaimed under the Rights in Water and Irrigation Act 1914, whereby groundwater resources in this location are managed by the Department of Water (DoW). The area under application is within an area with shallow aquifers with maximum groundwater levels reaching as high as 4m below ground level in some areas. It is possible that dewatering will be required during the development process and possibly groundwater extraction for the residential development. QUBE have been made aware that licences to take water from the DoW will be required prior to dewatering or groundwater extraction (Cardno, 2009b).

A direct interest submission was received from the City of Cockburn (2009) which raised the issue that a structure plan that is in place for this site has areas designated as Public Open Space (POS) and as such the City would like large trees within these areas retained for the purposes of POS establishment, site amenity and habitat for bird species such as Carnaby's Black-Cockatoo. Unfortunately, due to the topography of the site, the whole site is going to be lowered and levelled for the construction of the residential development and therefore, trees are not able to be retained (Cardno, 2009c).

Acid sulfate soils at the site have been mapped as "moderate to low risk of ASS occurring within 3 m of natural soil surface that could be disturbed by most land development activities (activities disturbing soils at depths greater than 3m carry a high to moderate risk of disturbing ASS)." A management plan will be required to avoid exacerbating acid sulfate soils at this site should dewatering of the site be required and/or the cutting of the land at this site and associated underground infrastructure reach depths greater than 3m.

Methodology

References:
- Cardno (2009a)
- Cardno (2009b)
- Cardno (2009c)
- Cardno (2009d)
- City of Cockburn (2009)
- QUBE (2009)

GIS Databases:
- RiWI Act, Groundwater Areas - DoW

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 Principle (a) and (b), may be at variance to Principles (c), (g), (h) and (i), and is not likely to be at variance to Principles (d), (e), (f) and (j).

5. References

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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)
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 DoW)