Department of Environment and Conservation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 2209/1
Permit type: Area Permit

1.2. Proponent details

Proponent's name: **MR Leland Richard Warner Foxbay Pty Ltd**

1.3. Property details

Property: LOT 64 ON DIAGRAM 80539 (Lot No. 64 BANDY CREEK BANDY CREEK 6450)
Local Government Area: Shire Of Esperance
Colloquial name:

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
34.86		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
The vegetation proposed to be cleared is mapped as Beard Vegetation Association 42 (Fanny Cove). This vegetation is described as shrublands; mallee & acacia scrub on south coastal dunes (Shepherd 2001). The soil type mapped for the property is A15 which is described as coastal dunes and their intervening swales with saline flats, swamps, and lakes; some lunettes; some estuarine areas: chief soils seem to be calcareous sands on the recent dunes fronting the coast, and siliceous sands on the older dunes and lunettes. There are various undescribed soils around the saline flats and swamps, around estuarine areas, and on aeolianite. As mapped, areas of unit Ca26 are included, particularly on headlands (Northcote et al. 1968).	The site visit confirmed this description (DEC 2008). The vegetation consisted of a coastal dune shrubland with dominant overstory species including Acacia saligna, Spyridium globulosum and Actinostrobus pyramidalis. In the swales of the dunes there are damplands as indicated by species such as Lepidosperma gladiatum and Lepidosperma squamatum.	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	The condition of the vegetation varied from Excellent to Degraded (Keighery 1994) as determined during a site visit (DEC 2008). The majority of the vegetation was in Excellent condition being the large remnant to the west (Keighery 1994). The presence of weeds and size of the remnant were the main factors contributing to the condition of the vegetation. No detailed condition mapping was carried out during the site visit.

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 proposed to be cleared is largely in Excellent (Keighery 1994) condition (DEC 2008) and is 34.86ha in size.

The vegetation under application is comprised of a vegetation complex that is well represented. The data suggests that the Shire and Bioregion are also reasonably well vegetated. However, the local area has been extensively cleared with ~25% of vegetation remaining.

Further to this, if the clearing was granted, it would fragment a reasonably well intact stretch of vegetation, isolating a large remnant to the west, severing the remnants connectivity to the internationally protected wetlands to the north east and is likely to have an impact on the environmental values and ecological function of nearby reserves. The degradation and loss of these remnants would impact the north south linkage between the coast and Woody Lake Nature Reserve to the north, which has already lost some connectivity from the encroachment of the Esperance townsite. Fragmentation would further degrade the biodiversity values of nearby reserves and the large remnant to the west, through the increased introduction of disturbance factors such as weeds, feral animals and human activities.

The Lake Warden wetlands suite is recognised internationally via the Ramsar convention and nationally via the ANCA Directory of Important Wetlands in Australia. The Lake Warden wetland suite is regularly visited by approximately 20 000 waterbirds and a significant portion of the worlds Hooded Plover's (Thinornis rubricollis tregellasi) population (a Priority 4 species) (Jaensch et al. 1988). Threats to this system include broad scale vegetation clearing, changed hydrology including salinity, pollution and urban encroachment (DEC 2002). The proposed clearing is at closest 665m from the wetlands and will incrementally contribute to these threatening processes affecting the Lake Warden wetlands suites if granted.

Additionally, twenty five records of seventeen Priority species have been found. This includes four P1, one P2, Five P3 and six P4 species. Of these thirteen occur on the same soil and vegetation type and two occur just on the same soil type. The vegetation under application is low lying near a major watercourse (Bandy Creek). The closest Priority species is 876m from the proposed clearing and the majority are ~5.5km away.

The vegetation proposed to be cleared is mapped as Beard Vegetation Association 42 (Fanny Cove). This vegetation is described as shrublands; mallee & acacia scrub on south coastal dunes. The soil type mapped for the property is A15 which is described as coastal dunes and their intervening swales with saline flats, swamps, and lakes; some lunettes; some estuarine areas: chief soils seem to be calcareous sands on the recent dunes fronting the coast, and siliceous sands on the older dunes and lunettes. There are various undescribed soils around the saline flats and swamps, around estuarine areas, and on aeolianite. As mapped, areas of unit Ca26 are included, particularly on headlands.

The site visit confirmed this description (DEC 2008). The vegetation consisted of a coastal dune shrubland with dominant overstory species including Acacia saligna, Spyridium globulosum and Actinostrobus pyramidalis. In the swales of the dunes there are damplands as indicated by species such as Lepidosperma gladiatum and Lepidosperma squamatum.

The condition of the vegetation varied from Excellent (Keighery 1994) to Degraded (Keighery 1994). The majority of the vegetation was in Excellent condition (Keighery 1994). The presence of weeds and size of the remnant were the main factors contributing to the condition of the vegetation. No detailed condition mapping was carried out during the site visit (DEC 2008).

The proponent has not provided any supporting documentation regarding flora surveys, vegetation or soil types for the application. To confirm the presence or absence of these species a flora survey at the appropriate time/s of year is required. As the vegetation proposed to be cleared is largely in Excellent (Keighery 1994) condition (DEC 2008) and due to the connectivity to other intact vegetation there is a likelihood these species could occur.

Therefore, the proposed clearing is at variance to this Principle.

Methodology

DEC (2008)
DEC (2002)
Jaensch et al. (1988)
Keighery (1994)
GIS database:
- ANCA wetlands - Environment Australia 26/3/99
- CALM Managed Lands and Waters - CALM 01/06/05
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Hydrography linear - DOW 13/7/06
- Pre European Vegetation - DA 01/01
- Ramsar wetlands - DEC 03
- SAC Biodatasets - accessed 18 Mar 08
- Soils, Statewide DA 11/99

(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 may be at variance to this Principle

The vegetation proposed to be cleared is largely in Excellent (Keighery 1994) condition (DEC 2008) and encompasses 34.86 ha (the remainder of vegetation on the property) for the purpose of a subdivision.

Within the local area (10km radius) thirty one occurrences from eight Threatened, Priority and other specially

protected fauna species have been recorded. Of these, five species are associated with a marine and/ or island environment and are not likely to be impacted by the proposed clearing. Two of the species have no current sightings after having been initially recorded in 1950.

The Hooded Plover's (Thinornis rubricollis tregellasi) is a Priority four species and nearly qualifies as threatened (under criteria C2a(i)) of the IUCN Red List (the International Union for the Conservation of Nature and Natural Resources. Benstead et al. 2006). This species favours wetlands (inland) - permanent freshwater lakes (over 8ha), wetlands (inland) - permanent freshwater marshes/ pools (under 8ha) and marine coastal/ supratidal - coastal brackish/ saline lagoons/ marine lakes (BirdLife International 2007).

The Lake Warden Wetland suite is (694m) north of the property (spanning to the east and west) is the likely habitat for this species that has been recorded in the local area. Threats to this system include broad scale vegetation clearing, changed hydrology including salinity, pollution and urban encroachment (DEC 2002).

Fox, cat and dog predation is considered the most significant threat for the Hooded Plover. Around human settlements, artificially high numbers of Silver Gull Larus novaehollandiae and Raven Corvus spp. are responsible for an increasing number of predation events and human disturbance increases the likelihood of predation and thermal stress (Weston 2000). Oil spills represent an additional threat (Western 2003). Breeding success is affected by off-road vehicles, livestock and ill-considered beach erosion management (Weston and Morrow 2000; Weston 2001). This wetland suite supports a significant proportion of the world's Hooded Plover population and is listed as a Ramsar wetland (Jaensch et al. 1988).

The vegetation proposed to be cleared is large (34.86 ha) in Excellent (Keighery 1994) condition (DEC 2008). Clearing of this vegetation may incrementally impact the habitat of the Hooded Plover (namely the nearby Lake Warden Wetland suite). The clearing will impact on other indigenous fauna species in the immediate area as the area will be further fragmented.

Methodology

Benstead et al. (2006)
BirdLife International (2007)
DEC (2008)
DEC (2002)
Jaensch et al. (1988)
Keighery (1994)
Weston (2003)
Weston (2001)
Weston (2000)
Weston and Morrow (2000)
GIS database:
- CALM Managed Lands and Waters - CALM 01/06/05
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Ramsar wetlands - DEC 03
- SAC Biodatasets - accessed 18 Mar 08

(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

Within the local area (10 km radius) no Declared Rare Flora (DRF) have been recorded. It is therefore unlikely that any DRF would occur within the v under application.

The proposal is therefore, not likely to be at variance to this Principle.

Methodology

GIS database:
- SAC Biodatasets - accessed 18 Mar 08

(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

Pink Lake, a Threatened Ecological Community, occurs within the local area (10km radius) of the vegetation under application. The boundary is 7.3km west (and the buffer is 7.2km west) of the vegetation proposed to be cleared and the town of Esperance lies between the TEC and the proposed clearing.

Threats to Pink Lake include broad scale vegetation clearing, changing hydrology (water becoming hyposaline and leaching of water from Lake Warden system) and pollution (nutrient enrichment and eutrophication) (DEC 2002). As the property is situated lower in the catchment than Pink Lake, it is unlikely to affect the hydrology of the lake.

Therefore, the proposed clearing is unlikely to compromise the functioning of the TEC.

Methodology DEC (2002)
GIS Database:
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Hydrographic catchments, catchments - DoW 01/06/07
- Hydrographic catchments, subcatchments - DoW 01/06/07
- Hydrography linear - DOW 13/7/06
- SAC Biodatasets - accessed 18 Mar 08

(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

The 34.86 ha of vegetation under application is proposed to be cleared for the purpose of a subdivision. The property in question has approximately 30.21 ha (62%) of native vegetation remaining on the property. After the proposed clearing there will be 3.02 (6.2%) of vegetation remaining. There is 25% of vegetation remaining in the local area (10km radius).

	Pre-European (ha)	Current extent (ha)	Remaining (%)
IBRA Bioregions**			
Esperance Plains^	2 899 949	1 482 950	51.1
Shire*			
Esperance	4 242 884	3 011 033	71
Beard Vegetation Complex**			
42	310 084	296 496	95.6

* (Shepherd et al. 2006)
** (Shepherd et al. 2001)
^ Area within Intensive Land Use Zone

Beard Vegetation Complex 42 is described as shrublands of mallee & acacia scrub on south coastal dunes.

The site visit confirmed this description (DEC 2008). The vegetation consisted of a coastal dune shrubland with dominant overstory species including Acacia saligna, Spyridium globulosum and Actinostrobus pyramidalis. In the swales of the dunes there are damplands as indicated by species such as Lepidosperma gladiatum and Lepidosperma squamatum.

The condition of the vegetation varied from Excellent (Keighery 1994) to Degraded (Keighery 1994). The majority of the vegetation was in Excellent condition (Keighery 1994), being the large remnant to the west. The presence of weeds and size of the remnant were the main factors contributing to the condition of the vegetation. No detailed condition mapping was carried out during the site visit (DEC 2008).

The vegetation under application is comprised of a vegetation complex that is well represented. The data suggests that the Shire and Bioregion are also reasonably well vegetated. However, the local area is extensively cleared with ~25% of vegetation remaining. Further to this, if the clearing was granted, it would fragment a reasonably well intact stretch of vegetation, isolating a large remnant to the west and severing connectivity to the internationally protected wetlands to the north east. Fragmentation of the remnant to the west would further degrade the biodiversity values of the vegetation through the increased introduction of disturbance factors such as weeds, feral animals and human activities.

As the proposed clearing is in a highly cleared area of the State and is of a large size in largely Excellent (Keighery 1994) condition (DEC 2008). However, it is within the town boundary and, therefore, may be at variance to this Principle.

Methodology DEC (2008)
Hopkins et al. (2001)
Keighery (1994)
Shepherd (2006)
Shepherd et al (2001)
GIS Databases:
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Local Government Authorities - DLI 8/07/04

- Pre European Vegetation - DA 01/01
- SAC Biodatasets - accessed 18 Mar 08
- Town Planning Scheme Zones - MFP 31/08/98

(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 at variance to this Principle

Within the local area (10km) there are a number of significant wetlands, part of the Lake Warden Wetland suite. Various lakes within this suite of wetlands are Internationally and Nationally recognised and protected under Ramsar, ANCA and Register of the National Estate requirements. Threats to this system include broad scale vegetation clearing, changed hydrology including salinity, pollution and urban encroachment (DEC 2002). This suite runs east west and is at closest 480m north of the vegetation under application. Lakes within the suite that are protected under Ramsar, ANCA and the Register of the National Estate include Lake Warden, Windabout Lake, Station Lake, Mullet Lake, Ewans Lake, Wheatfield Lake and Woody Lake. Another suite of ANCA wetlands (Pink Lake suite) occurs 7.5km west of the area under application. There is a non perennial lake 480m north of the property.

Buffers requirements for land developments are generally in the order of 500m for a wetland (DoW 2005). The proposed clearing falls outside this buffer requirement, however, the clearing will incrementally contribute to the threatening processes (DEC 2002) affecting the Lake Warden wetlands suites.

There are a number of damplands within the property, occurring in the swales, as indicated by the presence of species such Lepidosperma gladiatum and Lepidosperma squamatum (DEC 2008). The soil type mapped for the property is A15 which is described as coastal dunes and their intervening swales with saline flats, swamps, and lakes; some lunettes; some estuarine areas: chief soils seem to be calcareous sands on the recent dunes fronting the coast, and siliceous sands on the older dunes and lunettes. There are various undescribed soils around the saline flats and swamps, around estuarine areas, and on aeolianite. As mapped, areas of unit Ca26 are included, particularly on headlands. The position and extent of these damplands would need to be delineated to determine their significance.

The vegetation proposed to be cleared is 28m (at closest) to Bandy Creek (a major river that outlets into the ocean 993m to the south. This river runs along the western boundary of the property. The vegetation under application is within EPA Position Statement No. 2 (2000) agricultural area that has been extensively cleared. The position statement states that from a biodiversity perspective, stream reserves should generally be in the order of at least 200m wide.

Clearing of vegetation within this 200m buffer is highly likely to deteriorate the ecological values of Bandy Creek. The proposed clearing is therefore, at variance to this Principle.

Methodology

DEC (2008)
DEC (2002)
DoW (2005)
EPA (2000)
GIS Databases:
- ANCA wetlands - Environment Australia 26/3/99
- CALM Managed Lands and Waters - CALM 01/06/05
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Hydrography linear - DOW 13/7/06
- Hydrography linear (hierarchy) - DoW 13/7/06
- Ramsar wetlands - DEC 03
- Register of National Estate - Environment Australia, Australian and world heritage division 12 Mar 02

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

Comments

Proposal is at variance to this Principle

The Bandy Creek, Esperance coast catchment (of which this application is a part) is highly cleared (~75%). The Bandy Habour subcatchment (of which this application is a part) is also highly cleared (~80%). The groundwater salinity is mapped at 500 to 1000 TDS/mg/L. The area under application is low lying and flat with some coastal dunes. The annual rainfall is 600mm and evaporation is 1800mm.

The soil type mapped for the property is A15 which is described as coastal dunes and their intervening swales with saline flats, swamps, and lakes; some lunettes; some estuarine areas: chief soils seem to be calcareous sands on the recent dunes fronting the coast, and siliceous sands on the older dunes and lunettes. There are various undescribed soils around the saline flats and swamps, around estuarine areas, and on aeolianite. As mapped, areas of unit Ca26 are included, particularly on headlands.

Parts of the property are mapped at having a high salinity risk. This is likely to be evident in the low lying areas.

There are a number of damplands within the property, occurring in the swales, as indicated by the presence of species such Lepidosperma gladiatum and Lepidosperma squamatum (DEC 2008). This indicates that the groundwater table is close to the surface in these areas. Other parts of the property are sandy dunes (DEC 2008). Clearing of this vegetation is likely to increase the groundwater expression in these low lying areas increasing the occurrence of waterlogging and salinity.

The area under application is low lying and flat. Bandy Creek lies 28m to the west. A suite of wetlands lie 480m to the north of the vegetation under application indicating the landscapes natural tendency to hold water. Evidence of waterlogging can be observed via aerial photography on a nearby racing track 100m to the west which has the same soil type as the area under application. Clearing of 34.86ha is likely to exacerbate waterlogging, particularly after high rainfall events

The property is situated toward the bottom of the catchment, being 28m (at closest) to Bandy Creek, a major river that outlets into the ocean 993m to the south. The incremental impacts of salinity that is likely to be caused by the proposed clearing will be localised, with water draining into Bandy Creek and will therefore not affect the remainder of the catchment, except in the case of high rainfall events.

In the case of high rainfall events, such as that experience in January 2007, Bandy Creek flows are increased. As the catchment that drains into Bandy Creek is highly cleared, it is salinity affected, and in flood events the creek is likely to be more saline than usual. Photographs taken by DEC officers during the January 2007 (DEC 2007) flood event show that Bandy Creek flooded its banks on to the property in question. Photographs show that cleared areas were most affected by the flooding, such as the race track and the northern part of the property in question. In instances of flooding the saline water may pool back up Bandy Creek into the immediate surrounding low lying areas including the Lake Warden Wetland suite.

As the vegetation proposed to be cleared occurs on sands there is a risk of wind erosion following clearing. This risk is evident due to the already existing blowouts within the local area.

Therefore, the proposed clearing is likely to exacerbate salinity, waterlogging and is at a high risk of wind erosion.

Methodology

DEC (2007)
Northcote et al. (1968)
GIS database:
- Annual Evaporation Contours (Isopleths) - WRC 29/09/98
- Average Annual Rainfall Isohyets - WRC 29/09/98
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Hydrographic catchments, catchments - DoW 01/06/07
- Hydrographic catchments, subcatchments - DoW 01/06/07
- Hydrography, linear - DOW 13/7/06
- Salinity Risk LM 25m - DOLA 00
- Topographic contours statewide - DOLA and ARMY 12/09/02
- 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

Within the local area (10km radius) there are five Conservation Areas. This includes four Nature Reserves that are on the Register of the National Estate. They are Mullet Lake Nature Reserve (also a System 3 reserve 735m north and 3.9km east), Woody Lake Nature Reserve (800m north), Lake Warden Nature Reserve (4.1km west) and Recherche Archipelago Nature Reserve (islands of the coast 3.7km south south east).

The first three mentioned Nature Reserves make up the Lake Warden wetland suite and are listed under Ramsar and ANCA as significant wetlands. Threats to this system include broad scale vegetation clearing, changed hydrology including salinity, pollution and urban encroachment (DEC 2002).

Buffers requirements land developments are generally in the order of 500m for a wetland (DoW 2005). The proposed clearing falls outside this buffer requirement, however, the clearing will incrementally contribute to the threatening processes affecting the Lake Warden wetlands suites (DEC 2002).

In the case of high rainfall events, such as that experience in January 2007, Bandy Creek flows are increased. As the catchment that drains into Bandy Creek is highly cleared, it is salinity affected, and in flood events the creek is likely to be more saline than usual. Photographs taken by DEC officers during the January 2007 (DEC 2007) flood event show that Bandy Creek flooded its banks on to the property in question. Photographs show that cleared areas were most affected by the flooding, such as the race track and the northern part of the property in question. In instances of flooding the saline water may pool back up Bandy Creek into the immediate surrounding low lying areas including the Lake Warden Wetland suite.

The South Coast is a System 3 reserve 8.5 south west and 8.1km east of the vegetation proposed to be

cleared.

The proposed clearing of 34.86ha of vegetation in a highly cleared landscape (75% cleared) is likely to have an impact on the environmental values and ecological function of these nearby reserves. Clearing of this remnant would further fragment the landscape, particularly isolating a large remnant of vegetation to the west. The degradation and loss of these remnants would impact the north south linkage between the coast and Woody Lake Nature Reserve to the north which has already lost some connectivity from the encroachment of the Esperance townsite.

The proposed clearing is therefore, at variance to this Principle.

Methodology

DEC (2007)
DEC (2002)
DoW (2005)
GIS Databases:
- ANCA wetlands - Environment Australia 26/3/99
- CALM Managed Lands and Waters - CALM 01/06/05
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Hydrographic catchments, subcatchments - DoW 01/06/07
- Hydrography, linear - DOW 13/7/06
- Ramsar wetlands - DEC 03
- Register of National Estate - DEWHA 12 Mar 02
- System 1 to 5 and 7 to 12 areas - DEC 11/7/06
- Topographic contours statewide - DOLA and ARMY 12/09/02

(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 at variance to this Principle

The Bandy Creek, Esperance coast catchment (of which this application is a part) is highly cleared (~75%). The Bandy Habour subcatchment (of which this application is a part) is also highly cleared (~80%). The groundwater salinity is mapped at 500 to 1000 TDS/mg/L. The area under application is low lying and flat with some coastal dunes. The annual rainfall is 600mm and evaporation is 1800mm.

The soil type mapped for the property is A15 which is described as coastal dunes and their intervening swales with saline flats, swamps, and lakes; some lunettes; some estuarine areas: chief soils seem to be calcareous sands on the recent dunes fronting the coast, and siliceous sands on the older dunes and lunettes. There are various undescribed soils around the saline flats and swamps, around estuarine areas, and on aeolianite. As mapped, areas of unit Ca26 are included, particularly on headlands.

Parts of the property are mapped at having a high salinity risk. This is likely to be evident in the low lying areas. There are a number of damplands within the property, occurring in the swales, as indicated by the presence of species such Lepidosperma gladiatum and Lepidosperma squamatum (DEC 2008). This indicates that the groundwater table is close to the surface in these areas. Other parts of the property are sandy dunes (DEC 2008). Clearing of this vegetation is likely to increase the groundwater expression in these low lying areas increasing the occurrence of waterlogging and salinity.

The property is situated toward the bottom of the catchment, being 28m (at closest) to Bandy Creek, a major river that outlets into the ocean 993m to the south. The incremental impacts of salinity that is likely to be caused by the proposed clearing will be localised, with water draining into Bandy Creek and will therefore not affect the remainder of the catchment, except in the case of high rainfall events.

In the case of high rainfall events, such as that experience in January 2007, Bandy Creek flows are increased. As the catchment that drains into Bandy Creek is highly cleared, it is salinity affected, and in flood events the creek is likely to be more saline than usual. Photographs taken by DEC officers during the January 2007 (DEC 2007) flood event show that Bandy Creek flooded its banks on to the property in question. Photographs show that cleared areas were most affected by the flooding, such as the race track and the northern part of the property in question. In instances of flooding the water may pool back up Bandy Creek into the immediate surrounding low lying areas including the Lake Warden Wetland suite.

The vegetation proposed to be cleared is at closest 28m from Bandy Creek (major river). This river discharges into a bay ~993m south of the property. Due to the proximity of the watercourse and the scale of the proposed clearing (34.86ha) sedimentation resulting from the clearing is likely to impact this nearby watercourse and bay in which it discharges causing turbidity and eutrophication. Aerial photography already shows evidence of this occurring.

No data exists for this area with regard to Acid Sulfate Soils (ASS). It is possible that ASS occur in this area due to the proximity and presence of waterlogged areas. The disturbance of the soil profile with respect to clearing of vegetation is unlikely to disturb the profile in which ASS occurs.

The proposed clearing is likely to affect surface water quality by exacerbating salinity and runoff in this highly cleared catchment. This may incrementally affect the nearby Lake Warden wetlands suite, particularly in high rainfall events, which is threatened by broad scale vegetation clearing, changed hydrology including salinity, pollution and urban encroachment (DEC 2002).

Additionally, sedimentation as a result of clearing is likely to deteriorate the quality of the nearby watercourse and bay.

Methodology DEC (2002)
Northcote et al. (1968)
GIS database:
- Annual Evaporation Contours (Isopleths) - WRC 29/09/98
- Average Annual Rainfall Isohyets - WRC 29/09/98
- Esperance Townsite 20cm Orthomosaic - Landgate 07
- Hydrographic catchments, catchments - DoW 01/06/07
- Hydrographic catchments, subcatchments - DoW 01/06/07
- Hydrography, linear - DOW 13/7/06
- Salinity Risk LM 25m - DOLA 00
- Soils, Statewide DA 11/99

(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 at variance to this Principle**
Esperance is within a flood prone area with floods affecting the Shire as recently as January 2007.

The vegetation proposed to be cleared is at closest 28m from Bandy Creek (major river). This river discharges into a bay ~993m south of the property. As the property under application is close to the discharge point of this river, during a high rainfall event where flows are increased, flooding is likely to occur. During a site visit officers observed how the course of Bandy Creek had been altered during the previous flood event; bring its banks closer to the boundary of the property due to curves in the river causing erosion. Aerial photography from the 2007 flooding (DEC2007) shows flooding the property and adjoining properties, particularly within cleared areas.

The removal of 34.86ha of vegetation is likely to exacerbate the effects of flooding in this area.

Methodology DEC (2008)
DEC (2007)
GIS database:
- Esperance Townsite 20cm Orthomosaic - Landgate 07

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

Comments

The property under application is within the Esperance RIWI Act groundwater area. The proponent requires a Development approval from the Shire, Department of Planning and Infrastructure, the Environmental Protection Authority and Department of Environment and Conservation Planning Branch before commencing with the Canal Development. All of these approvals would be sort under a subdivisional approval by the Western Australian Planning Commission. To date, no such approvals have been given.

This application is for subdivision within the EPA Position Statement No. 2 (2000) agricultural area that has been extensively cleared. This is evident when examining the local area which has 25% of vegetation remaining. The proposed clearing does not comply with section 4.2.1 and 4.2.4 which address biodiversity and land degradation issues, for all clearing within this area, not limited to clearing for the purpose of agriculture.

Methodology EPA (2000)

4. Assessor's comments

Comment
The assessable criteria have been addressed and the clearing as proposed is at variance to Principles (a), (f), (g), (h), (i) and (j), may be at variance to Principles (b) and (e) and is not likely to be at variance to Principles (c) and (d).

5. References

ANCA (1996) A Directory of Important Wetlands in Australia. Second Edition. Australian Nature Conservation Agency, Canberra

Benstead, P., Butchart, S., Stattersfield, A. & Garnett, S. (Evaluators) 1996. IUCN Red List of Threatened Animals. IUCN, Gland, Switzerland.

BirdLife International (2007) Species factsheet: Thinornis rubricollis. Downloaded from http://www.birdlife.org on 18/3/2008
Department of Environment and Conservation (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Esperance 2 (ESP2 - Recherche subregion).
Department of Environment and Conservation (2007) Photographs of Bandy Creek Flood Event Jan 07. DEC TRIM Ref: DOC52639.
Department of Environment and Conservation (2008) Site Visit Report. Native Vegetation Conservation CPS 2209/1. DEC TRIM Ref: 50103.
Department of Water (2005) Water Quality Protection Note: Vegetation Buffers to Sensitive Water
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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
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)