

30 September 2015

## ASSESSMENT OF VEGETATION ACCESS ROAD, LUSSKY – HOPE VALLEY ROAD

### 1.0 BACKGROUND

#### Aims of the Survey

Lindsay Stephens of Landform Research conducted a vegetation assessment on 21 July 2015 to determine the status of vegetation on a triangular area of land off Hope Valley Road, west of the access road to the Lussy Road Limestone Pit.

#### Methods

During the inspection the whole site was walked and the native plant species identified. A thorough search for native species was conducted to determine whether any significant native vegetation communities or taxa were present.

As the vegetation was significantly disturbed not all the exotic species were recorded although the common species were noted.

The main references for plant identification were knowledge of the assessor, published texts, and Florabase, including as necessary comparison to the WA Herbarium Reference Collection.

The assessment of the vegetation communities were made by reference to the key Swan Coastal Plain studies, by comparison to the Vegetation Complexes and Floristic Community Types and geomorphic and regolith matching.

- Bush Forever used the same methodology based on comparisons to published floristics and geographic information, Bush Forever 2000, Volume 2 page 310.
- Comparisons were made to published boundaries of Vegetation Complexes in Heddlé et al, 1980.
- Comparisons of species were made to the descriptions of Floristic Community Types in Gibson et al 1994, pages 29 to 45. (Gibson, N, Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. (1994), A Floristic Survey of the Swan Coastal Plain. Unpublished Report for the Australian Heritage Commission prepared by the Department of Conservation and Land Management and the Conservation Council of Western Australia).

- Comparisons of species were made to the sorted table in Gibson et al 1994, Table 12, which shows the species frequency within each Floristic Community Type. Weston 2004 states that Neil Gibson noted that such comparisons are possible.
- Comparisons were made to the descriptions of the Floristic Community Types and maps in Appendix 1 of Gibson et al 2004.
- Comparisons to Weston A S, 2004, Threatened Ecological Community FCT (SCP) 26a Survey, Hope Valley – Wattleup Redevelopment Project Area.
- Comparisons to Weston, 2005, Vegetation and Flora survey and Condition Assessment and Rare Flora Search, Hope Valley – Wattleup Redevelopment Area, prepared for Landcorp.
- Descriptions of nearby Bush Forever sites in Bush Forever 2000, Volume 2 were examined.
- The Commonwealth EPBC databases were searched.
- Comparison to regolith maps such as the 1 : 50 000 Perth Metropolitan Environmental Geology Map Sheets produced by the Western Australian Geological Survey; particularly Fremantle Sheet.
- Comparisons were made to published boundaries of Landforms and Soils in Churchward and McArthur, 1980.
- Soil and regolith mapping and assessment of the geomorphology by Lindsay Stephens at the time of the site inspections. Soil and regolith mapping has been found to be very closely aligned to species composition, through extensive field mapping by Landform Research, with small changes to the clay or sesqui-oxide content being related to the introduction and deletion of particular indicator species.
- Comparisons to databases of Regolith and Vegetation Communities held by Landform Research and the field experience of Lindsay Stephens.

The vegetation assessment was conducted to Environmental Protection Authority (2004) Guidance Statement, *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*, No 51 June 2004, Level 1 Assessment.

### **Limitations of the Survey**

The survey was conducted in winter which had been dry. The timing was slightly early with respect to spring but based on the level of ground disturbance, pasture and weed groundcover and a lack of annual native species the timing of the survey was not deemed limiting. No species was observed that was an annual species that could not be identified because of a lack of flowers.

The perennial species were all readily identified from their features.

Considering the vegetation condition the assessment is regarded as valid.



Aerial photograph showing the access road and vegetation



Planted trees and shrubs over pasture on the cut slope of the access road

## 2.0 PHYSICAL ENVIRONMENT

### Site Description

The site consists of a disturbed piece of ground, crossed by services lying between a limestone access road to Lussy Limestone Quarry and industrial land use to the west.

The soils are yellow sands of the Spearwood System, underlain by limestone which rarely outcrops.

The soils have over the years been significantly disturbed across much of the site and subjected to regrowth vegetation.

### Hydrology

- **Surface Water**

There is no surface drainage due to the porosity and permeability of the sand, with precipitation draining to the water table.

Runoff from the bitumen road quickly infiltrates the soil at the edge of the road.

- **Groundwater**

The site has an elevation of 8 to 14 metres AHD with groundwater at 0.5 metres AHD based on the Perth Groundwater Atlas and locally developed landforms.

## 3.0 VEGETATION ASSESSMENT

### Community Types

The current study of the site was conducted to EPA (2004) Guidance Statement, *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*, No 5, 1 June 2004.

There is only minor indication of the original vegetation type restricted to small areas. Therefore the level of disturbance and regrowth is such that providing a definitive name for the original vegetation community is not possible.

The vegetation on the site was probably Karrakatta Complex Central and South, as identified by Hedde et al, 1980, *Vegetation Complexes of the Darling System, Western Australia in Atlas of Natural Resources, Darling System, Western Australia*, Department of Conservation and Environment.

No Community Types could be ascribed to those identified by Gibson et al, 1994, *A Floristic Survey of the Southern Swan Coastal Plain*, Unpublished Report for the Australian Heritage Commission, prepared by Department of Conservation and Land Management and the Conservation Council of Western Australia.

The northern portion is degraded *Banksia* Woodland and there is a small area of approximately 400 m<sup>2</sup> of vegetation where *Melaleuca huegelii* is common in the north.

The northern portion of the site had been burnt in summer 2014 – 2015.

The majority of the southern portion of the site is *Acacia rostellifera* regrowth Thicket which is developed as a near monoculture opportunist community as a result of previous clearing.

There has also been some planting of trees such as Tuart along the access road.

## Native Species List

Within the whole area there are only 22 species of native plants. This is very low considering the area of around 2 hectares surveyed.

Exotic species were common and widespread, particularly the grasses including invasive species and the common coastal weeds.

FAMILY	NATIVE GENUS - SPECIES	SPECIES PRESENT			
		<i>Acacia rostellifera</i> Regrowth	Degraded To Completely Degraded Sands	400 m <sup>2</sup> Disturbed <i>Melaleuca</i> Shrubland	Degraded <i>Banksia</i> Woodland
Aizoaceae	<i>Carpobrotus virescens</i>		X		
Cyperaceae	<i>Mesomelaena tetragona</i>				X
Dilleniaceae	<i>Hibbertia hypericoides</i>		X	X	X
Droseraceae	<i>Drosera erythrorhiza</i>			X	
Hemerocallidaceae	<i>Dianella revoluta</i> var <i>divaricata</i>			X	X
Mimosaceae	<i>Acacia pulchella</i>			X	X
	<i>Acacia rostellifera</i>	REGROWTH			REGROWTH
	<i>Acacia saligna</i>	X			
Myrtaceae	<i>Eucalyptus gomphocephala</i>	PLANTED	X		X
	<i>Eucalyptus marginata</i> sandplain		X		X
Papilionaceae	<i>Hardenbergia comptoniana</i>	X	X	X	
	<i>Jacksonia furcellata</i>				X
Phormiaceae	<i>Dianella revoluta</i> var <i>divaricata</i>			X	X
Proteaceae	<i>Banksia attenuata</i>		X		A
	<i>Dryandra (Banksia) dallanneyi</i>			X	X
	<i>Dryandra (Banksia) sessilis</i>			X	
	<i>Petrophile serruriaea</i> subsp <i>glanduligera</i>				1 PLANT
Ranunculaceae	<i>Clematis linearifolia</i>				X
Restionaceae	<i>Desmodcladus flexuosua</i>			X	X
Xanthorrhoeaceae	<i>Xanthorrhoea gracilis</i>		X		
	<i>Xanthorrhoea preissii</i>	X	X	X	X
Zamiaceae	<i>Macrozamia fraseri</i>		X		X
	TOTAL		22		
	<b>EXOTIC GENUS - SPECIES</b>				
Aizoaceae	<i>Carpobrotus edulis</i>	X	X	X	X
Asphodelaceae	<i>Asphodelus fistulosus</i>	X	X	X	X
Asteraceae	<i>Arctocheca calendula</i>	X	X	X	X
	<i>Gamochoeta coarctata?</i>	X	X	X	X
	<i>Hypochaeris</i> sp	X	X	X	X
	<i>Sonchus tenerrimus</i>	X	X	X	X
Euphorbiaceae	<i>Ricinus communis</i>	X	X		X
Fabaceae	<i>Lupinus cosentinii</i>	X	X	X	X
Fumariaceae	<i>Fumaria capreolata</i>	X	X	X	X
Graniaceae	<i>Pelargonium capitum</i>	X	X	X	X
Iridaceae	<i>Watsonia</i> spp		X		X
Liliaceae	<i>Asparagus asparagoides</i>	X	X	X	X
Oxalidaceae	<i>Oxalis pes-caprae</i>	X	X	X	X
Myrtaceae	<i>Leptospermum laevigatum</i>	X	X		
Poaceae	<i>Avena fatua</i>	X	X	X	X
	<i>Elytrigia</i> spp	X	X	X	X
	<i>Eragrotis curvula</i>	X	X	X	X

	<i>Erharta calycina</i>	X	X	X	X
	<i>Festuca arundinacea</i>	X	X	X	X
	<i>Lagurus ovatus</i>	X	X	X	X
	<i>Pennisetum setaceum</i>	X	X	X	X
Solanaceae	<i>Nicotiana glauca</i>	X	X	X	

### Vegetation Structure

The vegetation structure contains a approximating *Banksia* Woodland in the north west.

The *Acacia rostellifera* regrowth is a Thicket.

Other vegetation is too degraded to classify.

There is also a significant amount of exotic groundcover that increases as the planted native overstorey thins.

### Vegetation Condition

The vegetation condition across the whole site is Degraded to completely Degraded.

Even though the *Acacia rostellifera* regrowth is a thicket it is a monoculture of opportunistic regrowth that approximates the growth and form of an exotic species on land that was previously cleared.

The *Banksia* Woodland remnant in the north west approaches Degraded to Good in condition, improving towards the north west.

Other parts are pasture and exotic species with scattered native shrubs on previously cleared ground.

### Significant Vegetation

There are no significant plant communities and no significant, listed Threatened or Priority species.

There is one significant Tuart tree located to the west of the study area. This is a large mature tree with a trunk diameter of approximately 1.5 metres.

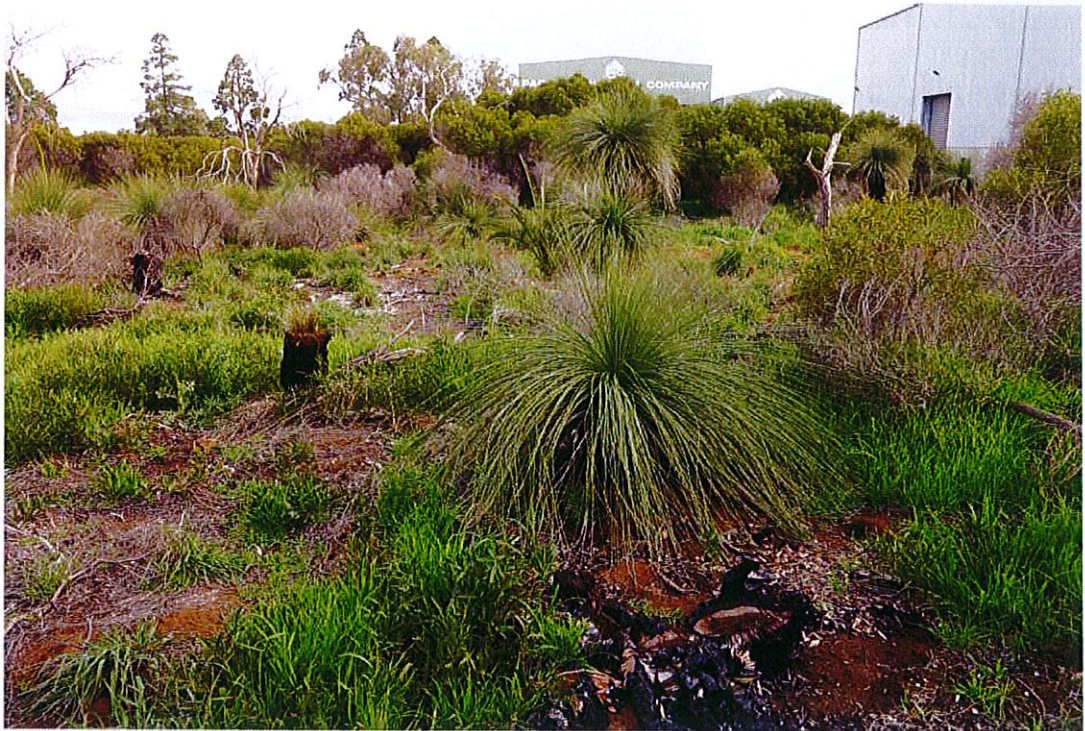


Typical vegetation of the degraded *Banksia* Woodland showing the regrowth of *Xanthorrhoea preisii*



Degraded *Banksia* Woodland burnt in summer 2014 - 2015





Degraded to Completely Degraded vegetation looking towards the *Acacia rostellifera* regrowth Thicket.



Completely Degraded land



*Melaleuca* Shrubland showing the Degraded condition.

#### **4.0 CONCLUSIONS**

The site consists of Degraded to Completely Degraded vegetation dominated by exotic groundcovers, mainly introduced grasses and weeds.

The vegetation improves towards the north west where Degraded ranging to Good *Banksia* Woodland occurs.

The degraded nature of the site is shown by there being only 22 native species found in an area of approximately 2 hectares.

Whilst some plants have habitat value to birds, the vegetation has low significance.

The large Tuart tree to the west, outside the subject land has a diameter of 1.5 metres and is regarded as a significant tree.

Lindsay Stephens