

Salmon Gums West Road Construction Project



Shire of Esperance

**Vegetation, Flora, Fauna and Environmental
Considerations Report**

EXECUTIVE SUMMARY

A level 1 flora survey was conducted for Salmon Gums West Road in July in accordance with the Environmental Protection Authority (EPA) schedule 51, Guidance for the Assessment of Environmental Factors (the Environmental Protection Act 1986) Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia, as part of the application to Clear Native Vegetation for a 8.79 km section of road upgrades. Total area of 20.98 hectares, 5.52 hectares of which is native vegetation. The permit area is along Salmon Gums West Road from the Coolgardie Esperance Highway to Gimlet Road. The existing road is a single lane of bitumen road within a 20 metres wide road reserve. The total cleared road width is currently ranges from 9 metres to 11 metres. The Shire is applying to clear 20m wide along the 8.79km section of road.

Introduction

The Shire of Esperance plans to upgrade Salmon Gums West Road from the Coolgardie Esperance Highway to Gimlet Road in the 2017-2018 financial year. This is a major transport route to the Salmon Gums CBH grain receival facility and thus gets a high amount of trucks and other traffic.

The survey is part of our compliance obligations for the purpose of clearing native vegetation to construct the road. Salmon Gums West Road is approximately 100km north of Esperance, west of the Salmon Gums townsite on the south coast of Western Australia. The Shire of Esperance has applied for a 20m wide clearing footprint area. The current road is 11m wide and the gazetted road reserve is 20m. The survey is restricted to an area 4.5m either side of the existing road alignment.

A level 1 flora survey has been undertaken in accordance with the Environmental Protection Authority (EPA) schedule 51, Guidance for the Assessment of Environmental Factors (the Environmental Protection Act 1986) Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia.



Figure 1: Location of Salmon Gums West Road

BACKGROUND

The road construction project has the potential to affect a number of possible environmental factors. These include;

- Threatened Flora (TF) and Priority Flora (PF) within a twenty kilometre radius.

Scope

As outlined in EPA schedule 51, the scope of the level 1 flora survey is in two parts being;

1. A desktop study for the purposes of gathering background information on the target area, and;
2. Reconnaissance survey to understand the likely presence of vegetation communities and flora species identified from the background study, define flora and vegetation units, their condition and potential impacts.

The survey involves low intensity sampling of flora to produce a species list (Appendix 1), and maps of vegetation types and condition.

Catchment landscape context

Climate

The climate is Mediterranean with cool wet winters and dry warm summers. The site receives an average annual rainfall of about 350 mm (DAFWA 2002).

Geology

Undivided poorly consolidated sediments: colluvium, weathered rocks, alluvium, sand, silt, clay, lacustrine and swamp deposits; silcrete, ferricrete, calcrete and shallow-marine sediments.

Soils and Topography

Soils consist of three individual subsystems;

Salmon Gums 3 Subsystem (246Sg_3): Seasonally inundated generally fresh water swamps. Grey non-cracking clays seasonally inundated.

Salmon Gums 1 Subsystem (246Sg_1): Level plain or plateau of low relief and poor external drainage and extensive Gilgia micro relief. Alkaline grey shallow sandy duplex soils and calcareous loamy earths with minor non-cracking clays.

Salmon Gums 2 Subsystem (246Sg_2): Very gently inclined scarp with external drainage via a well-developed network of incipient streams. Alkaline grey shallow sandy duplex soils and calcareous loamy earths with minor non-cracking clays and bare rock.

Vegetation

Mallee/ Eastern Mallee IBRA sub region.

The Beard (1973) vegetation mapping of the site is described as Eucalyptus woodland including Eucalyptus salmonophloia and other Eucalyptus sp.

Land Use

The site is located within the Salmon Gums West Road Shire Road Reserve. It is surrounded by mixed cropping and grazing land as well as the Salmon Gums Golf Course, Water Corporation reserves and a Crown Land Reserve.

METHODOLOGY

Desktop study

A desktop study of existing geospatial information was undertaken prior to the site visit as part of the level 1 survey. This included using a Geographical Information System (GIS) to review existing site digital orthophotos, geology, morphology, wetlands, native and planted vegetation, IBRA classification, Threatened Flora (TF), Priority Flora (PF) and Threatened Ecological Communities (TEC's). WALGA's Environment Planning Tool was also used and this report has been added as an Appendix.

State and Commonwealth database searches for potential DRF, PF, and Threatened Ecological Communities (TEC), within a twenty kilometre buffer of the survey sites was undertaken as part of the desktop study. Additional liaison with the Esperance DPaW District Flora Officer was conducted to further refine conservation values of interest and to define the twenty kilometre buffer due a lack of DRF and PF data across the District.

Field investigation

The preliminary field survey was conducted on 11 July 2017. The survey effort comprised of driving slowly down Salmon Gums West Road with frequent stops and transects by foot into the roadside vegetation. Each time there was a visible change in vegetation structure, condition or composition it was noted and a foot traverse was undertaken noting species present at the site and taking herbarium specimens. A portable field herbarium was established and a preliminary species list developed.

The Esperance Shire provided coordinates for each site which were uploaded from GIS into a Garmin GPSmap64 unit and a field aerial photo map was used to navigate to different habitat areas.

A list of TF and PF within a ten kilometre radius of each site was used in the field along with a Threatened and Priority Flora field manual provided by the Esperance DPaW District Flora Officer. A combination of local botanical knowledge, botanical field guides, the DPaW Esperance District Herbarium and Florabase were used to prepare a plant species lists for each site (Appendix 1). Specific habitats that were likely to contain Priority flora species were extensively searched.

The transects were used to develop a botanical species list, descriptions of vegetation types, structure, condition, threats, soils and landforms. The vegetation structure was determined by growth form, height class, dominant species, other common species, per cent cover, and health of each stratum. Vegetation condition ratings are derived from Keighery 1994, Appendix 2.

Ecological impacts were listed as being present or absent, and take into account both negative and positive impacts on the vegetation. They included clearing, artificial water way construction, fire, regeneration, waterlogging, senescence, weeds, erosion, sedimentation, rabbits, dieback, and illegal dumping of rubbish.

The condition of vegetation is a subjective assessment of how healthy the vegetation is at the time of the survey. This was based on the amount of dead or dying plants throughout the stratum compared to the amount of living plants and weed cover. This was categorized as "Excellent," "Very Good," "Good," "Degraded," or "Completely Degraded." The categories are derived from Keighery 1994, and outlined in further detail in Appendix 2.

All field data collected relating to vegetation type, condition, transect coverage, and photo points have been collated into GIS shapefiles and used as part of the analysis. Mapping of site area vegetation type and condition were collated and recorded as polygon shapefiles and attributed with area and perimeter parameters.

Findings from the desktop study and field survey were reviewed against whether each site would affect any of the following environmental values:

- The presence or absence of TF, PF and TEC's and
- The area and condition of remnant vegetation.

RESULTS

Desktop study

The Declared and endangered flora list (DEFL) database search and liaison with the Esperance DPaW District Flora Officer resulted in several known Priority Flora species and sites within a twenty kilometre radius of each site (Table 1). Appendix 3 provides a description of each priority conservation status. The site had 20 Priority Flora species and 1 Threatened Flora species recorded within a twenty kilometre radius of the survey area.

Taxon	TF	P1	P2	P3	P4
<i>Acacia amyctica</i>			2		
<i>Acacia glaucissima</i>				1	
<i>Adenanthos ileticos</i>					13
<i>Aotus lanea</i>		1			
<i>Aotus sp. Dundas</i>			1		
<i>Caladenia voigtii</i>					4
<i>Conostephium marchantiorum</i>				1	
<i>Conostephium uncinatum</i>			2		
<i>Cyathostemon sp. Esperance</i>		1			
<i>Ereomophila chamaephila</i>				1	
<i>Ereomophila compressa</i>				7	
<i>Eremophila serpens</i>					1
<i>Eucalyptus creta</i>				1	
<i>Eucalyptus dolichorhyncha</i>					4
<i>Eucalyptus merrickiae</i>	4				
<i>Grevillea aneura</i>					3
<i>Halgania sp. Peak Eleanora</i>			1		
<i>Lepidium fasciculatum</i>		2			
<i>Pimelea halophila</i>			4		
<i>Pityrodia chrysocalyx</i>				1	
<i>Thysanotus brachyantherus</i>			1		

Table 1: Priority flora sites within a 20 km radius

RESULTS

Threatened Ecological Communities

No TEC were identified in the desktop or field surveys

Field Flora Survey (TF and PF)

One species of Priority two flora was found during the survey. At 0.7km, it was not ascertained at survey time how plants are likely to be taken as part of this clearing permit, although it is likely the population extends into adjacent bushland.

One species of Priority three flora *Eremophila compressa* was found during the survey. 6 plants are likely to be taken as part of this clearing permit.

One species of Priority four flora was found during the survey. This was collected at 2.0km, it was not ascertained at survey time how plants are likely to be taken as part of this clearing permit, although it is likely the population extends into adjacent bushland.



Kilometres west from Coolgardie-Esperance highway	Notes	Vegetation Condition (Kieghery Scale)	Vegetation Description	Species Present
0-0.5km		Excellent	Eucalyptus woodland over Melaleuca shrubland	<i>Santalum acuminata</i> , <i>Melaleuca quadrififaria</i> , <i>Melaleuca pauperiflora</i> subsp. <i>Mutica</i> , <i>Eucalyptus flocktoniae</i> , <i>Eucalyptus delicata</i>
0.5-0.6	Old growth Salmon Gums woodland	Excellent	<i>Open Eucalyptus salmonophloia</i> woodland	<i>Eucalyptus salmonophloia</i> , <i>Olearia muelleri</i> , <i>Cassytha</i> sp., <i>Acacia latipes</i> , <i>Acacia erinacea</i> , <i>Dodonea stenozyga</i>
0.7		Excellent	Eucalyptus woodland over Melaleuca shrubland	<i>Olearia muelleri</i> , <i>Santalum acuminatu</i> , <i>Cassytha</i> sp., <i>Acacia</i> sp., <i>Eucalyptus</i> . <i>Acacia amycitica (P2)</i> , <i>Melaleuca brophyi</i> , <i>Austrostips</i> sp., <i>Diocera violaceae</i> , <i>Scaevola bursiaisifolia</i> , <i>Zygophyllum ovatum</i> , <i>Philothea fitzgeraldii</i>

1.1		Excellent	Eucalyptus woodland over Melaleuca shrubland	<i>Olearia muelleri Santalum acuminatum, Carpobrotus modestus,</i>
1.2-1.3	Exposed granite in sections	Excellent	Mixed Eucalyptus grossa / broombush scrub	<i>Santalum acuminatum Eucalyptus grossa, Meleuca uncinata, Scaevola spinescens, Grevilleaacuria, Trymalium myrrillis ssp. myrrillis</i>
1.6		Excellent	Eucalyptus woodland over Melaleuca shrubland	<i>Callitris roei, Eucalyptus grossa, Santalum acuminatum, Eucalyptus diptera, Melaleuca podiocarpa, Melaleuca pauperiflora subsp. mutica, Grevillea plurijuga, Eucalyptus lehmannii</i>
1.8		Excellent	Shrubland	<i>Meleuca uncinata, Santalum acuminatum, Leptosperma sp.</i>
2.0-2.5		Excellent	Open Eucalyptus woodland over open melaleuca shrubland	<i>Lysinema pentapetalum , Hakea lissocarpa, Melaleuca uncinata Grevillea aneura (P4), Dodonaea stenogyza</i>
2.6		Excellent	Eucalyptus woodland over Melaleuca shrubland	<i>Grevillea pectinata, Eucalyptus diptera, Melaleuca podiocarpa, Eucalyptus sp. , Olearia muelleri Eucalyptus diptera, Brachyscome ciliaris,</i>
3.2		Excellent	Eucalyptus woodland over shrubland	<i>Eucalyptus grossa, Eucalyptus sp. Grevillea acuaria, Olearia muelleri</i>
3.9		Excellent	Eucalyptus woodland over shrubland	<i>Halgania andromedifolia , Dodoneae stenogyza, Eucalyptus diptera, Grevillea acuaria, Santalum acuminatum, Leptomeria pachyclada, Boronia inornata ssp leptophylla</i>
4.5		Excellent	Eucalyptus woodland over Melaleuca shrubland	<i>Melaleuca pauperiflora subsp. mutica, Boronia sp, Dodonaea stenogyza, Santalum acuminatum, Eucalyptus annulata, Grevillea sp. Scaevola spinescens</i>
4.7-5.2	Water catchment on north side of road	Very good		

5.2-5.8	Loss of all veg on South side	Very good		
5.8- 5.9	Loss of all veg both sides	Very good		
5.9-6.8	Loss of all veg on South side	Very good		<i>Melaleuca lanceolata,</i>
6.8-7.7	Loss of all veg both sides	Very good	Eucalyptus woodland over Melaleuca shrubland	<i>Eucalyptus sp. Leptomeria pachyclada , Santalum acuminatum Boronia inornata ssp leptophylla, Melaleuca podiocarpa</i>
7.5-8.1	DRF Marker Eremophila compressor (P3)	Excellent	Eucalyptus woodland over Melaleuca shrubland	<i>Eucalyptus diptera, Dodenaea, Templetonia sulcata, Goodenia berardiana, Boronia inornata ssp leptophylla, Halgania andromedifolia, Grevillea plurijuga, Melaleuca pauperiflora subsp. pauperiflora, Microcybe multiflora, Acacia sulcata, Acacia lacchophylla, Acacia crassiloides, Pultenaea arida, Eremophila compressa DRF 6 plants,</i>
8.1 to 8.8 (Gimlet Rd)		Excellent	Eucalyptus woodland over Melaleuca shrubland	

Table 1. Notes taken in the field / Herbarium ID

Significant vegetation:

An area between 0.5-0.6km adjacent to the Salmon Gums Golf course has a number of large old growth *Eucalyptus salmonophloia*. These are significant visually and also have a number of hollows which could be used as nests by pygmy possums and birds. The Shire of Esperance will not clear these large trees as part of this permit.



Wildlife corridors

In a cleared landscape roadside vegetation can provide the only wildlife corridors for movement of birds and other animals. From Coolgardie Esperance highway to 5.2km the roadside clearing as part of this project will not likely to affect wildlife corridors, as there is significant remnant vegetation outside the road reserve.

The eastern 3.3km of the clearing footprint result in almost the entire loss of all remnant vegetation on the edges of the road (the south side will retain some trees in sections). The narrow 20m gazetted road width and fenceline to fenceline clearing by adjacent farmers, will result in the loss of these tree lines. Aerial photography of the area shows that there is good wildlife corridor parallel to Salmon Gums West Road 925m to the north and 1.28km to the south See attached map (Pink lines indicate Wildlife corridor lost, green shows alternative routes).



Photos from Field work

