

VEGETATION SURVEY BAANDEE NORTH RD.



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EXECUTIVE SUMMARY:

Baandee North Road, in the Shire of Kellerberrin is proposed to be widened and upgraded. Therefore the Shire has contracted Santaleuca Consulting to undertake a targeted flora survey of the roadside vegetation from Hearle Road to nearly 3km north of Beresford Road, a distance of 13 kilometres (SLK 10.54 to SLK 23.00).

The focus of the survey is to identify any rare, threatened or priority species which may be present. These species have been identified in various desktop studies and information received from the Department of Water and Environmental Regulation. No species on these lists were found, but one Priority species not found in this area before was found. It is *Aluta aspera* subsp. *localis*. A significant population of this Priority 2 plant was found at, and in the vicinity of gate 1471, Baandee North Road. The population numbers are approximately 100 plus. Plants were found in all areas of the road reserve and extend into the private remnant vegetation. The area surveyed, hosting the plant is approximately 2 hectares amongst highly disturbed ground, but stable, as the disturbances are historical. No further disturbances are likely, except those associated with the proposed road works. The road works are unlikely to disturb the population significantly as most of it is outside the proposed clearing envelope. Further wide-ranging surveying on adjacent private land has not been undertaken at this stage.

The survey used a methodology of scoring that will satisfy both Federal and State environmental agencies and present the evidence in a numerical table of environmental values. The survey area was broken down into 22 vegetation type sections (VT) as the landscape, which was constantly undulating, changed vegetation types often. Each VT was scored independently of the next, resulting in a table of VT numbers, corresponding to an included map for reference.

Additionally, the survey must take account of the Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as it pertains to the Threatened Ecological Communities (TEC) of the Eucalypt Woodlands of the Western Australian Wheatbelt. The scoring methodology is particularly relevant to this legislation and utilises the values set out in the Guidelines for assessing Wheatbelt Woodlands, published by the Department of Environment and Energy.

Although certain sections are categorised as Wheatbelt Woodlands, there are uncertainties on the interpretation of **significant impact** and the confusion surrounding certain species such as *Eucalyptus capillosa*. The species is named as a mallet in the conservation advice, but is actually a mallee. Mallees are not the subject of this legislation. The legislation's supporting conservation advice and assessment guidelines fail to adequately deconstruct the Eucalyptus genus into mallee, which probably should, taxonomically, be redefined as resprouters, as this is what a mallee is. Mallets are trees which do not resprout after fatal incidents.

I therefore, do not make any judgement of the data and do not indicate the likelihood of referral to the Federal Department of Environment and Energy.

METHODOLOGY

Desktop Study

A desktop study of existing geospatial information was undertaken prior to the site visit. This involved using Geographical Information System (GIS) to review existing site digital orthophotos, geology, native and planted vegetation, IBRA classification, Threatened Flora (TF), Priority Flora (PF) and Threatened Ecological Communities (TECs). 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 Wheatbelt Region Operations Officer for Flora & Fauna was conducted to further refine conservation values of interest.

RESULTS

Desktop Study

According to the *Pre_EuropeanVegetationDPIRD_006* shapefile, the relevant section of Baandee North Road runs through the following Beard vegetation associations:

Subregion	Association	Description	Rarity (%)
Avon Wheatbelt AVW01 Merredin	955	Mosaic: Shrublands; scrub-heath (South East Avon) / Shrublands; Allocasuarina campestris thicket	9.52
Avon Wheatbelt AVW01 Merredin	1049	Medium woodland; wandoo, York gum, salmon gum, morrel & gimlet	6.24

A search of the Threatened and Priority Flora Database (TPFL) was undertaken to identify species with a 20km radius of the relevant section of Baandee North Road. This list was augmented by a search of the Nature Map database. The records returned from the Nature Map search are summarised in Table 1 (this search returned a few extra species and records and so this is the result that is listed here). The site had 23 Priority Flora species and 8 Threatened Flora species recorded within a twenty kilometre radius of the survey area.

Beyond these species lists, the area to be surveyed is located in the IBRA subregion, Avon Wheatbelt AVW01 Merredin. This is one of three subregions listed in the Approved Conservation Advice as the location for the *Eucalypt Woodlands of the Western Australian Wheatbelt* Threatened Ecological Community.

Table 1 Records returned by Nature Map search

Taxon	T	P1	P2	P3	P4
<i>Acacia ancistrophylla</i> var. <i>perarcuata</i>				4	
<i>Acacia ataxiphylla</i> subsp. <i>magna</i>	1				
<i>Acacia denticulosa</i>	1				
<i>Acacia merrickiae</i>					4
<i>Acacia phaeocalyx</i>				2	
<i>Acacia sclerophylla</i> var. <i>pilosa</i>			5		
<i>Acacia sclerophylla</i> var. <i>teretiuscula</i>		2			
<i>Amanita grandis</i>			5		
<i>Amanita inculta</i>			7		
<i>Amanita kalamundae</i>				1	
<i>Angianthus micropodioides</i>				1	
<i>Austroparmelina macrospora</i>				1	
<i>Baeckea</i> sp. Tampia Hill		2			
<i>Boronia adamsiana</i>	10				
<i>Conospermum eatoniae</i>				1	
<i>Cryptandra dielsii</i>				14	
<i>Cryptandra stellulata</i>				2	

Table 1 Records returned by Nature Map search

Taxon	T	P1	P2	P3	P4
<i>Eremophila viscida</i>	2				
<i>Eucalyptus leptophylla</i> var. <i>floribunda</i>		1			
<i>Gastrolobium tenue</i>		5			
<i>Grevillea dryandroides</i> subsp. <i>hirsuta</i>	1				
<i>Hakea aculeata</i>	1				
<i>Jacksonia rubra</i>			2		
<i>Lepidium genistoides</i>				2	
<i>Leucopogon amplexans</i>			9		
<i>Melaleuca sciotostyla</i>	1				
<i>Philothea basistyla</i>	16				
<i>Scaevola tortuosa</i>		1			
<i>Stylidium merrallii</i>					1
<i>Synaphea constricta</i>				10	
<i>Thysanotus tenuis</i>				1	

SURVEY METHODOLOGY:

The section of road to be surveyed was then driven, armed with the information gleaned from the desk top study. The road section, measuring 12.46 km is a mosaic of different vegetation associations. Therefore, it was necessary to break the survey into small sections as soil types changed and therefore, vegetation types. The undulating nature of the landform over such a distance presented 15 separate pieces of information. The vegetation

types tended to replicate themselves, depending on whether they occurred in the valleys or higher ground.

Where vegetation types were replicated, they generally exhibited different qualitative values to one another. The results of each section are presented as numerical values corresponding to overstorey, midstorey, and understorey canopy cover, senescence values and weed density. In order to report on the Wheatbelt Woodlands Threatened Ecological Communities component of the survey we have used the methodology recommended in the Approved Conservation Advice issued by the Department of Environment and Energy, 2015.

A table was constructed to represent a percentage value of the salient references required to determine a vegetation block's quality. It will be up to the Department of Environment and Energy to interpret these values during their assessment of the clearing application, if it is found necessary by the Department of Water and Environmental Regulation to have the application referred on.

Each section was walked and the general vegetation type is described as well as scored for the values described above. The list of Threatened and Priority Flora was also used to confirm or deny the presence of these plants. Any flora found which cannot be identified on site or after subsequent desktop study, is sent to the WA Herbarium administered by the Department of Parks and Wildlife (DPAW).

The survey was conducted in accordance with the methodology outlined within the Technical Guidelines for Flora and Vegetation Surveys for Environmental Impact Assessment, issued by the Department of Water and Environmental Regulation (DWER), published in 2016. Within this publication the survey is described as a Reconnaissance Survey.

To represent the results of so many pieces of the jigsaw, the numerical values will be displayed and then a short discussion of the vegetation will follow each line of the table. The pieces will be referred as Vegetation Type (VT) 1,2,3 etc.

GROUND SURVEY RESULTS:

The road survey extended for nearly 13 km from Hearle Road, heading north to approximately 3 kilometres north of Beresford Road. As a whole, the road was generally given a generous road reserve to work with. On average both sides of the road have at least 20 metres of natural vegetation in various degrees of health and quality.

On the east side, an access track, poorly maintained but ever present, runs parallel to the road for the whole length of the road. Various disturbances are apparent on both sides of the road, including access tracks to paddocks, abandoned gravel or sand pits, spoon drains and other unidentified disturbances. In some areas it is assumed paddock fires have escaped and impacted on the vegetation sometimes with negative impacts for future regeneration.

LANDFORM DISCUSSION:

The landform can loosely be described as a mosaic of similar vegetation types replicating themselves over and over as the undulating landscape changes soil types.

The valley floors which are heavy soils of sandy clays or clays usually consist of *Eucalyptus salmonophloia* (Salmon gum) and *Eucalyptus salubris* (Gimlet), occasionally incorporating *Eucalyptus capillosa* (White gum). All three species are listed on the Federal list of species included in Wheatbelt Woodlands Threatened Environmental Communities legislation. As such they are treated separately and scored as to their density in each section. This density along with values for second and under storey species and weed species are used to determine their value as it pertains to this legislation.

Second storey species tend not to be of a great density and species are sparse, but can include *Eremophila drummondii*, *Melaleuca pauperiflora*, *Acacia hemitiles*, *Olearia muelleri*, *Senna artemisioides* and *Rhagodia preissii*. By far the heaviest density is in the understorey of healthy flats. They are generally referred to as chenopods within the report. *Maireana brevifolia* (bluebush), *Atriplex vesicaria* (saltbush), *Enchylaena tomentosa* and *Sclerolaena diacantha*. These are often augmented by *Austrostipa scabra* (speargrass) and *Schoenus hexandrus*. *Austrostipa scabra* will often out compete agricultural grasses in this environment.

As the landform rises slightly, the soils become slightly heavier and shallower and the mallee forms give way to mallee species. Where mallee is specified within the report, they generally comprise a mix of the following Eucalypt species: *E. loxophleba* subsp. *lissophloia*, *E. capillosa* subsp. *polyclada* (the mallee form of White gum), *E. yilgarnensis*, *E. erythronema* and *E. eremophila*. The tree form of *E. capillosa* can also be part of this mix.

When the over storey density is high, very little secondary or understorey is evident and the mallee can completely dominate. Annual species such as *Waitzia acuminata* and other wild flowers will germinate in good rainfall years, but often agricultural weeds will dominate the annual cycle in good rainfall years.

The soil type cycle continues as the ground rises, the sandy granite ecosystems dominated by *Eucalyptus loxophleba* subsp. *lissophloia* (Mallee) and Acacias such as *A. acuminata* and *A. lasiocalyx*, Melaleucas such as *M. uncinata*, *M. eleuterostachya*, *M. acuminata* and *M. cuticularis*. The understorey on this particular road tends to agricultural weeds and native species such as *Waitzia acuminata* are sporadic.

At the brow of most hills yellow clayey sandy gravel tends to dominate. The standout dominant species is *Allocasuarina acutivalvis*. *Allocasuarina corniculata* and *Allocasuarina campestris* also appear sporadically. Although all second storey species normally, the *Allocasuarinas* tend to 4 metres in height and become the overstorey. They are scored as second storey species, and are more accurately described as Sheoak shrubland. These areas are generally in good condition and display a full complement of ecosystem species. Weeds are generally minimal.

The change from this ecosystem to downhill, again, usually involves white sandy clays and *Eucalyptus capillosa* (Mallet form) reappears in a transition zone from gravels to clays. Mallees reappear and can include the tree form of *E. capillosa* at times. As mallees take over again, the tree form disappears and mallees become dominant.

This transition of soils and ecosystems changes constantly and all types can be represented in the space of 1 kilometre.

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT1	60	10	10	80	70	
VT2	40	20	20	80	60	20/ha
VT3	80	20	40	60	50	
VT4	80	30	50	40	20	10/ha
VT5	40	20	60	20	30	
VT6	80	40	20-30	60	15	50/ha
VT7	0	30	10	80	80	
VT8	80	30	20	40	50	2/ha
VT9	90	60	40	20	10	
VT10	90	20	10	10	10	50/ha
VT11	10	70-90	10	10-40	0	10/ha
VT12	90	15	20	60	50	
VT13	2	90	40	80	20	
VT14	60-70	10-20	80	80	25	
VT15	20	40	50	40	80	
VT16	80	30	20	50	70	40/ha
VT17	5	80	60	80	20	
VT18	70	10	30	80	70	
VT19	40	50	20	80	80	
VT20	50-60	50	10	20	10	40/ha
VT21	15	60-70	20	20	20	
VT22	10	30	70	10	10	10/ha



Map showing coloured representations of each VT section on Baandee North Rd., discussed below. Numbering starts in the south below Fisher West Rd at VT1. VT3&4 are directly opposite each other south of Fisher West Rd. Otherwise all numbers rise as the discussion moves north to past Beresford Rd.

VT SECTIONS DISCUSSION:

Each section is discussed below, with their corresponding tabular scores. According to the scoring guide in the Guide to Assessing Western Australian Wheatbelt Woodlands, published by the Federal Government, Department of Environment and Energy scoring a patch is detailed therein. Values attributed by me are based on this guide and pertain to roadside vegetation scoring rather than patch scoring. Condition scoring, based on the numerical scores given in the following tables are: Excellent, Very Good, Good, and Poor.

VT1 : GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT1	60	10	10	80	70	

Mallee Eucalypts dominate this section with minimal second storey. Understorey is a mix of chenopods and agricultural weeds.

VT2: GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT2	40	20	20	80	60	20/ha

The soils harden in the valley to white sandy clays and are dominated by *Eucalyptus capillosa*. Minimal second storey, consisting mostly of *Melaleuca pauperiflora*. Understorey is again chenopods and agricultural weeds.

VT3: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT3	80	20	40	60	50	

Solid mallee overstorey on the west side of road. Chenopods and native grasses make up the understorey with a high density of agricultural weeds.

VT4: EXCELLENT

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT4	80	30	50	40	20	10/ha

On the east side of the same section, *Eucalyptus capillosa* appears as part of the overstorey, otherwise dominated by mallee species.

VT5: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT5	40	20	60	20	30	

Mallee species comprise the overstorey but at a thinner density. High chenopod density.

VT6: EXCELLENT

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT6	80	40	20-30	60	15	50/ha

From Fisher Road West, dominant Eucalyptus overstorey, consisting of *E. salubris*, *E. capillosa*, *E. salmonophloia*, *E. yilgarnensis* and *E. loxophleba* subsp. *lissophloia*. Mallet type at approximately 50 trees per hectare. Light midstorey of *Acacia hemiteles* and *Melaleuca pauperiflora*. Minimal understorey consisting of mainly chenopods and light agricultural weeds. Most of the site has adjacent, similar vegetation on the east side on private land. This is also in similar condition and measures approximately 5 hectares.

VT7: POOR

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT7	0	60	10	80	80	0

Soil changes to granite sands with no overstorey species. Mid storey species are minimal but plentiful, such as *Acacia acuminata* and *A. lasiocalyx*. Section is degraded with a heavy burden of agricultural weeds and minimal native species.

VT8: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT8	80	30	20	40	50	2

Eucalyptus loxophleba subsp. *lissophloia*, *E. yilgarnensis*, *E. capillosa* subsp. *polyclada* overstorey of high density. *Melaleuca uncinata*, *M. eleuterostachya*, *M. cuticularis*, *Acacia acuminata* mid storey and a mix of native annuals such as *Waitzia acuminata* and mixed agricultural weeds make up the second and third storeys. Good condition despite the weed burden. This section has similar vegetation adjacent on private land of approximately 14 hectares.

VT 9: EXCELLENT

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT9	90	60	40	20	10	0

All mallee species as described previously, with relative densities of other associated species changing. Similar vegetation on the east side of approximately 14 hectares shared with VT 8. Extending to section 10, similar vegetation exists in a 20 metre strip on private land on the east side of the road reserve.

VT10: GOOD & VT11: GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT10	90	20	10	10	10	50/ha

Similar to previous but with the addition of *Eucalyptus capillosa* and *E. salubris* to the mix of mallees. This addition to the species mix causes this section to be potentially classified as Wheatbelt Woodland. Similar vegetation is still remnant on the east side, on private land, with a strip with widths between 15–75 metres.

VT12: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT12	90	15	20	60	50	0

Soil change to sandy gravel sees a change of vegetation in this area. Dominant species are *Allocasuarina acutivalvis*, *Al. corniculata*, *Grevillea paradoxa*, *Santalum acuminata*, *Acacia neurophylla*, *Hakea francisiana* with occasional *Eucalyptus leptapoda*. Sedges and annual native grasses including annual herbs complete a very healthy ecosystem, despite numerous historical disturbances, such as gravel pits, Telstra cables and a track on the east side of the road. A Priority 2 taxon, *Aluta aspera* subsp. *localis* was found at this site. The population on the road reserve seems extensive and continues over the width of the road reserve and continues into adjacent remnant vegetation. The population is apparent for all areas under *Allocasuarina acutivalvis* dominant shrubs. Adjacent remnant vegetation of about 30 hectares of similar vegetation surrounds a farm yard, houses, sheds and other farm assets. This area has not been surveyed.

VT13: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT13	2	90	40	80	20	0

Allocasuarina vegetation similar to last site with some *Eucalyptus leptapoda*. Main ground cover is *Austrostipa scabra* annual grasses. The high senesced value is from the *Austrostipa*.

Although an annual native grass, this species has also become an agricultural weed in years where environmental conditions suit.

VT14: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT14	60-70	10-20	80	80	25	0

Mixed *Allocasuarina* second storey and Mallee overstorey. A mosaic reflecting the changing soils from white clayey sands to sandy gravels. From VT 14 to VT 20 the soils tend to go back and forth as the land undulates.

VT15: GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT15	20	40	50	40	80	0

Overstorey thins and *Allocasuarina* to 4 metres re-emerges as dominant.

VT16: GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT16	80	30	20	50	70	40/ha

Land slopes down to heavier white sandy clays supporting *Eucalyptus capillosa* and *E. salmonophloia*. Very little mid storey and understorey dominated by agricultural weeds. Although possibly classed as Wheatbelt Woodland, lack of any other basic structure may impact on its' value.

VT17: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT17	5	80	60	80	20	0

Reverts to sandy gravel and minimum overstorey. *Allocasuarina* takes over again as dominant species. Basic understorey dominated by *Austrostipa scabra* and some agricultural weeds.

VT18: GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT18	70	10	30	80	70	0

Very short section where the mosaic changes back to mallee dominant, with minimal understorey. Mid storey missing and very weedy understorey.

VT19: GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT19	40	50	20	80	80	0

Mixed mallee and Allocasuarina with minimal understorey. Very high agricultural weed load.

VT20: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT20	50-60	50	10	20	10	40/ha

Mixed eucalypts including *Eucalyptus salubris* and *E. capillosa* as mallets and other mallees. Mid storey changes to *Melaluca pauperiflora*, *M. uncinata*, and *Eremophila drummondii*. Understorey very sparse with little in the way of species or weeds.

VT21: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT21	15	60-70	20	20	20	

Soil change back to gravels and Allocasuarina overstorey. Gravel pits adjoin this vegetation area.

VT22: VERY GOOD

Veg Type	Overstorey canopy %	Midstorey canopy %	Understorey canopy %	Senesced %	Weed cover %	Mallet density
VT22	10	30	70	10	10	10/ha

Open *Eucalyptus salmonophloia*, *E. salubris*, and *E. yilgarnensis*. Understorey dominated by *Austrostipa scabra* and *Waitzia acuminata*. Eucalypts are sparse and struggle to attain the density required to meet TEC status.

CONCLUSION:

Baandee North Road has been reconnaissance surveyed for a distance of nearly 13 kilometres. With information gleaned from various sources it was also a targeted survey to check for the existence or otherwise of a list of rare and priority species, which have been found in the past within 20 kilometres of the site. No species on the lists generated and outlined in the desk top survey discussion earlier, were found. One Priority 2 species (*Aluta aspera* subsp. *localis*) was found on the road reserve extending throughout this area where *Allocasuarina acutivalvis* dominates.

The patch is in VT12 and also extends into adjacent private remnant bushland. Surveys have not been carried out on adjacent private land where approximately 30 hectares of similar vegetation exists. Due to the lack of any weed burden in this short vegetation type, it is perhaps advisable to save the topsoils collected from this area during road construction, as a possible seed bank for gravel pit rehabilitation elsewhere. Clearing activity is likely to affect very few of the plants found, which inhabit approximately 2 hectares of surveyed ground amongst historical disturbances such as access to farm yards, an old gravel pit, culverts and old fire breaks. The owners have been spoken to and vow that the remnant existing around the farm yard and house is of high value to them and will not allow any further disturbance to the area. The road upgrade is of course, important to them, but are keen to help preserve the population of *Aluta*.

The road length of 13 kilometres needed to be broken down into 22 vegetation type (VT) sections, due to the ever changing mosaic over distance. Every VT section was numbered and scored. This score allows for a Poor, Good, Very Good, and Excellent value to be placed on it. With these scores, assessments can be made as to its condition and environmental value. This was particularly relevant when presenting evidence pertaining to the Wheatbelt Woodlands Threatened Environmental Communities (TEC). The federal Department of Environment and Energy have declared through the *Environment Protection and Biodiversity Conservation Act 1999*, that any clearing activities which **significantly impact** such woodlands needs to be referred to the federal Department for assessment. As this survey does not have the authority to make such a recommendation, only the evidence is presented. The client will ultimately make this decision or the state Department of Water and Environmental Regulation will decide if a referral is warranted. It is this Department which will assess the Clearing Permit Application in the first instance.

Over the 22 sections vegetation health was generally in the good to very good range and only one section was scored as excellent and only one section scored as poor. A mix of *Allocasuarina acutivalvis* dominated uplands was interspersed with mallees such as *Eucalyptus polyclada*, *E. loxophleba* subsp. *lissophloia*, and *E. yilgarnensis* and mixes of both over the 13 kilometres, with short sections of valley floor mallets such as *Eucalyptus salmonophloia*, *E. salubris*, and *E. capillosa*. In all sections any clearing activities for road widening will leave a substantial 15 to 18 metres of roadside vegetation on both sides. The only anomaly to this are three bends where the road reserve is concentrated to one side of the reserve, leaving the balance of up to 40 metres of vegetation on the opposite side.

Many sections of road reserve had adjacent strips of similar vegetation on private land and in some sections adjacent private vegetation blocks ranged from 5 to 30 hectares.

Discussion on these private remnants are included with VT remarks.

Overall, the vegetation types are typical and in many cases Good to Very Good quality.

Agricultural grasses and *Austrostipa scabra* dominate the understorey generally.

Throughout the survey length, historical disturbances such as an access track on the east side, Telstra cable installation, spoon drains, driveways and access tracks, culverts and gravel pits are common.

END