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# Nungarin North Road, McGregor Road, and Koorda–Bullfinch Road

VEGETATION CONDITION SURVEY

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# **EXECUTIVE SUMMARY**

The Shire of Mukinbudin (the Shire) have a clearing permit application (CPS 10505/1) with the Department of Water and Environmental Regulation (DWER). This application covers approximately 10.8 kilometres of roadside along Nungarin North Road, beginning at the Shire's southern boundary with the Shire of Nungarin and continuing to the intersection with Kununoppin–Mukinbudin Road.

The Shire engaged a botanist to conduct a Declared Rare Flora (DRF) search of the project area road reserves and had the author of this report conduct a survey of vegetation condition and presence/absence of Threatened Ecological Communities (TECs), specifically "Eucalypt Woodlands of the Western Australian Wheatbelt" for the project area.

There is one area of potential "Eucalypt Woodlands of the Western Australian Wheatbelt" TEC present along the surveyed roadsides associated with R 17855, however, no clearing is planned in this section and there will be no impact to the TEC.

The vegetation condition assessed ranged from "Completely degraded" to "Very good," with the majority being "Completely degraded."

# INTRODUCTION

Over the next four financial years, beginning in 2024/25, the Shire of Mukinbudin is being supported by Federal and State funding through the Wheatbelt Secondary Freight Network (WSFN) to upgrade approximately 17 kilometres of road network. The project begins on Nungarin North Road, from the Shire's boundary with the Shire of Nungarin, continuing on McGregor Road, before terminating along Koorda–Bullfinch Road at the western edge of the townsite.

There are approximately 10.8 km along Nungarin North Road, 2.5 km along McGregor Road, and 3.7 km along Koorda–Bullfinch Road that the Shire plans to upgrade.

An initial assessment of the clearing that would be required was undertaken with the Shire's consulting engineer, Tony Saraullo, in June 2023. This assessment indicated that the clearing area required with the standard 8-metre seal on a 10-metre formation (8-on-10) would be approximately 1.8 hectares.

After reviewing the initial assessment it was decided to design the first 5.4 kilometres of Nungarin North Road (from SLK 10.8 to 5.4) as a 9-metre seal on a 9-metre formation (9-on-9). This design change avoided much of the clearing that would be required for the more standard 8-metre seal on a 10-metre formation (8-on-10). The design change reduced the clearing required to 0.4444 hectares, which was the initial application area.

In February 2024, following correspondence between myself and Alice Watt, DWER Environmental Officer (21–23 February 2024), a reduction was made to the application on the basis that some of the initially included vegetation would only be subjected to maintenance activities (generally characterised by descriptions such as, "lopping" or "trimming"), rather than actual clearing. This further reduced the application area to 0.37 hectares.

While all this was progressing, WSFN approved the 9-metre seal on a 9-metre formation (9on-9), on the condition that the same design was employed for the full length of the Nungarin North Road section and continued for the McGregor Road section.

This led to the required footprint width of the road construction to be reduced by 1 metre. A subsequent review of the required clearing with the Shire's consulting engineer, Tony Saraullo, on 11 June 2024, resulted in a final reduction of the application area to 0.1713 hectares.

In anticipation of the requirements of the clearing permit application process, the Shire engaged a consulting botanist, Malcolm Trudgen, to survey the area for Declared Rare Flora species, and to provide advice to this report's author on vegetation condition. Mr Trudgen's report, *A targeted Declared Rare and Priority Flora survey of the verges of sections of three roads near Mukinbudin*, was submitted to DWER alongside the clearing permit application via email on 1 February 2024.

In contrast to Mr Trudgen's report, the focus of this current report is vegetation condition and potential occurrences of the "Eucalypt Woodlands of the Western Australian Wheatbelt" Threatened Ecological Community within the road reserves of the three roads.

This survey is consistent with the EPA's Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (December 2016).

# BACKGROUND

### Scope

The author of this report received a request from the Shire of Mukinbudin to conduct a vegetation survey and assessment of the presence or absence of the "Eucalypt Woodlands of Western Australian Wheatbelt" TEC of the roadsides along the following sections of road:

- Nungarin North Road, SLK 10.8 to 0.0 (south to north);
- McGregor Road, SLK 0.0 to 2.5 (south to north);
- Koorda–Bullfinch Road, SLK 11.9 to SLK 15.6 (west to east).

In the few areas where there was also remnant vegetation adjacent to the road reserve, this was useful in assessing the condition of vegetation in the road reserve. This was because such areas are often less disturbed than the road reserve and the comparison can make a condition assessment easier.

Where appropriate, adjacent patches of remnant vegetation were considered and assessed in terms of being potential TEC habitat.

The whole length of the site was visited four times, as outlined in the section on *Field Investigation* methodology.

### Catchment landscape context

The survey area runs mostly north-south, aside from the short section of Koorda–Bullfinch Road. At varying distances of between 2 and 7.5 kilometres to the east, a salt lake system runs south by south-west. The locally highest areas tend to be approximately the same distance to the west. For the most part, the greatest changes in elevation are to the west, so the survey area coincides with the start of the broad valley floor. However, a section of Nungarin North Road (approximately SLK 1.22 to 4.55) is well within a valley running east-west. Another section of Nungarin North Road (approximately SLK 4.55 to 8.66) is through a section of rapidly changing elevation.

#### Climate

According to the Köppen climate classification, the site lies on the intersection between Cold semi-arid and Hot semi-arid. The climate zone, based on temperature and humidity, is hot dry summer, cold winter

The closest BoM weather station to the northern end of the survey area is in Mukinbudin and has a long-term average annual rainfall of 286.0 mm. However, the data for this station between ~1999–2016 appears incomplete. The average rainfall between 1961–1990 is 300.4 mm.<sup>1</sup>

The closest BoM weather station to the southern end of the survey area is Gum Park and has a long-term average annual rainfall of 301.2 mm.<sup>2</sup>

<sup>&</sup>lt;sup>1</sup> "Monthly rainfall: Mukinbudin," Bureau of Meteorology, accessed 6 December, 2023.

 $http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139\&p_display_type=dataFile\&p_startYear=\&p_c=\&p_stn_num=012011$ 

<sup>&</sup>lt;sup>2</sup> "Monthly rainfall: Gum Park," Bureau of Meteorology, accessed 6 December, 2023. http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p\_nccObsCode=139&p\_display\_type=dataFile&p\_startY ear=&p\_c=&p\_stn\_num=010047

Figure 1. Köppen Climate Classification Map



# Köppen climate type

Cfb (Oceanic)
 Cfa (Humid subtropical)
 Cwa (Humid subtropical)
 Csb (Warm-summer mediterranean)
 Csa (Hot-summer mediterranean)



Figure 2. Surveyed Road Sections



#### Figure 3. Contours and Elevation



#### Geology

The surveyed area lies on the Yilgarn Plateau, the surface of the Yilgarn Craton. According to *RegolithofWA\_500metregridDMIRS\_017.shp*, the site alternates between the following geological types:

- 1. Sandplain, mainly eolian; includes some residual deposits;
- 2. Slope deposits; includes colluvium and sheetwash;
- 3. Alluvium in drainage channels, floodplains, and deltas; and,

4. Exposed rock, saprolite, and saprock.

When compared to the contour map, the geological types broadly follow the gentle undulations along the route, with areas of granite becoming more frequent towards the southern end.

Observations made through the field surveys generally supported these results. For example, as noted by Trudgen: "The section of the road verges sampled mostly traverse a gently undulating plain with slight to moderate relief. A few small areas of sheet granitic outcrop were observed and there were some more pronounced rises adjacent to areas of granitic outcrop or lateritic areas inside the adjoining paddocks.<sup>3</sup>

#### Soils

Much of the soil type is light clay to heavy loam associated with the broad valley floor. Where the elevation rises, the soil tends to become sandier and lighter in colour (generally more pale yellow than grey). Though the lightest the soil becomes is gravelly as there is no deep yellow sand.

At around SLK 6.83 on Nungarin North Road there is an historic gravel pit on the west. At around SLK 5.08 on the same road there is a small granitic outcrop. These features are examples of the kinds of changes in soil type that occur from broad valley floors as the elevation rises.

Soil landscape mapping identifies two soil landscape units (Kellerberrin and Kwolyin) and five subsystem units across the survey area:

- Kellerberrin, Mukinbudin;
- Kwolyin, Kwelkan;
- Kwolyin, Nembudding;
- Kwolyin, Nungarin; and,
- Kwolyin, Yelbeni.<sup>4</sup>

See the results of the desktop study for further discussion of the sites soils.

#### Vegetation

Pre-European Vegetation mapping (Figure 3.) of the survey area has the following Beard structure descriptions and vegetation associations:

<sup>&</sup>lt;sup>3</sup> Malcolm Trudgen (2023). A targeted Declared Rare and Priority Flora survey of the verges of sections of three roads near Mukinbudin. Unpublished report prepared for the Shire of Mukinbudin, 4.

<sup>&</sup>lt;sup>4</sup> Department of Primary Industries and Regional Development. Best\_Available\_Soil\_Mapping\_DPIRD\_027. Shapefile. Data last updated 13-07-2022. <u>https://data-downloads.slip.wa.gov.au/DPIRD-027/Geopackage</u>.

- 1. 8: Woodland other—Wheatbelt; Eucalyptus loxophleba, E. salmonophloia;
- 2. 551: Thicket—Acacia-Allocasuarina-Melaleuca alliance; and,
- 3. 128: Rock.<sup>5</sup>

While broadly correct, the highly cleared nature of the immediate landscape makes it difficult to confirm. However, as discussed in the above two sections, the site has gentle undulations, adjacent granitic intrusions, and a variety of soil types that suggest a more complicated vegetation association mosaic than indicated by the Pre-European Vegetation mapping. This is simply a reflection of the broad nature of the DPIRD mapping and is not unexpected.

#### Land use

The area surveyed is road reserve. The predominant land use of the surrounding area is agricultural, specifically broadacre cropping and livestock (sheep). There are some small areas of granite and remnant vegetation adjacent to the road reserve.

There is an above ground Water Corporation water supply pipeline on the western edge of the Nungarin North Road road reserve from SLK 2.03 to 6.02 (with occasional underground sections where the pipeline crosses agricultural gateways). Initial installation and subsequent maintenance activities associated with this pipeline have, presumably, kept remnant vegetation and regrowth to a minimum.

When assessing the required clearing in this section, the water pipe provides a clear guide any vegetation on the road-side of the pipeline would mostly be cleared and any vegetation on the other side would be unaffected. Changing to a 9-on-9 formation has meant that some vegetation immediately on the road-side of the water pipe no longer requires to be cleared.

# METHODOLOGY

### Desktop study

#### General

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, elevation profiles, soil type, pre-European vegetation, native and planted vegetation, IBRA classification, Threatened Flora (TF), Priority Flora (PF),

<sup>&</sup>lt;sup>5</sup> Department of Primary Industries and Regional Development. Pre\_European\_Vegetation\_DPIRD\_006. Shapefile. Last modified 20-08-2021. <u>https://data-downloads.slip.wa.gov.au/DPIRD-006/Shapefile</u>.

Threatened Ecological Communities (TECs), and available results from Dial Before You Dig/Before You Dig Australia enquiries.

#### TEC

The *1\_SurveyDetails* shape file was buffered by 10 m. The resulting layer was then overlaid on 2020 vegetation extent by Statewide pre-European vegetation mapping<sup>6</sup> layer to identify intersecting areas of remnant vegetation. These results were placed into a shapefile that was then supplemented by reviewing the aerial imagery and manually adding other potential areas of native vegetation.

Once the areas of remnant vegetation were finalised, they were then filtered by size (to identify remnants >2 ha) and cross-referenced with the shapefile of proposed clearing to identify potential impacts.

### **Field Investigation**

#### General

The entire length of each of the roadsides was visited at least four times. The first visit was during the targeted survey undertaken by the consulting botanist, Malcolm Trudgen (10–12 October, 2023). While Mr Trudgen's focus was searching for DRF, vegetation condition was observed and discussed regularly.

The second visit was on 16 October 2023. This visit consisted of the road reserves being driven slowly, with observations and locations recorded.

The third site visit was undertaken on 6 December 2023. This involved two people slowly driving the roadsides. For this site visit, observations regarding condition were recorded for every 100m. The observation area being between the edge of the road and the adjacent fence line. In the few areas where there was not a fence line, observations were made of the nearest vegetation. This was only relevant for the eastern section of Koorda–Bullfinch Road, which was dominated by eucalypts planted as part of historic town-scaping projects. The distance observed was to the far edge of the planted vegetation, generally no more than ~10 m from the edge of the road. The results of this survey are included in Appendix B. Photographs were also taken.

A fourth visit, mainly to take supplementary photographs, was undertaken on 11 January 2024. This involved one person taking photographs of gaps that had been identified when reviewing data from the previous site visits.

Generally, vegetation growing along the fence lines was assumed to be regrowth (aside from large eucalypts) as the area would have been cleared to allow for the fencing to be erected.

<sup>&</sup>lt;sup>6</sup> Data WA. Accessed January 5, 2023. https://catalogue.data.wa.gov.au/dataset/2020-vegetation-extent-by-statewide-pre-european-vegetation-mapping.

In the few areas where there was adjoining remnant vegetation, the presence was noted and used as a comparison to the vegetation being assessed.

#### TEC

Given that road reserves can qualify as areas of "Eucalypt Woodlands of the Western Australian Wheatbelt" TEC if the road reserve is wide enough (5 metres or more<sup>7</sup>), an assessment of the width of the road reserve was made. The road reserves under the survey area are all so narrow as to make it impossible for the road reserve to qualify without being contiguous with an adjacent area of vegetation.<sup>8</sup>

After the adjacent areas of remnant vegetation had been identified through the desktop study, each site was visited on 11 January 2024. During the visits, each site was photographed and assessed for vegetation type. The scope of the visits was to identify potential impact to TECs (specifically the Federally-listed "Eucalypt Woodlands of the Western Australian Wheatbelt") and not to document the extent of TEC within the Shire, so the assessment was conducted for the area of proposed works.

# RESULTS

### Desktop study

#### General

Cross-referencing the *Pre\_EuropeanVegetationDPIRD\_006* shapefile with the spreadsheet, *Vegetation\_Statistics\_Statewide\_2018\_Full\_report*, indicates that all of Nungarin North and Koorda–Bullfinch Roads consist of Woodland other (*Eucalyptus loxophleba, E. salmonophloia*), as does most of McGregor Road. McGregor Road, however, also passes through a patch of *Acacia-Allocasuarina-Melaleuca* alliance. The Beard vegetation associations and percentages remaining are in the table below.

Table 1. System and Vegetation Associations

<sup>&</sup>lt;sup>7</sup> Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt, 23.

<sup>&</sup>lt;sup>8</sup> There is one section of gazetted road reserve that would be wide enough, however, the road in this section is not constructed within the road reserve. See the discussion in the TEC section in the Results portion of the report for more detail.

IBRA Region	IBRA Subregion	System Association	Vegetation Association	Description	Remaining % (System / Vegetation)
		MOORINE ROCK	8	York gum, salmon gum etc.	14.52 / 14.61
Avon Wheatbelt	Merredin	MOORINE ROCK	551	Wattle, casuarina, and teatree. <i>Acacia-</i> <i>Allocasuarina-</i> <i>Melaleuca</i> alliance.	27.54 / 28.12

However, when inspecting the relevant aerial imagery, it appeared likely that the area for "York gum, salmon gum" is overrepresented and that there would be more area of soil types more likely to be better suited to the *Acacia*, *Allocasuarina*, and *Melaleuca* thicket, particularly associated with the areas of granite along Nungarin North Road. Subsequent consultation with the Department of Primary Industries and Regional Development's (DPIRD) Best Available Soil Mapping shapefile<sup>9</sup> supported this conclusion.

 $<sup>^9\</sup> Specifically:\ SoilLandscapeMapping\_WesternAustraliaattributedbyWASoilGroupDPIRD\_076.shp$ 

Figure 4. Pre European Vegetation Along the Three Roads



#### Legend

Wheatbelt Secondary Freight Network Upgrades [28350]

Shire of Mukinbudin Pre\_EuropeanVegetationDPIRD\_006

Eucalyptus salmonophloia,E.salubris,Atriplex spp.,Maireana spp.

Acacia-Allocasuarina-Melaleuca alliance.

Eucalyptus loxophleba,E.salmonophloia.

Rock.

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#### Table 2. Soil Types

Subsystem	Description
Kellerberrin, Mukinbudin	Valley floors, in the central Zone of Ancient Drainage, with calcareous loamy earth and alkaline red loamy duplex (mostly shallow). Woodland.
Kwolyin, Kwelkan	Undulating granitic low hills, in the central Zone of Ancient Drainage, with bare rock, deep sandy duplex (grey and red), shallow sand (red and yellow/brown) and red loamy duplex. York gum-jam woodland.
Kwolyin, Nembudding	Rises and low hills, in the northern Zone of Ancient Drainage, with alkaline red loamy duplex (mostly shallow) and yellow sandy earth. Mallee scrub and woodland.
Kwolyin, Nungarin	Gently undulating plains, in the central Zone of Ancient Drainage, with grey sandy duplex (shallow and deep) and grey shallow loamy duplex (often alkaline). Salmon gum-gimlet-wandoo woodland and mallee scrub.
Kwolyin, Yelbeni	Gently undulating sandplain plain, in the central Zone of Ancient Drainage, with yellow sandy earth (occasionally acid), yellow deep sand, gravel and pale deep sand. Heath, shrubland, and mallee scrub.

### TEC

For the whole length of Nungarin North Road, aside from a section associated with the Kununoppin–Mukinbudin Road intersection, the road reserve is only ~20 metres wide. The road as constructed is a minimum width of 13 metres (existing seal, shoulders, and drains). The road as constructed would need to be distinctly to one side of the road reserve to allow for the minimum width of 5 m to meet the minimum size requirement for the "Eucalypt Woodlands of the Western Australian Wheatbelt" TEC. The road as constructed does not deviate far enough from the centre of the road reserve to for this to occur.

There is also a wider section of road reserve to the west of R 17855, but as noted below, the road in this area has been constructed within the reserve itself and not in the road reserve. This means that an assessment of the presence/absence of the TEC is not dependent on the width of the road reserve, and instead is considered on the vegetation types of R 17855 and R 21364. These two reserves are grouped together under "ID 1" in both Table 3 and Figure 4 because they are contiguous.

McGregor Road is also constructed to a minimum width of 13 metres within a 20-metre road reserve and would not be able to qualify without adjacent remnant vegetation.

Koorda–Bullfinch Road is also constructed to a minimum width of 13 metres within a 20metre road reserve. However, it is bounded on the northern side by a rail reserve which does allow slightly more scope for meeting the width requirement. However, the vegetation is dominated by Acacia species until the planted eucalypt species directly adjacent to the townsite begin. So, the only way for the vegetation in the survey area to meet the minimum size threshold for "Eucalypt Woodlands of the Western Australian Wheatbelt" TEC is through qualifying adjacent remnant vegetation.

The areas of remnant vegetation that were identified during the desktop study and were visited, photographed, and assessed for vegetation type appear in the following maps and table.

Results were filtered by size and potential impact. Three areas larger than 2 hectares were identified as being impacted by the proposed works. However, none of the areas was assessed as being significantly impacted and none were dominated by eucalypt species with a single trunk.

The one area assessed as being significantly impacted was an area too small to qualify (1.7 ha), and it was dominated by mallees with only the occasional mallet-form eucalypt. As at the date of this report, this area will no longer be impacted because an agreement with the landowners could not be reached.<sup>10</sup>

Figure 6. Remnant Vegetation—North Section

<sup>&</sup>lt;sup>10</sup> The author has elected to retain the discussion as written in case the situation with the landowners changes in the next couple of years.





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Figure 7. Remnant Vegetation—South Section



#### Table 3. Remnant Vegetation Adjacent to the Proposed Work Areas

ID	Area (ha)	Source	Impacted by Proposed Works?	Quantum of Impact	Significant Impact	Vegetation Type
1	34.751	Shape file	No	Nil	No	Eucalypt woodlands in the south. Grading to mallee and then quickly to <i>Acacia-Hakea-Grevillea</i> associated with granite. Potential to grade back to eucalypt in the north-east corner.
2	1.2367	Shape file	No	Nil	No	Mostly Hakea recurva and Grevillea paniculata regrowth.
3	10.8073	Shape file	Yes	161.34 m2	No	Predominantly multi-stemmed mallee. Occasional single-stemmed eucalypt. Abrupt change to <i>Acacia-Melaleuca</i> woodland in the south.
4	7.8235	Shape file	No	Nil	No	Mostly mallee with pockets of Acacia woodland.
5	5.6329	Shape file	No	Nil	No	Mostly mallee with pockets of Acacia woodland.
6	3.9245	Shape file	No	Nil	No	Planted mallee with the occasional remnant single-stemmed eucalypt.
7	1.7234	Shape file	Yes	<del>3,173 m2</del>	<del>Yes</del>	Remnant mallee. Occasional single-stemmed eucalypt. Please see discussion on page 15.
8	0.3585	Shape file	No	Nil	No	Predominantly mallee, with occasional single-stemmed eucalypt.
9	0.8704	Shape file	No	Nil	No	Historically cleared with regrowth. Occasional remnant single- stemmed eucalypt increasing to the west, but none inside the survey area.

10	3.1455	Shape file	No	Nil	No	Mallee, grading towards single-stemmed eucalypts but none in the survey area.
11	10.4165	Aerial Imagery	Yes	39.55 m2	No	Occasional eucalypt, mostly mallee. Grading to eucalypt further west.
12	0.8062	Aerial Imagery	No	Nil	No	Mallee, some single-stemmed. Under- and mid-storey grazed out.
13	3.2961	Aerial Imagery	Yes	288.26 m2	No	Granite
14	2.0113	Aerial Imagery	No	Nil	No	Granite
15	0.9288	Aerial Imagery	No	Nil	No	Planted mallees. Floodway.
16	0.3305	Aerial Imagery	No	Nil	No	Historically cleared, some mallee regrowth.

## **Field Investigation**

### General

Most of the surveyed roadsides were completely degraded. The road reserves were almost exclusively less than three metres wide. Aside from large remnant eucalypts almost all of the other native vegetation is likely to be regrowth because the area would have been cleared to allow for the boundary fencing to be erected. The construction of most of the fences was decades ago, but even so, the species that have regrown are generally pioneer species and not truly representative of the pre-European vegetation.

Where there is adjacent remnant vegetation, there was the potential for the roadside to be in better condition.

#### Rare and Priority Flora

Rare and priority flora were covered by Malcolm Trudgen's report, A Targeted Declared Rare and Priority Flora Survey of the Verges of Sections of Three Roads Near Mukinbudin (November 2023).

Mr Trudgen noted that, "No Declared Rare Flora species were recorded in the study area."<sup>11</sup>

### TEC

No impacts to TECs were identified. The area surveyed was too narrow to qualify as "Eucalypt Woodlands of the Western Australian Wheatbelt" on its own. Visiting areas of adjacent remnant vegetation indicated that there was one area that would likely be considered "Eucalypt Woodlands of the Western Australian Wheatbelt" and that is an area alongside Nungarin North Road, south of the Dandanning Road intersection—R 17855.

This area is also complicated by the fact that the road was historically constructed outside of the road reserve, encroaching on R 17855 (there is another reserve at the north-west corner of R 17855 through which the constructed road also passes, R 21364).

According to the shapefile data, the agency responsible for R 17855 is DWER and the agency responsible for R 21364 is the Department of Education.

Fortunately, no clearing works are proposed within the areas of either reserve.

#### **Photos**

Photographs have been submitted to DWER separately.

<sup>&</sup>lt;sup>11</sup> Trudgen, 15.

# CONCLUSION

Due to the narrow width of the road reserve, clearing for the original roadworks, clearing for fencing of the adjoining farmland and the water pipeline, it is likely that apart from some larger eucalypt trees the native flora now in the road reserve is regrowth. Given the degree of clearing in the Shire and wheat belt such regrowth can have significant value for flora and fauna.

However, a significant proportion of the approximately 17 km of roadsides and associated adjacent remnant vegetation of Nungarin North, McGregor, and Koorda–Bullfinch roads is dominated by agricultural weeds and planted exotic species (generally eucalypts not native to the site). In some areas the regrowth of native species is sufficient to provide value for fauna (possibly especially birds moving through the area). In a few areas (such as a location for "*Baeckea exserta*" there is better regrowth as the (lateritic or granitic) soil was less amenable to clearing. *Acacia* species were prominent in the regrowth, but in places *Grevillea paniculata* was also noteworthy. Such regrowth as there is in the survey area is almost too species poor to be considered as remnant vegetation.

Significantly, due to the type road construction proposed very little of the regrowth will be impacted by the redevelopment

Rating	Length Along Nungarin North Road	Area (m <sup>2</sup> ) of Proposed Impact	Length Along McGregor Road	Area (m <sup>2</sup> ) of Proposed Impact	Length Along Koorda– Bullfinch Road	Area (m <sup>2</sup> ) of Proposed Impact
Completely Degraded	18.6	3,566.8	2.9		7.2	
Completely Degraded to Degraded	0.7	391.1	_		0.3	
Degraded	1.3	319.6	0.7		0.1	
Degraded to Good	0.1	0	0.2		_	
Good	0.2	41.7	1.2		_	
Good to Very Good	0.2	0	_		_	
Very Good	0.5	119.7	_		0.2	
TOTAL	21.6	4,438.9	5.0		7.8	

Table 4. Proposed Clearing Area by Vegetation Condition per Road at time of Application

Rating	Length Along Nungarin North Road	Area (m <sup>2</sup> ) of Proposed Impact	Length Along McGregor Road	Area (m <sup>2</sup> ) of Proposed Impact	Length Along Koorda– Bullfinch Road	Area (m <sup>2</sup> ) of Proposed Impact
Completely Degraded	18.6	1,512.6	2.9		7.2	
Completely Degraded to Degraded	0.7	84.2	_		0.3	
Degraded	1.3	116.2	0.7		0.1	
Degraded to Good	0.1	0	0.2		_	
Good	0.2	0	1.2		_	
Good to Very Good	0.2	0	_		_	
Very Good	0.5	0	_		0.2	
TOTAL	21.6	1,713.0	5.0		7.8	

Table 5. Proposed Updated Clearing Area by Vegetation Condition per Road

# **APPENDIX A-Condition Score to Keighery Scale**

Table 6. Score to Condition

Score	Condition
0	Completely Degraded
1	Completely Degraded to Degraded
2	Degraded
3	Degraded to Good
4	Good
5	Good to Very Good
6	Very Good
7	Very Good to Excellent
8	Excellent
9	Excellent to Pristine
10	Pristine

#### Table 7. Condition Descriptions

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without

	intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

# **APPENDIX B-Condition Scores per 100m**

Start	End	Score	Comments	VegCond
SLK	SLK			
0.0	0.1	0	Cleared	Completely Degraded
0.1	0.2	0	Cleared	Completely Degraded
0.2	0.3	0	Cleared, occasional regrowth	Completely Degraded
0.3	0.4	0	Cleared, occasional regrowth	Completely Degraded
0.4	0.5	1	Cleared except for patch of	Completely Degraded to
			Eucalypts, separated by Acacia	Degraded
			regrowth	
0.5	0.6	0	Cleared, occasional regrowth	Completely Degraded
0.6	0.7	0	Cleared, occasional regrowth	Completely Degraded
0.7	0.8	0	Cleared, occasional regrowth	Completely Degraded
0.8	0.9	0	Cleared, occasional Acacia regrowth	Completely Degraded
0.9	1.0	0	Cleared, occasional regrowth	Completely Degraded
1.0	1.1	0	Cleared, occasional regrowth	Completely Degraded
1.1	1.2	0	Cleared, occasional regrowth	Completely Degraded
1.2	1.3	0	Cleared	Completely Degraded
1.3	1.4	0	1 Eucalypt, cleared	Completely Degraded
1.4	1.5	0	Cleared, some regrowth	Completely Degraded
1.5	1.6	0	Cleared, some regrowth	Completely Degraded
1.6	1.7	0	Cleared, some regrowth	Completely Degraded
1.7	1.8	0	Cleared. Some regrowth	Completely Degraded
1.8	1.9	0	Cleared. Some regrowth	Completely Degraded
1.9	2.0	0	Cleared	Completely Degraded
2.0	2.1	1	Cleared, a line of Eucalypts. Water	Completely Degraded to
			pipe.	Degraded
2.1	2.2	1	Cleared, a line of Eucalypts.	Completely Degraded to
				Degraded

 Table 8. Nungarin North Road Condition Scores—West Side

Start	End	Score	Comments	VegCond
SLK	SLK			
	0.0	1		
2.2	2.3		Cleared, a line of Eucalypts.	Completely Degraded to
2.2	2.4	1		Degraded
2.3	2.4		Cleared, I line of Eucalypts.	Completely Degraded to
2.4	2.5	1		Degraded
2.4	2.5	1	Cleared, 1 line of Eucalypts.	Completely Degraded to
2.5	26	1	Classed 1 line of Eucolema	Degraded
2.5	2.0	1	Cleared, 1 line of Eucarypts.	Completely Degraded to
26	27	0	Cleared	Completely Degraded
2.0	2.7	0	Cleared acida from 2 Eucelynta	Completely Degraded
2.7	2.8	0	Cleared, aside from 2 Eucalypts	Completely Degraded
2.8	2.9	1	Cleared, a line of Eucarypis.	Completely Degraded to
2.0	2.0	0	Cleaned	Degraded
2.9	3.0 2.1	0	Cleared	Completely Degraded
3.0	3.1	0	Cleared	Completely Degraded
3.1	3.2	0	Cleared	Completely Degraded
3.2	3.3	1	Plenty of remnant Eucalypts	Completely Degraded to
2.2	2.4	0		Degraded
3.3	3.4	0	Cleared	Completely Degraded
3.4	3.5	1	Cleared, I line of Eucalypts.	Completely Degraded to
2.5	2.6	1		Degraded
3.5	3.6		Cleared, I line of Eucalypts.	Completely Degraded to
2.6	27	0		Degraded
3.6	3.7	0	Cleared	Completely Degraded
3.7	3.8	1	Cleared, I line of Eucalypts.	Completely Degraded to
2.0	2.0	1		Degraded
3.8	3.9	1	Cleared, line of remnant Eucalypts	Completely Degraded to
2.0	4.0	0	Changel	Degraded
3.9	4.0	0	Cleared	Completely Degraded
4.0	4.1	0	Cleared	Completely Degraded
4.1	4.2	0	Cleared	Completely Degraded
4.2	4.3	0	Cleared	Completely Degraded
4.3	4.4	0	1 Eucalypts, historic clearing, some	Completely Degraded
	4.7	0	regrowth	
4.4	4.5	0	Cleared, I group of Eucalypts.	Completely Degraded
4.5	4.6	0	Cleared	Completely Degraded
4.6	4.7	0	Historic clearing, some Eucalypts	Completely Degraded
4.7	4.8	0	Historically cleared, regrowth	Completely Degraded
4.8	4.9	1	Parkland cleared, historic clearing,	Completely Degraded to
			some regrowth, 1 Eucalypt.	Degraded

Start	End	Score	Comments	VegCond
SLK	SLK			
4.9	5.0	1	Parkland cleared, historic clearing,	Completely Degraded to
	5.0	1	some regrowth. 1 Eucalypt.	Degraded
5.0	5.1	0	Cleared, water pipe, granite	Completely Degraded
5.1	5.2	0	Parkland cleared water pipe	Completely Degraded
5.2	53	1	Parkland cleared, water pipe	Completely Degraded to
5.2	5.5		i arkiand creared, water pipe	Degraded
5.3	5.4	2	Remnant Eucalypts over regrowth	Degraded
			and water pipe	
5.4	5.5	1	Historically cleared, regrowth, water	Completely Degraded to
			pipe	Degraded
5.5	5.6	0	Cleared, water pipe	Completely Degraded
5.6	5.7	0	Cleared, water pipe	Completely Degraded
5.7	5.8	1	Remnant Eucalypts, Parkland	Completely Degraded to
			cleared, water pipe.	Degraded
5.8	5.9	1	Remnant Eucalypts, Parkland	Completely Degraded to
			cleared, water pipe.	Degraded
5.9	6.0	1	Parkland cleared	Completely Degraded to
				Degraded
6.0	6.1	0	Cleared	Completely Degraded
6.1	6.2	0	Cleared, some regrowth	Completely Degraded
6.2	6.3	2	Some Allocasuarina, Grevillea	Degraded
			Paradoxa?, Some Mallee, Acacia	
6.3	6.4	1	Some Mallee, some <i>Hakea</i> , some	Completely Degraded to
			Quandong	Degraded
6.4	6.5	1	Historic clearing, some Eucalypts	Completely Degraded to
				Degraded
6.5	6.6	1	Historic clearing, some Eucalypts	Completely Degraded to
				Degraded
6.6	6.7	1	Historic clearing, some Eucalypts	Completely Degraded to
				Degraded
6.7	6.8	0	Remnant Mallee at one end, weeds	Completely Degraded
			the rest	
6.8	6.9	1	Historically cleared, some regrowth.	Completely Degraded to
			No overstory or understory.	Degraded
6.9	7.0	1	Historically cleared, some regrowth.	Completely Degraded to
			No overstory or understory.	Degraded
7.0	7.1	1	Historically cleared, some regrowth.	Completely Degraded to
			No overstory or understory.	Degraded

Start SLK	End SLK	Score	Comments	VegCond
7.1	7.2	1	Historically cleared, some regrowth.	Completely Degraded to
			No overstory or understory.	Degraded
7.2	7.3	0	Cleared. Bluebush regrowth	Completely Degraded
7.3	7.4	1	Historically cleared, some regrowth.	Completely Degraded to
			No overstory or understory. 1	Degraded
			Eucalypt.	
7.4	7.5	1	Historically cleared, some regrowth.	Completely Degraded to
			No overstory or understory.	Degraded
7.5	7.6	1	Historically cleared, some regrowth.	Completely Degraded to
			No overstory or understory.	Degraded
7.6	7.7	1	Historically cleared, some regrowth.	Completely Degraded to
		_	No overstory or understory.	Degraded
7.7	7.8	2	Eucalyptus over Acacia and	Degraded
			Saltbush. Weeds either side.	
7.8	7.9	6	Eucalypts	Very Good
7.9	8.0	6	Eucalypts	Very Good
8.0	8.1	6	Eucalypts	Very Good
8.1	8.2	6	Eucalypts	Very Good
8.2	8.3	6	Eucalypts	Very Good
8.3	8.4	5	Few weeds, historic disturbance,	Good to Very Good
			mature regrowth	
8.4	8.5	4	Historically cleared, regrowth	Good
8.5	8.6	0	Cleared	Completely Degraded
8.6	8.7	0	Cleared	Completely Degraded
8.7	8.8	0	Cleared	Completely Degraded
8.8	8.9	0	Cleared	Completely Degraded
8.9	9.0	0	Cleared	Completely Degraded
9.0	9.1	2	Small patch of remnant Mallee.	Degraded
			Weed understory	
9.1	9.2	0	Some regrowth, historically cleared	Completely Degraded
9.2	9.3	0	Some regrowth, historically cleared	Completely Degraded
9.3	9.4	0	Some regrowth, historically cleared.	Completely Degraded
			1 Eucalyptus	
9.4	9.5	0	Some regrowth, historically cleared	Completely Degraded
9.5	9.6	0	Some regrowth, historically cleared.	Completely Degraded
			1 Eucalyptus	
9.6	9.7	0	Some regrowth, historically cleared	Completely Degraded
9.7	9.8	0	Some regrowth, historically cleared	Completely Degraded
9.8	9.9	0	Some regrowth, historically cleared	Completely Degraded

Start SLK	End SLK	Score	Comments	VegCond
9.9	10.0	0	Some regrowth, historically cleared	Completely Degraded
10.0	10.1	0	Some regrowth, historically cleared	Completely Degraded
10.1	10.2	0	Some regrowth, historically cleared	Completely Degraded
10.2	10.3	0	Cleared	Completely Degraded
10.3	10.4	0	Some regrowth, historically cleared	Completely Degraded
10.4	10.5	0	Parkland cleared	Completely Degraded
10.5	10.6	0	Some regrowth, historically cleared	Completely Degraded
10.6	10.7	0	Some regrowth, historically cleared	Completely Degraded
10.7	10.8	0	Some regrowth, historically cleared	Completely Degraded

#### Table 9. Nungarin North Road Condition Scores—East Side

Start	End	Score	Comments	VegCond
SLK	SLK			
0.0	0.1	0		Completely Degraded
0.1	0.2	0		Completely Degraded
0.2	0.3	0		Completely Degraded
0.3	0.4	1	Very narrow, weeds, occasional	Completely Degraded to
			remnant Eucalyptus, and Acacia	Degraded
0.4	0.5	1	Very narrow, weeds, occasional	Completely Degraded to
			remnant Eucalypt, Senna and	Degraded
			Acacia	
0.5	0.6	0	Completely cleared, Quandong	Completely Degraded
			regrowth	
0.6	0.7	0	Completely cleared, Quandong	Completely Degraded
			regrowth	
0.7	0.8	0	Parkland cleared	Completely Degraded
0.8	0.9	0	Parkland cleared	Completely Degraded
0.9	1.0	1	Planted Eucalypts, occasional	Completely Degraded to
			remnant Eucalypt	Degraded
1.0	1.1	1	Planted Eucalypts, occasional	Completely Degraded to
			remnant Eucalypt	Degraded
1.1	1.2	1	Planted Eucalypts, occasional	Completely Degraded to
			remnant Eucalypt	Degraded
1.2	1.3	0		Completely Degraded
1.3	1.4	0		Completely Degraded
1.4	1.5	1	Senna and Saltbush regrowth,	Completely Degraded to
			historically cleared.	Degraded

Start	End	Score	Comments	VegCond
SLK	SLK			
1.5	1.6	1	Planted Eucalypts, some Acacia,	Completely Degraded to
			Melaleuca Degraded	
1.6	1.7	1	Planted Eucalypts, Senna	Completely Degraded to
			regrowth, Acacia, Melaleuca	Degraded
1.7	1.8	1	Planted Eucalypts, Acacia	Completely Degraded to
			regrowth	Degraded
1.8	1.9	1	Planted Eucalypts, Saltbush, and	Completely Degraded to
			Wild Oats, occasional Austrostipa	Degraded
1.9	2.0	1	Planted Eucalypts, Saltbush, and	Completely Degraded to
			Wild Oats, occasional Austrostipa	Degraded
2.0	2.1	1	Planted Eucalypts, Saltbush, and	Completely Degraded to
			Wild Oats, occasional Austrostipa	Degraded
2.1	2.2	0	Parkland cleared, Eucalypts	Completely Degraded
			planted	
2.2	2.3	0	Cleared and weeds	Completely Degraded
2.3	2.4	1	Remnant Eucalypts, weeds, and	Completely Degraded to
			occasional Acacia regrowth	Degraded
2.4	2.5	0	Acacia regrowth	Completely Degraded
2.5	2.6	0	Parkland cleared, remnant	Completely Degraded
			Eucalypts	
2.6	2.7	0	Parkland cleared, remnant	Completely Degraded
			Eucalypts	
2.7	2.8	0	Parkland cleared, Eucalypts	Completely Degraded
			remnant	
2.8	2.9	0	Parkland cleared, Eucalypts	Completely Degraded
			remnant	
2.9	3.0	0	Completely cleared, weeds	Completely Degraded
3.0	3.1	0	Parkland cleared, 1 planted	Completely Degraded
			Eucalypts, Senna regrowth	
3.1	3.2	0	Parkland cleared, Bluebush	Completely Degraded
			understory, weeds	
3.2	3.3	0	Completely cleared, Bluebush	Completely Degraded
			regrowth	
3.3	3.4	0	Completely cleared, Bluebush	Completely Degraded
			regrowth	
3.4	3.5	0	Acacia, Senna regrowth. 1	Completely Degraded
			Eucalyptus.	
3.5	3.6	0	Completely cleared, Bluebush	Completely Degraded
3.6	3.7	0	Completely cleared, Bluebush Completely Degrad	

Start	End	Score	Comments	VegCond	
SLK	SLK				
3.7	3.8	0	Completely cleared, Bluebush	Completely Degraded	
3.8	3.9	0	Completely cleared, Bluebush	Completely Degraded	
3.9	4.0	0	Completely cleared, Bluebush	Completely Degraded	
4.0	4.1	0	Parkland cleared, planted Eucalypts	Completely Degraded	
4.1	4.2	0	1 remnant Eucalypts	Completely Degraded	
4.2	4.3	0	Parkland cleared, 1 remnant Eucalypts	Completely Degraded	
4.3	4.4	0	Acacia, Senna regrowth, and Bluebush	Completely Degraded	
4.4	4.5	0	Weeds	Completely Degraded	
4.5	4.6	0	Parkland cleared	Completely Degraded	
4.6	4.7	0	Parkland cleared	Completely Degraded	
4.7	4.8	0	Parkland cleared	Completely Degraded	
4.8	4.9	0	Parkland cleared	Completely Degraded	
4.9	5.0	1	Parkland cleared	Completely Degraded to Degraded	
5.0	5.1	1	Parkland cleared	Completely Degraded to Degraded	
5.1	5.2	1	Historically cleared, Mallee regrowth to 4m	Completely Degraded to Degraded	
5.2	5.3	1	Parkland cleared	Completely Degraded to Degraded	
5.3	5.4	1	Parkland cleared	Completely Degraded to Degraded	
5.4	5.5	0	Parkland cleared	Completely Degraded	
5.5	5.6	0	Completely cleared, weeds	Completely Degraded	
5.6	5.7	0	Completely cleared, weeds	Completely Degraded	
5.7	5.8	0	Completely cleared, weeds	Completely Degraded	
5.8	5.9	1	Parkland cleared, Eucalyptus remnant	Completely Degraded to Degraded	
5.9	6.0	0	Parkland cleared, Eucalyptus remnant, <i>Acacia</i> and <i>Hakea</i> .	Completely Degraded	
6.0	6.1	0	Cleared and weeds	Completely Degraded	
6.1	6.2	0	Historically cleared (purple flower photo)	Completely Degraded	
6.2	6.3	0	Historically cleared, some regrowth	Completely Degraded	

Start SLK	End SLK	Score	Comments	VegCond
6.3	6.4	0	Parkland cleared, plantedCompletely DegradedEucalypts	
6.4	6.5	0	Some regrowth	Completely Degraded
6.5	6.6	0	Parkland cleared	Completely Degraded
6.6	6.7	0	Parkland cleared, 2 Mallee	Completely Degraded
6.7	6.8	0	Historically cleared, some native grasses, mostly weeds	Completely Degraded
6.8	6.9	1	Historically cleared, regrowth to 3m. <i>Calothamnus gilesii</i>	Completely Degraded to Degraded
6.9	7.0	1	Historically cleared, regrowth to 3m. <i>Calothamnus gilesii</i>	Completely Degraded to Degraded
7.0	7.1	0	Cleared, weeds	Completely Degraded
7.1	7.2	0	Parkland cleared, <i>Acacia</i> (spiky one)	Completely Degraded
7.2	7.3	0	Occasional regrowth	Completely Degraded
7.3	7.4	0	Occasional regrowth	Completely Degraded
7.4	7.5	1	Parkland cleared	Completely Degraded to Degraded
7.5	7.6	1	Historically cleared, some regrowth 2m	Completely Degraded to Degraded
7.6	7.7	2	Remnant Eucalypts over Saltbush, grasses, weeds	Degraded
7.7	7.8	2	Remnant Eucalypts over Saltbush, grasses, weeds	Degraded
7.8	7.9	2	Remnant Eucalypts over Saltbush, grasses, weeds	Degraded
7.9	8.0	2	Remnant Eucalypts over Saltbush, grasses, weeds	Degraded
8.0	8.1	2	Remnant Eucalypts over Saltbush, grasses, weeds	Degraded
8.1	8.2	1	Remnant Eucalypts over Saltbush, grasses, weeds	Completely Degraded to Degraded
8.2	8.3	1	Remnant Eucalypts over Saltbush, grasses, weeds	Completely Degraded to Degraded
8.3	8.4	2	Remnant Eucalypts over Saltbush, grasses, weeds	Degraded
8.4	8.5	1	Historically cleared, <i>Grevillea</i> <i>paniculata</i> regrowth to 1.5m	Completely Degraded to Degraded
8.5	8.6	0	Completely cleared	Completely Degraded

Start	End	Score	Comments	VegCond
SLK	SLK			Ŭ
8.6	8.7	0	Hakea recurva regrowth	Completely Degraded
8.7	8.8	0	Hakea recurva regrowth	Completely Degraded
8.8	8.9	0	Hakea recurva regrowth	Completely Degraded
8.9	9.0	0	Grevillea paniculata regrowth	Completely Degraded
9.0	9.1	0	Parkland cleared, occasional	Completely Degraded
			Eucalyptus	
9.1	9.2	5	Sparse Eucalypt woodland, over	Good to Very Good
			saltbush, wild oats	
9.2	9.3	4	Sparse Eucalypt woodland, over	Good
			saltbush, wild oats	
9.3	9.4	3	Sparse Eucalypt woodland, over	Degraded to Good
			saltbush, wild oats	
9.4	9.5	1	Parkland cleared, Acacia-Senna	Completely Degraded to
			regrowth, and Bluebush	Degraded
9.5	9.6	0	Parkland cleared	Completely Degraded
9.6	9.7	2	Parkland cleared	Degraded
9.7	9.8	1	Historically cleared, Senna	Completely Degraded to
			regrowth 2m	Degraded
9.8	9.9	2	Parkland cleared, Senna regrowth	Degraded
			2m. Occasional Eucalypts	
9.9	10.0	0	Granite and cleared	Completely Degraded
10.0	10.1	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded
10.1	10.2	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded
10.2	10.3	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded
10.3	10.4	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded
10.4	10.5	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded
10.5	10.6	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded
10.6	10.7	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded
10.7	10.8	1	Historically cleared, some	Completely Degraded to
			regrowth	Degraded

Table 10.	McGregor .	Road	Condition	Scores-	West	Side
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Start	End	Score	Comments	VegCond
SLK	SLK			
0.0	0.1	0	1 Eucalypt, cleared	Completely Degraded
0.1	0.2	0	Cleared, some regrowth	Completely Degraded
0.2	0.3	0	Cleared, some regrowth	Completely Degraded
0.3	0.4	0	Cleared, some regrowth	Completely Degraded
0.4	0.5	0	Cleared, some regrowth	Completely Degraded
0.5	0.6	0	Cleared, some regrowth	Completely Degraded
0.6	0.7	0	Cleared, some regrowth	Completely Degraded
0.7	0.8	1	Cleared, line of remnant	Completely Degraded to
			Eucalypts	Degraded
0.8	0.9	0	Cleared, grasses	Completely Degraded
0.9	1.0	0	Cleared, grasses	Completely Degraded
1.0	1.1	1	Some Eucalypts, some saltbush,	Completely Degraded to
			some grasses	Degraded
1.1	1.2	0	Cleared, grasses	Completely Degraded
1.2	1.3	1	Remnant Eucalypts, some	Completely Degraded to
			regrowth, grasses	Degraded
1.3	1.4	1	Remnant Eucalypts, some	Completely Degraded to
			regrowth, grasses	Degraded
1.4	1.5	0	Historically cleared, some	Completely Degraded
			regrowth	
1.5	1.6	2	Historically cleared, Eucalypts	Degraded
			over grasses	
1.6	1.7	1	Historically cleared, good	Completely Degraded to
			regrowth	Degraded
1.7	1.8	4	Eucalypt and understory	Good
			associated with joining remnant	
1.8	1.9	4	Eucalypt and understory	Good
			associated with joining remnant	
1.9	2.0	4	Eucalypt and understory	Good
2.0	2.1	4	Eucalypt and understory	Good
2.1	2.2	0	Historically cleared	Completely Degraded
2.2	2.3	1	Historically cleared, 1 Eucalypt	Completely Degraded to
				Degraded
2.3	2.4	0	Cleared, weeds	Completely Degraded
2.4	2.5	3	1 Eucalypt associated with	Degraded to Good
			remnant. Historic clearing.	

Start	End	Score	Comments	VegCond
SLK	SLK			
0.0	0.1	0	Cleared, some regrowth	Completely Degraded
0.1	0.2	0	Historic clearing, some regrowth Completely Degrad	
0.2	0.3	0	Historic clearing, some regrowth	Completely Degraded
0.3	0.4	0	Historic clearing, some regrowth	Completely Degraded
0.4	0.5	0	Historic clearing, some regrowth	Completely Degraded
0.5	0.6	1	Historic clearing, Eucalypts over	Completely Degraded to
			Saltbush, some Acacia regrowth.	Degraded
			More weeds.	
0.6	0.7	2	Historic clearing, Eucalypts over	Degraded
			Saltbush, some Acacia regrowth.	
			More weeds.	
0.7	0.8	2	Historic clearing, Eucalypts over	Degraded
			Saltbush, some Acacia regrowth	
0.8	0.9	2	Historic clearing, Eucalypts over	Degraded
			Saltbush, some Acacia regrowth	
0.9	1.0	2	Historic clearing, Eucalypts over	Degraded
			Saltbush, some Acacia regrowth	
1.0	1.1	2	Historic clearing, Eucalypts over	Degraded
			Saltbush, some Acacia regrowth	
1.1	1.2	1	Historic clearing, 1 Eucalypt	Completely Degraded to
				Degraded
1.2	1.3	4	Eucalyptus over Saltbush and	Good
			grasses, occasional Acacia.	
			Associated with joining remnant.	
1.3	1.4	4	Eucalyptus over Saltbush and	Good
			grasses, occasional Acacia.	
			Associated with adjoining	
			remnant.	
1.4	1.5	4	No Eucalypts, Saltbush and	Good
			grasses.	
1.5	1.6	4	No Eucalypts, Saltbush and	Good
			grasses.	
1.6	1.7	4	Eucalypts over Saltbush and	Good
			grasses, occasional Acacia.	
			Associated with adjoining	
			remnant.	
1.7	1.8	4	Eucalypts over Saltbush and	Good
			grasses, occasional Acacia	

1.8	1.9	4	Eucalypts over Saltbush and grasses, occasional <i>Acacia</i>	Good
1.9	2.0	3	Remnant Eucalypts over Saltbush and grasses. Historic clearing.	Degraded to Good
2.0	2.1	1	Planted Eucalypts over Saltbush	Completely Degraded to
			and grasses	Degraded
2.1	2.2	2	Remnant Eucalypts over Saltbush	Degraded
			and grasses. Historic clearing.	
2.2	2.3	1	2 Eucalypts, cleared	Completely Degraded to
				Degraded
2.3	2.4	4	Associated with a joining remnant	Good
2.4	2.5	0	Cleared	Completely Degraded

Table 12. Koorda–Bullfinch Road Condition Scores–North Side

Start	End	Score	Comments	VegCond
SLK	SLK			
11.8	11.9	0	Completely cleared, weeds	Completely Degraded
11.9	12.0	2	Acacia, eucalypt regrowth	Degraded
12.0	12.1	0	Completely cleared, weeds	Completely Degraded
12.1	12.2	0	Completely cleared, weeds	Completely Degraded
12.2	12.3	0	Completely cleared, weeds	Completely Degraded
12.3	12.4	0	Completely cleared, weeds	Completely Degraded
12.4	12.5	1	Some Eucalypts, some Acacia,	Completely Degraded to
			mostly weeds (wild oats)	Degraded
12.5	12.6	1	Some Acacia, mostly weeds (wild	Completely Degraded to
			oats)	Degraded
12.6	12.7	1	Some Acacia, mostly weeds (wild	Completely Degraded to
			oats)	Degraded
12.7	12.8	1	Some Acacia, mostly weeds (wild	Completely Degraded to
			oats)	Degraded
12.8	12.9	1	Some Acacia, mostly weeds (wild	Completely Degraded to
			oats)	Degraded
12.9	13.0	1	Some Acacia, mostly weeds (wild	Completely Degraded to
			oats). Historically cleared (Back	Degraded
			to 12.6)	
13.0	13.1	0	Historically cleared, just weeds.	Completely Degraded
13.1	13.2	0	Historically cleared, just weeds.	Completely Degraded
13.2	13.3	0	Historically cleared, just weeds.	Completely Degraded
13.3	13.4	0	Historically cleared, just weeds.	Completely Degraded
13.4	13.5	0	Historically cleared, just weeds.	Completely Degraded

Start	End	Score	Comments	VegCond
SLK	SLK			
13.5	13.6	0	Historically cleared, just weeds.	Completely Degraded
13.6	13.7	0	Historically cleared, just weeds.	Completely Degraded
13.7	13.8	1	Planted Eucalypts, Acacia	Completely Degraded to
			regrowth, and weed understory.	Degraded
13.8	13.9	0		Completely Degraded
13.9	14.0	0		Completely Degraded
14.0	14.1	1	Two lines of planted Eucalypts,	Completely Degraded to
			sparse mid and understory,	Degraded
			virtually no weeds	
14.1	14.2	1	Two lines of planted Eucalypts,	Completely Degraded to
			sparse mid and understory,	Degraded
			virtually no weeds	
14.2	14.3	0	Mostly weeds	Completely Degraded
14.3	14.4	1	Planted Eucalypts, occasional	Completely Degraded to
			Acacia, mostly weeds, some	Degraded
			native grasses	
14.4	14.5	1	Planted Eucalypts, occasional	Completely Degraded to
			Acacia, mostly weeds, some	Degraded
			native grasses	
14.5	14.6	1	Planted Eucalypts, occasional	Completely Degraded to
			Acacia, mostly weeds, some	Degraded
			native grasses	
14.6	14.7	1	Planted Eucalypts, occasional	Completely Degraded to
			Acacia, mostly weeds, some	Degraded
			native grasses	
14.7	14.8	1	Planted Eucalypts, sparse	Completely Degraded to
			understory and mid story.	Degraded
14.8	14.9	0	Completely cleared	Completely Degraded
14.9	15.0	1	Planted Eucalypts, sparse mid	Completely Degraded to
			story, some understory, native	Degraded
			grasses, some weeds	
15.0	15.1	1	Planted Eucalypts, sparse mid	Completely Degraded to
			story, some understory, native	Degraded
			grasses, some weeds	
15.1	15.2	1	Planted Eucalypts, sparse mid	Completely Degraded to
			story, some understory, native	Degraded
			grasses, some weeds	

Start SLK	End SLK	Score	Comments	VegCond
15.2	15.3	1	Planted Eucalypts, sparse mid story, some understory, native grasses, some weeds	Completely Degraded to Degraded
15.3	15.4	1	Planted Eucalypts, sparse mid story, some understory, native grasses, some weeds	Completely Degraded to Degraded
15.4	15.5	1	Planted Eucalypts, sparse mid story, some understory, native grasses, some weeds	Completely Degraded to Degraded
15.5	15.6	1	Planted Eucalypts, sparse mid story, some understory, native grasses, some weeds	Completely Degraded to Degraded
15.6	15.7	1	Planted Eucalypts, sparse mid story, some understory, native grasses, some weeds	Completely Degraded to Degraded
15.7	15.8	1	Planted Eucalypts, sparse mid story, some understory, native grasses, some weeds	Completely Degraded to Degraded

Table 13. Koorda–Bullfinch Road Condition Scores–South Side

Start SLK	End SLK	Score	Comments	VegCond
SER	SER			
11.8	11.9	0	Completely cleared, weeds	Completely Degraded
11.9	12.0	0	Completely cleared, weeds	Completely Degraded
12.0	12.1	0	Completely cleared, weeds	Completely Degraded
12.1	12.2	6	Remnant Eucalypt woodland	Very Good
12.2	12.3	6	Remnant Eucalypt woodland	Very Good
12.3	12.4	0	Eucalypt regrowth	Completely Degraded
12.4	12.5	0		Completely Degraded
12.5	12.6	0		Completely Degraded
12.6	12.7	1	Road reserve widens. Historically	Completely Degraded to
			cleared, Acacia regrowth to 3m.	Degraded
			Understory mostly weeds (wild	
			oats.)	
12.7	12.8	1	Road reserve widens. Historically	Completely Degraded to
			cleared, Acacia regrowth to 3m.	Degraded
			Understory mostly weeds (wild	
			oats.)	

Start SLK	End SLK	Score	Comments	VegCond
12.8	12.9	1	Road reserve widens. Historically cleared, <i>Acacia</i> regrowth to 3m. Understory mostly weeds (wild oats.)	Completely Degraded to Degraded
12.9	13.0	1	Road reserve widens. Historically cleared, <i>Acacia</i> regrowth to 3m. Understory mostly weeds (wild oats.)	Completely Degraded to Degraded
13.0	13.1	1	Road reserve widens.	Completely Degraded to Degraded
13.1	13.2	1	Historically cleared, <i>Acacia</i> regrowth to 3m. Understory mostly weeds (wild oats.)	Completely Degraded to Degraded
13.2	13.3	1	Historically cleared, <i>Acacia</i> regrowth to 3m. Understory mostly weeds (wild oats.)	Completely Degraded to Degraded
13.3	13.4	1	Historically cleared, <i>Acacia</i> regrowth to 3m. Understory mostly weeds (wild oats.)	Completely Degraded to Degraded
13.4	13.5	0		Completely Degraded
13.5	13.6	0		Completely Degraded
13.6	13.7	0		Completely Degraded
13.7	13.8	0		Completely Degraded
13.8	13.9	0		Completely Degraded
13.9	14.0	0		Completely Degraded
14.0	14.1	0		Completely Degraded
14.1	14.2	0		Completely Degraded
14.2	14.3	0		Completely Degraded
14.3	14.4	0		Completely Degraded
14.4	14.5	0		Completely Degraded
14.5	14.6	0		Completely Degraded
14.6	14.7	0		Completely Degraded
14.7	14.8	0		Completely Degraded
14.8	14.9	0		Completely Degraded
14.9	15.0	0		Completely Degraded
15.0	15.1	0		Completely Degraded
15.1	15.2	0		Completely Degraded
15.2	15.3	0		Completely Degraded
15.3	15.4	0		Completely Degraded

Start SLK	End SLK	Score	Comments	VegCond
15.4	15.5	0		Completely Degraded
15.5	15.6	0	Planted Eucalypts + Peppercorn	Completely Degraded
			Tree (Schinus)	
15.6	15.7	0	Planted Eucalypts	Completely Degraded
15.7	15.8	0		Completely Degraded