

*Detailed Flora and Vegetation Survey
and
Targeted Flora Search*

Goldfields Rd, York



Prepared for: Shire of York

Prepared by: **Del Botanics**
PO Box 119
Mt Helena WA 6082
Mobile 0427700496
Email delbotanics@bigpond.com

March 2022

EXECUTIVE SUMMARY

This report has been prepared by Del Botanics on behalf of the Shire of York to present the results of a spring Detailed Flora and Vegetation survey and a Targeted Flora Search in the proposed roadside areas to be cleared (**Figure 1**).

The project area includes a planned upgrade of a crossover at SLK 3.59-3.62 (**Figure 2**), which is approximately 4 km and the widening along Goldfields Road from SLK 18.00 to SLK 26.00 (**Figure 3**), which is approximately 9 km. The location of the site is shown on **Figures 1, 2 & 3**.

The recent Detailed Flora and Vegetation Assessment identified 51 flora species, with 43% represented by weed species. The vegetation condition across the site is “Good” to “Completely Degraded”. One vegetation community was recorded at a local level during the survey.

One species of Threatened (T) Flora was recorded during the Targeted Flora Search. No other Threatened or Priority Flora pursuant to the *Biodiversity Conservation Act 2016* were located during the time of the survey. The Threatened Ecological Community (TEC) *Eucalyptus Woodlands of the Western Australia Wheatbelt* is likely to occur within the project area.

STATEMENT OF LIMITATIONS

This environmental report has been prepared in accordance with the scope of services set out in the original quotation. In preparing the report, Del Botanics has relied on data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report. Del Botanics has not verified the accuracy or completeness of the data to the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report are based in whole or in part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Del Botanics will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, unavailable, misrepresented or otherwise not fully disclosed.

In accordance with the scope of services, Del Botanics has relied on the data and have conducted environmental field monitoring in the preparation of the report. The nature and extent of monitoring conducted is described in the report. Within the limitations imposed by the scope of services, the monitoring and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care. No other warranty, express or implied, is made.

The report has been prepared for the benefit of the Client and for no other party. Del Botanics assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report. Other parties should not rely upon the report or the accuracy or completeness of any conclusions, and should make their own enquiries and obtain independent advice in relation to such matters.

Photographs © Del Botanics.

TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	II
1. INTRODUCTION.....	6
1.1 BACKGROUND.....	6
1.2 PURPOSE OF THIS REPORT	10
2. EXISTING ENVIRONMENT	11
2.1 LANDFORM, TOPOGRAPHY AND SOILS.....	11
2.2 VEGETATION	11
2.3 CLIMATE.....	12
3. FLORA AND VEGETATION ASSESSMENT	14
3.1 VEGETATION METHODS.....	14
3.2 THREATENED AND PRIORITY FLORA.....	15
3.2.1 <i>Environment Protection and Biodiversity Conservation Act (1999) – Species level significance</i>	17
3.2.2 <i>Department of Biodiversity, Conservation and Attractions (DBCA) Database Search</i>	19
3.3 THREATENED ECOLOGICAL COMMUNITIES.....	20
3.3.1 <i>Department of Biodiversity, Conservation and Attractions (DBCA) Database Search</i>	22
4. FLORA AND VEGETATION ASSESSMENT RESULTS	24
4.1 FLORA.....	24
4.1.1 <i>Introduced species</i>	26
4.1.2 <i>Threatened and Priority Flora</i>	27
4.1.3 <i>Threatened Ecological Communities</i>	32
4.2 VEGETATION.....	32
4.2.1 <i>Local Vegetation Communities</i>	32
4.2.2 <i>Vegetation Condition</i>	35
5. CONCLUSIONS AND RECOMMENDATIONS	39
6. REFERENCES	40

TABLES

Table 1	The Natural Resources Zones in the Shire of York
Table 2	Definition of Threatened and Priority Flora species
Table 3	Naturemap's listed Threatened and Priority species
Table 4	Categories of Threatened species
Table 5	Protected Matters listed Threatened and Priority species
Table 6	DBCA Threatened and Priority Flora Search Results
Table 7	Categories of DBCA's Threatened Ecological Communities
Table 8	Protected Matters listed Threatened Ecological Communities
Table 9	DBCA listed Threatened Ecological Communities
Table 10	Introduced Flora Recorded in the Survey Area
Table 11	Vegetation Structure Classes
Table 12	Local Vegetation Communities Recorded
Table 13	Vegetation Condition Scale

FIGURES

Figure 1	Site Location
Figure 2	Project Area (SLK 3.59-3.62)
Figure 2	Project Area (SLK 18.00-26.00)
Figure 3	Weather Data
Figure 4	Quadrat Locations
Figure 5a	Threatened Flora Search Results (SLK 18.00-26.00)
Figure 5b	Threatened Flora Search Results(SLK 18.00-26.00)
Figure 5c	Threatened Flora Search Results(SLK 18.00-26.00)
Figure 6	Threatened Flora Search Results (SLK 3.59-3.62)
Figure 7	Vegetation Community and Quadrat Locations (SLK 18.00-26.00)
Figure 8	Vegetation Community and Quadrat Locations (SLK 3.59-3.62)
Figure 9	Vegetation Condition and Quadrat Locations (SLK 18.00-26.00)
Figure 10	Vegetation Condition and Quadrat Locations (SLK 3.59-3.62)

PHOTOGRAPHIC PLATES

Plate 1	Roadside Vegetation in "Completely Degraded" condition
Plate 2	Roadside Vegetation in "Degraded" condition
Plate 3	Roadside Vegetation in "Good" condition
Plate 4	<i>Thomasia glabripetala</i> recorded along Goldfields Rd, York

APPENDICES

Appendix A	Vascular Plant Species Recorded
Appendix B	Quadrat Data
Appendix C	BAM Act Definitions

1. INTRODUCTION

1.1 BACKGROUND

This report has been prepared by Del Botanics on behalf of the Shire of York to present the results of a spring Detailed Flora and Vegetation Survey and a Targeted Flora Search. The project area includes an upgrade of a crossover at SLK 3.59-3.62 (**Figure 2**) and the widening along Goldfields Road from SLK 18.00 to SLK 26.00 (**Figure 3**).

The botanical survey of the flora species and vegetation was undertaken on 19th and 25th November 2021. The site is approximately 104 kilometres east of the Perth central area. The site location and project areas are shown on **Figures 1, 2 & 3**.







1.2 PURPOSE OF THIS REPORT

This report was prepared to present the results of the spring Detailed Flora and Vegetation Survey and Targeted Flora Search undertaken within the area described above. The flora species, vegetation communities and condition were used to determine the significance of the site.

In summary this report provides:

- Threatened Flora (T) and Threatened Ecological Communities (TEC's) Department of Biodiversity, Conservation and Attractions (DBCAs) and a Department of Agriculture, Water and the Environment (DAWE) Database search to determine results for the site;
- A spring botanical survey;
- A Targeted Threatened and Priority Flora search; and
- An assessment of vegetation communities and conditions.

2. EXISTING ENVIRONMENT

2.1 LANDFORM, TOPOGRAPHY AND SOILS

The Shire of York area is underlain by granitic rocks, migmatites and acidic gneisses. Most of the shire is underlain by granites of the Yilgran Block. The Shire of York contains two soil systems, each containing characteristic landforms, soil landscapes and vegetation (Weaving, 1994).

The Greenhills York Subsystem contains areas of soils derived from freshly exposed rock. This unit is typified by the red soils of the Avon Valley but also includes areas of similar, but often greyer and lighter textured soils to the east of the valley.

The soil of this area is mapped as Ewerts 2 Phase, which is described as hillslopes containing sand and loamy sand over yellowish clay soils, with some gravel ridges, and some heavier soils that often occur immediately below a breakaway.

2.2 VEGETATION

The South west of Western Australia has been divided into districts based on their vegetation type, drainage system and rainfall. The Shire York contains four Natural Resource Zones as shown below in **Table 1** (Weaving, 1994).

Table 1: The Natural Resources Zones in the Shire of York

NRZ Number	NRZ Code	Beard's Natural Region	Drainage Division	Rainfall (mm)
30	DIAvR3ii	Dale Sub-district (Northern Jarrah Forest)	Avon River	500-700
32	DLSwR3i	Dale Sub-district (Northern Jarrah Forest)	Swan Coast	500-700
34	DISwR2	Dale Sub-district (Northern Jarrah Forest)	Swan Coast	700-1100
62	AvAvR4	Avon Botanical District (Wheatbelt)	Avon River	less than 500

The Shire is found within two botanical districts: The Darling Botanical District and the Avon Botanical District. These Botanical Districts are divided into two drainage divisions, the Avon River and the Swan Coastal Plain.

The forested areas west of the Shire of York are dominated by the Darling Plateau. These areas consist of Jarrah (*Eucalyptus marginata*), Banksia's and grasstree's (*Xanthorrhoea* spp.). Marri (*Corymbia calophylla*) are predominately found on the loamy soils of the valley slopes, often with Wandoo (*Eucalyptus wandoo*). Flooded Gums (*Eucalyptus rudis*) and Paperbarks (*Melaleuca* spp.) are dominant along the Avon River.

The project area is situated on the eastern side of the townsite of York, where it is dominated by agricultural land uses and a large portion of the native vegetation has been cleared. Remnant vegetation is common along the water courses, which includes York Gum (*Eucalyptus loxophelba*) and Jam Wattle (*Acacia acuminata*). Wandoo occurs on the mid slopes and along roadsides. Salmon gum (*Eucalyptus salmonophloia*) appears as a dominant tree in remnant vegetation on loamy clay soils. Granite Outcrops are dominated by Lichens (Weaving, 1994).

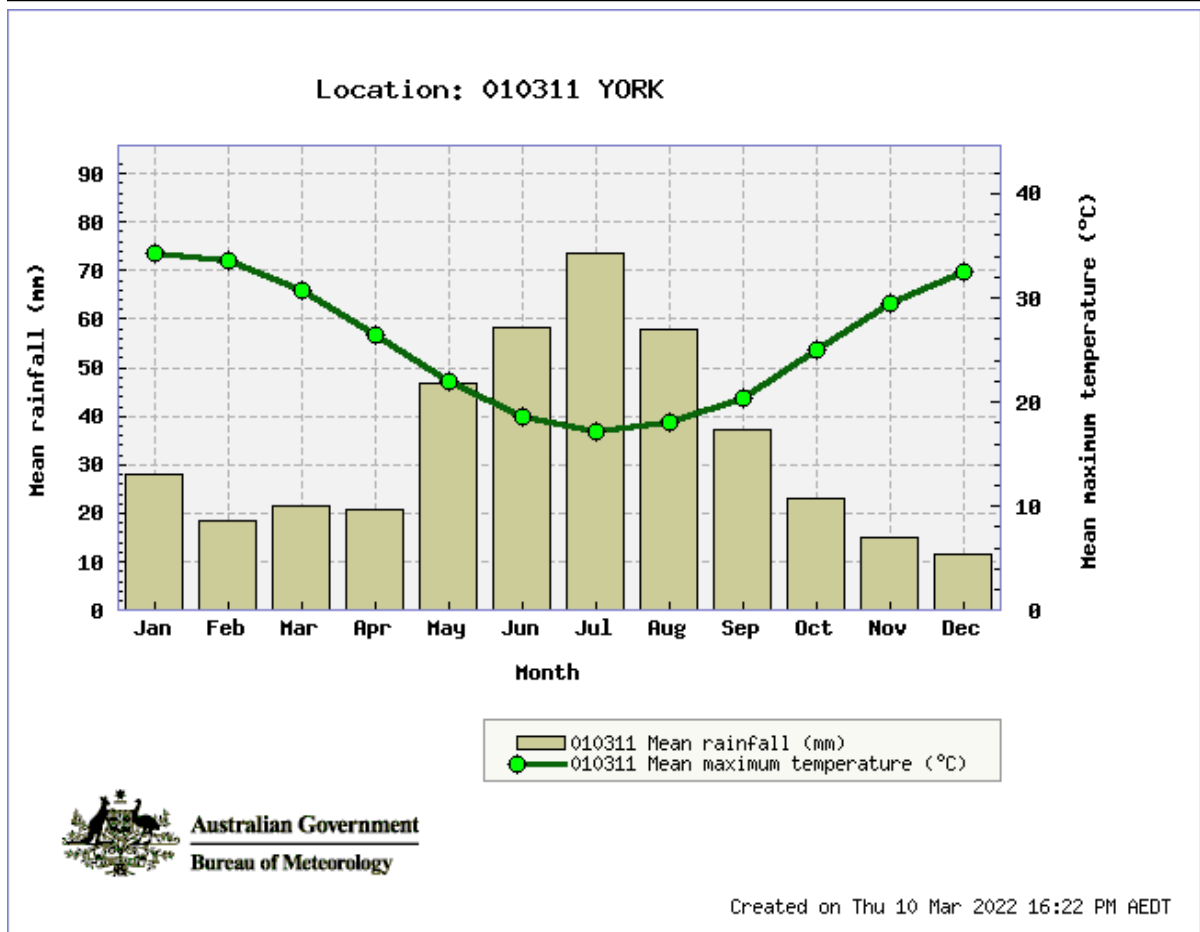
A major portion of the shire falls within the York Vegetation System. This vegetation is characterised by underlying gneissic rocks which have been eroded so that almost the entire laterite crusted surface has degraded revealing the fertile red loams. There is a gentle relief with occasional local outcrops of metamorphic rocks forming hills. York Gum Woodland covers the whole area with Wandoo confined to the less basic rocks. Flooded Gum (*Eucalyptus rudis*) and Swamp Sheoak (*Casuarina obesa*) grow along the Avon River and its tributaries (Weaving, 1994).

2.3 CLIMATE

The Bureau of Meteorology (BoM) weather station is in York (Site No. 010311). The long-term mean minimum temperature for York ranged from 3.9°C in July to 16.6°C in February. The long-term mean maximum temperature ranged from 17.1°C in July to 34.3°C in January between 1996 to 2022 (Bureau of Meteorology, 2022).

The long-term annual average rainfall is 412 millimetres (mm) from 1996 to 2022 (Bureau of Meteorology, 2022). Data is show below on **Figure 4**.

Figure 4 – Shire of York Weather Data



3. FLORA AND VEGETATION ASSESSMENT

3.1 VEGETATION METHODS

A Detailed Flora and Vegetation survey and Targeted Flora Search was undertaken on the 19th and 25th November 2021. The site was surveyed for flora species including, Threatened Flora (T), Priority Flora (P), potential areas of Threatened Ecological Communities (TEC's) and vegetation condition. Each variation or difference in vegetation was recorded with three 4 metre by 25 metre quadrats. This nonstandard quadrat shape was used due to insufficient space along the roadside. Data was recorded to statistically determine vegetation communities and condition. In total, six quadrats were assembled to record each vegetation community. Each quadrat recorded flora species, heights, percentage cover and percentage dead and alive. Quadrats were not assembled permanently; quadrat data is available in **Appendix B**.

The Targeted Flora search was conducted on foot using a Transverse sampling technique. Two Botanists walked in parallel sweeps, along the road reserve on each side of Goldfields Road. Navigation of the sweeps was carried out using two Tablet's using the Mappt program and a Garmin GPS for accurate navigation. The survey effort is shown below on **Figures 5a, 5b, 5c & 6**.

The survey methodology was undertaken in accordance with EPA Position Statement No.3: *Terrestrial Biological Surveys as an Element of Biodiversity Protection* and EPA Guidance Statement No. 51: *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*.

All plant specimens collected during the field survey were dried, pressed and then sorted in accordance with the requirements of the Western Australian State Herbarium. Identification of specimens occurred through comparison with named material and through the use of taxonomic keys.

The use of standard data collection forms ensured the data was collected in a systematic and consistent manner. At each quadrat the following information was recorded:

- Vegetation condition;
- Vegetation community;
- Flora species;
- Local disturbances;
- Topography;
- Soils; and
- Age since fire.

The vegetation communities occurring on this site were described in detail. Aerial photography was used to extrapolate and map plant communities in combination with running notes made during the course of the survey.

3.2 THREATENED AND PRIORITY FLORA

Species of flora acquire “Threatened” “Presumed Extinct” or “Priority” conservation status where populations are restricted geographically or threatened by local processes.

The Department of Biodiversity, Conservation and Attractions (DBCA) recognise these threats and subsequently applies regulations towards population protection and species conservation. The DBCA enforces regulations under the *Biodiversity Conservation Act 2016* to conserve Threatened species and protect significant populations. Priority Flora species are potentially rare or threatened and are classified in order of threat. Threatened and Priority Flora category definitions are listed in **Table 2**.

The likelihood of each flora species and vegetation community occurring onsite is determined by background research on the known soil types, vegetation communities and flowering times of each species. This information together with botanical knowledge provides an informative result on whether the flora species is likely to occur on the site. This determination is listed for each species in **Tables 3, 5 and 6** below.

Table 2: Definition of Rare and Priority Flora Species (DEC 2012)

Conservation Code	Category
T	<p>Threatened Flora (Declared Rare Flora – Extant). Schedule 1 under the Wildlife Conservation Act 1950 Rare Flora Notice Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such</p> <p>Threatened Flora (Schedule 1) are further ranked by the Department according to their level of threat using IUCN Red List criteria: CR: Critically Endangered - considered to be facing an extremely high risk of extinction in the wild. EN: Endangered –considered to be facing a very high risk of extinction in the wild. VU: Vulnerable - considered to be facing a high risk of extinction in the wild</p>
X	<p>Presumed Extinct Flora (Declared Rare Flora – Extinct) Schedule 2 under the Wildlife Conservation Act 1950 Rare Flora Notice Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such.</p>
P1	<p>Priority One: Poorly-known species pecies that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes</p>
P2	<p>Priority Two: Poorly-known species Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.</p>
P3	<p>Priority Three: Poorly-known species Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.</p>
P4	<p>Priority Four: Rare, Near Threatened and other species in need of monitoring (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. (c) Species that have been removed from the list of threatened species during the past five</p>
P5	<p>Priority Five: Conservation Dependent species Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years</p>

A search of the Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap database identified one Threatened (T), four Priority 1 (P1), two Priority 2 (P2), eight Priority 3 (P3) and four Priority 4 (P4) species, which may occur within a 10km radius of the area. These species are listed in **Table 3** below.

Table 3: NatureMap listed species

Species Name	Conservation Code	Likely to occur onsite	Survey undertaken in flowering time
<i>Androcalva fragifolia</i>	P1	No	Unknown
<i>Androcalva</i> sp. York	P1	No	Unknown
<i>Austrostipa nunaginensis</i>	P3	Yes	Unknown
<i>Baeckea</i> sp. Youndegin Hill	P1	Yes	Yes
<i>Beaufortia eriocephala</i>	P3	Yes	Yes
<i>Cryptandra beverleyensis</i>	P3	No	Unknown
<i>Darwinia thymoides</i> subsp. St Ronans	P4	Unknown	Unknown
<i>Daviesia nudiflora</i> subsp. <i>drummondii</i>	P3	No	No
<i>Drosera albonotata</i>	P2	Yes	Unknown
<i>Eremophila brevifolia</i>	P2	No	No
<i>Eucalyptus loxophleba</i> x <i>wandoo</i>	P4	Yes	No
<i>Hemiandra rutilans</i>	T	Yes	Yes
<i>Hemigenia platyphylla</i>	P4	Yes	Yes
<i>Melaleuca sclerophylla</i>	P3	No	No
<i>Placynthium nigrum</i>	P3	No	Unknown
<i>Scholtzia halophila</i> subsp. <i>mortlockensis</i>	P3	No	Unknown
<i>Stenanthemum yorkense</i>	P1	No	Unknown
<i>Stylidium scabridum</i>	P4	No	Yes
<i>Thomasia glabripetala</i>	T	Yes	Yes
<i>Xanthoparmelia subimitatrix</i>	P3	No	No

3.2.1 *Environment Protection and Biodiversity Conservation Act (1999) – Species level significance*

The *Environment Protection and Biodiversity Conservation (EPBC) Act*, 1999, promotes the conservation of biodiversity by providing strong protection for plants at a species level. Section 178 and 179 provides the lists and categories of threatened species under the Act and is presented in **Table 4** below.

Table 4: Categories of Threatened Species (EPBC Act, Section 179, 1999)

1	<p>Extinct A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.</p>
2	<p>Extinct in the Wild A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:(a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.</p>
3	<p>Critically Endangered A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.</p>
4	<p>Endangered A native species is eligible to be included in the endangered category at a particular time if, at that time: (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.</p>
5	<p>Vulnerable A native species is eligible to be included in the vulnerable category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.</p>
6	<p>Conservation Dependant A native species is eligible to be included in the conservation dependent category at a particular time if, at that time: (a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.</p>

A search using the Department of Agriculture, Water and the Environment (DAWE) Protected Matters Tool was undertaken within a 10km radius of the site. The search result listed twenty significant flora species which may occur in the area. Three species are listed as Critically Endangered, fourteen flora species have been listed as Endangered and five species are listed as Vulnerable. These species are listed in **Table 5** below.

Table 5: DAWE Protected Matters listed flora species

Species Name	Conservation Code	Likely to occur onsite	Survey undertaken in flowering time
<i>Acacia ataxiphylla</i> subsp. <i>magna</i>	Endangered	No	No
<i>Acacia cochlocarpa</i> subsp. <i>cochlocarpa</i>	Endangered	Yes	Unknown
<i>Acacia cochlocarpa</i> subsp. <i>velutinosa</i>	Critically Endangered	No	Unknown
<i>Acacia volubilis</i>	Endangered	Yes	No
<i>Allocasuarina fibrosa</i>	Vulnerable	No	No
<i>Andersonia gracilis</i>	Endangered	Yes	Yes
<i>Boronia capitata</i> subsp. <i>capitata</i>	Endangered	Yes	No
<i>Dasymalla axillaris</i>	Critically Endangered	Unknown	Unknown
<i>Daviesia euphorbioides</i>	Endangered	Yes	Yes
<i>Eleocharis keigheryi</i>	Vulnerable	No	Yes
<i>Gastrolobium hamulosum</i>	Endangered	Yes	Yes
<i>Grevillea christineae</i>	Endangered	No	No
<i>Grevillea dryandroides</i> subsp. <i>hirsuta</i>	Endangered	Yes	Yes
<i>Guichenotia seorsiflora</i>	Critically Endangered	Yes	No
<i>Hakea aculeata</i>	Vulnerable	Yes	Yes
<i>Melaleuca sciotostyla</i>	Endangered	No	No
<i>Roycea pycnophylloides</i>	Endangered	No	No
<i>Stylidium coroniforme</i> subsp. <i>amblyphyllum</i>	Endangered	Yes	Yes
<i>Thelymitra stellata</i>	Endangered	Yes	Yes
<i>Thomasia glabripetala</i>	Vulnerable	Yes	Yes
<i>Thomasia montana</i>	Vulnerable	Yes	Yes
<i>Verticordia staminosa</i> subsp. <i>staminosa</i>	Endangered	No	Yes

3.2.2 Department of Biodiversity, Conservation and Attractions (DBCA) Database Search

In addition to the background searches undertaken through the DBCA NatureMap and the DAWE Protected Matters searches, a Threatened and Priority flora search was undertaken through the DBCA. The search is undertaken on records from the Threatened and Priority Flora Database (TPFL) and the WA Herbarium database (WAHerb), which provides known locations of each species. The results are provided below in **Table 6**. The search was conducted within a 10km radial area from the central coordinate.

Table 6: DBCA Threatened and Priority Flora Search Results

Taxon	Conservation Status		Likely to occur onsite	Survey undertaken in flowering time
	DBCA	EPBC		
<i>Acacia cochlocarpa</i> subsp. <i>velutinos</i>	T	CR	No	Unknown
<i>Acacia volubilis</i>	T	CR	Yes	No
<i>Androcalva</i> sp. York	1		No	Unknown
<i>Caladenia integra</i>	4		No	Yes
<i>Eremophila brevifolia</i>	2		No	No
<i>Eucalyptus loxophleba</i> x <i>wandoo</i>	4		Yes	No
<i>Gastrolobium rotundifolium</i>	3		No	No
<i>Hakea aculeata</i>	T	EN	Yes	Yes
<i>Senecio gilbertii</i>	1		No	Yes
<i>Stenanthemum yorkense</i>	1		No	Unknown
<i>Stylidium coroniforme</i> subsp. <i>amblyphyllum</i>	T	EN	Yes	Yes
<i>Thomasia glabripetala</i>	T	VU	Yes	Yes
<i>Thomasia montana</i>	T	VU	Yes	Yes

3.3 THREATENED ECOLOGICAL COMMUNITIES

In Western Australia Threatened Ecological Communities (TEC's) are assessed through a procedure coordinated by the DBCA and are assigned to one of the categories outlined below in **Table 7**. While they are not afforded direct statutory protection at a State level (unlike Threatened Flora under the *Biodiversity Conservation Act 2016*) their significance is acknowledged through other State environmental approval processes (i.e. Environmental Impact Assessment pursuant to Part IV of the *Environmental Protection Act 1986*). Scheduled TEC's are afforded statutory protection at a Federal level pursuant to the EPBC Act. The Department has been identifying and listing threatened ecological communities since 1994 through the non-statutory process.

The Minister for Environment previously listed ecological communities as threatened through a non-statutory process if the community was presumed to be totally destroyed or at risk of becoming totally destroyed. The *Biodiversity Conservation Act 2016* (BC Act) provides for the statutory listing of threatened ecological communities (TECs) by the Minister. The new legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

The department has been identifying and listing TECs since 1994 through the non-statutory process. The WA Minister for Environment has endorsed 69 Ecological Communities as threatened in the following categories:

- 20 critically endangered
- 17 endangered
- 28 vulnerable
- 4 presumed totally destroyed.

25 of these are listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*. As at January 2019, an additional 393 ecological communities (community types and sub-types) with insufficient information available to be considered a TEC, or which are rare but not currently threatened, have been placed on the Priority list and referred to as Priority Ecological Communities (PECs).

Table 7: Categories of DBCA's Threatened Ecological Communities

PD	Presumably Totally Destroyed An ecological community that has been adequately searched for but for which no representative occurrences have been located.
CE	Critically Endangered An ecological community that has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future.
E	Endangered An ecological community that has been adequately surveyed and is not critically endangered but is facing a very high risk of total destruction in the near future.
V	Vulnerable An ecological community that has been adequately surveyed and is not critically endangered or endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future.

The EPBC Act provides for the strong protection of TEC's, which are listed under section 181 of the Act and are described as 'Critically Endangered', 'Endangered' or 'Vulnerable' under section 182. Schedules of protected TECs maintained pursuant to the EPBC Act are based on the same Floristic Community Type's (FCT's) as adopted by DBCA, however not all TEC's listed by the DBCA are scheduled under the EPBC Act.

The likelihood of Threatened Ecological Communities (TEC's) occurring onsite is determined by background research on the known soil types, the local vegetation communities, vegetation condition and size of the site. This information together with botanical knowledge provides an informative result on whether the TEC is likely to occur on within the project area. This determination is listed for each TEC listed in **Tables 8 and 9** below.

A Department of Agriculture, Water and the Environment (DAWE) Protected Matters Report indicated there is one Threatened Ecological Community (TEC) likely to occur within a 10km radius of the area. The TEC is listed below in **Table 8**.

Table 8: Protected Matters Report listed Threatened Ecological Communities

Species Name	Conservation Code	Likely to occur on site
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	Yes

3.3.1 Department of Biodiversity, Conservation and Attractions (DBCA) Database Search

In addition to the background searches undertaken through the DAWE Protected Matters search a Threatened Ecological Community (TEC) search was undertaken through the DBCA. The search is undertaken on records from the DBCA, which provides known locations of TEC’s. The results are provided below in **Table 9**. The search was conducted within a 30km radial area from the central coordinate. Three Threatened Ecological Communities have been recorded within a 20km radius of the site.

Table 9: DBCA listed Threatened Ecological Communities

Species Name	Conservation Code	Likely to occur on site
Pools of the Avon and Dale Rivers	Priority 1 [DBCA]	No
Eucalypt Woodlands of the Western Australian Wheatbelt	Priority 3 [DBCA] Critically Endangered [EPBC]	Yes
York Gum Woodlands of the Wheatbelt	Priority 3 [DBCA] Critically Endangered [EPBC]	Yes

During the survey the vegetation recorded along Goldfields Rd, York has been described as Eucalypt Woodlands. To determine the presence of the TEC *Eucalypt Woodlands of the Western Australian Wheatbelt*, patches that occur as roadside verges, must be in “Good” vegetation condition with a minimum patch width of 5 metres and meet any of the exotic plant species understorey cover / presence of mature trees criteria, shown below:

- A high-quality native understorey remains – i.e., no more than 30% total vegetation cover of exotic plant species. OR
- Exotic plant species account for over 30 to 50% total vegetation understorey cover AND mature trees are present, with at least 5 such trees per half hectare. Mature trees have a diameter at breast height of 30 cm or more, and often contain hollows. A minimum patch size of 5 hectares (12.5 acres) applies where:

- Exotic plant species account for over 30 to 50% total vegetation understorey cover BUT there are no or less than 5 mature trees present per half hectare OR
- Exotic plant species account for over 50 to 70% total vegetation understorey cover AND mature trees are present, with at least 5 such trees per half hectare.

The vegetation surveyed along Goldfields Rd, has recorded *Eucalypt Woodlands* in areas of “Good” vegetation condition and in some locations the road verge meets the 5 meter width criteria. The data presented in some quadrats using the dominant vegetation stratum, indicates that the percentage cover for native and weed species meets the criteria for determining the presence of the TEC *Eucalypt Woodlands of the Western Australian Wheatbelt*.

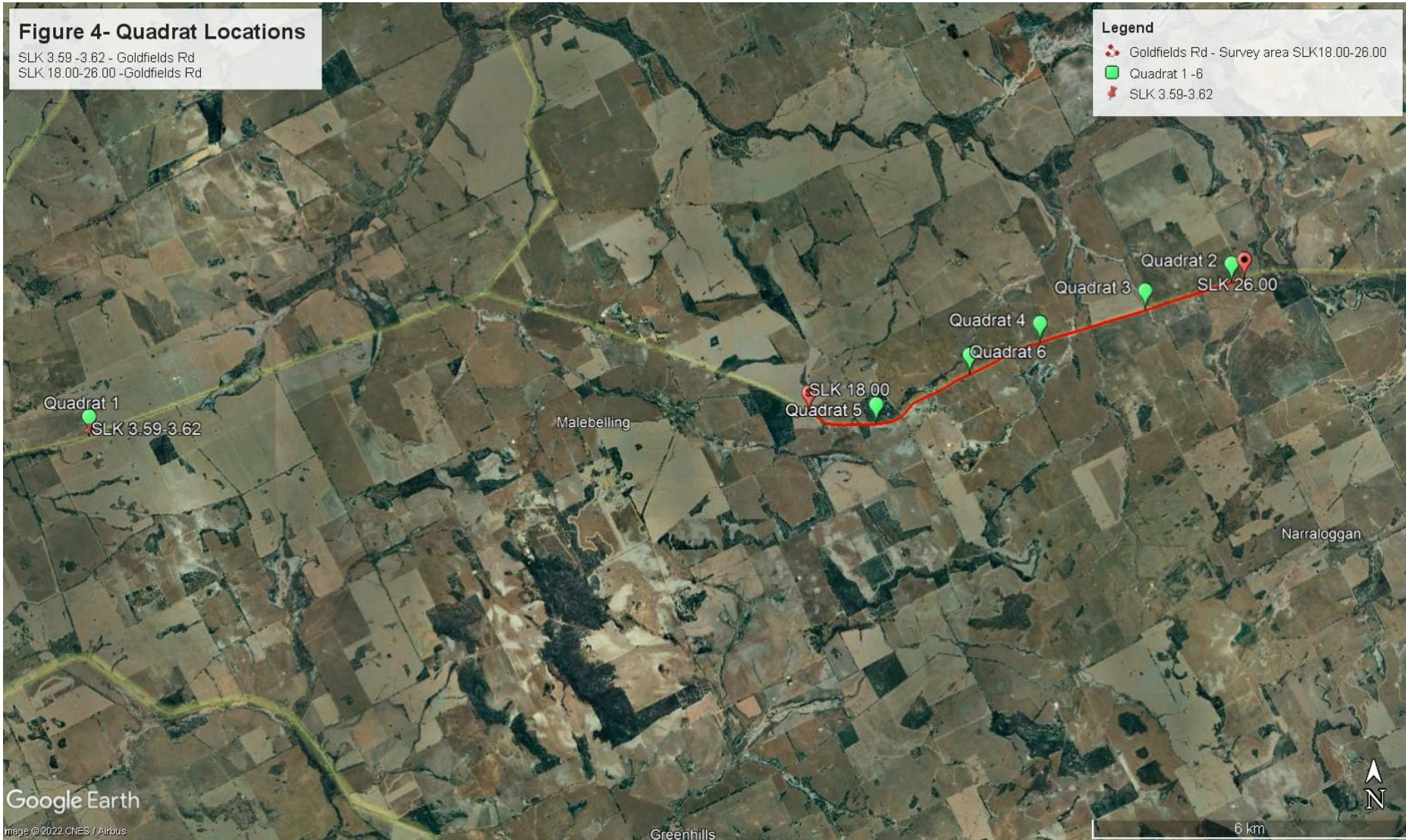
This suggests that the TEC is present along “Good” vegetation condition areas, where there are habitat trees and less than 50% weed cover in the road verge with a width of 5 meters.

It is recommended that a TEC assessment in areas that will be cleared is undertaken to confirm the presence of the TEC *Eucalypt Woodlands of the Western Australian Wheatbelt*.

4. FLORA AND VEGETATION ASSESSMENT RESULTS

4.1 FLORA

A total of 51 taxa, comprising of 18 families and 41 genera were recorded on site. A list of these species has been provided in **Appendix A**. Species representation was greatest among the Poaceae, Asteraceae and Chenopodiaceae families. Data was collected from six quadrats; quadrat locations are shown below on **Figure 4**.



4.1.1 *Introduced species*

Twenty-two introduced flora species were recorded on the site, which are provided in **Table 10** below. Species representation was greatest among the Poaceae and Asteraceae families. This represents 43% of the total number of flora species recorded on site. Of these introduced species, one is listed as a Declared Pest species under the *Biosecurity and Agriculture Management Act 2007* (BAM Act). BAM Act definitions are provided in **Appendix C**. No weed species recorded on site are listed as Weed of National Significance (WoNS).

Table 10: Introduced Flora Recorded in the Survey Area

Genus/Species	Common Name	BAM Act
* <i>Aira caryophylla</i>	Silvery Hairgrass	Permitted – s11
* <i>Arctotheca calendula</i>	Cape Weed	Permitted – s11
* <i>Avena barbata</i>	Bearded Oat	Permitted – s11
* <i>Avena fatua</i>	Wild Oat	Permitted – s11
* <i>Brassica tournefortii</i>	Mediterranean Turnip	Permitted – s11
* <i>Bromus diandrus</i>	Great Brome	Permitted – s11
* <i>Chamaecytisus palmensis</i>	Tagasaste	Permitted – s11
* <i>Chloris gayana</i>	Rhodes Grass	Permitted – s11
* <i>Erigeron bonariensis</i>	Flaxleaf Fleabane	Flaxleaf Fleabane
* <i>Echium plantagineum</i>	Paterson's Curse	Declared Pest - s22 (2)
* <i>Ehrharta longiflora</i>	Annual Veldt grass	Permitted – s11
* <i>Hordeum leporinum</i>	Barley Grass	Permitted – s11
* <i>Lactuca serriola</i>	Prickly Lettuce	Permitted – s11
* <i>Lolium rigidum</i>	Wimmera Ryegrass	Permitted – s11
* <i>Oncosiphon piluliferum</i>	Globe Chamomile	Permitted – s11
* <i>Orobancha minor</i>	Lesser Broomrape	Permitted – s11
* <i>Polycarpon tetraphyllum</i>	Fourleaf Allseed	Permitted – s11
* <i>Raphanus raphanistrum</i>	Wild Radish	Permitted – s11
* <i>Sonchus oleraceus</i>	Common Sowthistle	Permitted – s11
* <i>Tribulus terrestris</i>	Caltrop	Permitted – s11
* <i>Triticum aestivum</i>	Wheat	Permitted – s11
* <i>Vulpia ?myuros</i>	Rat's Tail Fescue	Permitted – s11

4.1.2 *Threatened and Priority Flora*

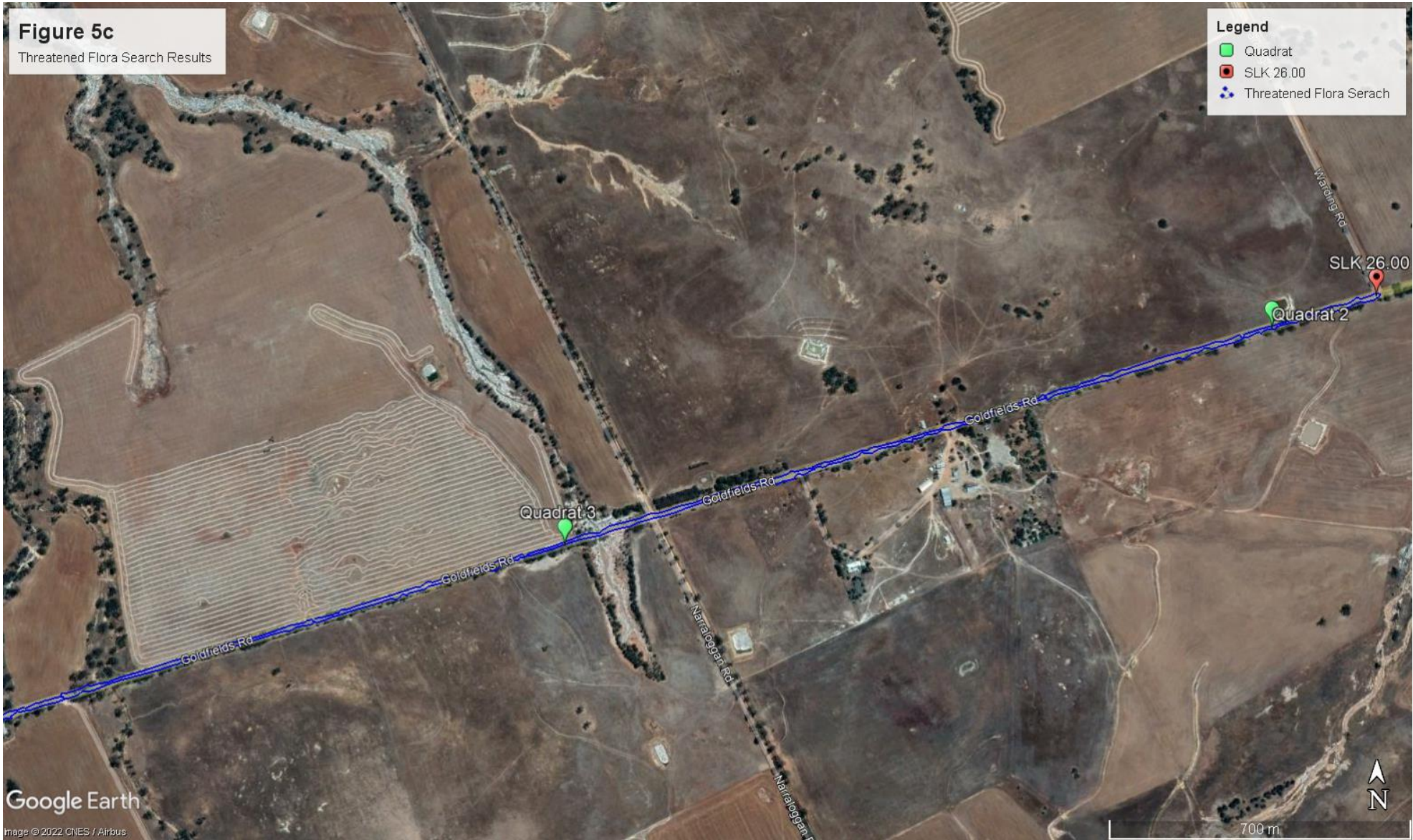
One species of Threatened (T) Flora was recorded during the survey; No other flora, pursuant to *Biodiversity Conservation Act 2016* and listed by the Department of Biodiversity, Conservation and Attractions (DBCAs) were located during the time of the survey. The botanical survey was undertaken in spring to coincide with the majority of the flowering times of the threatened species.

Three individuals of the Threatened (T) Flora Species *Thomasia glabripetala* were located. The individual plants are shown on **Figure 5**. The search effort results are shown on **Figures 5a, 5b, 5c & 6**. The locations of the plants are:

- 50 J 500338.00 E 6476205.00 S
- 50 J 500397.24 E 6476212.02 S
- 50J 500396.74 E 6476215.34 S









4.1.3 *Threatened Ecological Communities*

One Threatened Ecological Community *Eucalypt Woodlands of the Western Australian Wheatbelt* listed by Department of Agriculture, Water and the Environment (DAWE) and Department of Biodiversity, Conservation and Attractions (DBCA) is likely to occur within the project area, further assessments are required to determine the presence of the TEC.

4.2 VEGETATION

4.2.1 *Local Vegetation Communities*

Vegetation structure recorded in each vegetation community is used to determine the coverage class as described below in **Table 11**. These vegetation structure classes are defined and used in the Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016).

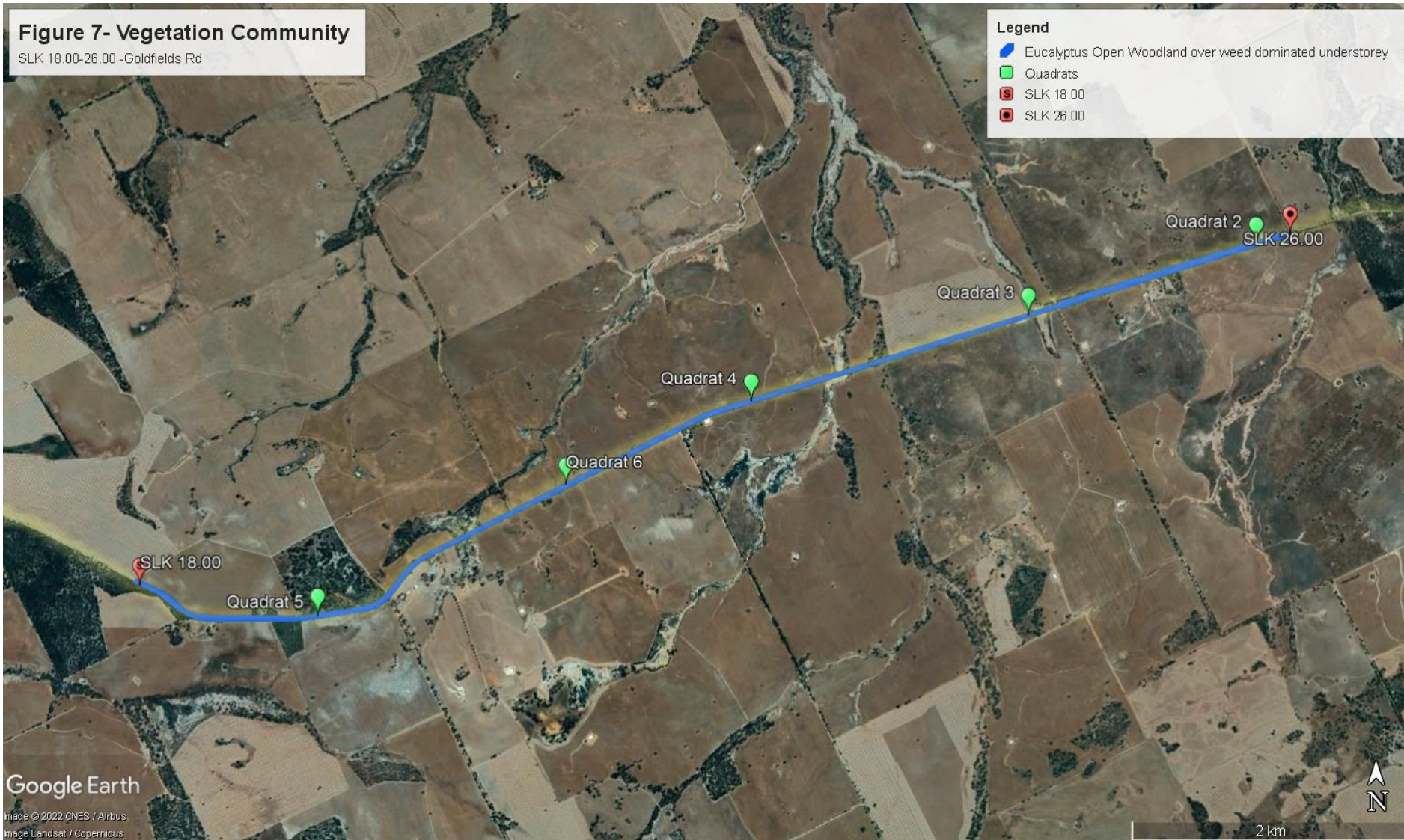
Table 11: Vegetation Structure Classes

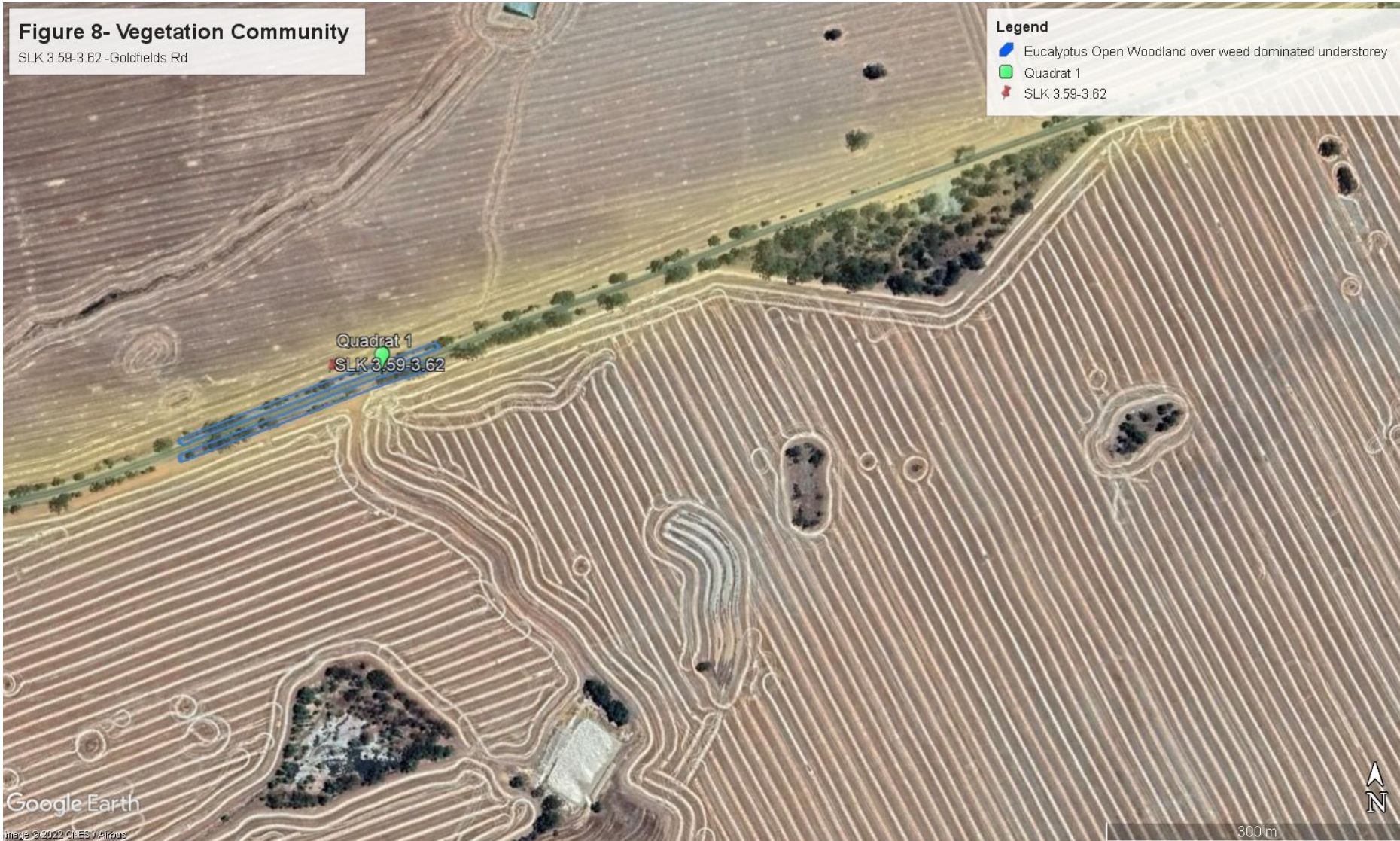
Life Form/ Height Class	Canopy Cover (percentage)			
	100% - 70%	70% - 30%	30% - 10%	10% - 2%
Trees 10-30m	Closed Forest	Open Forest	Woodland	Open Woodland
Trees < 10m	Low Closed Forest	Low Open Forest	Low Woodland	Low Open Woodland
Shrub Mallee	Closed Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
Shrubs > 2m	Closed Tall Scrub	Tall Open Scrub	Tall Shrubland	Tall Open Shrubland
Shrubs 1-2m	Closed Heath	Open Heath	Shrubland	Open Shrubland
Shrubs < 1m	Closed Low Heath	Open Low Heath	Low Shrubland	Low Open Shrubland
Grasses	Closed Grassland	Grassland	Open Grassland	Very Open Grassland
Herbs	Closed Herbland	Herbland	Open Herbland	Very Open Herbland
Sedges	Closed Sedgeland	Sedgeland	Open Sedgeland	Very Open Sedgeland

One vegetation community was represented within the projects at a local level; which has been described below in **Table 12**. Photographic representations of the vegetation community are shown in the Quadrat data sheets in **Appendix B**. The vegetation community and quadrat locations are shown on **Figures 7 & 8**.

Table 12: Local Vegetation Community Recorded along Goldfields Rd, York November 2021

Community Descriptions
Vegetation Community 1 – <i>Eucalyptus Open Woodland over weed dominated understorey</i>
Open Woodland of <i>Eucalyptus wandoo</i> , <i>Eucalyptus salmonophloia</i> and <i>Eucalyptus loxophleba</i> over Grassland of <i>*Lolium rigidum</i> , <i>*Erharta longiflora</i> , <i>*Bromus diandrus</i> over Very Open Herbland of <i>*Raphanus raphanistrum</i> and <i>*Brassica tournefortii</i>





4.2.2 *Vegetation Condition*

Roadside vegetation provides a unique display of vegetation, providing a cross section as roads cut across the landscape, from the top of hills, down slopes, over creeks at the bottom of valleys, and back up hills on the other side.

Roadside vegetation plays an important role in the conservation of Western Australia’s flora and fauna. In heavily cleared landscapes, the vegetation in the road reserve acts as a wildlife corridor, enabling fauna movement between large patches of bush. It also provides essential habitat. In some areas rare fauna, such as the Carnaby’s cockatoo, breed in the hollows of roadside trees. In addition, more than 50% of Threatened Flora have at least one population on a roadside, and some species depend on roadside vegetation for their continued existence (DPaW, 2018).

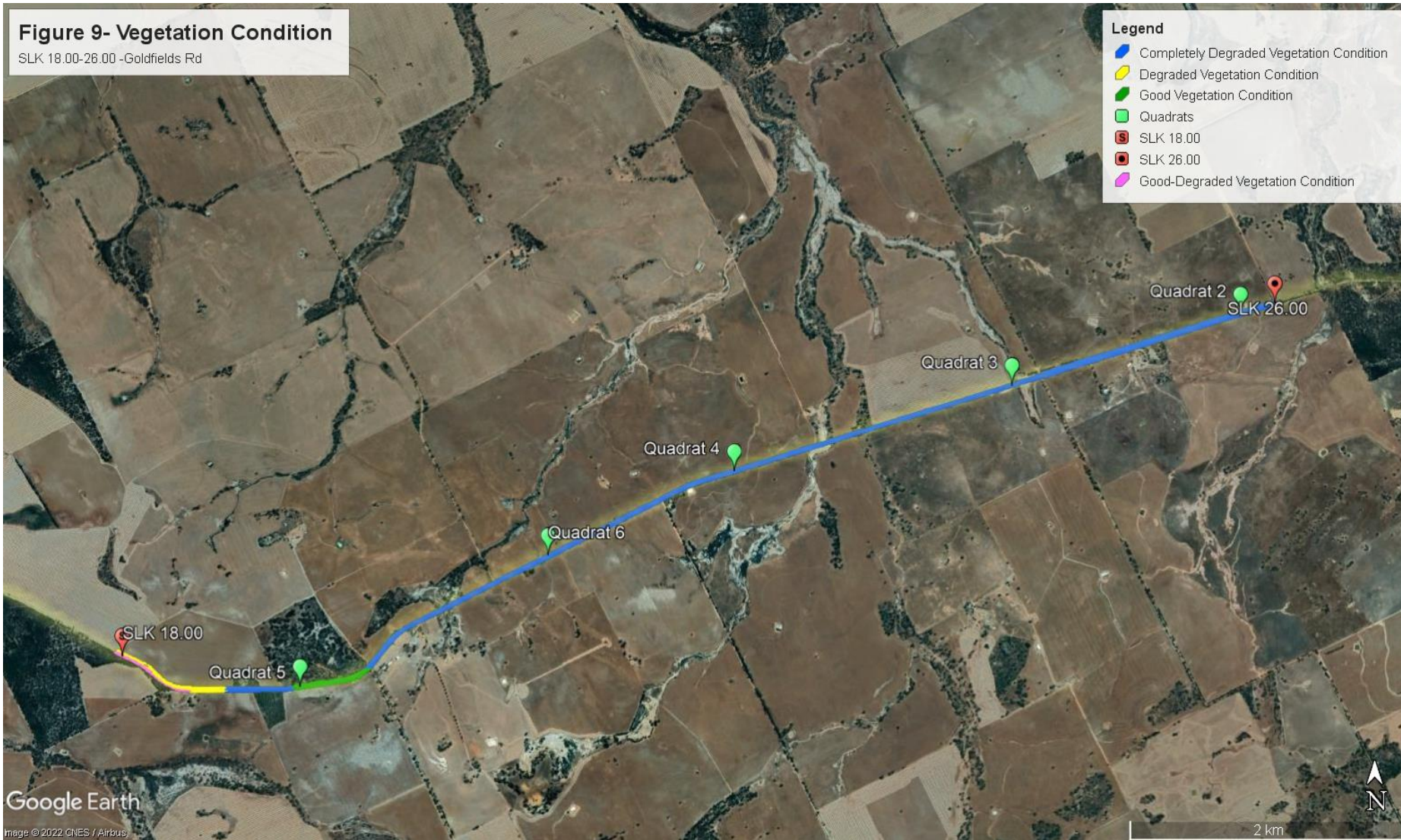
Many roadsides have been cleared due to historic land disturbances and due to the adjacent land uses of farming and agriculture they often can retain a high number of invasive weeds, which impacts the vegetation condition. The vegetation condition recorded along Goldfields Rd was recorded as “Good” to “Completely Degraded”. Vegetation condition mapping is provided on **Figures 9 & 10**.

The vegetation condition was rated according to the Vegetation Condition Scale used in the Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016). The definitions are described in **Table 13** below.

Table 13: Vegetation Condition Scale

Vegetation Condition	South West and Interzone Botanical Provinces	Eremaean and Northern Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.	
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds

Poor		Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
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 and shrubs.	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs





5. CONCLUSIONS AND RECOMMENDATIONS

The Detailed Flora and Vegetation survey along Goldfields Rd, York, identified a total of 51 taxa representing 41 genera and 18 families. Weeds species comprised of 43% of the total flora recorded. The vegetation condition was recorded as “Good” to “Completely Degraded”.

One vegetation community was recorded onsite. The vegetation community is best described as Open Woodland of *Eucalyptus wandoo*, *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* over Grassland of **Lolium rigidum*, **Erhrarta longiflora*, **Bromus diandrus* over Very Open Herbland of **Raphanus raphanistrum* and **Brassica tournefortii*.

The vegetation community recorded within the project area shows distinct traits of the vegetation recorded within the Avon Botanical District. This includes York Gum (*Eucalyptus loxophelba*) and Jam Wattle (*Acacia acuminata*) with Wandoo occurring on the mid slopes and along roadsides. Salmon gum (*Eucalyptus salmonophloia*) appears as a dominant tree in remnant vegetation on loamy clay soils.

Three individual plants of one Threatened (T) Flora species pursuant to the *Biodiversity and Conservation Act 2016* was located during the time of the survey. The Threatened Ecological Community *Eucalypt Woodlands of the Western Australian Wheatbelt* listed by Department of Agriculture, Water and the Environment (DAWE) and Department of Biodiversity, Conservation and Attractions (DBCA) is likely to occur within the survey area, however further assessments are required to determine which roadside areas meet the requirements to the TEC.

Based on the results of this survey, Del Botanics proposes the following recommendations:

- Protect current populations of the Threatened Flora Species *Thomasia glabripetala*;
- Undertake a Threatened Ecological Communities (TEC) assessment prior to clearing; and
- Undertake a Black Cockatoo Habitat Tree Assessment prior to clearing.

6. REFERENCES

Beard J. S. (1990). *Plant life of Western Australia*. Kangaroo Press, Perth.

Bureau of Meteorology (2022) *Monthly climate data statistics*

Department of Agriculture and Food WA (2012) *Soil-landscape systems of Western Australia (GIS dataset)*. Perth, Australia.

English, V. and Blyth, J. (1997). *Identifying and conserving Threatened Ecological Communities in the South West Botanical Province*. ANCA National Reserves System Cooperative Program, Project Number N702.

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (s 266B) Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community, DEE, Perth.

Environmental Protection Authority (2001a). Position Statement No. 2. *Environmental Protection of Native Vegetation in Western Australia*. EPA, Perth.

Environmental Protection Authority (2001b). Position Statement No. 3. *Terrestrial biological surveys as an element of biodiversity protection*. EPA, Perth.

Environmental Protection Authority (2003a). Guidance statement No. 10. *Guidance for the Assessment of Environmental Factors – Level of assessment for proposals affecting natural areas within the System 6 Region and Swan Coastal Plain portion of the System 1 Region*. EPA, Perth.

Environmental Protection Authority (2003b). Guidance statement No. 51. *Guidance for the Assessment of Environmental Factors – Terrestrial flora and vegetation surveys for environmental impact assessment in Western Australia*. EPA, Perth.

Hedde, E.M., Loneragan, O.W. and Havel, J.J. (1980). *Darling Systems – Vegetation Complexes*. In: Atlas of Natural Resources Darling System, Western Australia. Department of Conservation and Environment, Perth.

Roadside conservation - Parks and Wildlife Service (dpaw.wa.gov.au)

Western Australian Herbarium (2022). *FloraBase - The Western Australian Flora*. Department of Biodiversity, Conservation and Attractions

Williams, K. and Mitchell, D. (2001) *Jarrah Forest 1 (JF1 – Northern Jarrah Forest subregion)*. Perth, Australia.

PHOTOGRAPHIC PLATES



Plate 1: Roadside Vegetation in “Completely Degraded” condition



Plate 2: Roadside Vegetation in “Degraded” condition



Plate 3: Roadside Vegetation in “Good” condition



Plate 4: *Thomasia glabripetala* recorded along Goldfields Rd, York

APPENDIX A
VASCULAR PLANT SPECIES RECORDED

APPENDIX A:**VASCULAR PLANT SPECIES RECORDED ALONG GOLDFIELDS RD, YORK, NOVEMBER 2021**

(*Denotes a weed species)

Family	Species/Genus
Amaranthaceae	<i>Ptilotus polystachyus</i>
Asparagaceae	<i>Dichopogon fimbriatus</i> <i>Lomandra sp.</i>
Asphodelaceae	<i>Dianella revoluta</i>
Asteraceae	* <i>Arctotheca calendula</i> * <i>Conyza bonariensis</i> * <i>Lactuca serriola</i> * <i>Oncosiphon piluliferum</i> * <i>Sonchus oleraceus</i>
Boraginaceae	* <i>Echium plantagineum</i>
Brassicaceae	* <i>Brassica tournefortii</i> * <i>Raphanus raphanistrum</i>
Caryophyllaceae	* <i>Polycarpon tetraphyllum</i>
Chenopodiaceae	<i>Atriplex nummularia</i> <i>Atriplex semibaccata</i> <i>Enchylaena tomentosa</i> <i>Rhagodia preissii</i> <i>Atriplex semibaccata</i>
Crassulaceae	<i>Crassula alata</i>
Cyperaceae	<i>Lepidosperma leptostachyum</i>
Fabaceae	* <i>Chamaecytisus palmensis</i> * <i>Polypogon tetraphyllum</i> <i>Acacia acuminata</i> <i>Acacia sp</i> <i>Acacia microbotrya</i> <i>Gastrolobium trilobum</i> <i>Kennedia coccinea</i>
Montiaceae	<i>Calandrinia ?calyptrata</i>
Myrtaceae	<i>Eucalyptus loxophleba</i> <i>Eucalyptus salmonophloia</i> <i>Eucalyptus wandoo</i>
Orobanchaceae	* <i>Orobanche minor</i>
Poaceae	* <i>Aira caryophyllea</i> * <i>Avena fatua</i> * <i>Bromus diandrus</i> * <i>Chloris gayana</i> * <i>Ehrharta longiflora</i> * <i>Hordeum leporinum</i> * <i>Lolium rigidum</i> * <i>Triticum aestivum</i> * <i>Vulpia ?myuros</i> <i>Austrostipa elegantissima</i> <i>Austrostipa trichophylla</i> <i>Rytidosperma caespitosum</i> <i>Rytidosperma sp</i>

Proteaceae

Jacksonia sternbergiana

Persoonia quinquenervis

Xanthorrhoeaceae

Xanthorrhoea preissii

Zygophyllaceae

**Tribulus terrestris*

APPENDIX B
QUADRAT DATA

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Goldfields Rd, York	Date: 19/11/2021	Site: Q1
GPS Datum: 50 485458.25 6475980	Topography: Upper slope	Litter cover: 30 % twigs, 10% leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Sandy Clay (orange)
Vegetation Description: Road side York Gum		
Vegetation Condition: Completely Degraded		
Observations: Lack of native understorey species Good Habitat Trees		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus loxophleba</i>	25	100		40
	<i>Na</i>				
Middle	<i>Na</i>				
	<i>Na</i>				
Lower	* <i>Lolium rigidum</i>	40	5	95	25
	* <i>Vulpia ?myuros</i>	30		100	4
	<i>Crassula alata</i>	10		100	3
Additional Species	* <i>Sonchus oleraceus</i>				
	* <i>Avena fatua</i>				
	* <i>Bromus diandrus</i>				
	* <i>Triticum aestivum</i>				
	* <i>Raphanus raphanistrum</i>				
	* <i>Polycarpon tetraphyllum</i>				
	* <i>Aira caryophyllea</i>				
	* <i>Conyza bonariensis</i>				
	* <i>Tribulus terrestris</i>				
	* <i>Lactuca serriola</i>				
	<i>Rhagodia preissii</i>				
	* <i>Orobanche minor</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Goldfields Rd, York	Date: 19/11/2021	Site: Q2
GPS Datum: 50 507109.34 6478863.36	Topography: Upper slope	Litter cover: 40 % twigs, 15% leaves 20% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Sandy Clay (orange)
Vegetation Description: Road side York Gum		
Vegetation Condition: Completely Degraded		
Observations: Lack of native understorey species Good Habitat Trees on SE side of Goldfields Rd		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus loxophleba</i>	1500	95	5	55
	<i>Na</i>				
Middle	<i>Acacia acuminata</i>	100	100		2
Lower	<i>Rhagodia preissii</i>	30	100		2
	* <i>Raphanus raphanistrum</i>	120		100	3
	* <i>Lolium rigidum</i>	100	1	99	5
Additional Species	<i>Enchylaena tomentosa</i>				
	* <i>Ehrharta longiflora</i>				
	* <i>Oncosiphon piluliferum</i>				
	* <i>Avena fatua</i>				
	<i>Atriplex semibaccata</i>				
	* <i>Aira caryophyllea</i>				
	* <i>Vulpia ?myuros</i>				
	* <i>Sonchus oleraceus</i>				
	* <i>Polypogon tetraphyllum</i>				
	* <i>Orobancha minor</i>				
	* <i>Arctotheca calendula</i>				
	* <i>Lactuca serriola</i>				
	* <i>Bromus diandrus</i>				
	<i>Acacia microbotrya</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Goldfields Rd, York	Date: 19/11/2021	Site: Q3
GPS Datum: 50 505474.65 6478356.62	Topography: Mid slope	Litter cover: 30 % twigs, 10% leaves 15% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Sandy Gravel (orange)
Vegetation Description: Road side York Gum		
Vegetation Condition: Completely Degraded		
Observations: Lack of native understorey species Good Habitat Trees		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus salmonophloia</i>	30	100		70
	<i>Eucalyptus loxophleba</i>	20	95		10
Middle					
Lower	* <i>Brassica tournefortii</i>	120		100	7
	* <i>Bromus diandrus</i>	100		100	20
	* <i>Ehrharta longiflora</i>	100	3	97	30
Additional Species	<i>Austrostipa elegantissima</i>				
	* <i>Avena fatua</i>				
	<i>Rhagodia preissii</i>				
	<i>Lomandra sp.</i>				
	* <i>Lolium rigidum</i>				
	* <i>Sonchus oleraceus</i>				
	* <i>Hordeum leporinum</i>				
	<i>Atriplex semibaccata</i>				
	* <i>Vulpia ?myuros</i>				
	* <i>Aira caryophyllea</i>				
	* <i>Chloris gayana</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Goldfields Rd, York	Date: 19/11/2021	Site: Q4
GPS Datum: 50 503480.70 6477742.55	Topography: Mid slope	Litter cover: 30 % twigs, 20% leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Gravel (orange)
Vegetation Description: Road side – Wandoo- Salmon Gum		
Vegetation Condition: Completely Degraded		
Observations: Lack of native understorey species, Good Habitat Trees		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus salmonophloia</i>	3000	100		40
	<i>Eucalyptus wandoo</i>	2000	100		40
Middle	<i>Na</i>				
	<i>Na</i>				
Lower	<i>Rhagodia preissii</i>	60	100		5
	* <i>Lolium rigidum</i>	30			10
	* <i>Brassica tournefortii</i>	40			4
Additional Species	<i>Lomandra sp.</i>				
	* <i>Avena barbata</i>				
	<i>Acacia sp</i>				
	* <i>Ehrharta longiflora</i>				
	<i>Austrostipa elegantissima</i>				
	<i>Enchylaena tomentosa</i>				
	<i>Rytidosperma caespitosum</i>				
	* <i>Aira caryophylla</i>				
	* <i>Vulpia ?myuros</i>				
	* <i>Sonchus oleraceus</i>				
	<i>Calandrinia ?calyptata</i>				
	* <i>Polycarpon tetraphyllum</i>				
	* <i>Chloris gayana</i>				
	<i>Atriplex semibaccata</i>				
* <i>Orobanche minor</i>					
Opp	<i>Dianella revoluta</i>				
Opp	<i>Dichopogon fimbriatus</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Goldfields Rd, York	Date: 19/11/2021	Site: Q5
GPS Datum: 50 500372.08 6476212.96	Topography: Mid slope	Litter cover: 30 % twigs, 20% leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Peaty Sand (brown/grey)
Vegetation Description: Road side York Gum		
Vegetation Condition: Good – Degraded		
Observations: Some native understorey species		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus wandoo</i>	2500	100		90
	<i>Na</i>				
Middle	<i>Jacksonia sternbergiana</i>	150	100		2.5
	<i>Xanthorrhoea preissii</i>	100	100		3
	<i>Gastrolobium trilobum</i>	50	100		2
Lower	* <i>Bromus diandrus</i>	60		100	55
	* <i>Ehrharta longiflora</i>	50		100	40
	<i>Kennedia coccinea</i>	T	100		6
Additional Species	* <i>Chamaecytisus palmensis</i>				
	* <i>Echium plantagineum</i>				
	<i>Persoonia quinquenervis</i>				
	<i>Kennedia coccinea</i>				
	* <i>Ehrharta longiflora</i>				
	<i>Austrostipa elegantissima</i>				
	<i>Enchylaena tomentosa</i>				
	* <i>Orobanche minor</i>				
	<i>Lepidosperma leptostachyum</i>				
	<i>Dianella revoluta</i>				
	* <i>Sonchus oleraceus</i>				
	* <i>Avena barbata</i>				
opp	<i>Ptilotus polystachyus</i>				
opp	<i>Rytidosperma sp</i>				
opp	<i>Acacia acuminata</i>				

Del Botanics

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Goldfields Rd, York	Date: 19/11/2021	Site: Q6
GPS Datum: 50 502146.39 6477144.60	Topography: Mid slope	Litter cover: 30 % twigs, 10% leaves 10% logs
Age since fire: >10 yrs	Disturbance: Hi Med Lo	Soils: Sandy Clay (orange)
Vegetation Description: Road side York Gum		
Vegetation Condition: Completely Degraded		
Observations: Lack of native understorey species Good tree regeneration		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus loxophleba</i>	1000	100		40
	<i>Na</i>				
Middle	<i>Acacia acuminata</i>	400	100		25
	<i>Na</i>				
Lower	* <i>Avena barbata</i>	60		100	15
	* <i>Bromus diandrus</i>	50		100	14
	<i>Austrostipa elegantissima</i>	60	100		3
Additional Species	* <i>Chloris gayana</i>				
	* <i>Echium plantagineum</i>				
	* <i>Brassica tournefortii</i>				
	<i>Ptilotus polystachyus</i>				
	<i>Austrostipa trichophylla</i>				
	* <i>Sonchus oleraceus</i>				
	* <i>Arctotheca calendula</i>				
	* <i>Vulpia ?myuros</i>				

APPENDIX C

BAM ACT DEFINITIONS

BAM Act Definitions

Legal status

Each listed organism is declared under the Biosecurity Management act with certain legal requirements:

Declared Pest, Prohibited - s12

Prohibited organisms are declared pests by virtue of section 22(1), and may only be imported and kept subject to permits. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.

Permitted - s11

Permitted organisms must satisfy any applicable import requirements when imported. They may be subject to an import permit if they are potential carriers of high-risk organisms.

Declared Pest - s22(2)

Declared pests must satisfy any applicable import requirements when imported, and may be subject to an import permit if they are potential carriers of high-risk organisms. They may also be subject to control and keeping requirements once within Western Australia.

Permitted, Requires Permit - r73

Regulation 73 permitted organisms may only be imported subject to an import permit. These organisms may be subject to restriction under legislation other than the *Biosecurity and Agriculture Management Act 2007*. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.

Unlisted - s14

If you are considering importing an unlisted organism/s you will need to submit the name/s for assessment, as unlisted organisms are automatically prohibited entry