



Lights Road Upgrade Fauna Habitat Assessment Report

To: [REDACTED] – Manager Technical Services

From: [REDACTED] – Sustainability Officer

CC: [REDACTED] – Director Assets and Sustainable Development
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Subject: *Fauna Habitat Assessment Report for Lights Road upgrade – for native vegetation clearing permit application*

File Ref: PROJ.ENG. 22_23 LIGHTS ROAD – SLK 0.03-0.83

BACKGROUND:

The Shire of Denmark submitted an application to Department of Water and Environmental Regulation (DWER) on 28/07/2022 to clear up to 0.715ha of native vegetation including a maximum of 32 trees along a 1.25km section of Lights Road for purposes of widening between to 6m to improve traffic safety.

This section of Lights Road is identified as a road of significance with a higher volume of traffic particularly during peak tourism periods. Currently it is only a one way windy road with blind corners and limited opportunities to pullover; with significant sized trees located close to the road edge. It is also used by heavy vehicles and is on a school bus route.

The Shire received notification that the clearing permit application was accepted for assessment on 31/08/2022. Verbal correspondence between the Shire and DWER suggests that further information will be required to be provided in the form of a fauna habitat assessment.

The Shire has amended the road construction plans in order to reduce and minimise the amount of native vegetation clearing required from 32 trees to a maximum of 26 trees.

AVOIDANCE & MITIGATION MEASURES:

The Shire has adopted avoidance and mitigation measures to minimise disturbance to native vegetation required to be cleared from the proposed road construction operations due to traffic safety improvements. These avoidance and mitigation measures include:

- Only trees and understorey required to be cleared for road construction will be removed. A significant number of trees directly adjacent to the roadside are being retained.
- Road widening has been reduced to 4-5m width in the southern section with strategic passing bays from original 6m width to enable retention of more trees.
- Road infill increased to up to 500mm depth in areas to bring road surface to original level commensurate with existing roadside vegetation level; to minimise the need for deep drains with adjacent shoulders and batters which would have involved clearing of an additional 2-3m width from existing road edge on both sides of road.
- Road construction planned amendments aforementioned results in a reduction in trees from 32 to 26 trees in total to be removed.
- Machinery utilised (skid steer and/or front-end loader) size will be commensurate with the works to be undertaken to ensure all clearing is undertaken in a sensitive manner.
- Appropriate dieback hygiene measures will be undertaken including machinery to be clean on entry and on exit from the site.

MAP OF SUBJECT AREA

Depicted below is a Map of Lights Road 1.25km section proposed for road widening 4-6m, depicting 26 trees and associated understorey to be cleared, and existing vegetation line.

LEGEND

- existing vegetation
- clearing undergrowth
- Trees - maximum 26 trees to be cleared
- Hydrography
- Roads
- Shire Reserves
- Cadastre

0 100 200 m

1:5,000



Produced by [REDACTED] Sustainability Officer - Shire of Denmark 27/10/2022.
 Whilst all care has been taken, no responsibility shall be taken for any omissions or errors in this documentation.
 Please advise the Shire of Denmark of any errors or omissions in this document.
 Digital Cadastral Data Supplied by the Western Australian Land Information Authority.



EIA Native vegetation clearing
 proposal Lights Rd - widening and
 sealing road - updated trees layer
 Maximum 26 trees and associated
 understorey

FAUNA ASSESSMENT METHODOLOGY:

DESKTOP ENVIRONMENTAL IMPACT ASSESSMENT

A desktop environmental assessment was undertaken indicating the following threatened fauna species as known to occur within a 3km radius of the proposed area to be cleared:

FAUNA WITHIN 3KM RADIUS OF PROPOSED DISTURBANCE AREA			
SPECIES	COMMON NAME	HABITAT	CONSERVATION STATUS
<i>Cynotelopus notabilis</i>	WA pill millipede	Moist forest and woodlands	Endangered
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	Jarrah, marri, karri forest	Endangered
<i>Calyptorhynchus latirostris</i>	Carnaby's (white-tailed black) cockatoo	Eucalypt woodlands	Endangered
<i>Dasyurus geoffroii</i>	Chuditch	Forest, mallee shrublands, woodland	Vulnerable
<i>Hydromys chrysogaster</i>	Water rat (Rakali)	Permanent fresh or brackish water sources	Priority 4
<i>Isodon fusciventer</i>	Quenda	Swamps, banksia and jarrah woodlands	Priority 4
<i>Pandion cristatus</i>	Osprey	Coastal and river environs near body of water	International agreement (IA)
<i>Phascogale tapoatafa wambenger</i>	Brush-tailed Phascogale	Eucalypt forest	Conservation dependent (CD)
<i>Setonix brachyurus</i>	Quokka	Dense riparian vegetation	Vulnerable
<i>Thalasseus bergii</i>	Crested Tern	Coastal and estuarine environs, lakes and rivers	IA

The vegetation proposed to be cleared is situated within the Mattiske and Havel vegetation complexes Hazelvale (HA), Ky and Ks, which is well represented across the landscape.

VEGETATION COMPLEX	SUBREGION	LANDFORM TYPE	SPECIES
Hazelvale (HA)	Southern Plain	Low woodland; low forest and closed heath	<i>Eucalyptus marginata</i> ; <i>E.patens</i> ; <i>Agonis juniperina</i> ; <i>Callistachys lanceolata</i> ; Myrtaceae spp.
(Ky)	Keystone	Open forest; tall open forest	<i>Eucalyptus marginata</i> ; <i>Corymbia calophylla</i> ; <i>Banksia grandis</i> ; <i>E.brevistylis</i>
(Ks)	Keystone	Woodland	<i>Eucalyptus marginata</i> ; <i>Allocasuarina fraseriana</i>

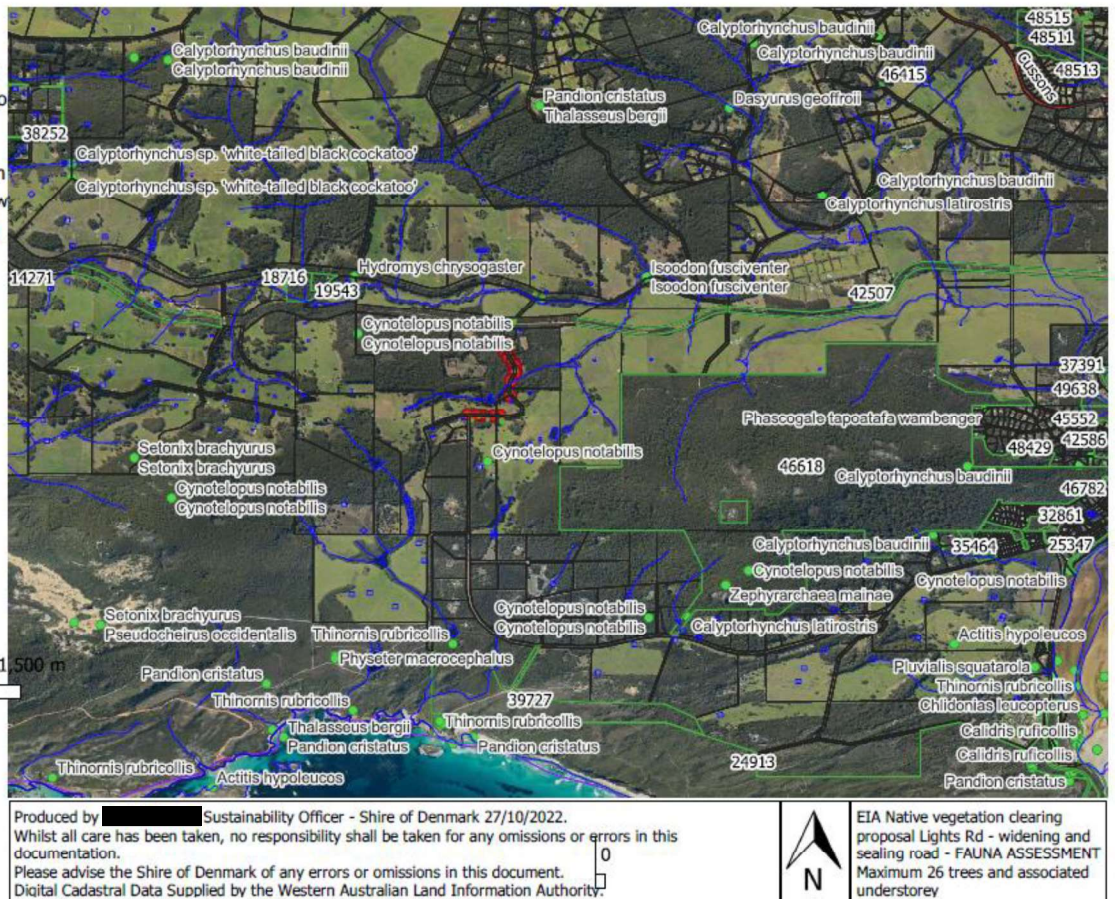
The 26 trees proposed to be taken is deemed to not adversely impact upon the vegetation corridor linkages, vegetation mosaic, or hydrological processes across the landscape.

LEGEND

- Threatened fauna
- Carnaby's Cockatoo Confirmed Roost Sites
- existing vegetation
- clearing undergrowth
- Trees - maximum 26 trees to be cleared
- Hydrography
- Roads
- Shire Reserves
- Cadastre

0 750 1500 m

1:25,000



Map of Lights Rd proposed road construction and known threatened fauna within 3km radius

GROUND VISUAL FAUNA HABITAT ASSESSMENT OF TREES PROPOSED TO BE CLEARED
 A ground visual fauna habitat assessment was conducted by Shire of Denmark Sustainability Officer on 26/10/22 to assess the individual trees proposed to be cleared for the road construction, with a focus on threatened fauna habitat potential, specifically roosting habitat for endangered black cockatoos and hollows for phascogales.

Data collected for the assessment included:

- species of each individual tree
- diameter of the tree at chest height
- growth stage
- height estimate of tree
- likelihood of roosting and/or hollow habitat for known threatened fauna species that occur in the area
- any additional notable tree condition where applicable (including canopy cover, sustained damage or natural senescence).

The assessment was conducted from the northern section, numbering individual trees from 1-26 along the 1.25km section of Lights road to the T-junction where the gravel road meets the existing sealed road.

Two photographs were taken of each individual tree (numbered from the northern end); one photograph oblique, from the perspective along the roadside (marked as 'a'), and one looking up the trunk of each tree to depict the canopy (marked as 'b'). These are depicted below in the section under 'Images'.



Map of 26 trees along Lights Rd numerically ordered 1-26 for Fauna Habitat Assessment

LIMITATIONS

Limitations of the assessment include it was a ground visual survey only, based on the findings of the desktop environmental assessment for the threatened fauna species likely to inhabit the area. Canopy drip cover was not included in the assessment criteria.

FINDINGS:

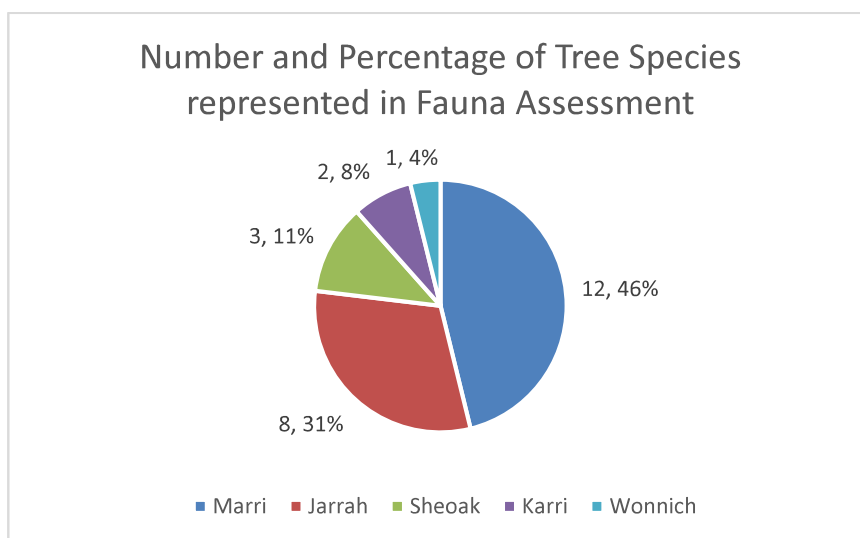
NUMBER	SPECIES	DIAMETER (mm at chest height)	GROWTH STAGE	ROOSTING/ HOLLOWS	COMMENTS	EASTINGS	NORTHINGS
1	<i>Corymbia calophylla</i> (Marri)	700	Mature	R	evidence of canker	525626.9	6127923
2	<i>Corymbia calophylla</i> (Marri)	600	Mature	R		525629.6	6127918
3	<i>Eucalyptus marginata</i> (Jairrah)	350	Immature	-		525622.7	6127912
4	<i>Corymbia calophylla</i> (Marri)	700	Mature	R		525641.8	6127895
5	<i>Eucalyptus marginata</i> (Jairrah)	600	Mature	R		525633.7	6127894
6	<i>Eucalyptus marginata</i> (Jairrah)	900	Senescing	R + H	double trunk; minimal canopy cover	525658.3	6127862
7	<i>Eucalyptus marginata</i> (Jairrah)	200	Immature	-		525656	6127850
8	<i>Eucalyptus marginata</i> (Jairrah)	750	Mature	R	double trunk	525658.5	6127843
9	<i>Corymbia calophylla</i> (Marri)	500	Mature	R		525685.7	6127807
10	<i>Corymbia calophylla</i> (Marri)	900	Senescing	R	double trunk; damage sustained	525689.8	6127799
11	<i>Allocasuarina fraseriana</i> (Sheoak)	400	Senescing	-		525690.3	6127782
12	<i>Allocasuarina fraseriana</i> (Sheoak)	600	Mature	-		525689.7	6127784
13	<i>Eucalyptus marginata</i> (Jairrah)	150	Immature	-	minimal canopy cover	525700.8	6127775
14	<i>Eucalyptus marginata</i> (Jairrah)	400	Senescing	-	damage sustained; no canopy cover	525702.3	6127772
15	<i>Eucalyptus marginata</i> (Jairrah)	500	Mature	R+H		525703.7	6127770
16	<i>Corymbia calophylla</i> (Marri)	400	Mature	R	minimal canopy cover	525704.7	6127768
17	<i>Corymbia calophylla</i> (Marri)	400	Mature	R		525708.5	6127719
18	<i>Corymbia calophylla</i> (Marri)	400	Mature	R		525702.9	6127701
19	<i>Eucalyptus diversicolor</i> (Karri)	700	Immature	R		525673.6	6127636
20	<i>Callistachys lanceolata</i> (Wonnich)	300	Mature	-	removal required due to drainage	525669.7	6127497
21	<i>Corymbia calophylla</i> (Marri)	550	Mature	R	minimal canopy cover	525591.5	6127313
22	<i>Corymbia calophylla</i> (Marri)	400	Mature	-	damage sustained	525536.6	6127310
23	<i>Corymbia calophylla</i> (Marri)	300	Immature	-	minimal canopy cover	525466.6	6127313
24	<i>Eucalyptus diversicolor</i> (Karri)	600	Immature	R	minimal canopy cover	525440.2	6127314
25	<i>Allocasuarina fraseriana</i> (Sheoak)	350	Mature	R		525409.2	6127316
26	<i>Corymbia calophylla</i> (Marri)	350	Mature	R		525342.7	6127322

RESULTS:

There were 26 individual trees in total that were assessed for potential habitat for threatened fauna known to occur within the area – deemed required to be cleared for purposes of road construction to improve traffic safety.

SPECIES

SPECIES	NUMBER	PERCENTAGE
<i>Corymbia calophylla</i>	12	46
<i>Eucalyptus marginata</i>	8	31
<i>Allocasuarina fraseriana</i>	3	11
<i>Eucalyptus diversicolor</i>	2	8
<i>Callistachys lanceolata</i>	1	4



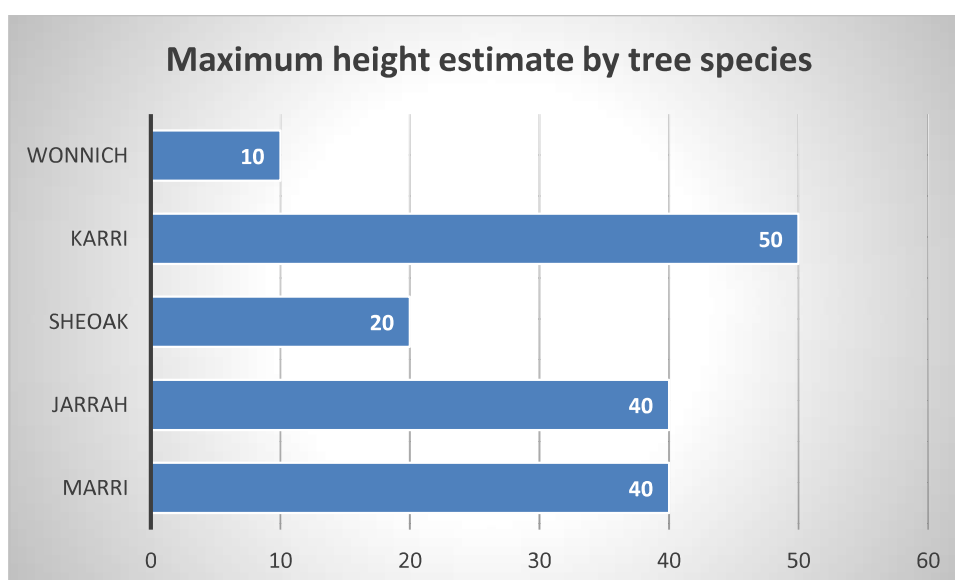
HEIGHT

All jarrah and marri trees were approx. between 30-40m in height

The sheoaks were approx. 20m in height

The wonnich was approx. 10m in height

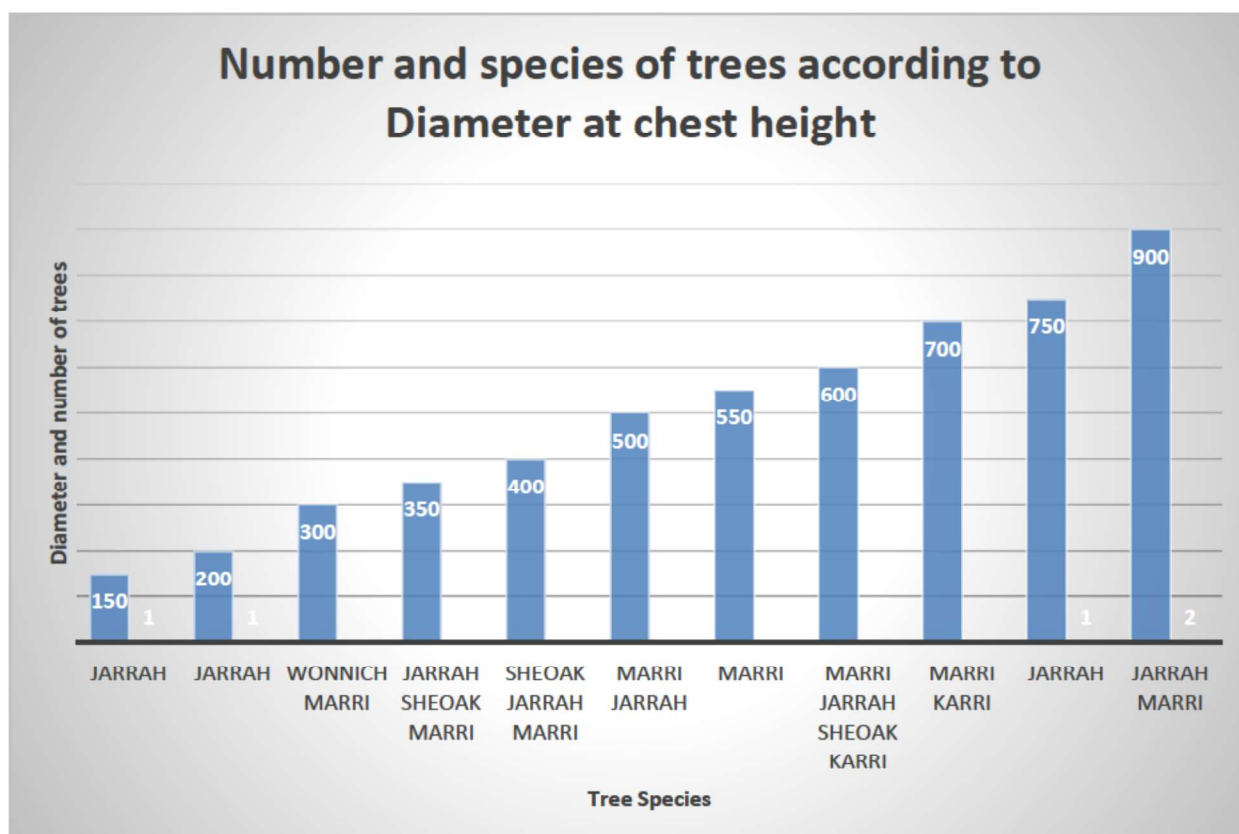
The karri trees were approx. 40-50m in height



DIAMETER AT CHEST HEIGHT

Tree diameter ranged from 100-900mm, however the 3 trees with the largest diameter were noted as all having double trunks. Mean average diameter overall was 600mm; however the median average was 500mm; with the mode average of 6 trees having 400mm diameter at chest height, those being predominantly marri (4).

DIAMETER (mm) PER NUMBER OF TREES											
DIAMETER	150	200	300	350	400	500	550	600	700	750	900
NUMBER OF TREES	1	1	2	3	6	2	1	4	3	1	2



GROWTH STAGE & CONDITION

The majority of trees 16 were at the mature growth stage (16; 62%); with 6 (23%) at immature stage (3 jarrah, 2 karri, 1 marri); and 4 (15%) observed as senescing or dead (2 jarrahs, one marri, one sheoak).

6 trees were noted as having minimal to no canopy cover – (3 marri, 2 jarrah, 1 karri) – due to senescence or immature growth stage or damage sustained.

There were 3 trees observed to have some level of sustained damage, presumably due to machinery from grading of the road, or from vehicle accidents due to the trees proximity to the roadside (2 marri, 1 jarrah). There was also evidence of canker on one mature marri.

IMAGES



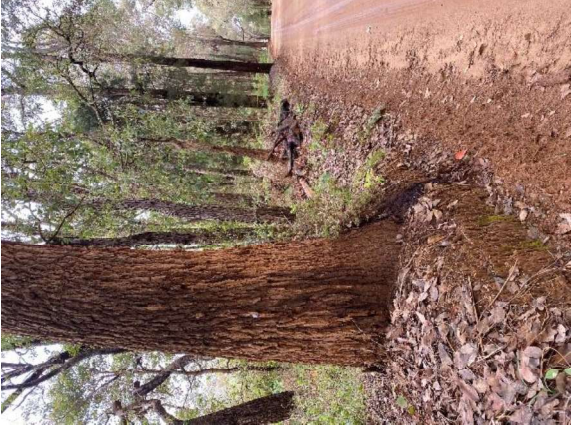
Tree ID: 1a



Tree ID: 1b



Tree ID: 2a



Tree ID: 2b



Tree ID: 3a



Tree ID: 3b



Tree ID: 4a



Tree ID: 4b



Tree ID: 5a



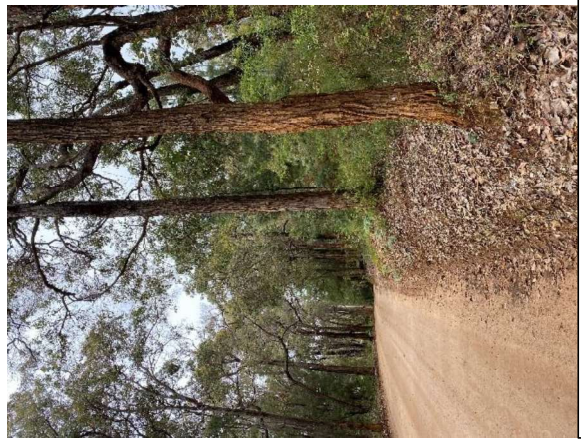
Tree ID: 5b



Tree ID: 6a



Tree ID: 6b



Tree ID: 7a



Tree ID: 7b



Tree ID: 8a



Tree ID: 8b



Tree ID: 9a

Tree ID: 9b



Tree ID: 10a

(sustained damage)

Tree ID: 10b



Tree ID: 11a

Tree ID: 11b



Tree ID: 12a

Tree ID: 12b





Tree ID: 13a and 14a



Tree ID: 13b



Tree ID: 14b



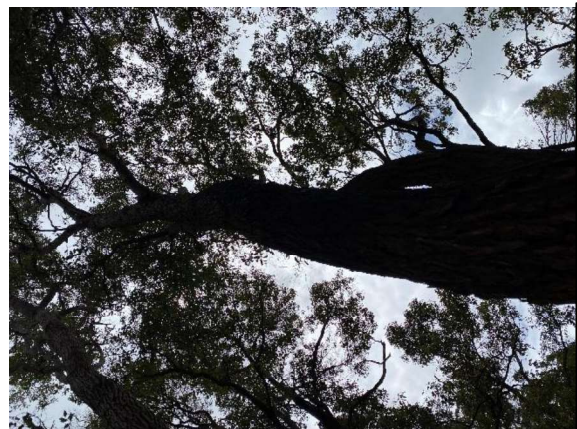
Tree ID: 15a



Tree ID: 15b



Tree ID: 16a



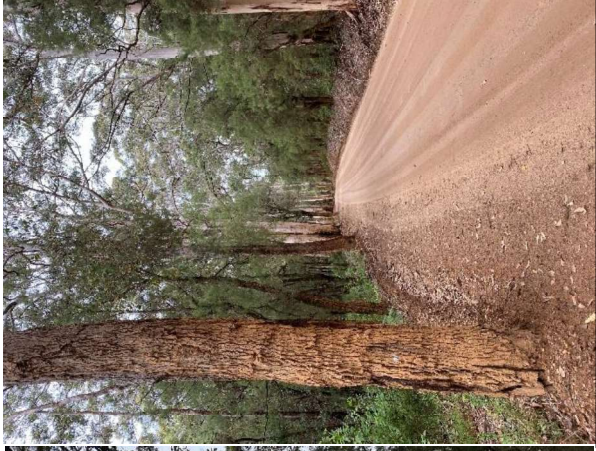
Tree ID: 16b



Tree ID: 17a



Tree ID: 17b



Tree ID: 18a



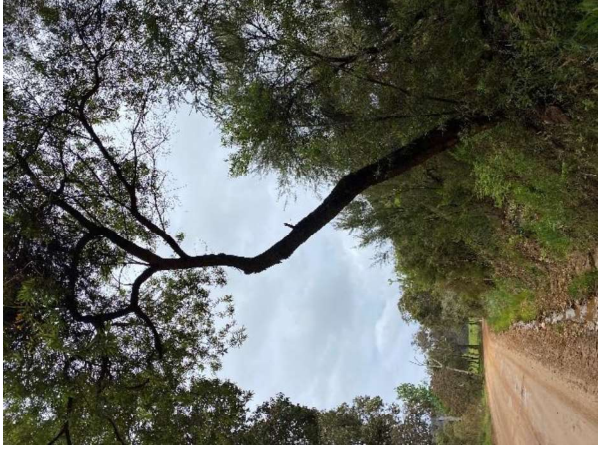
Tree ID: 18b



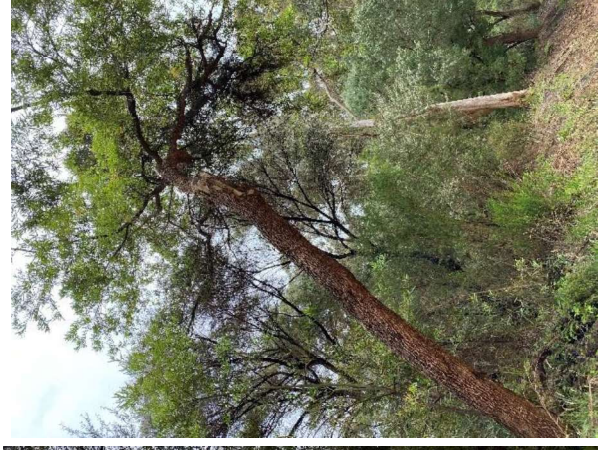
Tree ID: 19a



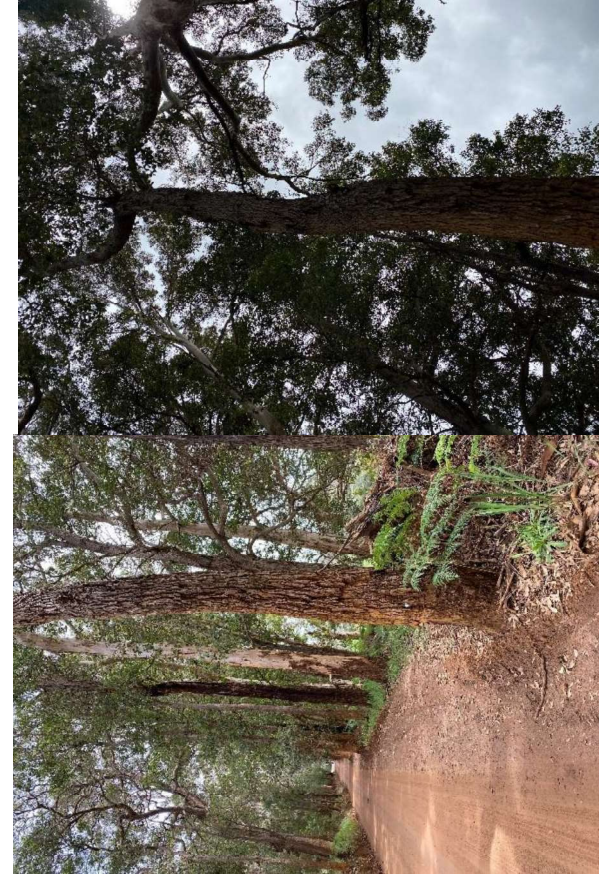
Tree ID: 19b



Tree ID: 20a



Tree ID: 20b



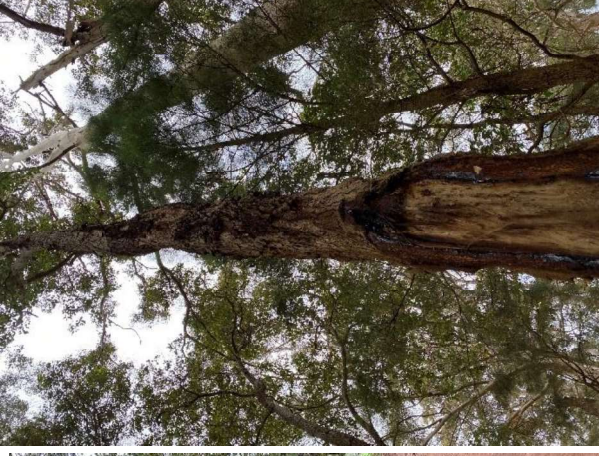
Tree ID: 21a

Tree ID: 21b



Tree ID: 22a

Tree ID: 22b



Tree ID: 23a

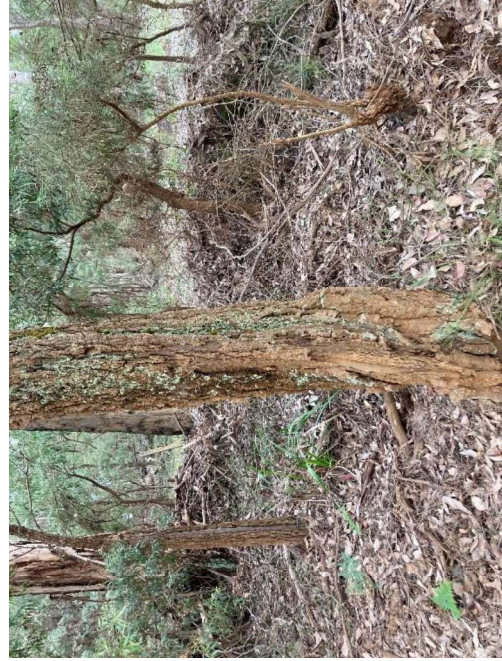
Tree ID: 23b



Tree ID: 24a

Tree ID: 24b





Tree ID: 25a



Tree ID: 25b



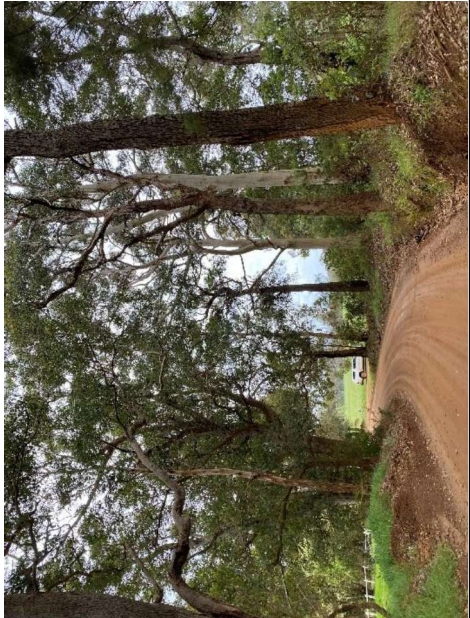
Tree ID: 26a



Tree ID: 26b



Lights Road northern section



Lights Road bend



Lights Rd verge and neighbouring bush