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**Arboricultural Impact Assessment**

Indigo Shire Council solar array  
2 Kurrajong Way,  
Beechworth, 3747

February 27, 2023

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To whom it may concern,

On February 20, 2023, the services of High Country Arborist Reports were provided in assessing selected trees on the development site at the rear of 2 Kurrajong Way, Beechworth.

This report, as understood by the author is to be submitted to relevant parties regarding planned development of the site and any relationship to the trees present.

Inspection was undertaken by Ben Keys under calm weather conditions.

As agreed, this tree report will provide the following information regarding trees assessed:

- Onsite inspection of trees
- Tree identification
- Measurements and photographs (DBH tape, digital photographs)
- Observations of tree health and condition
- Expected impact on trees and structures (including TPZ/SRZ details)
- Professional recommendations for works and/or mitigation or changes to construction techniques to allow any significant trees to be retained in accordance with *AS4970-2009 Protection of Trees on Development Sites*.
- Specifics, details, or recommendations as required by the determining authority.

NOTE: Prior to reading this report and subsequently following any advice, opinions, recommendations, or findings provided, you must hereby understand and agree to our *Terms of Advice and Service* as provided at the end of the report.

Report inclusions and exclusions, assessment methodology and specifics pertaining to Australian Standards referenced may also be found at the end of the document

Please find the tree report included below.

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## 1.0 Executive summary

On February 20, 2023, we inspected selected trees on the development site at the rear of 2 Kurrajong Way, Beechworth. This site is the Indigo Shire council office building that is proposed for the installation of solar panels, plus trenching for cables in the vicinity of existing trees.

### General findings:

1. Six trees only were assessed on site; all native species. These trees are located on the raised embankment to the south of council offices. This puts their location within the neighbouring property (defined as 11 Bluegum Crescent; Linaker Motel).
2. Proposed plans for this site involve the installation of solar panels and supporting infrastructure (posts, cabling) along the edge of the embankment.
3. We understand this supporting infrastructure will comprise fifteen concrete posts (approx. 200mm diameter) and 600mm-depth cable trenching to the east of the site.
4. This proposal has the potential to impact several of the surrounding mature trees, many of which have large stem measurements and associated large Tree Protection Zones (TPZ).
5. Tree 1 is a high-value remnant *Eucalyptus mannifera*, located 8.5m from the embankment. Impact to Tree 1 will result from cable trenching at the edge of the retaining wall. Given no tree roots can exist beyond the edge of this wall, we are satisfied minor excavation in this area will not significantly impact Tree 1's health and we expect this tree to remain viable.
6. Trees 2 and 3 are located a sufficient distance from the wall so as not to be affected by trenching.
7. Trees 4 and 5 are maturing *Callitris endlicheri*, located 5-7m from the edge of the embankment. Impact to these trees will result from post-holes dug for panel supports. Given the relatively small size of these post-holes (200mm diameter) we are satisfied this minor excavation will not negatively affect the health of Trees 4 and 5 and they will remain viable.
8. Tree 6 is another high-value remnant *Eucalyptus mannifera*, located 11m from the embankment. Impact to Tree 6 will also result from post-hole excavation. Again, these are

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minor excavation works in comparison to the large TPZ area of Tree 6, so we are satisfied this tree will also remain viable, with expected impacts well under 10%.

9. All excavation works must be undertaken with relatively lightweight machinery (no heavy excavators), unless these larger machines can work from outside tree TPZ areas (excavate using long booms).
10. We understand it will be important that the final solar array is installed at a consistent height, despite the undulating ground on top of the embankment. This must be achieved by varying post heights/installation depth – not via earthworks to level the surface or via any site cut/fill across the TPZ areas of affected trees.
11. This site is subject to Indigo Shire planning overlay: Schedule 1 To Clause 43.05 Neighbourhood Character Overlay. This overlay requires a permit to remove, destroy or lop any trees, but these are not occurring during this project. No permits are required.
12. There is no requirement for a Tree Protection Management Plan for this project, nor the appointment of a Project Arborist to oversee this job.

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## 1.1 Purpose of this report

The purpose of this report is to provide the findings of an independent assessment of the trees occupying the aforementioned area and to provide an arboricultural impact assessment, impact mitigation advice and a risk of harm assessment.

This report has been prepared in accordance with *AS4970-2009: Protection of Trees on Development Sites* and *AS4373-2007: Pruning of Amenity Trees*.

## 1.2 Documents relevant to this report

- *Australian Standard: Protection of Trees on Development Sites AS4970-2009*
- *Australian Standard: Pruning of Amenity Trees AS4373-2007*
- Site proposal / plans
- Indigo Shire planning overlay: *Schedule 1 To Clause 43.05 Neighbourhood Character Overlay*

## 2.0 Site observations

### 2.1 Site overview

Site is a raised embankment to the south (rear) of council offices; 2 Kurrajong Way.



### 2.2 Site photo



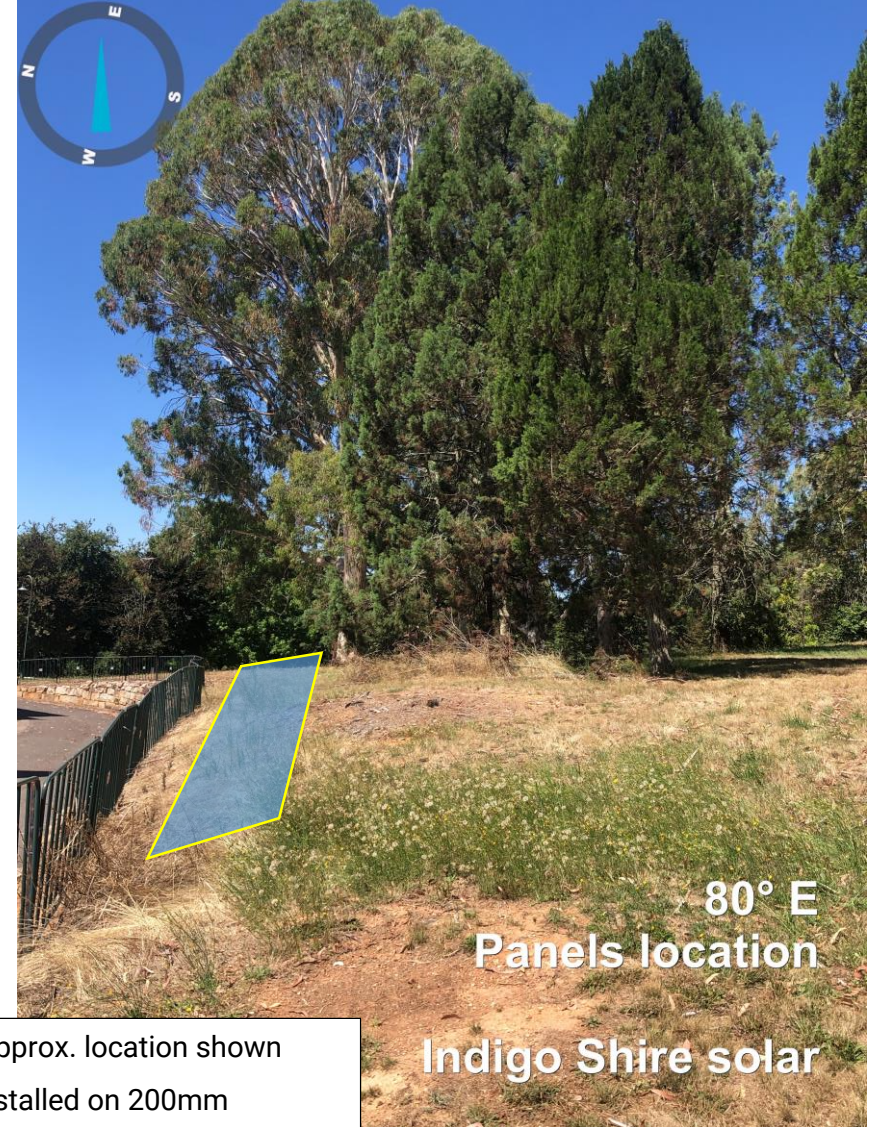
2.3 Site plan showing tree locations (TPZ not to scale)



## 2.4 Additional photos



Trench 600mm deep to be excavated along edge of wall near Tree 1. Tree roots cannot extend beyond wall, so any impact from trenching at this location will be minimal.



Solar panels (approx. location shown above) to be installed on 200mm diameter concrete posts. Minor impacts (less than 10%) expected to Trees 4-6.

### 3.0 Tree data table

TREE ID	BOTANICAL NAME	COMMON NAME	ORIGIN	HEIGHT (m)	WIDTH (m)	DBH (m)	TPZ (m radius)	DAB (m)	SRZ (m radius)	AGE	U.L.E.	STRUCTURE	HEALTH	ARB. VALUE	Distance to trench/post holes	IMPACT
1	<i>Eucalyptus mannifera</i>	Brittle Gum	Vic native	22	16	1.11	13.32	1.22	3.60	Maturing	50+	Good	Good	High	8.5m	Minor
2	<i>Corymbia citriodora</i>	Lemon-scented Gum	Native	9	8	0.4	4.8	0.56	2.59	Maturing	20-50	Average	Good	Medium	12m	Nil
3	<i>Eucalyptus species</i>	Unknown	Native	7	4	0.21, 0.42	5.64	0.47	2.41	Over-mature	0-10	Poor	Poor	Low	9.9m	Nil
4	<i>Callitris endlicheri</i>	Black Cypress Pine	Vic native	7	5	0.38	4.56	0.47	2.41	Maturing	20-50	Good	Good	Medium	5.0m	Minor
5	<i>Callitris endlicheri</i>	Black Cypress Pine	Vic native	6	4	0.32	3.84	0.38	2.20	Maturing	20-50	Average	Average	Medium	7.0m	Minor
6	<i>Eucalyptus mannifera</i>	Brittle Gum	Vic native	18	10	1.54	15	1.72	4.16	Maturing	50+	Average	Average	High	11m	Minor

## 4.0 All tree data

### TREE 1 *Eucalyptus mannifera* Brittle Gum

Native indigenous	SE Australia	Evergreen
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B. Name	ULE	DBH	TPZ	DAB	SRZ
<i>E. mannifera</i>	50+	1.11m	13.32m	1.22m	3.60m
Height	Spread	Health/structure	Age	Arb. Value	Impact
22m	16m	Good, good	Maturing	High	Minor <10%



**TREE 2 *Corymbia citriodora***

**Lemon-scented Gum**

Native	SE Australia	Evergreen
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B. Name	ULE	DBH	TPZ	DAB	SRZ
<i>C. citriodora</i>	20-50	0.40m	4.80m	0.56m	2.59m
Height	Spread	Health/structure	Age	Arb. Value	Impact
9m	8m	Good/average	Maturing	Medium	Nil



**TREE 3 *Eucalyptus species***

**Unknown**

Native	Australia	Evergreen
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B. Name	ULE	DBH	TPZ	DAB	SRZ
<i>Eucalyptus sp.</i>	0-10	0.21, 0.42m	5.64m	0.47m	2.41m
Height	Spread	Health/structure	Age	Arb. Value	Impact
7m	4m	Poor/poor	Over-mature	Low	Nil

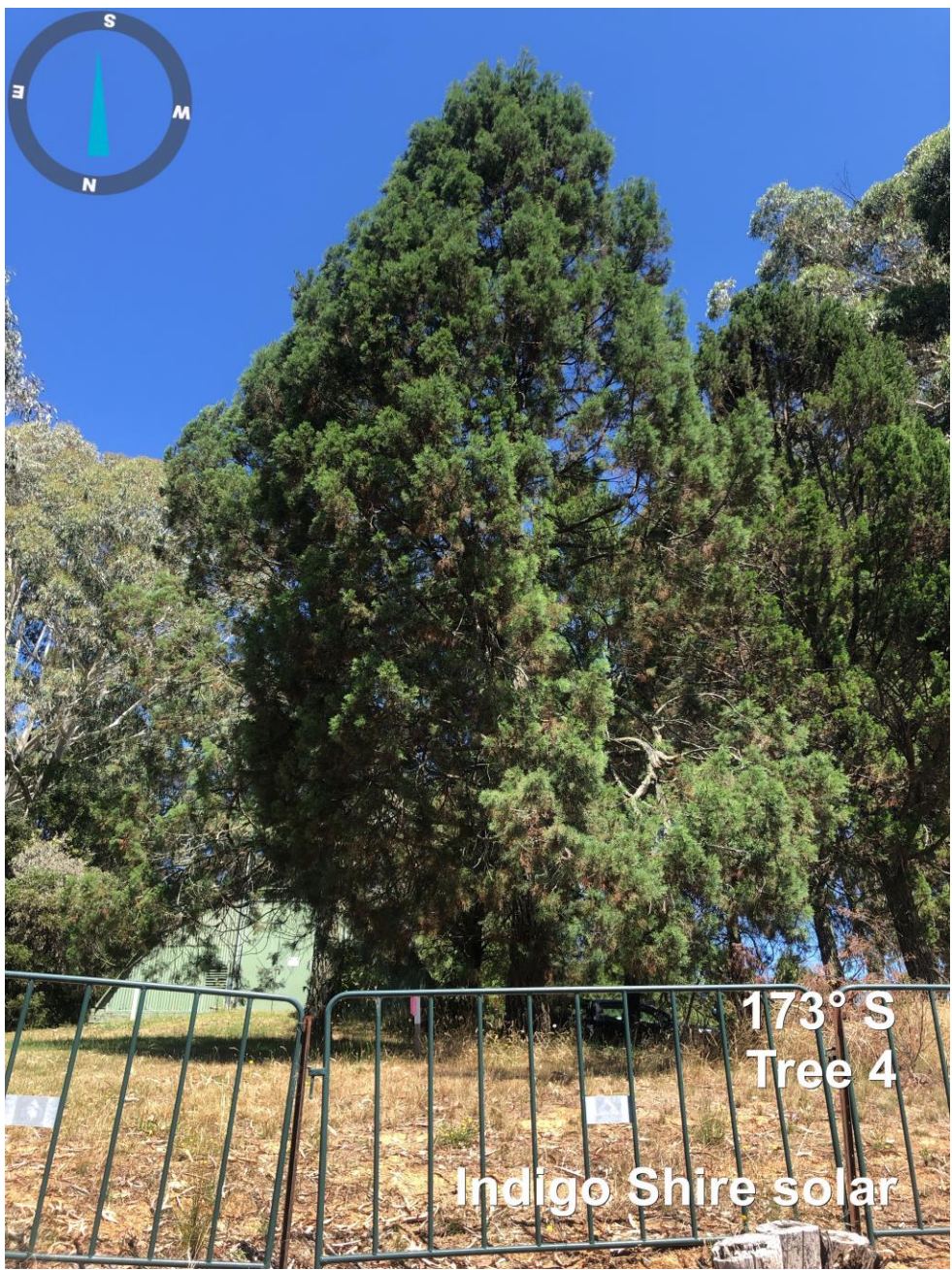


**TREE 4 *Callitris endlicheri***

**Black Cypress Pine**

Native indigenous	SE Australia	Evergreen
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B. Name	ULE	DBH	TPZ	DAB	SRZ
<i>C. endlicheri</i>	20-50	0.38m	4.56m	0.47m	2.41m
Height	Spread	Health/structure	Age	Arb. Value	Impact
7m	5m	Good/good	Maturing	Medium	Minor <10%



**TREE 5 *Callitris endlicheri***

**Black Cypress Pine**

Native indigenous	SE Australia	Evergreen
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B. Name	ULE	DBH	TPZ	DAB	SRZ
<i>C. endlicheri</i>	20-50	0.32m	3.84m	0.38m	2.20m
Height	Spread	Health/structure	Age	Arb. Value	Impact
6m	4m	Average/average	Maturing	Medium	Minor <10%



**TREE 6 *Eucalyptus mannifera* Brittle Gum**

Native indigenous	SE Australia	Evergreen
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B. Name	ULE	DBH	TPZ	DAB	SRZ
<i>E. mannifera</i>	50+	1.54m	15.0m	1.72m	4.16m
Height	Spread	Health/structure	Age	Arb. Value	Impact
18m	10m	Average/average	Maturing	High	Minor <10%



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## 5.0 Report exclusions

This assessment/report does not include the following:

- Below ground inspection (includes: location, condition and/or integrity of roots; condition of inaccessible parts of trunk; property or asset conflicts and/or damage due to roots).
- Soil profile test (including degrees of compaction if any).
- Detailed aerial tree inspection observations/findings (Visual Tree Inspection was conducted from the ground).
- Abiotic disorder certainty (resulting from groundwater analysis, gas leak investigations, etc).
- Certainty of presence or identity of biotic agents (pests, pathogens). Where present, biotic agents must be sampled and sent for lab analysis – a process not included in this commission.
- Certainty of decay present (if any) within the tree (tree was inspected from the outside only, meaning the condition and integrity of the structural wood within the tree cannot be ascertained).

## 6.0 References

Lonsdale, D., 2017. *Principles of Tree Hazard Assessment*. 7th ed. Stokehouse: UK Arb. Association.

Mattheck, C., 1996. *The Body Language Of Trees*. 7th ed. London: Stationery Office Books.

Nicolle, D., 2016. *Eucalypts For Planting In Australia*. Adelaide: Lane Print and Post.

Roberts, J., Jackson, N. & Smith, M., 2018. *Tree Roots In The Built Environment*. 3rd ed. Stokehouse: UK Arb. Association.

Standards Australia, 2007. *AS-4373-2007: Pruning of Amenity Trees*, Sydney: Standards Australia.

Standards Australia, 2009. *AS-4970-2009: Protection of Trees on Development Sites*, Sydney: Standards Australia.

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## 7.0 Descriptors

### 7.1 Origin

**Indigenous:** Known to occur naturally at the subject site location.

**Vic native:** Species that occur naturally in Victoria (may include the subject site location).

**Native:** Species that occur naturally in other states of Australia, but not Victoria.

**Exotic:** species that occur naturally outside of Australia, i.e. species has been introduced.

### 7.2 Useful Life Expectancy (ULE)

**50+ years:** Trees appear to be retainable in the current landscape for more than 50 years.

- Structurally sound trees in locations that can accommodate future growth.
- Minimally-defective trees that could be made suitable for retention in the long term by remedial arboricultural practices and maintenance.
- Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention.

**20-50 years:** Trees that appear to be retainable in the current landscape for 20-50 years.

- Trees that may only live between 20 and 50 years.
- Trees that may live for more than 20 years but would be removed during the course of normal management for safety or nuisance reasons.
- Minimally-defective trees that can be made suitable for retention in the medium term by remedial arboricultural practices and maintenance.

**10-20 years:** Trees that appear to be retainable in the current landscape for 10-20 years.

- Trees that may only live for 10-20 years.
- Trees that may live for more than 15 years but would be removed during the course of normal management for safety or nuisance reasons.
- Defective trees that require substantial remedial work to make safe and are only suitable for retention in the short term.

**0-10 years/REMOVE:** Trees requiring imminent removal, or within 10 years.

- Declining trees due to disease or inhospitable conditions.
- Dangerous trees due to instability or recent loss of adjacent trees and/or structural defects including cavities, decay, included bark, wounds or poor structure.

### 7.3 Health ratings

**Dead:** Tree is completely dead or at an irreparable state of health: non-functional crown (no green leaves), stem cambium dead, no evidence of fresh shoots, heavily declined.

**Poor:** Tree is presenting large quantities of crown dieback or thinning. Persistent infections of pathogens, insect borers, fungal cankers and root disease may be present. Treatments may only be temporary to achieve hazard reduction prior to tree removal.

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**Average:** Tree is presenting symptoms of stress that may be due to seasonal biotic or abiotic conditions (water stress or seasonal defoliators). Symptoms may include tip dieback, crown thinning, defoliation or leaf discoloration. Condition may be reversible.

**Good:** Tree is generally free of pest and disease symptoms; any biotic or abiotic stress is not present over more than 10% of the tree. Foliage cover is healthy/robust.

## 7.4 Structure ratings

**Poor:** Tree has structural weakness that may be due to poor growth development, fungal decay, mechanical damage, or a combination of these. Signs of potential structural failure of major structural components may be present.

**Average:** Tree has structural weaknesses, but is unlikely to fail at any major structural component and does not present symptoms of imminent failure. Minor fungal degradation may be present.

**Good:** Tree has no obvious, notable structural defects, or indicators of fungal decay.

## 7.5 Age classifications

**Juvenile:** Young trees, generally less than 10 years old.

**Semi-mature:** Trees which have reached approx.. half of their expected size/lifespan.

**Mature:** Trees which have reached their expected size and are approximately two thirds of the way through their expected average lifespan.

**Over-mature:** Trees which have over-matured within the surrounding landscape and now present in a state of health and/or structural decline.

**Dead:** Trees with a non-functional crown or that are irreversibly dying.

**Stump re-growth:** Trees which have been cut to a stump and allowed to regrow.

## 7.6 Retention value

**Low:** Trees that offer little in terms of contributing to site amenity for reasons of poor health and/or structural condition or species unsuitability (invasive or environmental weed species). Juvenile and semi-mature trees which could be readily replaced may also be placed in this category. Trees of low retention value should not be a constraint on development.

**Medium:** Trees offering some beneficial attributes that may enhance the site or local environment, but may be limited to some degree by their health, structure or ULE. Moderate retention value trees should be considered for retention where possible within the development design, but not necessarily to the detriment of the design

**High:** Trees which positively contribute to the future site or local environment due to their botanical, historical or local significance in combination with good characteristics of health and structure. Significant remnant trees may be placed in this category regardless of health and structure. High retention value trees should be considered for retention and be incorporated within the design layout.

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## 9.0 Terms of service and advice

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This assessment and subsequent report findings are the culmination of research combined with the professional opinion of a qualified consulting arborist. Our consultants pride themselves on independent reports. This report has not been produced to support a particular motive, produce a desired value, or predict a desired occurrence. All findings are reported without bias towards certain parties or results.

To the author's knowledge, all facts, assessment techniques and material presented is current and accurately researched. Opinions expressed within this report are supported by current research.

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