MEMORANDUM			
TO	[redacted]		
FROM	[redacted]		
DATE	12 April 2021	PURPOSE	For Information
SUBJECT	Addendum report: Ongerup Flora and Fauna Survey		

Purpose

This report has been prepared as an addendum to the *Ongerup Flora and Fauna Survey Report* prepared by Eco Logical Australia (ELA 2021).

Background

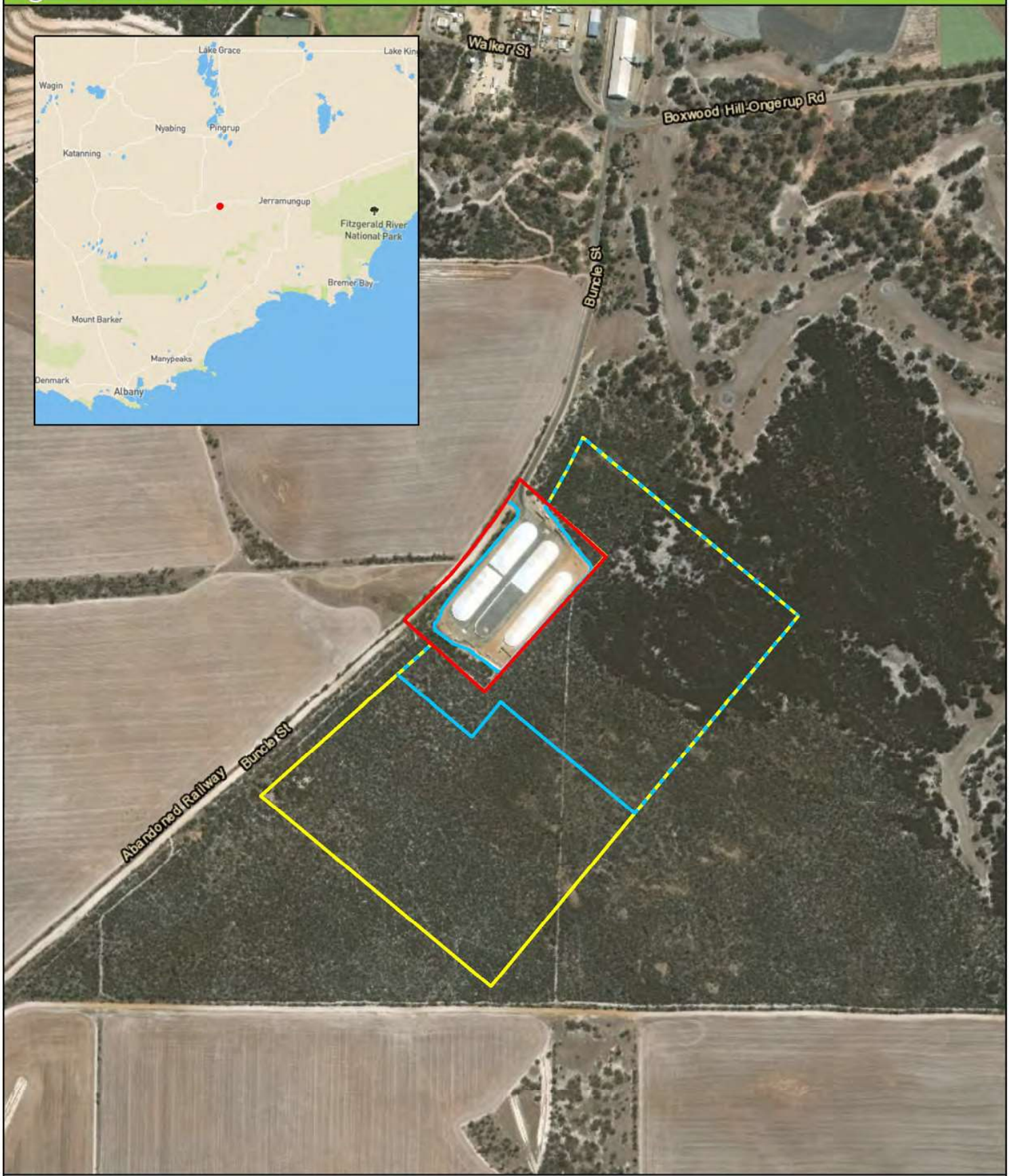
CBH Group (CBH) is proposing to remove native bushland at the existing Ongerup grain receival site, in the Shire of Gnowangerup. The proposed clearing is approximately 15.72 hectares (ha) to allow the construction of up to six open bulkheads for grain receival and storage, and associated infrastructure such as internal roads, weighbridges and sampling locations.

Eco Logical Australia (ELA) was initially engaged by CBH to undertake a Detailed and Targeted flora and vegetation survey and a Level 1 fauna survey (including Black Cockatoo assessment), of an area 32 ha in size (the original study area, **Figure 1**). Subsequent to undertaking surveys of the original study area, ELA was commissioned to undertake a supplementary survey of 5.37 ha (the supplementary study area, **Figure 1**) and an additional survey of part of the original study area (the additional survey study area, **Figure 1**). Scope of the current survey in relation to the supplementary and additional study areas included:

- Undertaking a Detailed vegetation and flora assessment and a Basic vertebrate fauna assessment in the supplementary study area, including a targeted Malleefowl (*Leipoa ocellata*) and conservation significant flora search;
- Undertaking targeted Orange Sun Orchid, *Thelymitra* sp. Ongerup (S. Oborne 142), searches in suitable habitat within the additional survey study area; and
- Reassessing the additional survey study area for evidence of recent (post-September 2018) Malleefowl usage (presence of birds, moulds and/or tracks).

These survey scopes aim to fill some of the ecological gaps identified in the *Ongerup Grain Receival Site expansion – environmental approvals advice memo* (ELA 2020), which will support the environmental approvals for the development.

Figure 1: Site overview



Legend

- Original study area
- Additional survey study area
- Supplementary study area

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Methodology

Desktop review

The desktop review for the original survey (ELA 2021) was considered sufficient to inform the current surveys, both within the supplementary and additional study areas, as such no alterations to the databases queries or subsequent results were made.

Field survey

To ensure data consistency between study areas, the field survey was undertaken as per methodologies described in ELA (2021). Two new quadrats were established in the supplementary study area to confirm the continuation of vegetation communities and vegetation condition previously mapped within the original study area ELA (2021). This was considered adequate survey effort due to the small area of vegetation present in the supplementary study area. The survey effort is shown in **Figure 2**.

The field survey was undertaken by Daniel Brassington and Briana Wingfield on the 16th and 17th November 2020. The survey team's relevant qualifications, experience and licences are provided in **Table 1**. A total of 3.8 mm of rainfall was recorded during the field survey (BoM 2021).

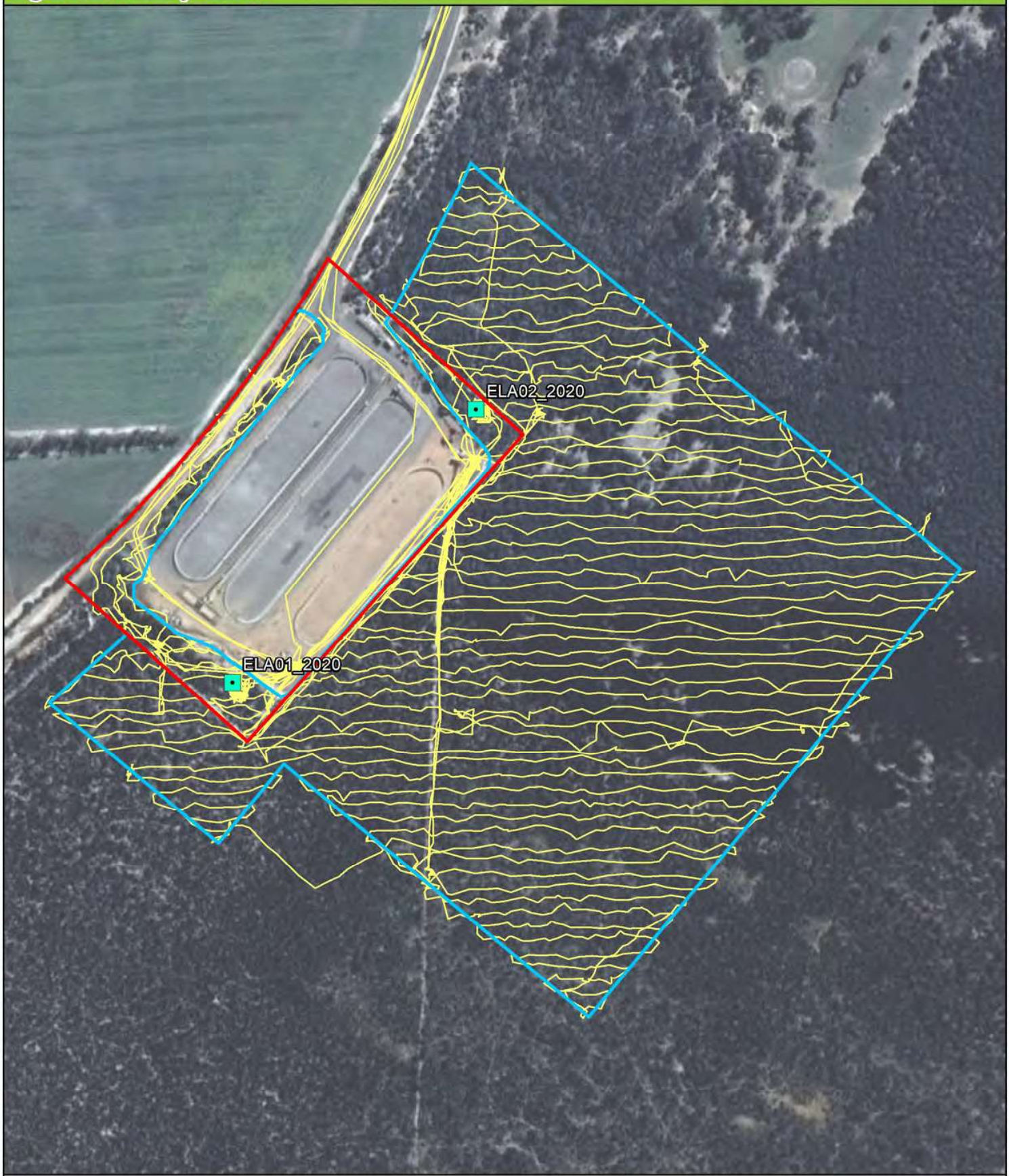
Table 1: Survey team

Name	Qualification	Relevant experience	Licences
Daniel Brassington	BSc. Hons. Environmental Science	Daniel has more than 10 years' experience in botanical surveys and environmental services throughout Western Australia. This includes baseline vegetation studies, threatened and priority flora surveys, weed surveys, rehabilitation and vegetation monitoring.	Flora scientific collection licence: SL012503 DRF permit: TFL 15-1920
Briana Wingfield	BSc. Conservation and Wildlife Biology and Environmental Science (Hons)	Briana has seven years' experience conducting fauna surveys across Western Australia, including basic fauna surveys and targeted black cockatoo habitat assessments.	N/A

Limitations

No constraints or limitations of the survey methods used were identified. Outcomes and explanations of limitations associated with current survey are consistent with the limitations assessment presented in ELA (2021).

Figure 2: Survey effort



Legend

- Additional survey study area
- Supplementary study area
- GPS Track
- Quadrats

Service Layer Credits: Google

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Results and discussion

Desktop assessment

The type, nature and extent of database searches previously undertaken in ELA (2021) was considered adequate to inform the current survey. As a result, there were no changes to the desktop assessment results in ELA (2021), with a total of 49 conservation listed flora and 28 listed fauna species being identified as possibly occurring in the supplementary study area.

Flora and vegetation survey

FLORA OVERVIEW

A total of 45 flora species, representing 16 families and 31 genera, were recorded from the two quadrats in the supplementary study area during the current survey. Ten of these flora species (nine native and one introduced) were not previously identified in ELA (2021) (**Table 2**). Quadrat site data is provided in ELA (2021) and **Appendix A**.

Table 2: Additional flora species recorded from the current survey

Family	Species name
Cyperaceae	*Lepidosperma* sp. Ravensthorpe
Fabaceae	*Gompholobium confertum*
Goodeniaceae	*Coopernookia strophiolata*
Lamiaceae	*Microcorys glabra*
Myrtaceae	*Baeckea latens*
Myrtaceae	*Eucalyptus vegrandis* subsp. *vegrandis*
Myrtaceae	*Melaleuca bracteosa*
Myrtaceae	*Melaleuca laxiflora*
Myrtaceae	*Melaleuca undulata*
Poaceae	**Aira cupaniana*

CONSERVATION SIGNIFICANT FLORA

No Threatened flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the *Biodiversity Conservation Act 2016* (BC Act) were recorded in the supplementary study area during the current survey. Three Priority flora species listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were recorded in the supplementary study area during the current survey, as shown in **Table 3** and **Figure 3**. These three species were also recorded in ELA (2021).

Table 3: Location of Priority flora

Species name	No. of Individuals	Easting	Northing
Leucopogon florulentus (P3)	5	637485	6239608
Leucopogon newbeyi (P3)	10	637307	6239408
Leucopogon newbeyi (P3)	5	637485	6239608
Melaleuca polycephala (P3)	4	637337	6239391
Melaleuca polycephala (P3)	2	637269	6239569
Melaleuca polycephala (P3)	4	637307	6239408

TARGETED ORANGE SUN ORCHID SURVEY

The Orange Sun Orchid, *Thelymitra* sp. Ongerup (S. Oborne 142), listed as Priority 3 by DBCA, was found to have potential to occur from the desktop assessment in ELA (2021) and therefore targeted in the current survey, during the November flowering period (WAH 1998-). However, this species was not recorded during the current survey in the supplementary study area or additional survey study area. Whilst the Ongerup area received less rainfall in October (13.6mm compared to the average of 33mm; BoM 2021), the level of survey effort within the supplementary study area and additional survey study area was considered appropriate to identify and record cryptic species, such as *Thelymitra* sp. Ongerup (S. Oborne 142). In view of these results, the Orange Sun Orchid, *Thelymitra* sp. Ongerup (S. Oborne 142), is considered unlikely to occur within the supplementary study area and additional survey study area.

INTRODUCED FLORA

One additional introduced flora species was identified in the supplementary study area during the current survey, **Aira cupaniana* (Silvery Hairgrass). This species is not listed as a Declared Pest under the *Biosecurity and Agriculture Management Act 2007* (BAM Act) or Weeds of National Significance (WoNS).

Two introduced flora species recorded in ELA (2021) were found in the supplementary study area during the current survey; **Ursinia anthemoides* (Ursinia) and *Vulpia myuros* (Rat's Tail Fescue). Neither of these species are listed as Declared Pests under the BAM Act or as a WoNS.

Figure 3: Conservation significant flora recorded within the supplementary study area

Legend

- Supplementary study area

Conservation significant flora

- *Leucopogon florulentus* (P3)
- *Leucopogon newbeyi* (P3)
- *Melaleuca polycephala* (P3)

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VEGETATION COMMUNITIES

Five vegetation communities were identified and mapped by ELA (2021) in the original study area. Due to the small area of vegetation present in the supplementary study area and clear structural and species composition differences between individual vegetation communities, two quadrats was sufficient to confirm the continuation of vegetation communities. Three of the five vegetation communities were found to extend into the supplementary study area: Vegetation Community 3, 4 and 5. Infrastructure, tracks and roads also occur within the supplementary study area. Descriptions of these vegetation communities and the extent that they occur within the supplementary study area are provided in Table 5 and Figure 4.

Vegetated areas within the supplementary study area accounting for a total of 1.21 ha (22.53% of the supplementary study area), with infrastructure, tracks and roads accounting for the remaining 4.15 ha (77.28%). Vegetation community 5 was the most dominant vegetation type occurring in the supplementary study area (0.53 ha, 9.87%), representing 43.80% of the vegetated area.

No conservation significant ecological communities listed under the EPBC Act, BC Act and/or by DBCA occur or were inferred to occur within the supplementary study area.

VEGETATION CONDITION

Vegetation condition within the supplementary study area was assessed and mapped and the results are depicted in Figure 5. The extent that each vegetation condition occurs within the supplementary study area are provided in Table 4**.**

Vegetation in the supplementary study area ranged from Degraded to Very Good. A total of 4.15 ha (77.28%) of the supplementary study area comprised of infrastructure, tracks and roads. Majority of vegetation within the supplementary study area was recorded as being in Very Good condition (0.61 ha, 50.41%). The remaining vegetation was classed as being in Good condition (0.27 ha, 22.31%) and Degraded condition (0.35 ha, 28.93%).

Table 4: Vegetation condition within the supplementary study area

Condition	Extent within the supplementary study area
Very Good	0.61 ha (11.36%)
Good	0.27 ha (5.03%)
Degraded	0.35 ha (6.52%)
Infrastructure, tracks and roads	4.15 ha (77.28%)
Total	**5.27 ha**

Table 5: Vegetation communities within the supplementary study area

Type	Description	Associated species	Extent within the supplementary study area
Vegetation community 3	*Eucalyptus thamnoides* subsp. *thamnoides* and *Eucalyptus phaenophylla* subsp. *phaenophylla* sparse mallee shrubland over *Melaleuca hamata*, *Melaleuca carrii* and *Gastrolobium crassifolium* open shrubland over *Lepidosperma* sp. Bandalup Scabrid (N. Evelegh 10798) sparse sedgeland.	*Desmocladus asper*, *Lepidosperma fimbriatum*, *Lepidospermum erubescens*, *Lomandra effusa* and *Rinzia communis*.	0.32 ha (5.96%)
Vegetation community 4	*Eucalyptus phenax* subsp. *phenax* and *Eucalyptus thamnoides* subsp. *thamnoides* sparse mallee shrubland over *Melaleuca ?undulata* and *Melaleuca polycephala* sparse shrubland over *Gahnia ancistrophylla* and *Gahnia* sp. dull bases (K.R. Newbey 5111) sparse sedgeland.	*Billardiera laxiflora*, *Dillwynia acerosa*, *Eucalyptus annulate*, *Exocarpus aphyllus* and *Hibbertia lineata*.	0.36 ha (6.70%)
Vegetation community 5	*Eucalyptus thamnoides* subsp. *thamnoides* and *Eucalyptus phaenophylla* subsp. *phaenophylla* sparse mallee shrubland over *Melaleuca glaberrima, Melaleuca hamata* and *Melaleuca spathulata* open shrubland over *Gahnia ancistrophylla* and *Gahnia* sp. dull bases (K.R. Newbey 5111) isolated sedges	*Acacia bidentata*, *Dianella revoluta*, *Eucalyptus captiosa*, *Hakea laurina*, *Hibbertia lineata* and *Neurachne alopecuroidea.*	0.53 ha (9.87%)
Infrastructure, tracks and roads	CBH infrastructure or cleared for tracks and roads	N/A	4.15 ha (77.28%)
Total			**5.27 ha**

Figure 4: Vegetation communities within the supplementary study area

Legend

- Supplementary study area
- Infrastructure, tracks and roads

Vegetation community

- 3: *Eucalyptus thamnoides* subsp. *thamnoides* and *Eucalyptus phaenophylla* subsp. *phaenophylla* sparse mallee shrubland over *Melaleuca hamata*, *Melaleuca carrii* and *Gastrolobium crassifolium* open shrubland over *Lepidosperma* sp. Bandalup Scabrid (N. Evelegh 10798) sparse sedgeland
- 4: *Eucalyptus phenax* subsp. *phenax* and *Eucalyptus thamnoides* subsp. *thamnoides* sparse mallee shrubland over *Melaleuca ?undulata* and *Melaleuca polycephala* sparse shrubland over *Gahnia ancistrophylla* and *Gahnia* sp. dull bases (K.R. Newbey 5111) sparse sedgeland
- 5: *Eucalyptus thamnoides* subsp. *thamnoides* and *Eucalyptus phaenophylla* subsp. *phaenophylla* sparse mallee shrubland over *Melaleuca glaberrima*, *Melaleuca hamata* and *Melaleuca spathulata* open shrubland over *Gahnia ancistrophylla* and *Gahnia* sp. dull bases (K.R. Newbey 5111) isolated sedges

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Figure 5: Vegetation condition within the supplementary study area

Legend

- Supplementary study area
- Infrastructure, tracks and roads

Vegetation condition

- Very Good
- Good
- Degraded

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Fauna survey

FAUNA OVERVIEW

A total of eight additional fauna species, not previously identified in ELA (2021), were recorded in the supplementary study area (Table 6). This included five birds, two mammals (one native and one introduced) and one reptile. One of these additional species, the European Rabbit (*Oryctolagus cuniculus*), was recorded from secondary signs (scats, diggings).

No Threatened fauna species listed under the EPBC Act, BC Act and/or by DBCA were recorded in the supplementary study area during the current survey.

Table 6: Additional fauna species recorded in the supplementary study area

Species name	Common name
Cacatua sanguinea	Little Corella
Lichenostomus virescens	Singing honeyeater
Manorina flavigula	Yellow-throated Miner
Rhipidura leucophrys	Willie Wagtail
Trichoglossus moluccanus	Rainbow lorikeet
**Oryctolagus cuniculus*	European rabbit
Osphranter robustus	Common wallaroo (Euro)
Pseudonaja nuchalis	Western Brown Snake

FAUNA HABITAT

Two fauna habitats were identified and mapped by ELA (2021), one of which was found to extend into the supplementary study area: Open mallee woodland over mixed *Melaleuca* shrubland on light grey/brown sandy clay plain. This habitat accounts for a total of 1.21 ha (22.53% of the supplementary study area), whilst infrastructure, tracks and roads accounts for the remaining 4.15 ha (77.28%). The extent of this fauna habitat within the supplementary study area is provided in Figure 6.

Figure 6: Fauna habitat within the supplementary study area

Legend

- Supplementary study area
- Infrastructure, tracks and roads

Fauna Habitat

- Open mallee woodland over mixed Melaleuca shrubland on light grey/brown sandy clay plain

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TARGETED MALLEEFOWL SURVEY

The Malleefowl (*Leipoa ocellata*), listed as Vulnerable (VU) under the EPBC Act and BC Act, was considered likely to occur from the desktop assessment in ELA (2021) and therefore targeted in the current survey. The targeted search did not identify any current evidence (presence of birds, tracks and/or mounds) within the supplementary study area or additional survey study area. However, the suitable habitat of mallee vegetation over sandy substrate (Benshemesh 2007) within the supplementary study area and additional survey study area is contiguous with nearby habitat where Malleefowl have been previously recorded (DBCA 2007–2021). Although there was a distinct lack of leaf litter present for breeding purposes (Plate 1), Malleefowl could still utilise the supplementary study area and additional survey study area for foraging, and therefore is still considered Likely to occur.

Plate 1: Open mallee woodland (left) and closed mallee forest (right)

Summary

Additional to ELA (2021) surveys of the original study area; the supplementary study area and additional survey study area were surveyed to fill some ecological gaps identified in ELA (2021).

A total of 45 flora species, representing 16 families and 31 genera, were recorded from the two quadrats in the supplementary study area during the current survey. Ten of these flora species (nine native and one introduced) were not previously identified in ELA (2021). No Threatened flora species listed under the EPBC Act and/or the BC Act were recorded in the supplementary study area during the current survey. Three P3 flora species listed by DBCA were recorded in the supplementary study area during the current survey; *Leucopogon florulentus*, *Leucopogon newbeyi* and *Melaleuca polycephala*. These three species were also recorded in ELA (2021).

The Orange Sun Orchid, *Thelymitra* sp. Ongerup (S. Oborne 142) (P3 by DBCA and targeted in the current survey) was not recorded in the supplementary study area or additional survey study area. Favourable rainfall conditions and the level of survey effort were considered appropriate to identify and record the cryptic species. Therefore, the Orange Sun Orchid, *Thelymitra* sp. Ongerup (S. Oborne 142), is considered unlikely to occur within the supplementary study area and additional survey study area.

Five vegetation communities were identified and mapped by ELA (2021) in the original study area. Due to the small area of vegetation present in the supplementary study area and clear structural and species composition differences between individual vegetation communities, two quadrats was sufficient to confirm the continuation of vegetation communities. Three of the five vegetation communities were found to extend into the supplementary study area: Vegetation Community 3, 4 and 5. Infrastructure, tracks and roads also occur within the supplementary study area. Vegetation in the supplementary study area ranged from Degraded to Very Good.

A total of eight additional fauna species, not previously identified in ELA (2021), were recorded in the supplementary study area. This included five birds, two mammals (one native and one introduced) and one reptile. No Threatened fauna species listed under the EPBC Act, BC Act and/or by DBCA were recorded in the supplementary study area during the current survey. No evidence of Malleefowl (*Leipoa ocellata*) (presence of birds, tracks and/or mounds) was not recorded in the supplementary study area or additional survey study area. Although there was a distinct lack of leaf litter present for breeding purposes, Malleefowl could still utilise the suitable habitat within the supplementary study area and additional survey study area for foraging, and therefore is still considered Likely to occur.

Two fauna habitats were identified and mapped by ELA (2021), one of which was found to extend into the supplementary study area: Open mallee woodland over mixed *Melaleuca* shrubland on light grey/brown sandy clay plain.

References

Benshemesh, J. 2007. National Recovery Plan for Malleefowl. Department for Environment and Heritage, South Australia.

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Appendix A: Quadrat data

Site name	Date	Site type	Observer
ELA01_2020	17/11/2020	Quadrat 10 x 10m	DB
Vegetation condition	**Disturbance notes**	**Age since fire (years)**	**Vegetation community**
Very Good	N/A	>20 years	4
Habitat description	**Landform unit**	**Aspect**	**Slope %**
Sparse mallee shrubland	Flat	N/A	0
Soil colour	**Soil type**	**Rock type**	**Outcropping (%)**
Fine white	Sandy loam	N/A	0
Easting		**Northing**	
637307		6239408	

Species	Cover (%)	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus flocktoniae subsp. flocktoniae	8	M	Mallee shrub
Eucalyptus vegrandis subsp. vegrandis	7	M	Mallee shrub
Eucalyptus thamnoides	1	M	Mallee shrub
Melaleuca bracteosa	15	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca acuminata subsp. acuminata	3	M	Shrub, cycad, grass-tree, tree-fern

Species	Cover (%)	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Baeckea latens	2	M	Shrub, cycad, grass-tree, tree-fern
Leucopogon newbeyi (P3)	2	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca polycephala (P3)	1.5	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca bracteosa	15	M	Shrub, cycad, grass-tree, tree-fern
Dillwynia acerosa	1	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca glaberrima	1	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca undulata	1	M	Shrub, cycad, grass-tree, tree-fern
Grevillea oligantha	0.25	M	Shrub, cycad, grass-tree, tree-fern
Exocarpos aphyllus	0.2	M	Shrub, cycad, grass-tree, tree-fern
Coopernookia strophiolata	0.1	M	Shrub, cycad, grass-tree, tree-fern
Gompholobium confertum	0.1	M	Shrub, cycad, grass-tree, tree-fern
Grevillea heugelii	0.1	M	Shrub, cycad, grass-tree, tree-fern
Anthotium humile	0.01	M	Shrub, cycad, grass-tree, tree-fern
Leucopogon sp. Bremer Bay (K.R. Newbeyi 4667)	0.01	M	Shrub, cycad, grass-tree, tree-fern
Hakea laurina	0.25	M	Tree, palm
Gahnia ancistrophylla	4	G	Sedge
Neurachne alopecuroidea	0.5	G	Other grass
**Aira cupaniana*	0.01	G	Other grass
Rytidosperma setaceum	0.01	G	Other grass
**Vulpia myuros*	0.25	G	Forb
Dianella revoluta	0.1	G	Forb
**Ursinia anthemoides*	0.01	G	Forb
Cassytha aurea var. hirta	C		Vine
Billardiera laxiflora	C		Vine

Site name	Date	Site type	Observer
ELA02_2020	17/11/2020	Quadrat 10 x 10m	DB
Vegetation condition	**Disturbance notes**	**Age since fire (years)**	**Vegetation community**
Very Good	N/A	>20 years	5
Habitat description	**Landform unit**	**Aspect**	**Slope %**
Sparse mallee shrubland	Flat	N/A	0
Soil colour	**Soil type**	**Rock type**	**Outcropping (%)**
Fine white	Sandy loam	N/A	0
Easting		**Northing**	
637485		6239608	

Species	Cover (%)	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Eucalyptus phaenophylla	4	M	Mallee shrub
Eucalyptus vegrandis subsp. vegrandis	2	M	Mallee shrub
Eucalyptus thamnoides	0.1	M	Mallee shrub
Melaleuca hamata	5	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca glaberrima	2	M	Shrub, cycad, grass-tree, tree-fern
Baeckea latens	2	M	Shrub, cycad, grass-tree, tree-fern
Gastrolobium crassifolium	2	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca bracteosa	4	M	Shrub, cycad, grass-tree, tree-fern

Species	Cover (%)	Stratum (U=Upper, M=Middle, G=Ground)	Sub-Stratum
Melaleuca spathulata	12	M	Shrub, cycad, grass-tree, tree-fern
Leucopogon newbeyi (P3)	1	M	Shrub, cycad, grass-tree, tree-fern
Leucopogon florulentus (P3)	1	M	Shrub, cycad, grass-tree, tree-fern
Acacia sphacelata subsp. recurva	0.25	M	Shrub, cycad, grass-tree, tree-fern
Melaleuca laxiflora	0.1	M	Shrub, cycad, grass-tree, tree-fern
Exocarpos aphyllus	0.1	M	Shrub, cycad, grass-tree, tree-fern
Microcorys glabra	0.2	M	Shrub, cycad, grass-tree, tree-fern
Leptospermum erubescens	0.1	M	Shrub, cycad, grass-tree, tree-fern
Lasiopetalum rosmarinifolium	0.1	M	Shrub, cycad, grass-tree, tree-fern
Acacia amputata	0.1	M	Shrub, cycad, grass-tree, tree-fern
Hakea laurina	1	M	Tree, palm
Gahnia ancistrophylla	1	G	Sedge
Austrostipa elegantissima	0.1	G	Other grass
Neurachne alopecuroidea	0.5	G	Other grass
Lepidosperma tuberculatum	0.2	G	Other grass
Lepidosperma sp. Ravensthorpe (G.F.Craig 5188)	0.2	G	Other grass
**Ursinia anthemoides*	0.1	G	Forb
**Vulpia myuros*	0.1	G	Forb
Lomandra effusa	0.1	G	Forb
Desmocladus asper	0.1	G	Forb
Thysanotus patersonii	0.01	G	Forb
Billardiera laxiflora	C	G	Vine