

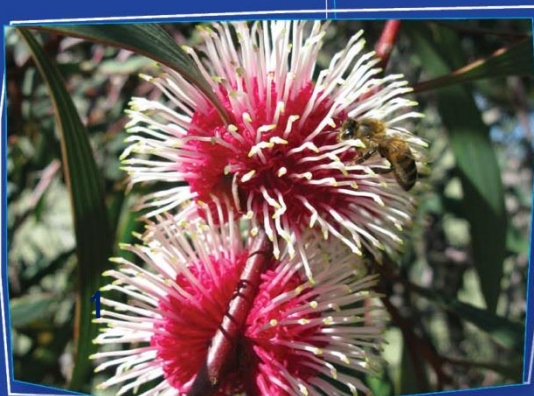
## Reserve 24633 Coomalbidgup Swamp Swamp Yate PEC Assessment

Offset Site for Shire of Esperance  
Strategic Purpose Permit CPS 9524/1



Report compiled by Shire of Esperance Environmental Team:  
Katherine Walkerden– BSc, MEnvSc, Environmental Officer  
Julie Waters – BEnvSc (Hons), Environmental Coordinator

June 2023



## 1 Executive Summary

The Shire of Esperance was required to demonstrate 1.49 ha of Swamp Yate PEC as an environmental offset for their Strategic Purpose Permit CPS 9524/4.

Initially Reserve 26192 'Roberts Swamp reserve' was offered as an offset site to Department of Water and Environmental Regulation (DWER), however this site did not meet the Swamp Yate PEC listing documentation criterion.

Reserve 24633 'Coomalbidgup Swamp' will now be offered as an alternative site as this site does meet the Swamp Yate PEC listing documentation criterion. This report demonstrates Coomalbidgup Swamp's suitability.

## 2 Swamp Yate, Priority Ecological Community (PEC)

The Priority 3(iii) "Swamp Yate, *Eucalyptus occidentalis*, woodlands in seasonally inundated clay basins in the South Coast of Western Australia" Ecological Community, was initially nominated as a Priority Ecological Community by Ecologia in 2008 as part of their Regional Flora and vegetation assessment for Grange Resources Limited Southdown Magnetite Proposal. (Appendix 1).

As discussed at the Esperance District Threatened Flora and Ecological Communities Recovery Team meeting on 8/3/2023, this is listing documentation should be used to carry out assessments on potential occurrences of this PEC.

## 3 Reserve 24633, Coomalbidgup Swamp

Reserve 24633 was initially offered as a conservation offset site in 2017 CPS 7487/1, CPS 7485/1 and CPS 7489/1 (Waters, 2017). The 201.67ha reserve is located on the intersection of South Coast Highway and Coomalbidgup Road, approximately 50km west of Esperance. The reserve contains 171.5 ha of vegetation mapped as 'Yate / paperpark mixed forest'.

A report published in June 2008 as part of the South Coast Wetland Monitoring Project states that numerous dead Swamp Yate trees are scattered throughout the wetland as a result of altered hydrology which was evident after high rainfall events which occurred in the 1980's when the wetland became flooded. In recent years regenerating yates have been observed within the shore buffer zones. In discussions with long time Coomalbidgup resident John Gray the swamp used to dry out sometimes but in the 45 years he's been at Coomalbidgup he's only seen it dry twice, and it hasn't dried up for the last 20 years. Clearing in the catchment is likely to be the main cause of this increased inundation.

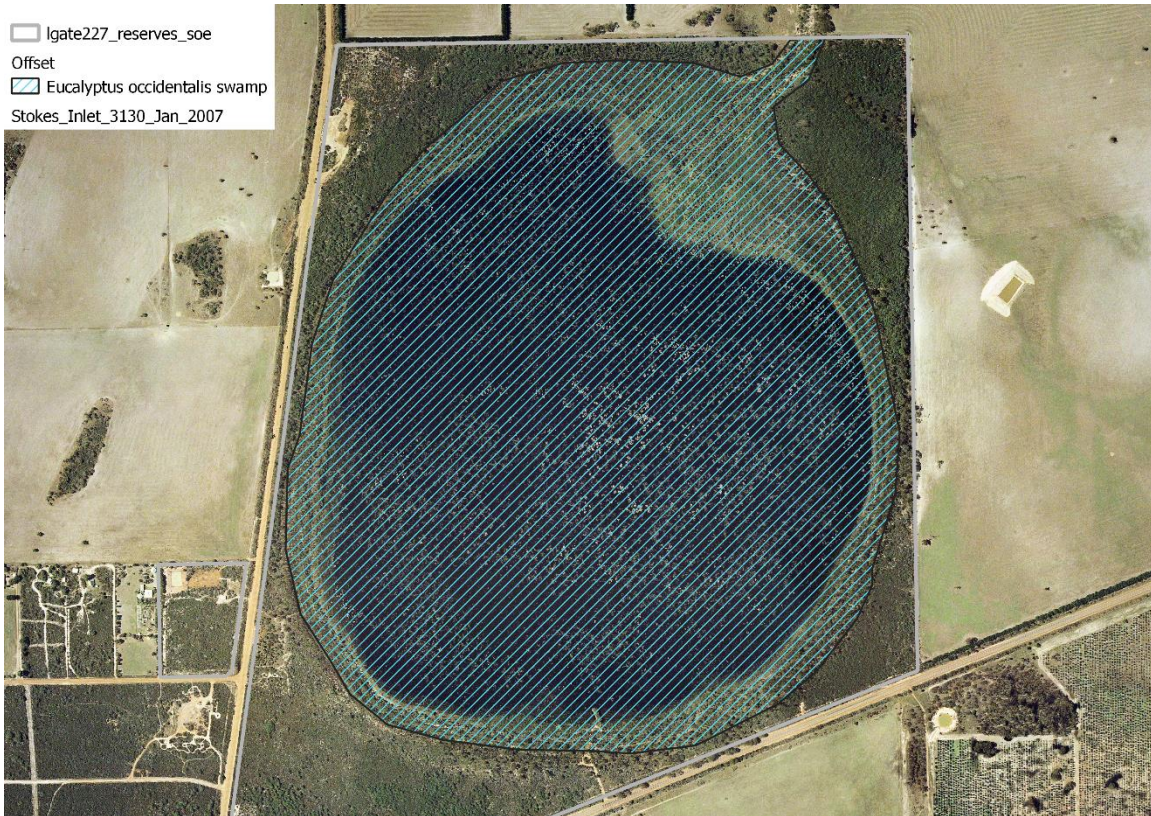


Figure 1. Coomalbidgup Swamp in 2007.

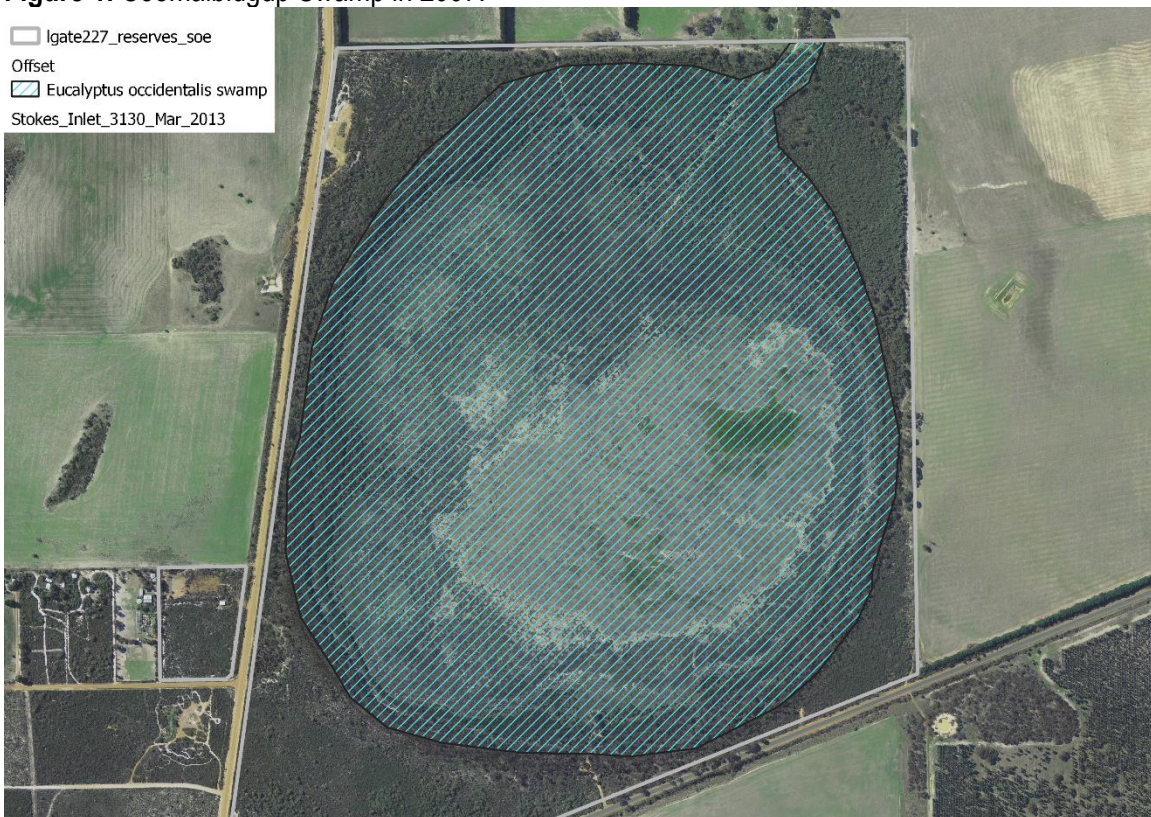


Figure 2. Coomalbidgup swamp in 2013.



**Figure 3.** Coomalbidgup swamp in 2018.

## 4 Fire History

The 2017 report stated that the fire history of this site appears to be long unburnt with no obvious signs of any recent fire activity.

However on 2/1/2023 a small fire burnt the south west corner of reserve 24633. This was extinguished by the creation of machine built firebreaks. The fire went into the yate vegetation.



Figure 4. Coomalbidup swamp fire January 2023.

## 5 Swamp Yate PEC Assessment

On 26/5/2023, Katherine Walkerden and Julie Waters carried out an assessment on Coomalbidgup Swamp against the Ecologia (2008) listing criterion to ascertain that the site met the PEC listing criterion.

<b>Swamp Yate (<i>Eucalyptus occidentalis</i>) woodlands in seasonally inundated clay basins with intact understorey and fringing vegetation</b>	<b>Criterion 1: Abiotic Factors</b> i) Occurs on valley floor; ii) Basin is more or less circular; iii) Seasonally inundated.	<b>Criterion 2:</b> Centre of basin inhabited by <i>Eucalyptus occidentalis</i> low woodland (often with an understorey of <i>Melaleuca cuticularis</i> ).	<b>Criterion 4:</b> Fringing the wetland is <i>dense rushes and sedges</i> .	<b>Criterion 3:</b> Peripheral to the central basin is a waterlogged zone of <i>E. occidentalis</i> associated with heath to open scrub and/or small trees. <i>Melaleuca calycina</i> , <i>M. glaberrima</i> , <i>M. incana</i> , <i>M. pulchella</i> , <i>Taxandria callistachys</i> ;	<b>Swamp Yate PEC</b>
<i>Eucalyptus occidentalis</i> over <i>Melaleuca cuticularis</i>  - 171.546 ha	i) occurred on a valley floor ii) Basin is circular ii) Basin would historically dry out over summer. The Swamp has only dried out once since 2010.	Littoral vegetation was dominated by <i>Eucalyptus occidentalis</i> with <i>Melaleuca cuticularis</i> understorey.  Central basin was previously dominated by <i>Eucalyptus occidentalis</i> prior to a significant flooding event in 2007.	Edge of littoral vegetation was a dense layer of Cyperaceae sedges with scattered rushes.	Peripheral to the central basin was <i>Melaleuca cuticularis</i> .	Mostly consistent with PEC



**Figure 5.** Photo of Yate Swamp taken from Western side of Coomalbidgup Swamp. Photo taken by Katherine Walkerden on the 26.05.2023.



**Figure 6.** Photo of yate swamp taken from edge of burned area. Photo taken by Katherine Walkerden on the 26.05.2023.



**Figure 7.** Recently burned area of yate swamp. Photo taken by Katherine Walkerden on the 26.05.2023.



**Figure 8.** Photo of Yate swamp showing dense sedge layer. Photo taken by Katherine Walkerden on the 26.05.2023.





**Figure 9.** Photo of Coomalbidgup Yate swamp. Photo taken by Katherine Walkerden on the 26.05.2023.

## 6 References

Hopkinson, K (2002) *Wetland Conservation at Esperance WA Recommendations for the Management of the Coomalbidgup Swamp wetlands*, A report produced by Green Skills for the Natural Heritage Trust and the Water and Rivers Commission.

Waters J (2017) *Offsets Proposal Coomalbidgup Swamp - Reserve 24633, Flora and Vegetation Report* June 2017, Shire of Esperance.

## Appendix 1: Swamp Yate (*Eucalyptus occidentalis*) woodland in seasonally-inundated basins - Community Description

Description obtained from: Ecologia for Grange Resources Limited (2008) Southdown Magnetite Proposal. Regional Flora and vegetation assessment. Unpublished Report

### Swamp Yate (*Eucalyptus occidentalis*) woodland in seasonally-inundated basins

#### Community Description

The centre of these sumplands was usually inhabited by Swamp Yate (*Eucalyptus occidentalis*) low woodland often with an understorey of the Saltwater Paperbark (*Melaleuca cuticularis*). Peripheral to the central seasonally-inundated basin of these wetlands there was often a waterlogged zone of *E. occidentalis* associated with *Kunzea recurva* heath to open scrub and/or the small trees *Melaleuca preissiana* and *Banksia littoralis* and a number of mallees (primarily *Eucalyptus decipiens* subsp. *adesmophloia*). Fringing the wetland there was usually an *Anarthria laevis* sedgeland. However in the wetlands where there was shallow laterite, the sedgeland was usually replaced with a *Pericalymma ellipticum* heath.

The understorey shrubs of this vegetation were typically very open. *Melaleuca cuticularis*, *Kunzea recurva* and *Hakea nitida* generally formed an open tall shrub layer. *Hakea denticulata*, *Hakea laurina*, *Hakea varia*, *Exocarpos sparteus*, *Agonis theiformis*, *Lambertia inermis* and *Nuytsia floribunda* were also sometimes present in the seasonally waterlogged areas fringing the sumplands. Other common shrub taxa, recorded at low density across the sampled sites were *Isopogon trilobus*, *Acacia pulchella* var. *glaberrima*, *Taxandria spathulata*, *Astartea glomerosa*, *Astartea aspera*, *Beaufortia empetrifolia*, *Melaleuca concinna* and *Conothamnus aureus*. Other mid and low shrub species recorded at lower abundance included *Acacia biflora*, *Acacia luteola*, *A. subcaerulea*, *Adenanthos cuneatus*, *Banksia baueri*, *Banksia dryandroides*, *Bossiaea praetermissa*, *Daviesia inflata*, *Dryandra falcata*, *Dryandra mucronulata* subsp. *mucronulata*, *Dryandra tenuifolia* var. *tenuifolia*, *Gompholobium confertum*, *Hibbertia lineata*, *Leucopogon conostephioides*, *Melaleuca subtrigona*, *Petrophile squamata* subsp. *squamata*, *Petrophile media*, *Spyridium majoranifolium*, *Stirlingia anethifolia* and *Thomasia stelligera*. The perennial herbs *Villarsia parnassifolia*, *Anthotium humile*, *Stylidium corymbosum*, *Goodenia filiformis* and *Velleia trinervis* were abundant in the wetlands in good condition. These herbs inhabited the shallowly-inundated zone of the wetland and were most apparent when the water receded and the herbs were in flower in late summer. A dense ground layer was generally present in the seasonally waterlogged fringe of the sumplands and this was dominated by rushes and sedges including *Anarthria laevis*, *Baumea juncea*, *Gahnia ancistrophylla*, *Lepidosperma striatum*, *Schoenus laevigatus*, *Schoenus subfascicularis* and *Tricostularia compressa*. A suite of native grasses was also recorded including *Amphipogon amphipogonoides*, *Austrostipa hemipogon*, *Cyperochloa hirsuta*, *Deyeuxia quadriseta* and *Neurachne alopecuroidea*. Naturalised alien grasses and herbs were prevalent in the more disturbed wetlands and these included \**Aira caryophyllea*, \**Cirsium vulgare*, \**Conyza parva*, \**Conyza sumatrensis*, \**Hordeum leporinum*, \**Hypochaeris glabra*, *Juncus pallidus*, \**Lagurus ovatus*, \**Pennisetum clandestinum*, \**Pseudognaphalium luteoalbum*, \**Rumex crispus*, \**Solanum nigrum* and \**Vulpia myuros* var. *megalura*

## Appendix 2: Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form



### Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

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<b>COMMUNITY:</b> Swamp Yate, Eucalyptus occidentalis, woodlands in seasonally inundated clay basins in the South Coast of Western Australia		<b>OBSERVATION DATE:</b> 26/05/2023
<b>New occurrence</b> <input checked="" type="checkbox"/>	<b>Site ID:</b> _____	<b>CONS STATUS:</b> P3
<b>OBSERVER/S:</b> Katherine Walkerden, Julie Waters		<b>PHONE:</b> 0418568774
<b>ROLE:</b> Environmental officer & Coordinator	<b>ORGANISATION:</b> Shire of Esperance	
<b>EMAIL:</b> Katherine.Walkerden@esperance.wa.gov.au		

**DESCRIPTION OF LOCATION** (Provide at least nearest town/named locality, and the distance and direction to that place):

Eucalyptus occidentalis dominated swamp fringe with Melaleuca cuticularis understorey.  
Edge of littoral vegetation was dominated by a dense sedge layer.  
Central swamp was inhabited by scattered Eucalyptus occidentalis trees prior to permanent inundation. **Reserve No:** 24633

**DISTRICT:** Esperance **LGA:** Esperance **Land manager present:**

<b>DATUM:</b> GDA84 / MG84 <input checked="" type="checkbox"/> AGD84 / AMG84 <input type="checkbox"/> WGS84 <input type="checkbox"/> Unknown <input type="checkbox"/>	<b>COORDINATE S:</b> (if UTM coords provided, Zone is also required) DecDegrees <input type="checkbox"/> DegMinSec <input type="checkbox"/> UTM <input checked="" type="checkbox"/> <b>Lat / Northing:</b> 828855 <b>Long / Easting:</b> 349174 <b>Zone:</b> 51	<b>METHOD USED:</b> GPS <input type="checkbox"/> Differential GPS <input checked="" type="checkbox"/> Map <input checked="" type="checkbox"/> No. satellites: _____ Map used: _____ Boundary polygon captured: <input checked="" type="checkbox"/> Map used: _____
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**LAND TENURE:**

Nature reserve <input type="checkbox"/>	Timber reserve <input type="checkbox"/>	Private property <input type="checkbox"/>	Rail reserve <input type="checkbox"/>	Shire road reserve <input type="checkbox"/>
National park <input type="checkbox"/>	State forest <input type="checkbox"/>	Pastoral lease <input type="checkbox"/>	MRWA road reserve <input type="checkbox"/>	Other Crown reserve <input checked="" type="checkbox"/>
Conservation park <input type="checkbox"/>	Water reserve <input type="checkbox"/>	UCL <input type="checkbox"/>	SLK/Pole _____ to _____	Specify other: <u>Shire conservation reserve</u>

**AREA ASSESSMENT:** Edge survey  Partial survey  Full survey  Area observed (m<sup>2</sup>): \_\_\_\_\_  
**EFFORT:** Time spent surveying (minutes): \_\_\_\_\_ No. of minutes spent / 100 m<sup>2</sup>: \_\_\_\_\_

THREATS - type, and supporting information: <small>e.g. clearing, too frequent fire, weed, disease. Refer to field manual for list of threats &amp; agents.</small>	Cause/Agent: <small>e.g. weed type, grazing species, recreation type</small>	Area affected	Current impact (N-E)	Potential impact (L-E)	Potential Threat Offset (S-L)
• <b>Altered hydrological regime</b>	Broadacre clearing surrounding occurrence	____%	H	H	____
• <b>Weed invasion</b>	Asparagus asparagoides in PEC: Leptospermum laevigatum invasion in surrounding vegetation	____%	L	M	____
• <b>Increased use of the reserve for recreation. 4WD</b>	Fire access tracks installed during January 2023 fire	____%	L	H	____
• <b>Use of the reserve by neighbouring fire brigade</b>	Fire access tracks installed during January 2023 fire	____%	L	H	____
• _____	_____	____%	____	____	____
• _____	_____	____%	____	____	____
• _____	_____	____%	____	____	____
• _____	_____	____%	____	____	____
• _____	_____	____%	____	____	____

\*Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme  
 \*Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)

*Please return form to:*  
**communities.data@dpaw.wa.gov.au**  
 or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: \_\_\_\_\_ Date entered: \_\_\_\_\_ Database no: \_\_\_\_\_



## Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

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<b>CONDITION OF OCCURRENCE: (Bush Forever Scale)</b> (estimate % of area in each)					
Pristine <input type="checkbox"/> <input style="width: 40px;" type="text"/> %	Very Good <input type="checkbox"/> <input style="width: 40px;" type="text"/> %	Degraded <input type="checkbox"/> <input style="width: 40px;" type="text"/> %			
Excellent <input type="checkbox"/> <input style="width: 40px;" type="text"/> %	Good <input type="checkbox"/> <input style="width: 40px;" type="text"/> %	Completely Degraded <input type="checkbox"/> <input style="width: 40px;" type="text"/> %			
<b>RECOMMENDED MANAGEMENT ACTIONS:</b> e.g. roadside markers, weed control, etc.					
Rehabilitate firebreak tracks					
<b>ACTIONS IMPLEMENTED (include date):</b>					
<b>HABITAT INFORMATION:</b> (Check more than one box for combinations or where necessary)					
<b>LANDFORM:</b> Crest <input type="checkbox"/> Hill <input type="checkbox"/> Ridge <input type="checkbox"/> Outcrop <input type="checkbox"/> Slope <input type="checkbox"/> Flat <input type="checkbox"/> Open depression <input type="checkbox"/> Drainage line <input type="checkbox"/> Closed depression <input type="checkbox"/> Wetland <input checked="" type="checkbox"/>	<b>ROCK TYPE:</b> Granite <input type="checkbox"/> Dolerite <input type="checkbox"/> Laterite <input type="checkbox"/> Ironstone <input type="checkbox"/> Limestone <input type="checkbox"/> Quartz <input type="checkbox"/> Specify other: <input style="width: 40px;" type="text"/>	<b>LOOSE ROCK:</b> <small>(on soil surface; e.g. gravel, quartz fields)</small>  0-10% <input checked="" type="checkbox"/> 10-30% <input type="checkbox"/> 30-50% <input type="checkbox"/> 50-100% <input type="checkbox"/>	<b>SOIL TYPE:</b> Sand <input type="checkbox"/> Sandy loam <input type="checkbox"/> Loam <input type="checkbox"/> Clay loam <input type="checkbox"/> Light clay <input type="checkbox"/> Peat <input type="checkbox"/> Specify other: <input style="width: 40px;" type="text"/>	<b>SOIL COLOUR:</b> Red <input type="checkbox"/> Brown <input type="checkbox"/> Yellow <input type="checkbox"/> White <input type="checkbox"/> Grey <input type="checkbox"/> Black <input type="checkbox"/> Specify other: <input style="width: 40px;" type="text"/>	<b>DRAINAGE:</b> Well drained <input type="checkbox"/> Seasonally inundated <input checked="" type="checkbox"/> Permanently inundated <input checked="" type="checkbox"/> Tidal <input type="checkbox"/> Specify other: <input style="width: 40px;" type="text"/>
<b>Specific Landform Element:</b> (Refer to field manual for additional values)					
<b>CONDITION OF SOIL:</b> Dry <input type="checkbox"/> Moist <input checked="" type="checkbox"/> Waterlogged <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Cracked <input type="checkbox"/> Saline <input type="checkbox"/> Other: <input style="width: 40px;" type="text"/>					
<b>VEGETATION CLASSIFICATION:</b>	1. <u>Eucalyptus occidentalis</u> swamp fringe with <u>Melaleuca cuticularis</u>				
	2. Scattered <u>Eucalyptus occidentalis</u> over dense mixed sedges				
	3. <input style="width: 40px;" type="text"/>				
	4. <input style="width: 40px;" type="text"/>				

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### Threatened and Priority Ecological Community (TEC/PEC) Occurrence Report Form

<b>FIRE HISTORY:</b>			
<b>Last Fire:</b>	Season/Month: January	Year: 2023	Fire intensity: High <input type="checkbox"/> Medium <input type="checkbox"/> Low <input checked="" type="checkbox"/> No evidence of fire <input type="checkbox"/>
<b>Actual Occurrence Landuse:</b> Picnic area			
<b>Adjacent Landuse:</b> Farmland, Fire brigade, satellite townsite			
<b>Associated Flora Species:</b>			
Eucalyptus occidentalis			
Melaleuca cuticularis			
Lepidosperma sp.			
Acacia cyclops			
Acacia saligna			
Mixed sedges			
* Note a 2017 Esperance Wildflower Society species list for Reserve 24633 exists			
<b>Associated Fauna Species:</b>			
Coomalbidgup swamp has been regularly monitored and surveyed by CALM and Birds Australia between 1981-1991, due to the large number of water birds that roost, nest and moult in the area. The wetlands have also been surveyed as part of the CALM waterfowl counts conducted annually in South Western Australia during 1988-1992.			
9 different species of waterbirds have been recorded. In addition, a survey of the birds within the reserve fringing Coomalbidgup Swamp identified 36 different species, including breeding pairs of Eurasian Coots.			
<b>OTHER COMMENTS:</b>			
References: Wetland Conservation at Esperance WA Recommendations for the Management of the Coomalbidgup Swamp wetlands, A report produced by Green Skills for the Natural Heritage Trust and the Water and Rivers Commission by Wetland project officer Kevin Hopkinson December 2002			

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**Threatened and Priority  
Ecological Community (TEC/PEC)  
Occurrence Report Form**

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<b>ATTACHED:</b>	Map <input type="checkbox"/>	Mudmap <input type="checkbox"/>	Photo <input type="checkbox"/>	GIS data <input type="checkbox"/>	Field notes <input type="checkbox"/>
Other:	<input type="text"/>				
<b>COPY SENT TO:</b>	Regional Office <input type="checkbox"/>	District Office <input checked="" type="checkbox"/>	Other: <input type="text"/>		
<b>Submitter of record:</b>	<u>Katherine Walkerden</u>		<b>Role:</b>	<u>Environmental Officer</u>	
<b>Signature:</b>	<input type="text"/>		<b>Date submitted:</b>	<u>08.08.2023</u>	

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