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22nd November 2018

Daniel Panickar
Eco Logical Australia
Level 1 Bishops See
235 St Georges Terrace
Perth WA 6000

RE: Level 1 Flora, Fauna and Vegetation Survey Windmills 3 and 11 Albany Windfarm.

Dear Daniel,

I write in regards to the Level 1 Flora, Fauna and Vegetation Survey undertaken at the Albany Windfarm of the approximate 5753m² (Windmill 3) and 6568m² (Windmill 11) survey areas, within the City of Albany. Refer to Figure 1 and 2. A survey for species listed under the *Wildlife Act 1950* and *EPBC Act 1999* was undertaken on the 12th November 2018 by Dr Karlene Bain (Zoologist) and Bianca Theyer (Conservation and Wildlife Biologist) and the 2nd and 13th November 2018 by Ellen Hickman (Botanist) from Bio Diverse Solutions.

Specialist People Involved

Karlene has worked within the Environmental Sector for over 20 years with the Department of Parks and Wildlife (formerly Dept. Conservation and Land Management and Dept. Environment and Conservation). Dr Karlene Bain is an Australian Leader in small mammals and threatened Fauna, with a keen interest in spiders.

Ellen Hickman specialises in vegetation and flora surveys in the south-west of Western Australia. She has 18 years' experience as a botanist, initially as a research assistant for the Botany Department of the University of Western Australia, then as a Rare Flora Officer with the Department of Environment and Conservation on the south coast of Western Australia.

Bianca Theyer has been with Bio Diverse Solutions for 2 years. Previous to this she completed her Honours in Conservation Biology at UWA, and has assisted various organisations such as DBCA (formerly DPaW) Bush Heritage Australia and Australian Wildlife Conservancy to undertake biodiversity monitoring tasks. She has a keen interest in small mammals.

The scope of works

The scope of works to Eco Logical Australia (ELA) included:

- Desktop assessment of the subject area, of publicly available databases for probable Threatened flora and fauna species (DRF and Priority listed flora) data. Reviewed threatened flora, fauna or ecological community DBCA database requests, as supplied by ELA;
- Undertake reconnaissance flora and vegetation survey across the subject site through relevé sampling in vegetation types present, field GPS vegetation and flora survey and mapping of boundaries of vegetation types;
- Undertake any identification of flora species, including herbarium identification if required;
- Preparation of GIS files of Vegetation Types, Condition and populations of Threatened Species;
- Undertake a Level 1 Fauna Survey across the subject site through low intensity sampling and reconnaissance survey of fauna and to provide habitat maps and descriptions of the area;
- Undertake targeted survey for Mains Assassin Spider (*Zephyrarchaea mainae*);
- Provide ELA with all data pertaining to the site and a brief report / letter detailing findings to be incorporated into ELAs documentation; and
- Surveys were aligned with the appropriate government agency legislation and guidelines.



Figure 1: Windmill 3 survey area



Figure 2: Windmill 11 survey area

A summary of the flora findings of the survey is outlined as:

- A desktop inventory of potential flora species likely to occur within 10 km of the survey area was undertaken using the following databases: Nature Map Database Search (Online); Protected Matters Search Tool (Department of Environment); and WA Herbarium records accessed through Flora Base (WA Department of Parks and Wildlife);
- The vegetation community at the Wind Turbine 3 site is a mosaic of predominantly Coastal Limestone Heath (ARVS 5) with patches of Coastal Heath (ARVS 3). Refer to Survey Findings – Windmill 3 on page 22;
- The vegetation community at the Wind Turbine 3 site is a mosaic of Peppermint Low Forest (ARV 2) and Coastal Heath (ARV 3). Refer to Survey Findings – Windmill 11 on page 23
- Targeted surveys were undertaken for 13 species of Declared Rare Flora, 43 Priority listed species, 1 presumed extinct species (Table 5) and 5 TECs / PECs (Table 6);
- There is potential suitable habitat for 18 of the listed species (*Synaphea incurva*, *Leucopogon cymbiformis*, *Gyrostemon thesioides*, *Thelymitra variegata*, *Conospermum quadripetalum*, *Melaleuca ringens*, *Austrostipa mundula*, *Synaphea preissii*, *Gahnia sclerioides*, *Thomasia quercifolia*, *Thomasia solanacea*, *Eucalyptus x missilis*, *Corybas limpidus*, *Adenanthos x cunninghamii*, *Kennedia glabrata*, *Conostylis misera*, *Drakaea micrantha* and *Calectasia cyanea*);
- *Thomasia quercifolia* was identified at Windmill 3 with 9 individuals located within the survey area and an additional 36 found within the 10m buffer area (total of 45 individuals);
- All *Thomasia quercifolia* individuals identified to the south west of Windmill 3. Clearing of vegetation in this area should be avoided if possible. If the area must be cleared to allow for maintenance operations the client will need to seek permission from DBCA to take the species; and
- None of the potential Priority or Threatened Ecological Communities were identified as being within the survey areas.

A summary of the fauna findings of the survey is outlined as:

- A desktop inventory of potential flora species likely to occur within 10 km of the survey area was undertaken using the following databases: Nature Map Database Search (Online) and Protected Matters Search Tool (Department of Environment);
- Vegetation was assessed for suitability for presence of *Zephyrarchaea mainae* at each Windmill and areas deemed suitable habitat were sampled. Seven plots were sampled at Windmill 3 and 5 at Windmill 11;
- No *Zephyrarchaea mainae* individuals were found at either site; and
- The presence of the Priority 4 *Isoodon fusciventer* (Quenda) was detected through diggings at Windmill 11. No Threatened or Priority fauna species were detected at Windmill 3.

Please refer to the Survey Report Attachment 1.

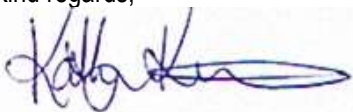
Conclusion

In conclusion Bio Diverse Solutions ascertain that there is one P4 flora species (*Thomasia quercifolia*) at Windmill 3 and one P4 fauna species (*Isoodon fusciventer*) at Windmill 11 pursuant to the following legislation:

- *Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. Administered by the Australian Government Department of the Environment (DoE);
- *Wildlife Conservation Act 1950 (WC Act)*. Administered by the Western Australian Department of Parks and Wildlife (DPaW); and
- DPaW Priority Flora list. A non-legislative list maintained by DPaW for management purposes.

Thank you for the opportunity to undertake this project. If you have any queries regarding this matter please feel free to contact me via email on kath@biodiversesolutions.com.au or phone/fax on 9842 1575.

Kind regards,



Kathryn Kinnear
Director, Senior Environmental Consultant
Bio Diverse Solutions

Attachment 1
Level 1 Survey Report

Level 1 Flora and Fauna Brief Report

Job Description: Level 1 Flora and Fauna survey at Windmills 3 and 11 within the City of Albany Windfarm.

Date: 2nd, 12th and 13th November 2018

Botanist: Ellen Hickman.

Ecologist: Karlene Bain and Bianca Theyer.

Windmill 3 Survey outcomes

The vegetation community at the Wind Turbine 3 site is a mosaic of predominantly Coastal Limestone Heath (ARVS 5) with patches of Coastal Heath (ARVS 3). One priority listed species *Thomasia quercifolia* (P4) was identified at this site. A few non-invasive weed species were present at the site, so the vegetation condition is considered 'Excellent'. No threatened fauna species were detected at within the survey area. There is potential marginal habitat for the threatened *Zephyrarchaea mainae* with 7 plots sampled from. No *Z. mainae* individuals were detected. Refer to Table 1 outlining the flora and Table 2 for fauna species recorded.

Table 1: List of flora species recorded within the Coastal Limestone Heath / Coastal Heath mosaic.

Family	Genus	Species	Common Name	Plant form
Anarthriaceae	<i>Anarthria</i>	<i>prolifera</i>		sedge
Anarthriaceae	<i>Lyginia</i>	<i>barbata</i>		sedge
Apiaceae	<i>Daucus</i>	<i>glochidiatus</i>	Australian Carrot	herb
Apiaceae	<i>Platysace</i>	<i>compressa</i>	Tapeworm Plant	herb
Asteraceae	<i>Asteridea</i>	<i>pulverulenta</i>	Common Bristle Daisy	herb
Asteraceae	<i>Hypochaeris</i>	<i>radicata</i>	Flat Weed *	herb
Asteraceae	<i>Lagenophora</i>	<i>huegellii</i>		herb
Asteraceae	<i>Olearia</i>	<i>axillaris</i>	Coastal Daisybush	shrub
Asteraceae	<i>Rhodanthe</i>	<i>citrina</i>		herb
Asteraceae	<i>Senecio</i>	<i>pinnatifolius</i>		herb
Asteraceae	<i>Waitzia</i>	<i>suaveolens</i>	Fragrant Waitzia	herb
Casuarinaceae	<i>Allocasuarina</i>	<i>humilis</i>	Dwarf Sheoak	shrub
Casuarinaceae	<i>Allocasuarina</i>	<i>lehmanniana</i>	Dune Sheoak	shrub
Chenopodiaceae	<i>Rhagodia</i>	<i>baccata</i>	Berry Saltbush	shrub
Cyperaceae	<i>Cyathochaeta</i>	<i>equitans</i>		sedge
Cyperaceae	<i>Lepidosperma</i>	<i>squamatum</i>		sedge
Cyperaceae	<i>Schoenus</i>	<i>caespititius</i>		sedge
Dilleniaceae	<i>Hibbertia</i>	<i>grossulariifolia</i>		shrub
Dilleniaceae	<i>Hibbertia</i>	<i>racemosa</i>	Stalked Guinea Flower	shrub
Elaeocarpaceae	<i>Tremandra</i>	<i>stelligera</i>		shrub
Ericaceae	<i>Acrotriche</i>	<i>cordata</i>	Coast Ground Berry	shrub
Ericaceae	<i>Leucopogon</i>	<i>parviflorus</i>	Coast Beard-heath	shrub
Ericaceae	<i>Leucopogon</i>	<i>propinquus</i>		shrub
Ericaceae	<i>Leucopogon</i>	<i>distans</i>		shrub
Ericaceae	<i>Leucopogon</i>	<i>obovatus</i>		shrub
Ericaceae	<i>Lysinema</i>	<i>ciliatum</i>	Curry Flower	shrub
Euphorbiaceae	<i>Amperea</i>	<i>ericoides</i>		shrub
Fabaceae	<i>Acacia</i>	<i>cochlearis</i>	Ridgid Wattle	shrub
Fabaceae	<i>Acacia</i>	<i>littorea</i>		shrub
Fabaceae	<i>Bossiaea</i>	<i>linophylla</i>		shrub

Note: * indicates weed species

Table 1 continued.

Family	Genus	Species	Common Name	Plant form
Fabaceae	<i>Gompholobium</i>	<i>polymorphum</i>		herb
Fabaceae	<i>Jacksonia</i>	<i>horrida</i>		shrub
Geraniaceae	<i>Pelargonium</i>	<i>capitatum</i>	Rose Pelargonium*	herb
Geraniaceae	<i>Pelargonium</i>	<i>littorale</i>		herb
Goodeniaceae	<i>Scaevola</i>	<i>crassifolia</i>	Thick-leaved Fan-flower	shrub
Goodeniaceae	<i>Scaevola</i>	<i>nitida</i>	Shining Fanflower	shrub
Goodeniaceae	<i>Velleia</i>	<i>trinervis</i>		herb
Haemodoraceae	<i>Conostylis</i>	<i>aculeata</i>	Prickly Conostylis	herb
Iridaceae	<i>Patersonia</i>	<i>occidentalis</i>	Purple Flag	herb
Lamiaceae	<i>Westringia</i>	<i>dampieri</i>		shrub
Loganiaceae	<i>Orianthera</i>	<i>serpyllifolia</i>		herb
Malvaceae	<i>Thomasia</i>	<i>quercifolia</i>	Oak Leaved Thomasia (P4)	shrub
Montiaceae	<i>Calandrinia</i>	<i>liniflora</i>	Parakeelya	herb
Myrtaceae	<i>Agonis</i>	<i>flexuosa</i>	Peppermint	shrub
Myrtaceae	<i>Eucalyptus</i>	<i>angulosa</i>	Ridge-fruited Mallee	mallee
Myrtaceae	<i>Melaleuca</i>	<i>diosmifolia</i>		shrub
Myrtaceae	<i>Melaleuca</i>	<i>thymoides</i>		shrub
Orchidaceae	<i>Thelymitra</i>	<i>macrophylla</i>		herb
Orobanchaceae	<i>Bellardia</i>	<i>trixago</i>	Bellardia	herb
Phyllanthaceae	<i>Phyllanthus</i>	<i>calycinus</i>	False Boronia	shrub
Phyllanthaceae	<i>Poranthera</i>	<i>microphylla</i>	Small Poranthera	herb
Poaceae	<i>Lagurus</i>	<i>ovatus</i>	Hare's Tail Grass*	grass
Polygalaceae	<i>Comesperma</i>	<i>virgatum</i>	Milkwort	herb
Primulaceae	<i>Lysimachia</i>	<i>arvensis</i>	Pimpernel*	herb
Proteaceae	<i>Adenanthos</i>	<i>cuneatus</i>	Coastal Jugflower	shrub
Proteaceae	<i>Adenanthos</i>	<i>sericeus</i>	Woolly Bush	shrub
Proteaceae	<i>Banksia</i>	<i>grandis</i>	Bull Banksia	shrub
Proteaceae	<i>Banksia</i>	<i>nivea</i>	Honeypot Dryandra	shrub
Proteaceae	<i>Banksia</i>	<i>sessilis</i>	Parrot Bush	shrub
Proteaceae	<i>Hakea</i>	<i>oleifolia</i>	Dungyn	shrub
Proteaceae	<i>Hakea</i>	<i>prostrata</i>	Harsh Hakea	shrub
Proteaceae	<i>Hakea</i>	<i>ruscifolia</i>	Candle Hakea	shrub
Proteaceae	<i>Hakea</i>	<i>varia</i>	Variable-leaved Hakea	shrub
Ranunculaceae	<i>Clematis</i>	<i>pubescens</i>	Common Clematis	creeper
Restionaceae	<i>Desmocladus</i>	<i>flexuosus</i>		sedge
Rhamnaceae	<i>Spyridium</i>	<i>globulosum</i>	Basket Bush	shrub
Rhamnaceae	<i>Spyridium</i>	<i>majoranifolium</i>		shrub
Rubiaceae	<i>Opercularia</i>	<i>hispidula</i>	Hispid Stinkweed	herb
Rubiaceae	<i>Opercularia</i>	<i>vaginata</i>	Dog Weed	herb
Solanaceae	<i>Anthocercis</i>	<i>littorea</i>	Yellow Tailflower	shrub
Stylidiaceae	<i>Stylidium</i>	<i>violaceum</i>	Violet Triggerplant	herb
Thymelaeaceae	<i>Pimelea</i>	<i>ferruginea</i>		shrub

Note: * indicates weed species



Figure 1: Representative images of the Coastal Limestone Heath / Coastal Heath mosaic within the survey area.

Table 2: List of fauna species recorded within the Coastal Limestone Heath / Coastal Heath mosaic.

Family	Species name	Vernacular
Mammals and Birds		
Macropodidae	<i>Macropus fuliginosus</i>	Western grey kangaroo
Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie wagtail
Timaliidae	<i>Zosterops lateralis</i>	Silvereye
Maluridae	<i>Malurus splendens</i>	Splendid wren
Meliphagidae	<i>Phylidonyris novaehollandiae</i>	New Holland honeyeater
Rhipiduridae	<i>Rhipidura albiscapa</i>	Grey Fantail
Spiders		
Zodariidae	<i>Storosa tetrica</i>	
Eutichuridae	<i>Cheiracanthium sp.</i>	
Araneidae	<i>Eriophora biapicata</i>	Garden Orb Weaving Spiders
Gnaphosoidea (super Family)	<i>Gnaphosidae (family)</i>	Ground Spiders
Lamponidae	<i>Lampona cylindrata</i>	Whitetailed Spider
Theridiidae	<i>Emertonella sp.</i>	
Thomisidae	<i>Stephanopsis barbipes</i>	Crab Spider
Salticidae	<i>Servaea sp.</i>	



Figure 2: Representative images of the spider sampling locations (Plots 1-4) throughout Windmill 3 survey area.



Figure 3: Representative images of the spider sampling locations (plots 5-7) throughout Windmill 3 survey area.

Windmill 11 Survey outcomes

The vegetation community at the Wind Turbine 3 site is a mosaic of Peppermint Low Forest (ARVS 2) and Coastal Heath (ARVS 3). No priority or threatened species were detected at this site. Fauna species at this site particularly birds were quite low, the only threatened species detected was *Isoodon obesulus* (P4), with several areas of diggings detected. The activity level was quite low within the survey area and is likely marginal habitat. There is potential marginal habitat for the threatened *Zephyrarchaea mainae* with 5 plots sampled from. No *Z mainae* individuals were detected. Refer to Table 3 outlining the flora species and Table 4 for fauna species recorded.

Table 3: List of flora species recorded within the Peppermint Low Forest / Coastal Heath mosaic.

Family	Genus	Species	Common Name	Plant form
Anarthriaceae	<i>Anarthria</i>	<i>prolifera</i>		sedge
Anarthriaceae	<i>Lyginia</i>	<i>barbata</i>		sedge
Apiaceae	<i>Daucus</i>	<i>glochidiatus</i>	Australian Carrot	herb
Apiaceae	<i>Platysace</i>	<i>compressa</i>	Tapeworm Plant	herb
Apiaceae	<i>Xanthosia</i>	<i>tasmanica</i>		herb
Araliaceae	<i>Trachymene</i>	<i>pilosa</i>	Native Parsnip	herb
Asparagaceae	<i>Thysanotus</i>	<i>gracilis</i>		herb
Asparagaceae	<i>Thysanotus</i>	<i>patersonii</i>		herb
Asteraceae	<i>Lagenophora</i>	<i>huegelii</i>		herb
Asteraceae	<i>Olearia</i>	<i>axillaris</i>	Coastal Daisybush	shrub
Asteraceae	<i>Rhodanthe</i>	<i>citrina</i>		herb
Asteraceae	<i>Senecio</i>	<i>pinnatifolius</i>		herb
Casuarinaceae	<i>Allocasuarina</i>	<i>humilis</i>	Dwarf Sheoak	shrub
Casuarinaceae	<i>Allocasuarina</i>	<i>lehmanniana</i>	Dune Sheoak	shrub
Cyperaceae	<i>Cyathochaeta</i>	<i>equitans</i>		sedge
Cyperaceae	<i>Lepidosperma</i>	<i>squamatum</i>		sedge
Cyperaceae	<i>Schoenus</i>	<i>caespititius</i>		sedge
Dilleniaceae	<i>Hibbertia</i>	<i>amplexicaulis</i>		herb
Dilleniaceae	<i>Hibbertia</i>	<i>furfuracea</i>		shrub
Dilleniaceae	<i>Hibbertia</i>	<i>racemosa</i>	Stalked Guinea Flower	shrub
Droseraceae	<i>Drosera</i>	<i>erythrorhiza</i>	Red Ink Sundew	herb
Elaeocarpaceae	<i>Tremandra</i>	<i>stelligera</i>		shrub
Ericaceae	<i>Leucopogon</i>	<i>obovatus</i>		shrub
Ericaceae	<i>Lysinema</i>	<i>ciliatum</i>	Curry Flower	shrub
Euphorbiaceae	<i>Amperea</i>	<i>ericoides</i>		shrub
Fabaceae	<i>Acacia</i>	<i>littorea</i>		shrub
Fabaceae	<i>Acacia</i>	<i>pulchella</i>	Prickly Moses	shrub
Fabaceae	<i>Bossiaea</i>	<i>linophylla</i>		shrub
Fabaceae	<i>Gompholobium</i>	<i>polymorphum</i>		herb
Fabaceae	<i>Gompholobium</i>	<i>tomentosum</i>	Hairy Yellow Pea	herb
Fabaceae	<i>Isotropis</i>	<i>cuneifolia</i>	Granny Bonnets	herb
Fabaceae	<i>Jacksonia</i>	<i>horrida</i>		shrub
Geraniaceae	<i>Pelargonium</i>	<i>capitatum</i>	Rose Pelargonium*	herb
Goodeniaceae	<i>Scaevola</i>	<i>crassifolia</i>	Thick-leaved Fan-flower	shrub
Goodeniaceae	<i>Velleia</i>	<i>trinervis</i>		herb

Note: * indicates weed species

Table 3 continued.

Family	Genus	Species	Common Name	Plant form
Haemodoraceae	<i>Conostylis</i>	<i>aculeata</i>	Prickly Conostylis	herb
Iridaceae	<i>Patersonia</i>	<i>occidentalis</i>	Purple Flag	herb
Loganiaceae	<i>Orianthera</i>	<i>serpyllifolia</i>		herb
Myrtaceae	<i>Agonis</i>	<i>flexuosa</i>	Peppermint	shrub
Myrtaceae	<i>Eucalyptus</i>	<i>angulosa</i>	Ridge-fruited Mallee	mallee
Myrtaceae	<i>Melaleuca</i>	<i>densa</i>		shrub
Myrtaceae	<i>Melaleuca</i>	<i>thymoides</i>		shrub
Olacaceae	<i>Olax</i>	<i>phyllanthi</i>		shrub
Orchidaceae	<i>Caladenia</i>	<i>reptans</i>	Little Pink Fairy Orchid	herb
Orchidaceae	<i>Cyrtostylis</i>	<i>robusta</i>		herb
Orchidaceae	<i>Thelymitra</i>	<i>benthamiana</i>	Leopard Orchid	herb
Orobanchaceae	<i>Orobanche</i>	<i>minor</i>	Lesser Broomrape*	herb
Pittosporaceae	<i>Billardiera</i>	<i>fusiformis</i>	Australian Bluebell	creeper
Poaceae	<i>Briza</i>	<i>maxima</i>	Blowfly Grass*	herb
Polygalaceae	<i>Comesperma</i>	<i>virgatum</i>	Milkwort	herb
Proteaceae	<i>Adenanthos</i>	<i>cuneatus</i>	Coastal Jugflower	shrub
Proteaceae	<i>Banksia</i>	<i>attenuata</i>	Slender Banksia	shrub
Proteaceae	<i>Banksia</i>	<i>grandis</i>	Bull Banksia	shrub
Proteaceae	<i>Banksia</i>	<i>nivea</i>	Honeypot Dryandra	shrub
Proteaceae	<i>Hakea</i>	<i>oleifolia</i>	Dungyn	shrub
Proteaceae	<i>Hakea</i>	<i>prostrata</i>	Harsh Hakea	shrub
Proteaceae	<i>Hakea</i>	<i>ruscifolia</i>	Candle Hakea	shrub
Ranunculaceae	<i>Clematis</i>	<i>pubescens</i>	Common Clematis	creeper
Restionaceae	<i>Desmocladius</i>	<i>flexuosus</i>		sedge
Rhamnaceae	<i>Spyridium</i>	<i>globulosum</i>	Basket Bush	shrub
Rhamnaceae	<i>Spyridium</i>	<i>majoranifolium</i>		shrub
Rubiaceae	<i>Opercularia</i>	<i>hispidula</i>	Hispid Stinkweed	herb
Thymelaeaceae	<i>Pimelea</i>	<i>rosea</i>	Rose Banjine	shrub

Note: * indicates weed species



Figure 4: Representative images of the Peppermint Low Forest / Coastal Heath mosaic within the survey area

Table 4: List of fauna species recorded within the Peppermint Low Forest / Coastal Heath mosaic.

Family	Species name	Vernacular
Mammals and Birds		
Macropodidae	<i>Macropus fuliginosus</i>	Western Grey Kangaroo
Muridae	<i>Rattus fuscipes</i>	Bush Rat
Peramelidae	<i>Isoodon obesulus</i> (P4)	Quenda
Meliphagidae	<i>Anthochaera lunulata</i>	Western Wattlebird
Meliphagidae	<i>Phylidonyris novaehollandiae</i>	New Holland honeyeater
Artamidae	<i>Cracticus tibicen</i>	Australian Magpie
Spiders		
Zodariidae	<i>Storosa tetrica</i>	
Eutichuridae	<i>Cheiracanthium</i> sp.	
Deinopidae	<i>Menneus</i> sp.	
Thomisidae	<i>Diaea</i> sp.	
Clubionidae	<i>Clubiona</i> sp.	
Miturgidae	<i>Thasyraea lepida</i>	
Oxyopidae	<i>Oxyopes</i> sp.	
Thomisidae	<i>Stephanopis barbipes</i>	Crab Spider
Salticidae	<i>Servaea</i> sp.	



Figure 5: Representative images of the spider sampling locations (Plots 8-11) throughout Windmill 11 survey area.



Figure 5: Representative images of the spider sampling locations (Plot 12) throughout Windmill 11 survey area.

Threatened Flora, Priority and Ecological Communities, and Fauna risk assessments for Windmills 3 and 11
Table 5: Threatened flora survey outcomes and risk assessment (continued over page)

Family	Species	Status (WA)	Habitat	Flowering Period	Suitable Habitat Present	Flowering Y/N	Survey Outcome/Comment
Araliaceae	<i>Hydrocotyle serendipita</i>	P2	Known from two areas of burnt woodland on slopes below granite peaks in Two Peoples Bay Nature Reserve and Torndirrup National Park. Grey-black or orange-brown sand over granite,	Oct-Dec	N	Y	Fire ephemeral. No suitable habitat on site. Species not found.
Asparagaceae	<i>Laxmannia jamesii</i>	P4	Grey sand. Winter-wet locations.	May-Jul	N	N	No suitable habitat on site. Species not found.
Asparagaceae	<i>Thysanotus isantherus</i>	P4	Granite	Nov-Dec	N	Y	No suitable habitat on site. Species not found.
Centrolepidaceae	<i>Centrolepis caespitosa</i>	P4	White sand, clay. Salt flats, wet areas.	Oct-Dec	N	Y	No suitable habitat on site. Species not found.
Cyperaceae	<i>Gahnia sclerioides</i>	P4	Loam, sandy soils. Moist shaded situations.		Y	N	Species not found.
Dasypogonaceae	<i>Calectasia cyanea</i>	T	White, grey or yellow sand, gravel. Occurs in heathland on gentle slopes with <i>Allocasuarina humilis</i> , <i>Banksia grandis</i> , <i>Adenanthos cuneatus</i> , <i>Hakea ruscifolia</i> and <i>Melaleuca thymoides</i> .	Jun-Oct	Y	N	Species not found.
Droseraceae	<i>Drosera fimbriata</i>	P4	White sand, granite.	Sept-Oct	N	N	No suitable habitat on site. Species not found.
Ericaceae	<i>Andersonia</i> sp. Mitchell River (B.G. Hammersley 925)	P3	Grey sand over laterite or granite.	Jen-Sept	N	N	No suitable habitat on site. Species not found.
Ericaceae	<i>Leucopogon alternifolius</i>	P3	Grey/white sand. Swampy areas, seasonally wet areas.	Aug-Dec	N	Y	No suitable habitat on site. Species not found.

Table 5 continued.

Family	Species	Status (WA)	Habitat	Flowering Period	Suitable Habitat Present	Flowering Y/N	Survey Outcome/Comment
Ericaceae	<i>Leucopogon cymbiformis</i>	P2	White/grey or yellow sand, lateritic gravelly soils. Sandplains, wet flats, foothills.	Jul-Nov or Feb-Mar	Y	Y	Species not found.
Ericaceae	<i>Lysinema lasianthum</i>	P4	Swamps, seasonally wet areas.	Jul-Nov or Feb-Mar	N	N	No suitable habitat on site. Species not found.
Ericaceae	<i>Sphenotoma drummondii</i>	T	Stony or shallow soils over granite or quartzite. Steep rocky slopes, crevices of rocks.	Sept-Dec	N	Y	No suitable habitat on site. Species not found.
Euphorbiaceae	<i>Euphorbia sarcostemmoides</i>	P1	Sandstone ridges, quartzite hills.		N	N	Records show this species has only been found in the Gascoyne and Little Sandy Desert IBRA Region. No suitable habitat on site. Species not found.
Fabaceae	<i>Gastrolobium ferrugineum</i>	P2	Sand, brown-red sandy gravel, laterite. Plains.	Aug-Sept	N	N	No suitable habitat on site. Species not found.
Fabaceae	<i>Acacia ataxiphylla</i> subsp. <i>ataxiphylla</i>	P3	Gravelly clay loam, white/grey sand. Flats, roadsides	Nov-Dec or Jan	N	Y	No suitable habitat on site. Species not found.
Fabaceae	<i>Acacia prismifolia</i>	X	Rocky slopes	N/A	N	N/A	Presumed extinct. Species not found.
Fabaceae	<i>Kennedia glabrata</i>	T	Soil pockets, sandy soils. Granite outcrops.	Aug-Nov	Y	Y	No suitable habitat on site. Species not found.
Goodeniaceae	<i>Goodenia sepalosa</i> var. <i>glandulosa</i>	P3	Red sand or loam.	Jan-Dec	N	Y	Records show this species has only been found in the Dampierland, Northern Kimberley and Victoria Bonaparte IBRA Regions. No suitable habitat on site. Species not found.
Gyrostemonaceae	<i>Gyrostemon thesioides</i>	P2	Sand over limestone. Consolidated coastal dunes	Nov-Dec or Jan	Y	Y	Species not found.
Haemodoraceae	<i>Conostylis misera</i>	T	White or grey sand, sandy loam. Winter-wet flats.	Oct-Nov	Y	Y	Species not found.

Table 5 continued.

Family	Species	Status (WA)	Habitat	Flowering Period	Suitable Habitat Present	Flowering Y/N	Survey Outcome/Comment
Hemerocallidaceae	<i>Agrostocrinum scabrum</i> subsp. <i>littorale</i>	P2	Shallow granite loams. Coastal slopes.	Oct-Nov	N	Y	No suitable habitat on site. Species not found.
Juncaceae	<i>Juncus meianthus</i>	P3	Black sand, sandy clay. Creeks, seepage areas.	Nov-Dec or Jan	N	Y	No suitable habitat on site. Species not found.
Lamiaceae	<i>Pityrodia ipthima</i>	P1	Skeletal red-brown sandy loam over banded ironstone. Upper hillslopes.	N/A	N	N/A	Records show this species has only been found in the Gascoyne IBRA Region. No suitable habitat on site. Species not found.
Malvaceae	<i>Thomasia multiflora</i>	P1	Black sand. Seasonally wet areas, granite outcrops.	Sept-Oct	N	N	No suitable habitat on site. Genus found onsite but species was not found.
Malvaceae	<i>Thomasia quercifolia</i>	P4	Coastal heath on secondary limestone	Sept-Oct	Y	Y	Species detected onsite
Malvaceae	<i>Thomasia solanacea</i>	P4	Alluvium, sand over limestone, rocky loam. Coastal areas.	Sept-Dec	Y	Y	Species not found.
Myrtaceae	<i>Eucalyptus educta</i>	P2	Shallow soils. Granite rocks.	Apr	N	N	No suitable habitat on site. Species not found.
Myrtaceae	<i>Eucalyptus x missilis</i>	P4	Sand over limestone or granite. Coastal sites	Jan-Apr	Y	N	Species not found.
Myrtaceae	<i>Melaleuca ringens</i>	P3	Sand. Limestone ridges & clifftops.	Sept-Oct	Y	N	Species not found.
Orchidaceae	<i>Caladenia granitora</i>	T	Shallow soil crevices on granite. Coastal areas.	Oct-Nov	N	Y	No suitable habitat on site. Species not found.
Orchidaceae	<i>Caladenia harringtoniae</i>	T	Sandy loam. Winter-wet flats, margins of lakes, creeklines, granite outcrops.	Oct-Nov	N	Y	No suitable habitat on site. Species not found.
Orchidaceae	<i>Corybas limpidus</i>	P4	Sand. Coastal dunes.	Aug-Sept	Y	N	Species not found.
Orchidaceae	<i>Diuris drummondii</i>	T	Low-lying depressions, swamps.	Nov-Dec or Jan	N	Y	No suitable habitat on site. Species not found.

Table 5 continued.

Family	Species	Status (WA)	Habitat	Flowering Period	Suitable Habitat Present	Flowering Y/N	Survey Outcome/Comment
Orchidaceae	<i>Drakaea micrantha</i>	T	White-grey sand.	Sept-Oct	Y	N	Species not found.
Orchidaceae	<i>Microtis pulchella</i>	P4	Peaty sand. Winter-wet swamps.	Nov-Dec or Jan	N	Y	No suitable habitat on site. Species not found.
Orchidaceae	<i>Prasophyllum paulinae</i>	P1	Known only from a degraded area in a complex of cleared swamps to the west of Albany. The species grows among grasses and herbs in black, peaty, alkaline soil.	Sept-Nov	N	Y	No suitable habitat on site. Species not found.
Orchidaceae	<i>Thelymitra variegata</i>	P2	Sandy clay, sand, laterite.	Jun-Sept	Y	N	Species not found.
Pannariaceae	<i>Degelia flabellata</i>	P2	Information not available	N/A	N/A	N/A	Lichen species, no lichen found during the survey.
Poaceae	<i>Austrostipa mundula</i>	P3	Sandy to clay loams and limestone in grassland, heathland, shrubland and mallee.		Y	N	Species not found.
Poaceae	<i>Lachnagrostis billardierei</i> subsp. <i>billardierei</i>	P3	Sand over granite. Hilltops.	Dec	N	N	No suitable habitat on site. Species not found.
Proteaceae	<i>Adenanthos x cunninghamii</i>	P4	Grey sand. Coastal dunes & sandplains.	Mar or Sept-Oct	Y	N	Genus detected onsite. Species not found.
Proteaceae	<i>Banksia brownii</i>	T	Sand over laterite, gravel, loam over granite. In gullies.	Mar-Jul	N	N	No suitable habitat on site. Species not found.
Proteaceae	<i>Banksia goodii</i>	T	Shallow white to grey sand over laterite, in low open forest or low woodland of Jarrah and Sheoak.	May, Nov	N	Y	No suitable habitat on site. Species not found.
Proteaceae	<i>Banksia seneciifolia</i>	P4	Sandy loam, sand. Rocky hillslopes.	Jun or Aug	N	N	No suitable habitat on site. Species not found.
Proteaceae	<i>Banksia serra</i>	P4	Gravel, sand or clay loam over laterite. Hillslopes.	Jul-Sept	N	N	No suitable habitat on site. Species not found.

Table 5 continued.

Family	Species	Status (WA)	Habitat	Flowering Period	Suitable Habitat Present	Flowering Y/N	Survey Outcome/Comment
Proteaceae	<i>Banksia verticillata</i>	T	Sandy loam. On or beside granite outcrops.	Jan-Apr	N	N	No suitable habitat on site. Species not found.
Proteaceae	<i>Conospermum quadripetalum</i>	P2	Sandy clay, grey sand. Flats behind coastal hills.	Sept-Nov	Y	Y	Species not found.
Proteaceae	<i>Isopogon buxifolius</i> var. <i>buxifolius</i>	P2	Grey sand. Swampy areas.	Jul-Dec	N	Y	No suitable habitat on site. Species not found.
Proteaceae	<i>Isopogon uncinatus</i>	T	Loam or sand on granite, peaty sand. Swampy depressions, hillslopes.	Oct-Nov	N	Y	No suitable habitat on site. Species not found.
Proteaceae	<i>Synaphea incurva</i>	P1	Gravelly loam, sandy soils. Slopes.	Sept-Nov	Y	Y	Species not found.
Proteaceae	<i>Synaphea preissii</i>	P3	Sand, gravelly loam	Jul-Nov or Feb-Mar	Y	N	Species not found.
Restionaceae	<i>Chordifex abortivus</i>	T	Sand. Low rises and undulating areas.	Sep-Oct	N	N	No suitable habitat on site. Species not found.
Rhamnaceae	<i>Spyridium spadicum</i>	P4	Sand or gravelly loam. Granitic hills.	Aug-Dec or Jan-Feb	N	Y	No suitable habitat on site. Species not found.
Rutaceae	<i>Boronia crassipes</i>	P3	Sand, peaty sand. Winter-wet swamps, creeklines.	Aug-Sept	N	N	No suitable habitat on site. Species not found.
Stylidiaceae	<i>Stylidium falcatum</i>	P1	Sand, gravelly clay loam. Plains, lateritic ridges.	Oct-Nov	N	Y	No suitable habitat on site. Species not found.
Usneaceae	<i>Usnea pulvinata</i>	P1	Information not available	N/A	N/A	N/A	Lichen species, no lichen found during the survey.
Zygophyllaceae	<i>Tribulus adelacanthus</i>	P3	Commonly recorded in association with limonitic landforms	N/A	N	N/A	Records show this species has only been found in the Gascoyne and Murchison IBRA Regions. No suitable habitat on site. Species not found.

Table 6: Priority and Threatened Ecological Community (PEC and TEC) survey outcomes

Community Name	Status	Description	Survey Outcome
Subtropical and Temperate Coastal Saltmarsh	Priority 3 (WA) VU (EPBC Act)	Occurs on sandy or muddy substrate on the coast in areas with at least some tidal connection, including coastal clay pans, estuaries and embayments. Dominated by salt-tolerant vegetation (halophytes). Succulent herbs, shrubs and grasses generally dominate and vegetation is < 0.5 m height (with the exception of some reeds and sedges). Species characteristic of the community include: <i>Austrostipa stipoides</i> , <i>Gahnia trifida</i> , <i>Juncus kraussii</i> , <i>Samolus repens</i> . In the south-west of WA there is a high diversity of <i>Tecticornia</i> , <i>Triglochin</i> , <i>Samolus</i> and <i>Puccinellia</i> . Proportional cover by tree canopy such as mangroves, Melaleucas or Casuarinas is not greater than 50%, nor is proportional ground cover by seagrass greater than 50%.	Not present within the survey area
Coastal <i>Melaleuca incana</i> / <i>Taxandria juniperina</i> Shrubland/Closed Forest	Priority 1 (WA)	No detailed description available within the Priority Ecological Communities for Western Australia Version 27 (DBCAs).	Not present within the survey area
<i>Banksia littoralis</i> woodland / <i>Melaleuca incana</i> Shrubland	Priority 1 (WA)	No detailed description available within the Priority Ecological Communities for Western Australia Version 27 (DBCAs).	Not present within the survey area
<i>Astartea scoparia</i> Swamp Thicket		No detailed description available within the Priority Ecological Communities for Western Australia Version 27 (DBCAs).	Not present within the survey area
<i>Banksia coccinea</i> Shrubland / <i>Eucalyptus staeri</i> / Sheoak Open Woodland (Community 14a - Sandiford & Barrett 2010) (all/or portion in EPBC listed Kwongkan community)	Priority 1 (WA) EN (EPBC Act)	Found on deep white/light grey sand on the lower slopes and valleys, usually occurring just upslope of seasonally wet drainage lines. The community is floristically very diverse and structurally quite variable. Typically, <i>Allocasuarina fraseriana</i> , <i>Eucalyptus staeri</i> , <i>Banksia attenuata</i> and <i>Banksia ilicifolia</i> are present as emergents or as low open woodland above a <i>Banksia coccinea</i> tall open scrub, mixed open/closed heath, mixed low open heath, mixed sedge land and open herbland. <i>Jacksonia spinosa</i> often forms a distinct stratum above the heathland, dominant heath species are <i>Melaleuca thymoides</i> , <i>Adenanthos cuneatus</i> , <i>Leucopogon rubricaulis</i> , <i>Phyllota barbata</i> , <i>Hypocalymma strictum</i> and <i>Leucopogon glabellus</i> . Common sedges and herbs include <i>Anarthria scabra</i> , <i>Lyginia barbata</i> , <i>Schoenus caespitius</i> , <i>Anarthria prolifera</i> , <i>Anarthria gracilis</i> and <i>Cyathochaeta equitans</i> . The community is highly susceptible to <i>Phytophthora</i> dieback with infestations resulting in greatly reduced floristic and structural diversity. Appears to be restricted to the Albany region.	Not present within the survey area

Table 7: Priority and Threatened Fauna survey outcomes

Scientific Name	Common Name	Status	Survey Method	Habitat Present	Likelihood of Detection of Species if present	Species Present
<i>Actitis hypoleucos</i>	Common sandpiper	IA	Survey for birds in suitable habitat; almost entirely coastal.	N	H	N
<i>Apus pacificus</i>	Fork-tailed swift	IA	Survey of potential habitat; almost exclusively aerial, flying from less than 1 m to at least 300 m above ground over inland plains but sometimes above foothills or in coastal areas. Mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh (Higgins 1999).	Y	H	N
<i>Ardenna carneipes</i>	Fleshy-footed shearwater	T	Assessment of habitat suitability including coastal areas and offshore islands	N	H	N
<i>Atrichornis clamosus</i>	Noisy scrub-bird	EN	Diurnal surveys of suitable habitat and potential foraging areas; dawn and dusk surveys and call back for calling birds. Preferred habitat includes low closed forests 5–15 m in height that are dominated by Eucalyptus or Agonis and Banksia littoralis and occur in the steep and wetter gullies, and drainage lines of hills and granite mountains and on the margins of freshwater lakes.	N	H	N
<i>Botaurus poiciloptilus</i>	Australasian bittern	EN	Dawn survey for calling males. Survey was conducted during the spring-summer breeding season for 1 hour prior to dawn and one hour after sunrise when calls are most often heard (Marchant & Higgins 1990). Weather was calm and clear, allowing for optimal listening conditions. In the south-west of Western Australia, the Australasian Bittern is found in beds of tall rush mixed with, or near, short fine sedge or open pools. The species also occurs around swamps, lakes, pools, rivers and channels fringed with lignum (<i>Muehlenbeckia</i> sp.), cane grass (<i>Eragrostis</i> sp.) or other dense vegetation (Marchant & Higgins 1990).	N	H	N
<i>Calidris alba</i>	Sanderling	IA	Survey for birds in suitable habitat; almost entirely coastal.	N	H	N
<i>Calidris canutus</i>	Red knot	IA	Survey for birds in suitable habitat; almost entirely coastal. Red Knots gather in large flocks on the coast in sandy estuaries with tidal mudflats	N	M	N

Table 7 Continued.

Scientific Name	Common Name	Status	Survey Method	Habitat Present	Likelihood of Detection of Species if present	Species Present
<i>Calidris ferruginea</i>	Curlew sandpiper	T	Survey for birds in suitable habitat; almost entirely coastal. Found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters.	N	M	N
<i>Calidris ruficollis</i>	Red-necked stint	IA	Survey of suitable habitat: mostly coastal areas, including sheltered inlets, bays, lagoons and estuaries with intertidal mudflats; ephemeral or permanent shallow wetlands near the coast or inland, and sometimes flooded paddocks or damp grasslands (Higgins & Davies 1996).	N	H	N
<i>Calidris tenuirostris</i>	Great knot	T	Survey for birds in suitable habitat; inhabit intertidal mudflats and sandflats in sheltered coasts, including bays harbours and estuaries.	N	M	N
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo	VU	Dawn survey for roosting and foraging birds. Diurnal survey for nesting females, focusing on the hollows of large, mature trees. Diurnal assessment of the presence and extent of foraging habitat including vegetation containing proteaceous heath/woodland, eucalypt woodlands or forest (particularly Marri and Jarrah forest) and in areas dominated by Pinus spp.	N	H	N
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	EN	Dawn survey for roosting and foraging birds. Diurnal survey for nesting females, focusing on the hollows of large, mature trees. Diurnal assessment of the presence and extent of foraging habitat including vegetation containing proteaceous heath/woodland, eucalypt woodlands or forest (particularly Marri and Jarrah forest) and in areas dominated by Pinus spp.	N	H	N
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo	EN	Dawn sightings and calls to identify potential breeding and roosting trees. Breeding tree survey and identification of suitable tree species within the survey area with a diameter at breast height (DBH) of over 50cm; Survey for presence and extent of foraging habitat (proteaceous heath/woodland, eucalypt woodlands or forest) and search for evidence of foraging such as chewed nuts.	N	H	N

Table 7 Continued.

Scientific Name	Common Name	Status	Survey Method	Habitat Present	Likelihood of Detection of Species if present	Species Present
<i>Charadrius leschenaultii</i>	Greater sand plover	IA	Survey for birds in suitable habitat; almost entirely coastal, inhabiting littoral and estuarine habitats. Mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons (Stewart et al. 2007). Seldom occur at shallow freshwater wetlands (Storr 1977).	N	H	N
<i>Dasyornis longirostris</i>	Western bristlebird	VU	Diurnal surveys of suitable habitat and potential foraging areas; dawn and dusk surveys and call back for calls. Preferred habitat includes floristically diverse low dense coastal heathland (McNee 1986).	N	H	N
<i>Dasyurus geoffroi</i>	Chuditch	VU	Searches for faecal material and den sites in wooded habitat. Logs must have a diameter > 30 cm and a hollow with 7–20 cm diameter and 1 m length (Dunlop and Morris 2012)	N	M	N
<i>Diomedea exulans subsp. exulans</i>	Snowy albatross	T	Assessment of habitat suitability including coastal areas and offshore islands	N	M	N
<i>Falco peregrinus</i>	Peregrine falcon	S	Survey of potential habitat; almost exclusively aerial, flying above vegetation whilst hunting.	Y	H	N
<i>Falco peregrinus subsp. macropus</i>	Australian peregrine falcon	S	Survey of potential habitat; almost exclusively aerial, flying above vegetation whilst hunting.	Y	H	N
<i>Falsistrellus mackenziei</i>			Surveys for potential hollows in suitable habitat; Preferred habitat of live mainly in wet sclerophyll forests of Karri, Jarrah and Tuart eucalypts. Roost in hollows in old trees, branches and stumps, in colonies	N	M	N
<i>Galaxiella munda</i>	Mud minnow	T	Search for suitable habitat including small streams or shallow pools connected to streams (Pen et al. 1991).	N	L	N
<i>Galaxiella nigrostriata</i>	Black-stripe minnow	P3	Search for suitable habitat including small streams or shallow pools connected to streams (Pen et al. 1991).	N	L	N

Table 7 Continued.

Scientific Name	Common Name	Status	Survey Method	Habitat Present	Likelihood of Detection of Species if present	Species Present
<i>Geotria australis</i>	Pouched lamprey	P4	Search for suitable habitat. Species is anadromous and requires estuaries and coastal waters connected to freshwater rivers and streams with slow flowing, fine sediment microhabitats where spawning and development of ammocoetes occurs.	N	H	N
<i>Hydromys chrysogaster</i>	Water-rat (rakali)	P4	Remote cameras and diurnal assessment of habitat and evidence of feeding. Wide variety of freshwater habitats, from subalpine streams and other inland waterways to lakes, swamps, and farm dams.	N	H	N
<i>Hydroprogne caspia</i>	Caspian tern	IA	Assessment of habitat suitability including coastal areas and offshore islands	N	H	N
<i>Isodon fusciventer</i>	Quenda	P4	Assessment of habitat and search for scat and diggings. Preferred habitat includes scrubby, often swampy, vegetation with dense cover up to 1 m high, often feeding in adjacent forest and woodland that is burnt on a regular basis.	Y	H	Y
<i>Limosa lapponica</i>	Bar-tailed godwit	IA	Survey for birds in suitable habitat; inhabit estuarine mudflats, beaches and mangroves.	N	M	N
<i>Macronectes giganteus</i>	Giant petrel	IA	Assessment of habitat suitability including coastal areas and offshore islands	N	H	N
<i>Macrotis lagotis</i>	Bilby	T	Assessment of habitat and search for scat and diggings. Preferred habitat is open tussock grassland on uplands and hills; mulga woodland/shrubland growing on ridges and rises, and hummock grassland (spinifex) growing on sandplains and dunes, drainage systems, Salt Lake systems and other alluvial areas.	N	M	N
<i>Nannatherina balstoni</i>	Balston's pygmy perch	VU	Search for suitable habitat including acidic, tannin-stained freshwater pools, streams and lakes in peat flats within 30 km of the coast of south-west Western Australia. The species prefers shallow water, and is commonly associated with tall sedge thickets and inundated riparian vegetation (Allen et al. 2002; Morgan et al. 1998).	N	H	N
<i>Notamacropus irma</i>	Western brush wallaby	P4	Assessment of habitat suitability, search for faecal material and runnels/ pads. Preferred habitat includes open forest or woodland, particularly open, seasonally-wet flats with low grasses and open scrubby thickets.	Y	H	N

Table 7 Continued.

Scientific Name	Common Name	Status	Survey Method	Habitat Present	Likelihood of Detection of Species if present	Species Present
<i>Oxyura australis</i>	Blue-billed duck	P4	Diurnal surveys of suitable habitat. Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover.	N	H	N
<i>Pandion cristatus</i>	Osprey, eastern osprey	IA	Assessment of habitat suitability including coastal areas and offshore islands	N	M	N
<i>Philomachus pugnax</i>	Ruff	IA	Survey for birds in suitable habitat; generally fresh, brackish or saline wetlands with exposed mudflats at the edges. It is found in terrestrial wetlands including lakes, swamps, pools, lagoons, tidal rivers, swampy fields and floodlands. They are occasionally seen on sheltered coasts, in harbours, estuaries, seashores and are known to visit sewage farms and saltworks	N	M	N
<i>Plegadis falcinellus</i>	Glossy ibis	IA	Survey for birds in suitable habitat; requires shallow water and mudflats, is found in well-vegetated wetlands, floodplains, mangroves and ricefields	N	M	N
<i>Pluvialis fulva</i>	Pacific golden plover	IA	Surveys for birds in suitable habitat; coastal habitats, occasionally fresh, brackish or saline wetlands or claypans especially with muddy margins and often with submerged vegetation or short emergent grass. Other terrestrial habitats include short grass in paddocks, or ploughed or recently burnt areas (Marchant & Higgins 1993).	Y	H	N
<i>Pluvialis squatarola</i>	Grey plover	IA	Surveys for birds in suitable habitat; sheltered embayments, estuaries and lagoons with mudflats and sandflats; terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes (Marchant & Higgins 1993).	N	H	N
<i>Pseudocheirus occidentalis</i>	Western ringtail possum	CR	Assessment of habitat suitability, search for hollows, dreys and faecal material. Suitable habitat in the southern forests includes Jarrah, Marri or Karri dominated forests. South coast habitat includes coastal heath, Jarrah/Marri woodland and forest, Peppermint Tree woodland, myrtaceous heaths and shrublands, Bullich dominated riparian zones and Karri forest (DPaW 2014)	Y	H	N
<i>Thalassarche chlororhynchus</i>	Atlantic yellow-nosed albatross	T	Assessment of habitat suitability including coastal areas and offshore islands	N	M	N
<i>Thalasseus bergii</i>	Crested tern	IA	Assessment of habitat suitability including coastal areas and offshore islands	N	H	N

Table 7 Continued.

Scientific Name	Common Name	Status	Survey Method	Habitat Present	Likelihood of Detection of Species if present	Species Present
<i>Thinornis rubricollis</i>	Hooded plover	P4	Dawn survey for birds within suitable habitat including sheltered sandy beaches and salt lakes	N	H	N
<i>Tringa glareola</i>	Wood sandpiper	IA	Survey for birds in suitable habitat; seen in small flocks or singly on inland shallow freshwater wetlands, often with other waders. They prefer ponds and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber.	N	M	N
<i>Tringa nebularia</i>	Common greenshank, greenshank	IA	Dawn survey for calling birds and dawn survey of dam and creek line area for birds.	N	H	N
<i>Tyto novaehollandiae subsp. novaehollandiae</i>	Masked owl (southern subsp)	P3	Surveys for potential breeding hollows in suitable habitat; wide variety of lowland forests and woodlands that provide mature trees with hollows suitable for nesting and roosting, and nearby open areas for foraging (Schodde & Mason 1980, Peake et al. 1993). Nests in large hollows in old eucalypt trees (Kavanagh & Murray 1996). Sedentary and territorial (Schodde & Mason 1980). May occupy exclusive home ranges, and may mate for life (Kavanagh & Murray 1996).	N	H	N
<i>Zephyrarchaea mainae</i>	Western archaeid spider	VU	Search for suitable habitat including suspended leaf-litter litter lodged in the crown of Restionaceae species, <i>L. gladiatum</i> and <i>L. effusum</i> , which grow under long-unburnt stands of weeping peppermint (<i>Agonis flexuosa</i> (Willd.) Sweet; Rix and Harvey, 2009, 2012a)	Y	M	N

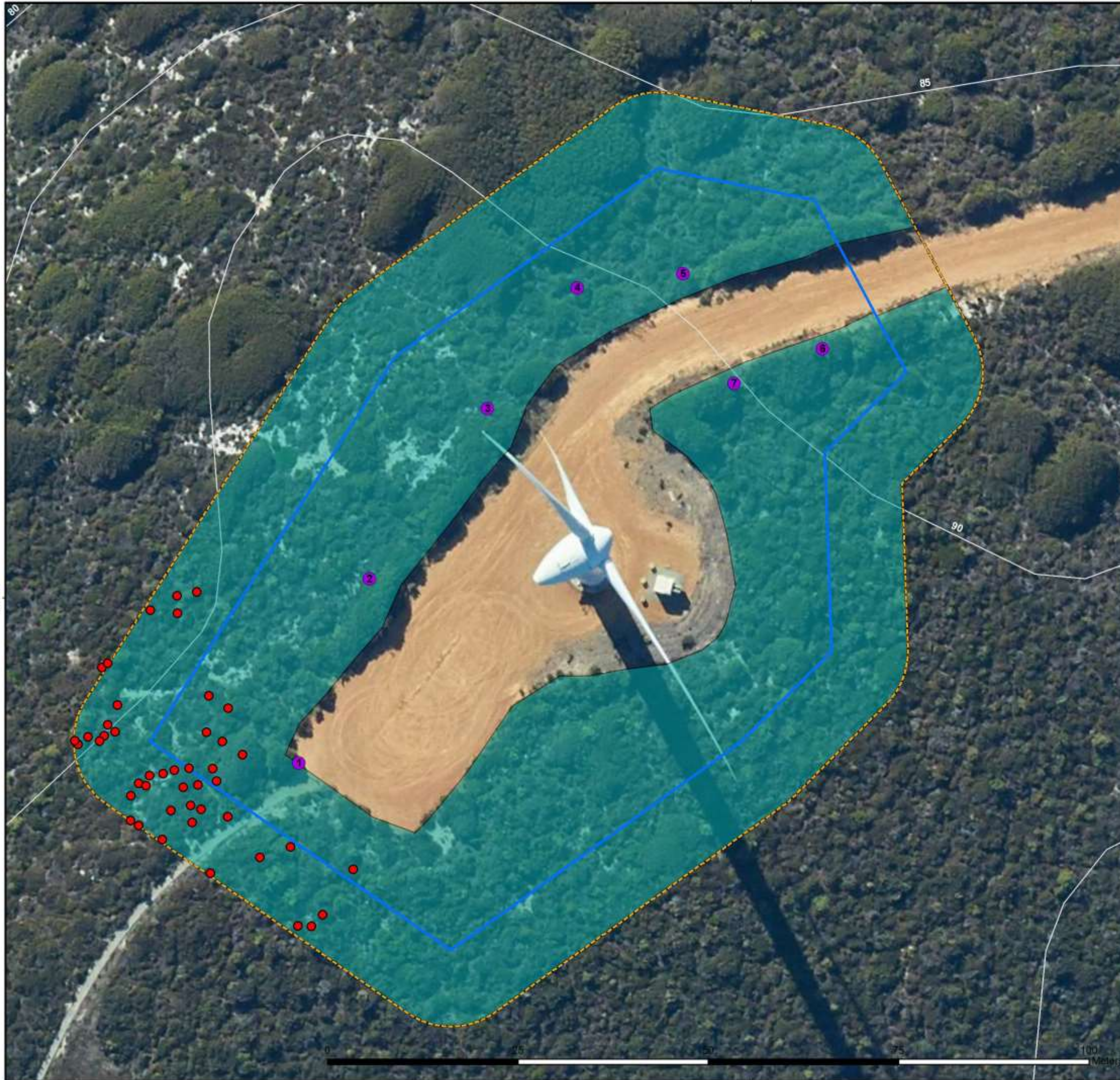
Summary of outcomes

A summary of the flora findings of the survey is outlined as:

- A desktop inventory of potential flora species likely to occur within 10 km of the survey area was undertaken using the following databases: Nature Map Database Search (Online); Protected Matters Search Tool (Department of Environment); and WA Herbarium records accessed through Flora Base (WA Department of Parks and Wildlife);
- The vegetation community at the Wind Turbine 3 site is a mosaic of predominantly Coastal Limestone Heath (ARVS 5) with patches of Coastal Heath (ARVS 3). Refer to Survey Findings – Windmill 3 on page 22;
- The vegetation community at the Wind Turbine 3 site is a mosaic of Peppermint Low Forest (ARV 2) and Coastal Heath (ARV 3). Refer to Survey Findings – Windmill 11 on page 23
- Targeted surveys were undertaken for 13 species of Declared Rare Flora, 43 Priority listed species, 1 presumed extinct species (Table 5) and 5 TECs / PECs (Table 6);
- There is potential suitable habitat for 18 of the listed species (*Synaphea incurva*, *Leucopogon cymbiformis*, *Gyrostemon thesioides*, *Thelymitra variegata*, *Conospermum quadripetalum*, *Melaleuca ringens*, *Austrostipa mundula*, *Synaphea preissii*, *Gahnia sclerioides*, *Thomasia quercifolia*, *Thomasia solanacea*, *Eucalyptus x missilis*, *Corybas limpidus*, *Adenanthos x cunninghamii*, *Kennedia glabrata*, *Conostylis misera*, *Drakaea micrantha* and *Calectasia cyanea*);
- *Thomasia quercifolia* was identified at Windmill 3 with 9 individuals located within the survey area and an additional 36 found within the 10m buffer area (total of 45 individuals);
- All *Thomasia quercifolia* individuals identified to the south west of Windmill 3. Clearing of vegetation in this area should be avoided if possible. If the area must be cleared to allow for maintenance operations the client will need to seek permission from DBCA to take the species; and
- None of the potential Priority or Threatened Ecological Communities were identified as being within the survey areas.

A summary of the fauna findings of the survey is outlined as:

- A desktop inventory of potential flora species likely to occur within 10 km of the survey area was undertaken using the following databases: Nature Map Database Search (Online) and Protected Matters Search Tool (Department of Environment);
- Vegetation was assessed for suitability for presence of *Zephyrarchaea mainae* at each Windmill and areas deemed suitable habitat were sampled. Seven plots were sampled at Windmill 3 and 5 at Windmill 11;
- No *Zephyrarchaea mainae* individuals were found at either site; and
- The presence of the Priority 4 *Isoodon fusciventer* (Quenda) was detected through diggings at Windmill 11. No Threatened or Priority fauna species were detected at Windmill 3.



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Overview Map Scale 1:100,000

Legend

- Subject Site
- 10m Buffer
- Cadastre
- 5m Contours
- Thomasia quercifolia*
- Spider Plot
- Fauna Values**
- Spider Plot
- Vegetation Complexes**
- Coastal Limestone Heath / Coastal Heath



Scale
1:500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Albany Windfarm
Albany WA 6330

Survey Findings - Windmill 3

Assessor	QA Check	Drawn by
EH	KK	BT
STATUS	FILE	DATE
FINAL	ELA002	21/11/2018



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Overview Map Scale 1:100,000

Legend

- Subject Site
- 10m Buffer
- Cadastre
- 5m Contours
- ▲ Quenda
- Spider Plot
- Peppermint Low Forest / Coastal Heath Mosaic



Scale
1:550 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

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Survey Findings - Windmill 11

Assessor EH	QA Check KK	Drawn by BT
STATUS FINAL	FILE ELA002	DATE 21/11/2018