



FIELD DEPLOYMENT REPORT

EAGLE MONITORING SOLUTION

PROFILE

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DETAILS

The Client	UPC/AC Renewables
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VERSION CONTROL

Version	Date	Author	Comments
0.1	June 2020	J Lawrence	Draft
0.2	June 2020	M Ross	Review & Sent
0.3	May 2021	J Lawrence	Minor update as per client request

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1. DEPLOYMENT LOCATION

Indicium Dynamics have been engaged by UPC Renewables (UPC) to assist with remote monitoring of Tasmanian Wedge Tail and White-bellied sea eagles nest sites located on Jim's Plains and Robbins Island in North-West Tasmania.

Deployment was planned in 2 stages, with an initial deployment in May 2020 and second deployment in June 2020. The initial deployment was to install LoRa Gateways on Met Masts located at the sites.

The second deployment is to install IoT Nest Sensors and Cameras to enable remote monitoring of in nest activity.

This report covers the second deployment to install nest sensors and cameras.

2. DEVICES INSTALLED

The following devices are to be installed across the field:

2.1 LORA COMMUNICATION GATEWAY

A communication gateway that receives data from in-field sensors via LoRa and then transmits data to the internet for processing via 4G. Gateways are mounted to the Met Mast located at Jim's Plains and 2 masts located on Robbins Island. They are fully enclosed within a weatherproof casing. Power is provided by 12v battery which is maintained via solar charging. Solar panel and LoRa Antenna are mounted on the Met Mast. These have previously been installed by Australian Radio Towers (ART) under supervision of UPC who were attending to conduct scheduled maintenance on the Met Masts in March 2020.

All 3 gateway sites were again visited during this second field deployment with additional battery protection hardware installed.

2.2 IOT NEST SENSOR

A custom designed, fully weatherproof sensor that is mounted directly above the eagle nest. The nest sensor detects in-nest movement and communicates with the LoRa Gateway to report this nest activity. Power is provided by a fully enclosed battery.

2.3 ARLO WIRELESS CAMERA

A motion activated camera that is mounted above the eagle nest that captures video and still images. These are stored on the device transferred via 4G. Power is provided by a fully enclosed battery which is maintained by solar charging.

3. SITE REPORT

Installations were undertaken from Wednesday 3rd to Friday 5th June 2020 inclusive. The following is the status of device install and commissioning across the field locations:

3.1 JIM'S PLAIN

There were 2 previously identified nest sites selected for monitoring, JP1 and TL5.



Figure 1 - Map showing nest locations

JP1

This site was located, and the nest observed, however the nest condition is noted as being very poor. Despite this, there were signs of nest usage, including dropping underneath the tree however this may not be from eagle activity.

Site was successfully installed



Figure 2 - Installation at JP1 site noting poor nest condition

TL5

This site was observed as a possible nest location from previous aerial survey but had not been inspected from the ground. After a ground search, the nest tree was located, however there did not appear to be a viable nest from the ground. To confirm, the tree was climbed and the suspected nest was found to be substantially damaged and considered no longer a viable site for eagle use. 2 Tasmanian Wedge-Tail Eagles were cited within 150m of the candidate tree, perching in a nearby large eucalypt. A visual survey of the nearby area from both the ground and by tree

climber failed to locate the location of a nest. The weather at the time of searching was overcast with light showers, adding additional difficulty to locating a nest.

Site not complete due to insufficient data to locate nest



Figure 3 - TL5 tree showing potential past nest site

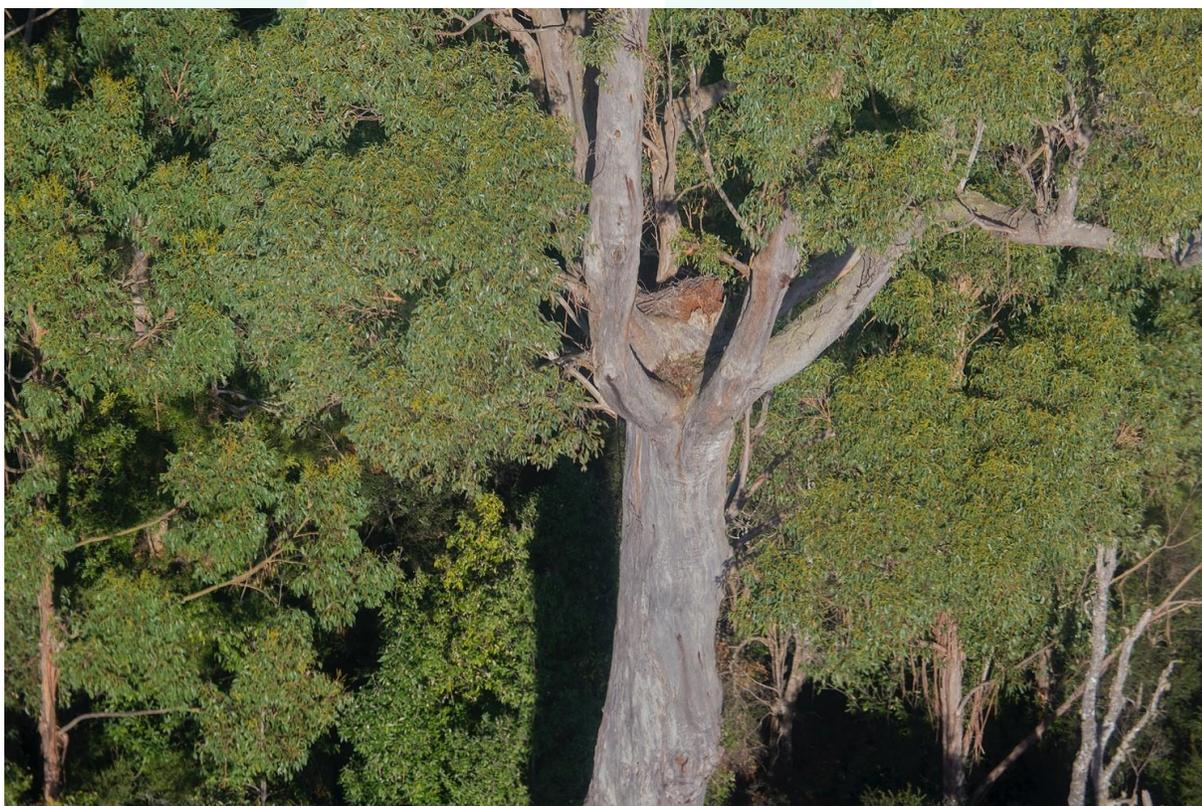


Figure 4 - TL5 site from helicopter survey (2019)



Figure 5 -Tasmanian wedge-tailed eagle cited near TL5 location

3.2 ROBBINS ISLAND

There was a total of 9 eagle nest locations previously identified.

However, since the 2019 GHD Nest Survey Report, several sites have been lost due to weather and fire. These sites are RI6, RI7 and RI8.



Figure 6 - Map showing nest locations

RI1

This nest site had not previously been located/inspected from the ground. The nest is located in dense bush, approximately 850m South-East of the southern end of the airstrip.

Upon arriving at the co-ordinates obtained from the Nest Survey Report, a partially collapsed nest was located within 35m of this location. It is very likely that this was the nest that was seen on that occasion. However, the nest appears to have sustained substantial damage since the survey and now appears unlikely to be in use. This nest is located at 333518.00 m E 5492708.00 m S.

A Tasmanian wedge-tailed eagle was observed flying in very close proximity to this collapsed nest and a brief search of the area successfully located a much higher quality nest.

The nest in better condition is located around 220m SW of the original coordinates in the Nest Survey Report. This nest is located at 333334.00 m E 5492550.00 m S.

Given the relatively close proximity to the original location observed in 2019 and the citing of a Tasmanian wedge-tailed eagle in the area, it was agreed to install sensor and camera equipment in this alternative nest location.

Site was successfully installed

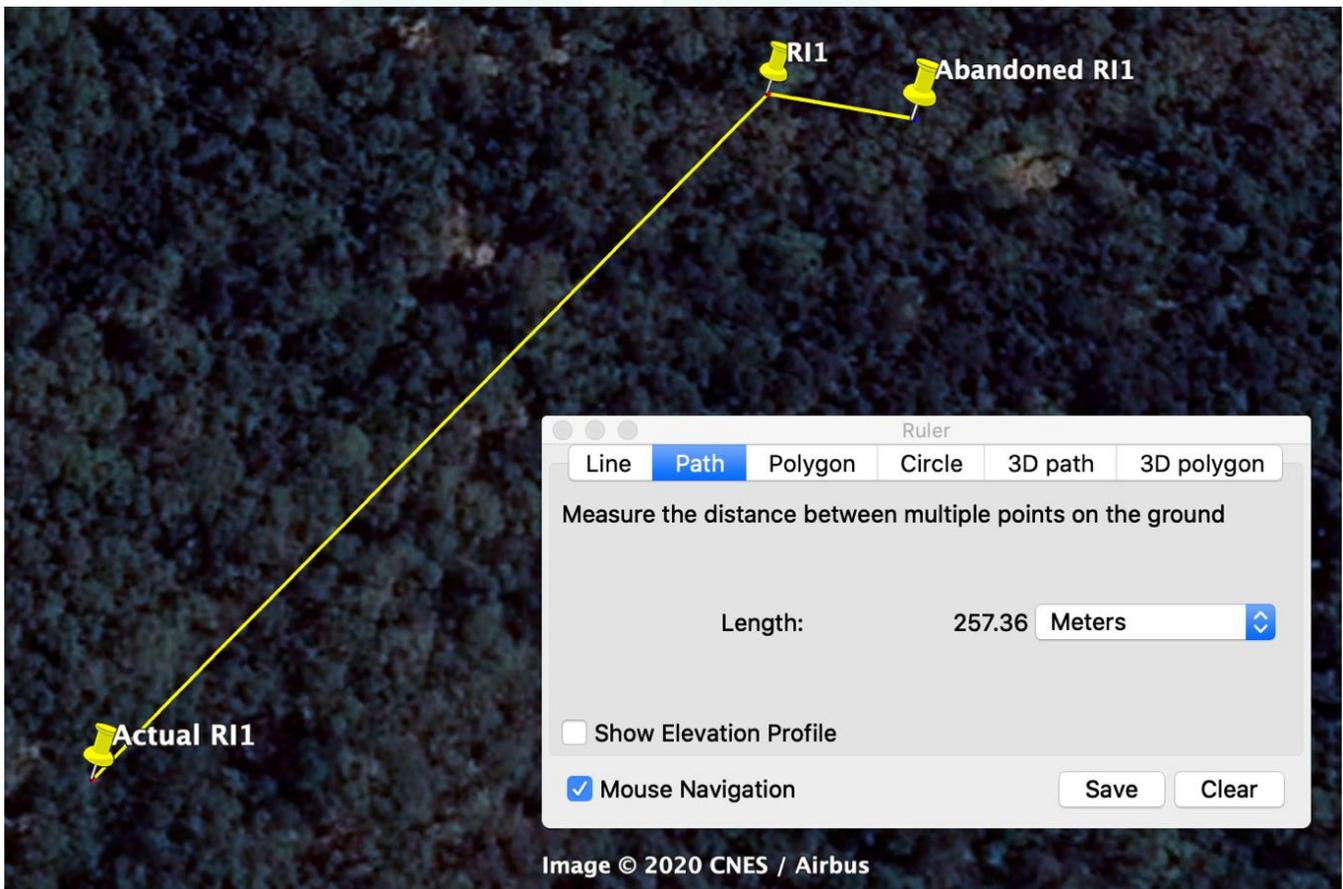


Figure 7 - Map showing difference in RI1 nest installation



Figure 8 - RI1 Nest where monitoring was installed

RI2

This White-bellied sea eagle nest is located on a rocky outcrop on the northern tip of Robbins Island. As there are no trees in close proximity to the nest, monitoring equipment was installed on an aluminum post bolted to the rock in a suitable proximity to the nest.

Upon arriving at the site, 2 eagles were observed in the nest and subsequently flying overhead. It is expected this will be an active nest in the short term. The nest was observed to be in excellent condition.

Site was successfully installed



Figure 9 - Monitoring installation at RI2



Figure 10 - RI2 nest site

RI3

Located in a large dead eucalypt, this Tasmanian wedge-tailed eagle nest was an extremely difficult installation due to the risk of tree and limb collapse during climbing. However, by suspending ropes above the nest location, climbing was successful and monitoring equipment was able to be safely installed.

Site was successfully installed



Figure 11 - Tree climber during install at RI3



Figure 12 - R13 Tree

RI4

White-bellied sea eagle nest located in large eucalypt. Nest was observed to be in excellent condition.

Site was successfully installed



Figure 13 - White-bellied sea eagles in RI4 nest

RI5

Nest is cited in a large dead eucalypt. A ground survey of the nest tree identified substantial damage had occurred to the tree, with the large overhead branches having now fallen. With a lack of surrounding trees in close proximity and the age and condition of the nest tree, it was determined it was unsafe to climb. The nest appears to be substantially damaged and is not likely to be a viable nest site in the future.

Site not installed, due to unsafe climbing conditions and lack of alternative equipment mounting options



Figure 14 - RI5 tree showing missing top limbs



Figure 15 - RI5 tree from 2019 survey showing top limbs

RI9

Tasmanian wedge-tailed eagle nest located in a large eucalypt. Eagle was cited flying in area nearby during installation. Nest appears to be in good condition.

Site was successfully installed



Figure 16 - RI9 Nest

4. ISSUES ENCOUNTERED

The following issues were encountered during this field deployment:

- Sites RI6, RI7 & RI8 lost prior to installation
- RI1 site approximately 200m from observed co-ordinates in 2019 survey
- RI5 deemed unsafe to climb and tree substantially damaged since 2019 survey
- TL5 site located but no viable nest. Alternative nest tree not located