

Flyers Creek Wind Farm
MP 08_0252

Final Layout Plans
(Condition C7 + C9)

Flyers Creek Wind Farm Pty Ltd
21 January 2022

Contents

1. Introduction.....	2
2. Purpose of this Report.....	2
3. Detailed design and micro-siting.....	3
3.1 Design process.....	3
3.2 Compliance with Condition C7	4
3.2.1 Approved and micro-sited WTG Locations.....	4
3.2.2 Hollow Bearing Trees.....	5
3.2.3 Compliance with Conditions of Approval.....	6
3.3 Final Layout Plans - Condition C9.....	7
Appendix A: Final Layout Plan.....	8
Appendix B: Final WTG Coordinates.....	10
Appendix C: NGH Environmental HBT Survey	11
Appendix D: HBT Maps	17

1. Introduction

Flyers Creek Wind Farm (the Project) is an approved 38 wind turbine wind farm located approximately 20 kilometres (km) south of Orange. The Project is located in Blayney Shire Council (BSC) and Cabonne Shire Council (CSC).

Project Approval MP 08_0252 was granted under Part 3A of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) to Flyers Creek Wind Pty Ltd (the Proponent) for the Project by the NSW Planning and Assessment Commission on 14 March 2014 (Project Approval).

The Project was transitioned to become State significant development (SSD) on 6 July 2018 and the Project Approval is now taken to be a SSD consent granted under the EP&A Act.

The Project Approval has been modified a total of 5 times since originally being granted with the most recent modification being Modification 5 which was determined on 15 October 2021. The Proponent, Flyers Creek Wind Farm Pty Ltd, is part of the Iberdrola Australia Ltd corporate group (Iberdrola).

The approved Project comprises:

- the construction and operation of a wind farm with up to 38 turbines and associated infrastructure including access tracks, local road infrastructure upgrades and electrical connections between the turbines (both underground cable and under and above ground power lines);
- an on-site substation (inclusive of switch room, control room and auxiliary services building); and
- a 132 kV transmission line and switching station to connect the project to the grid.

2. Purpose of this Report

This report contains detailed plans of the final layout of the Project including:

- details on the micro-siting of the wind turbines and/or ancillary infrastructure in accordance with the limits contained in Condition C7 of Schedule C of the Project Approval; and
- the GPS coordinates of the final wind turbine locations, as required by Condition C9 of Schedule C of the Project Approval.

The final layout of the Project remains consistent with the terms of the Project Approval.

Table 1 below provides details of Conditions C7 and C9 of Schedule C of the Project Approval and confirms where in this report the relevant condition is addressed.

Table 1 Details of Condition C7 and C9 and how the Condition is addressed

Condition	Requirement	Document reference
C7	The Proponent may micro-site the wind turbines and ancillary infrastructure without further approval provided:	-
	i) no wind turbine is moved more than 100 metres from the relevant GPS coordinates in Appendix 1(<i>Approved Layout</i>);	Section 3.2.1
	ii) turbines 3 (WTG 1) and 15 (WTG 9) are not moved closer to the residences “Hillvue” and “Cooramilla” from the relevant GPS coordinates in Appendix 1(<i>Approved Layout</i>) respectively;	Section 3.2.1
	iii) the revised location of the wind turbine is at least 50 metres from existing hollow- bearing trees; or where the approved turbine location is already within 50 metres of existing hollow-bearing trees, the revised location of the turbine is not moved any closer to existing hollow-bearing trees; and	Section 3.2.2
	iv) the revised location of the wind turbine and/or ancillary infrastructure would not result in any non-compliance with the conditions of this approval.	Section 3.2.3
C9	Prior to the commencement of construction, the Proponent must submit detailed plans of the final layout of the Project to the Secretary, including:	This Report
	(a) details on the micro-siting of any wind turbines and/or ancillary infrastructure; and	Section 3.1 and Appendix A
	(b) the GPS coordinates of the final wind turbine locations.	Appendix B

3. Detailed design and micro-siting

3.1 Design process

Detailed design and micro-siting of the project layout has been undertaken to derive the final layout presented in Annexure A of this report (**Final Layout**).

The detailed design and micro-siting was undertaken based on the following principles:

- Micro-siting of turbine locations and ancillary infrastructure is carried out in accordance with Condition C7 of Schedule C of the Project Approval.
- The Final Layout remains generally in accordance with the EA as defined in the Project Approval (EA).
- The Final Layout remains in accordance with the conditions of the Project Approval.
- The Final Layout is suitable for construction (slope, ground conditions, etc).
- The Final Layout minimises the overall disturbance footprint where possible.
- The Final Layout remains within the project lands where access has been agreed and meets the conditions of agreements with the Project landowners.
- The Final Layout optimises the energy yield of the Project.
- The impacts of the Final Layout remains consistent with those assessed in the EA and including in relation to:
 - Visual amenity;

FCWF 08_0252 Final Layout Plans

- Noise;
- Shadow flicker;
- Aboriginal and historic heritage;
- Flora and fauna;
- Bushfire risk;
- Telecommunications;
- Aviation; and
- Transport and access.

The Final Layout has also been developed in consultation with the Project landowners.

3.2 Compliance with Condition C7

3.2.1 Approved and micro-sited WTG Locations

The following table provides information on the approved and micro-sited WTG locations and confirms the extent of the micro-siting.

All micro-sited WTG locations remain within 100 metres (m) of the GPS coordinates in Appendix 1 of the Project Approval.

The locations of WTG 1 (previously known as approved WTG 3) and WTG 9 (previously known as approved WTG 15) remain unchanged in the Final Layout and therefore are not located any closer to the residences of Hillvue or Cooramilla.

Table 2 Approved and Microsited WTG Locations

UTM WGS84-Zone 55S						
Approved WTG ID	X [m]	Y [m]	Microsited WTG ID	X [m]	Y [m]	Micro-siting Distance [m from approved]
3	692487.0	6290959.0	1	692487.0	6290959.0	0.0
5	692610.0	6290375.0	2	692513.0	6290374.0	97.0
6	692438.0	6289879.0	3	692392.0	6289965.0	97.5
7	692375.0	6289621.0	4	692375.0	6289626.0	5.0
8	691922.0	6289293.0	5	691875.0	6289287.0	47.4
9	691710.0	6288716.0	6	691775.0	6288656.0	88.5
11	690764.0	6288686.0	7	690842.0	6288627.0	97.8
10	690463.0	6289008.0	8	690474.0	6288976.0	33.8
15	694616.0	6287092.0	9	694616.0	6287092.0	0.0
18	693315.0	6284663.0	10	693227.0	6284620.0	97.9
19	693106.0	6284262.0	11	693124.0	6284281.0	26.2
20	693633.0	6283962.0	12	693675.0	6283925.0	56.0
29	689403.0	6282413.0	13	689375.0	6282396.0	32.8
30	689820.0	6282149.0	14	689835.0	6282175.0	30.0
31	690231.0	6282050.0	15	690230.0	6282070.0	20.0
28	689635.0	6282686.0	16	689682.5	6282689.5	47.6
27	689933.0	6282625.0	17	690030.0	6282617.0	97.3

FCWF 08_0252 Final Layout Plans

26	690381.0	6282714.0	18	690424.0	6282802.0	97.9
25	690357.0	6283178.0	19	690375.0	6283176.0	18.1
24	690258.0	6283778.0	20	690266.0	6283821.0	43.7
21	691090.6	6283878.0	21	691142.0	6283831.0	69.6
22	691440.0	6283635.0	22	691475.0	6283603.0	47.4
23	691435.8	6283205.2	23	691444.0	6283243.0	38.7
46	697221.0	6283308.0	24	697210.0	6283325.0	20.2
45	696940.0	6283488.0	25	696917.0	6283523.0	41.9
44	696745.0	6283761.0	26	696689.0	6283807.0	72.5
43	696494.0	6283966.0	27	696506.0	6284062.0	96.7
42	695229.0	6282331.0	28	695225.0	6282276.0	55.1
41	695383.0	6282655.0	29	695375.0	6282638.0	18.8
40	695285.0	6282880.0	30	695302.0	6282960.0	81.8
39	695178.0	6283099.0	31	695128.0	6283182.0	96.9
38	694007.0	6282678.0	32	693975.0	6282706.0	42.5
37	692897.0	6279893.0	33	692913.0	6279965.0	73.8
36	692852.0	6280328.0	34	692862.0	6280340.0	15.6
35	692379.4	6281358.4	35	692387.8	6281383.6	26.5
34	692320.4	6281639.0	36	692290.0	6281671.0	44.1
33	692173.0	6281920.0	37	692163.9	6281921.5	9.2
32	692382.0	6282353.0	38	692375.0	6282374.0	22.1

3.2.2 Hollow Bearing Trees

Condition C7(iii) of Schedule C of the Project Approval provides that "the revised location of the wind turbine [must be] at least 50 metres from existing hollow-bearing trees; or where the approved turbine location is already within 50 metres of existing hollow-bearing trees, the revised location of the turbine is not moved any closer to existing hollow-bearing trees."

The intent of this condition is to avoid the risk of potentially unacceptable bird and bat impacts during operation of the WTGs by ensuring that the micro-sited WTGs are not located any closer to hollow-bearing trees (HBTs).

Condition D3 of Schedule D of the Project Approval provides that "No more than 26 hollow bearing trees shall be removed for the project, unless the Planning Secretary agrees otherwise." By letter dated 13 August 2021, the Planning Secretary agreed to a maximum of 189 HBTs being removed for the Project under condition D3 of Schedule D of the Project Approval in light of the:

- further baseline mapping of the vegetation and key habitat; and
 - calculation of the biodiversity offset credit liabilities,
- for the Project carried out under condition D5 of Schedule D of the Project Approval.

Trees were surveyed to identify HBTs and mapped in accordance with the NSW Biodiversity Assessment Methodology (2020) and as such not every tree has been surveyed for hollows at this stage. Therefore, the HBT data comprises:

- Known HBTs: these are trees which have been surveyed and identified as hollow bearing; and
- Assumed HBTs: these are trees which have been identified as potentially hollow bearing. Their status will be confirmed during pre-construction surveys carried out in accordance

with the Construction Flora and Fauna Management Plan approved under condition F21 of Schedule F of the Project Approval.

In order to facilitate the finalisation of the Final Layout, additional survey work was undertaken by NGH Environmental on 22 December 2021 to confirm whether the 2 Assumed HBTs located west of WTG 3 were in fact HBTs in accordance with the NSW Biodiversity Assessment Methodology (2020). The results of the survey undertaken by NGH Environmental confirmed that these 2 trees do not contain any hollows and, accordingly, these trees have been confirmed to not be HBTs. Appendix C contains a copy of the NGH Environmental HBT Survey Report in this regard. The updated survey information has been included in this document.

Appendix D provides maps showing:

- the location of the Known HBTs and Assumed HBTs within both:
 1. the initial Project layout contained in Figure 1-1 of the Project Approval (**Initial Layout**); and
 2. the Final Layout presented in this report; and
- each of the Known HBTs and Assumed HBTs within 50 m of each WTG location under both the Initial Layout and Final Layout.

As is made clear from the maps in Appendix D:

- a number of Known HBTs and Assumed HBTs are located within the approved disturbance footprint for the Initial Layout and were required to be removed in order to enable construction of the Initial Layout (**Relevant HBT's**);
- 17 HBTs (8 Known HBTs and 9 Assumed HBTs) are located within 50m of 9 of the micro-sited WTG locations forming part of the Final Layout; and
- all 17 of the Known HBTs and Assumed HBTs located within 50m of 9 of the micro-sited WTG locations forming part of the Final Layout were Relevant HBT's which are approved for removal under the Initial Layout.

These 17 Relevant HBT's Approved for Removal will be removed prior to the commencement of construction of the Project as part of ongoing "Pre-construction minor works" as defined under the Project Approval which relevantly includes "minor clearing of native vegetation". Accordingly, at the time construction of the Project commences, in accordance with Condition C7(iii) of Schedule C of the Project Approval, there will be no existing HBT's within 50m of the micro-sited WTG locations the subject of the Final Layout.

All HBT's removed for the purpose of the Project, including the Relevant HBTs, will be offset in accordance with the requirements of the NSW Biodiversity Offsets Scheme and Condition D6 of Schedule D of the Project Approval.

3.2.3 Compliance with Conditions of Approval

As outlined in section 3.2.1, detailed design and micro-siting of the turbines and ancillary infrastructure was undertaken to derive the Final Layout based on a comprehensive set of design principles. This included ensuring that the Final Layout remains in accordance with each of the Project Approval conditions. In particular, the Final Layout:

- remains generally in accordance with the EA;
- will comply with the restrictions on clearing and habitat impacts contained in Conditions D1, D2 and D3 of Schedule D of the Project Approval;

FCWF 08_0252 Final Layout Plans

- accords with the plans and strategies submitted and approved under the conditions of the Project Approval; and
- will not result in any non-compliance with any Project Approval conditions.

Evidence of this is demonstrated via the FCWF Compliance Tracking Programme and associated compliance tracking reports which will be provided throughout the pre-construction, construction, and operational phases of the Project.

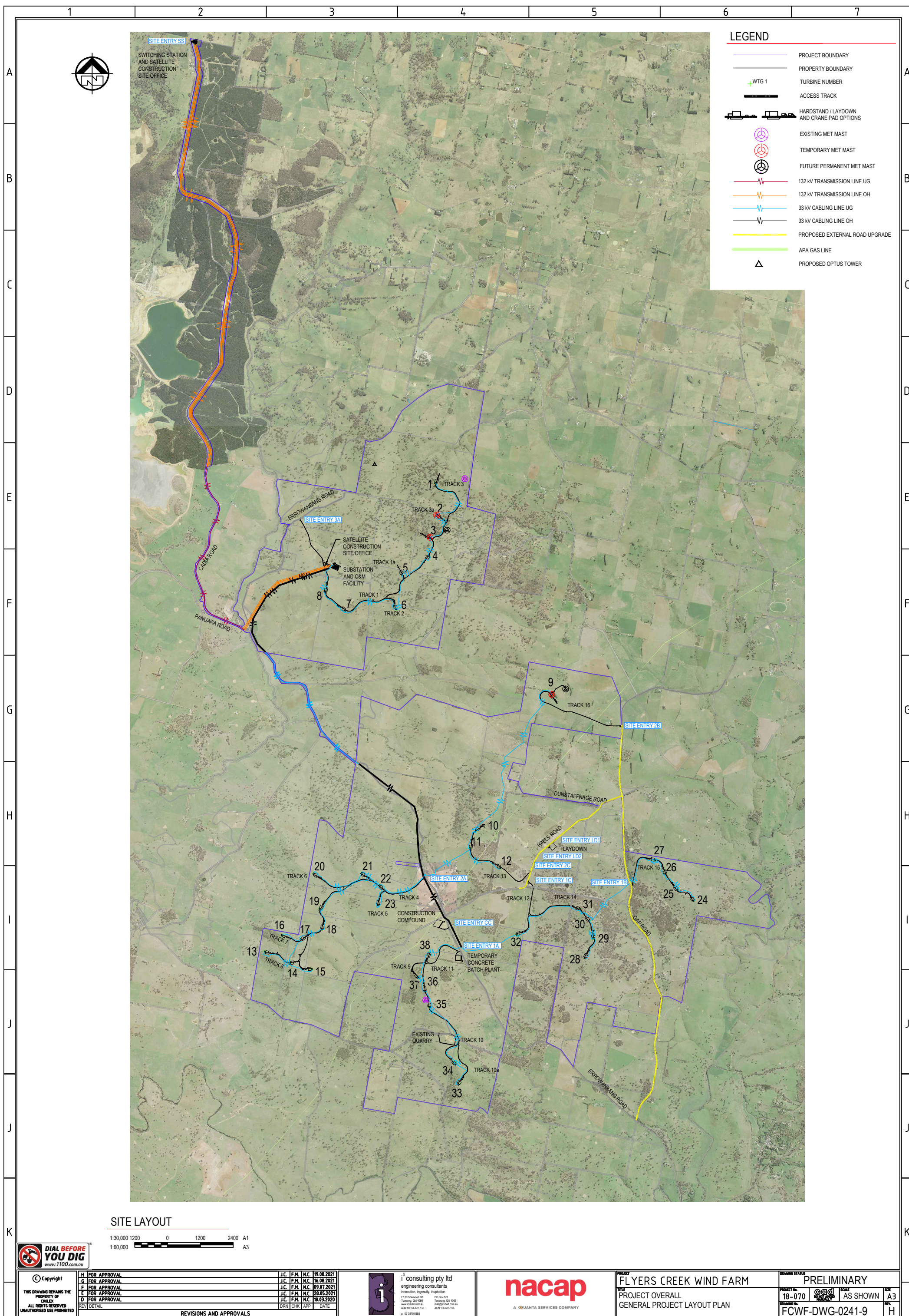
3.3 Final Layout Plans - Condition C9

Appendix A contains detailed plans showing the Final Layout of the Project, including the locations of the wind turbines and ancillary infrastructure.

Appendix B contains the GPS coordinates of the final wind turbine locations.

Should it become necessary to further micro-site any wind turbine locations or ancillary infrastructure in light of unexpected ground conditions encountered during construction then this Final Layout Plan will be updated in accordance with Condition C15 of Schedule C of the Project Approval to reflect any further micro-siting proposed prior to construction of the relevant component.

Appendix A: Final Layout Plan



Appendix B: Final WTG Coordinates

Wind Turbine Coordinates

UTM WGS84-Zone 55S				
WTG ID	X [m]	Y [m]	Latitude	Longitude
1	692487.0	6290959.0	-33.5036069	149.0722149
2	692513.0	6290374.0	-33.5088752	149.0726204
3	692392.0	6289965.0	-33.5125836	149.0714063
4	692375.0	6289626.0	-33.5156423	149.0712962
5	691875.0	6289287.0	-33.5187879	149.0659885
6	691775.0	6288656.0	-33.5244935	149.0650476
7	690842.0	6288627.0	-33.5249220	149.0550128
8	690474.0	6288976.0	-33.5218418	149.0509780
9	694616.0	6287092.0	-33.5380769	149.0959622
10	693227.0	6284620.0	-33.5606108	149.0815462
11	693124.0	6284281.0	-33.5636851	149.0805105
12	693675.0	6283925.0	-33.5667940	149.0865202
13	689375.0	6282396.0	-33.5813482	149.0405453
14	689835.0	6282175.0	-33.5832585	149.0455461
15	690230.0	6282070.0	-33.5841345	149.0498224
16	689682.5	6282689.5	-33.5786480	149.0437944
17	690030.0	6282617.0	-33.5792396	149.0475520
18	690424.0	6282802.0	-33.5775018	149.0517555
19	690375.0	6283176.0	-33.5741394	149.0511480
20	690266.0	6283821.0	-33.5683450	149.0498368
21	691142.0	6283831.0	-33.5680982	149.0592670
22	691475.0	6283603.0	-33.5700936	149.0629015
23	691444.0	6283243.0	-33.5733441	149.0626449
24	697210.0	6283325.0	-33.5715543	149.1247137
25	696917.0	6283523.0	-33.5698238	149.1215152
26	696689.0	6283807.0	-33.5673061	149.1189977
27	696506.0	6284062.0	-33.5650414	149.1169712
28	695225.0	6282276.0	-33.5813746	149.1035697
29	695375.0	6282638.0	-33.5780843	149.1051057
30	695302.0	6282960.0	-33.5751954	149.1042492
31	695128.0	6283182.0	-33.5732262	149.1023270
32	693975.0	6282706.0	-33.5777270	149.0900152
33	692913.0	6279965.0	-33.6026259	149.0791719
34	692862.0	6280340.0	-33.5992550	149.0785415
35	692387.8	6281383.6	-33.5899342	149.0732086
36	692290.0	6281671.0	-33.5873613	149.0720933
37	692163.9	6281921.5	-33.5851261	149.0706813
38	692375.0	6282374.0	-33.5810094	149.0728572

Appendix C: NGH Environmental HBT Survey

21 January 2022

Megan Richardson
Project Manager
Iberdrola Australia
Level 17 56 Pitt Street
Sydney NSW 2000



megan.richardson@iberdrola.com.au

Dear Megan

Re: 18-558 – Flyers Creek Wind Farm Offsets

NGH were engaged by Iberdrola Australia to conduct a hollow-bearing tree (HBT) assessment at Flyers Creek Wind Farm of some trees near wind turbine 1 and 3.

This letter report outlines the HBT tree assessment and results.

Site Assessment

An NGH Ecologist conducted a tree assessment surrounding WTG1 and WTG3 on the 22nd December 2021 to determine the presence/absence of hollows.

The trees identified as potential hollow bearing (from aerial imagery) surrounding WTG1 and WTG3 were initially observed from ground level. There were two trees near WTG 3 that appeared to contain hollows. These were inspected using an extension pole with a 5m reach, a ladder and a camera to record up to a height of approximately 8 metres.

All non-hollow bearing and potential hollow-bearing trees identified within the survey area surrounding WTG1 and WTG3 were GPS marked (see Figure 1 and Figure 2).

Limitations

Due to time and height constraints not all potential HBTs could be assessed using the camera.

Weather conditions during the survey were viable with some windy conditions limiting use of the extension pole.



WAGGA WAGGA

35 Kincaid Street (PO Box 5464) Wagga Wagga NSW 2650

T. (02) 6971 9696 E. ng@nghconsulting.com.au W. www.nghconsulting.com.au

NSW • ACT • QLD • VIC

ABN 31 124 444 622 ACN 124 444 622

Results

Three potential HBTs were identified within the area surveyed. No HBTs were identified within 50m WTG1 or WTG3.

Twelve HBTs were marked through aerial assessment in the area surrounding the micro sited WTG1 and WTG3. Two of these HBTs potentially contain hollows. An additional tree previously unmarked as a HBT was identified as potentially containing a hollow. Therefore, a total of three potential HBTs were identified during the HBT assessment. Table 1 below details HBT results.

Table 1 HBT Tree assessment data

Flyers Creek Offset Report	GPS Location		WTG Number	Hollow Tree Assessment Presence/Absence
	Easting	Northing		
Assumed from Aerial	692503	6290951	WT1	Absent
Assumed from Aerial	692547	6291032	WT1	Absent
Assumed from Aerial	692244	6290004	WT3	Absent
Assumed from Aerial	692327	6289965	WT3	Absent
Assumed from Aerial	692369	6289994	WT3	Absent
Assumed from Aerial	692304	6290014	WT3	Potential
Assumed from Aerial	692305	6289991	WT3	Absent
Assumed from Aerial	692286	6289996	WT3	Absent
Assumed from Aerial	692269	6290014	WT3	Absent
Assumed from Aerial	692234	6290025	WT3	Potential
Assumed from Aerial	692225	6290016	WT3	Absent
Assumed from Aerial	692372	6289961	WT3	Absent
Previously unrecorded	692362	6290015	WT3	Potential



18-558 Flyers Creek Wind Farm Offset Report **WTG 1 HBT survey result**

Legend

- 50m Buffer Microsited WT Layout
- DA-Approved Layout WT Layout
- Revised Microsited WT Layout
- ▲ Flyers Creek Offset Report - Assumed HBTs
- ▲ HBT Tree Assessment
- Non Hollow-bearing



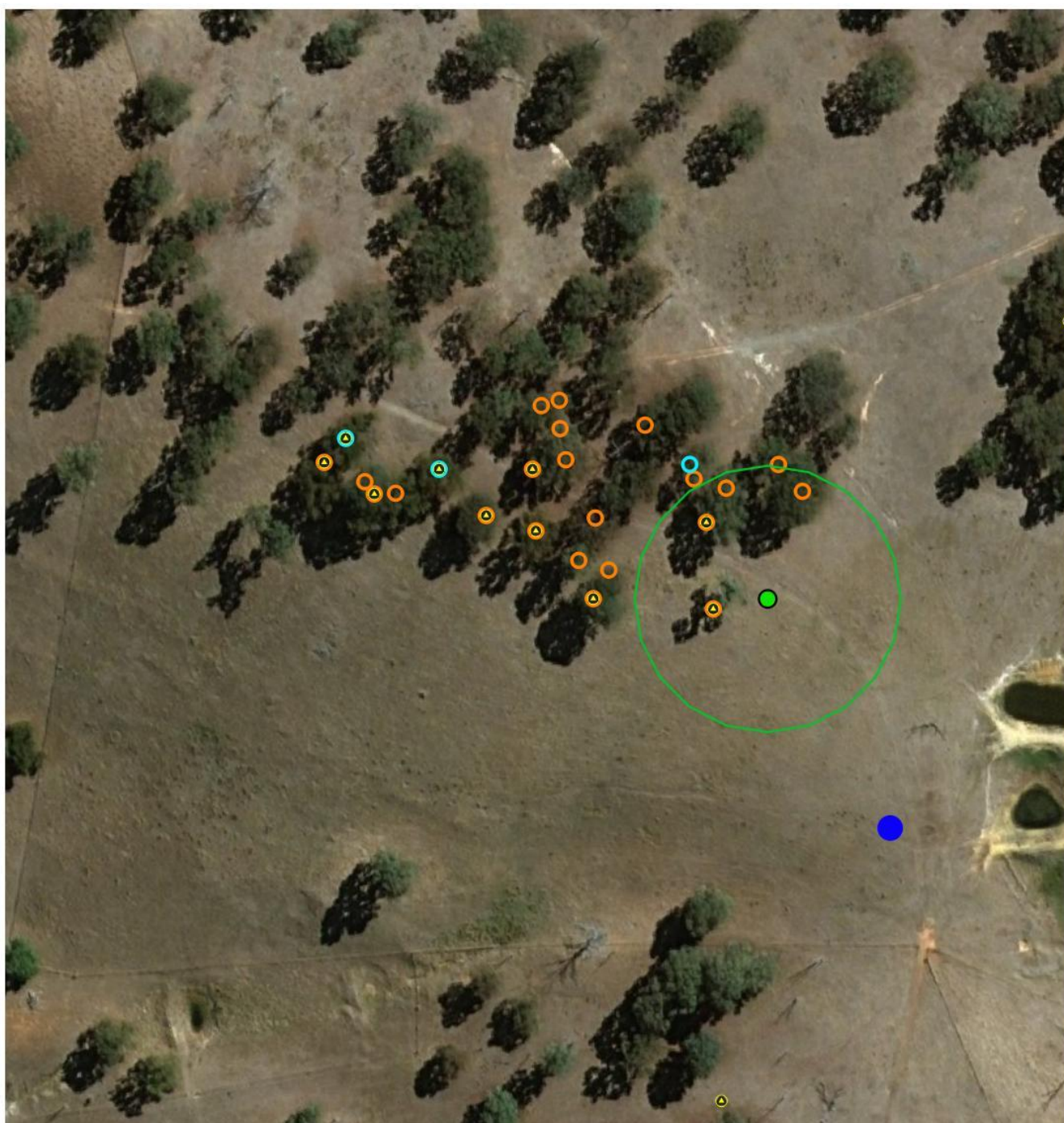
Data Attribution
 © NGH 2022
 © Infigen Energy Development 2022
 © Esri & QGIS 2022

Ref: 18-558 Flyers Creek Wind Farm Offset
 Report Maps\WTG 1 HBT survey result
 Author: C. Vincent
 Date created: 21.01.2022
 Datum: GDA94 / MGA zone 55



NGH

Figure 1 WTG1 HBT Assessment



18-558 Flyers Creek Wind Farm Offset Report **WTG 3 HBT survey result**

Legend

- DA Approved Layout WT Layout
- Revised Microsited WT Layout
- 50m Buffer Microsited WT Layout
- ▲ Flyers Creek Offset Report - Assumed HBTs
- ▲ HBT Tree Assessment
- Non Hollow-bearing

Data Attribution
 © NGH 2022
 © Infigen Energy Development 2022
 © Esri & QGIS 2022

Ref: 18-558 Flyers Creek Wind Farm
 Offset Report Maps \ WTG 3 HBT
 survey result
 Author: C.Vincent
 Date created: 21.01.2022
 Datum: GDA94 / MGA zone 55



NGH

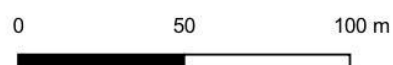


Figure 2 WTG3 HBT Assessment

Conclusion

The trees assessed within 50 metres of WTG1 and WTG3 were determined to be non-hollow bearing trees.

There were three potential HBTs located near WTG3 which are outside of the 50 metre buffer. If these are to be impacted at a later stage, further assessment is recommended to determine presence/absence of hollows.

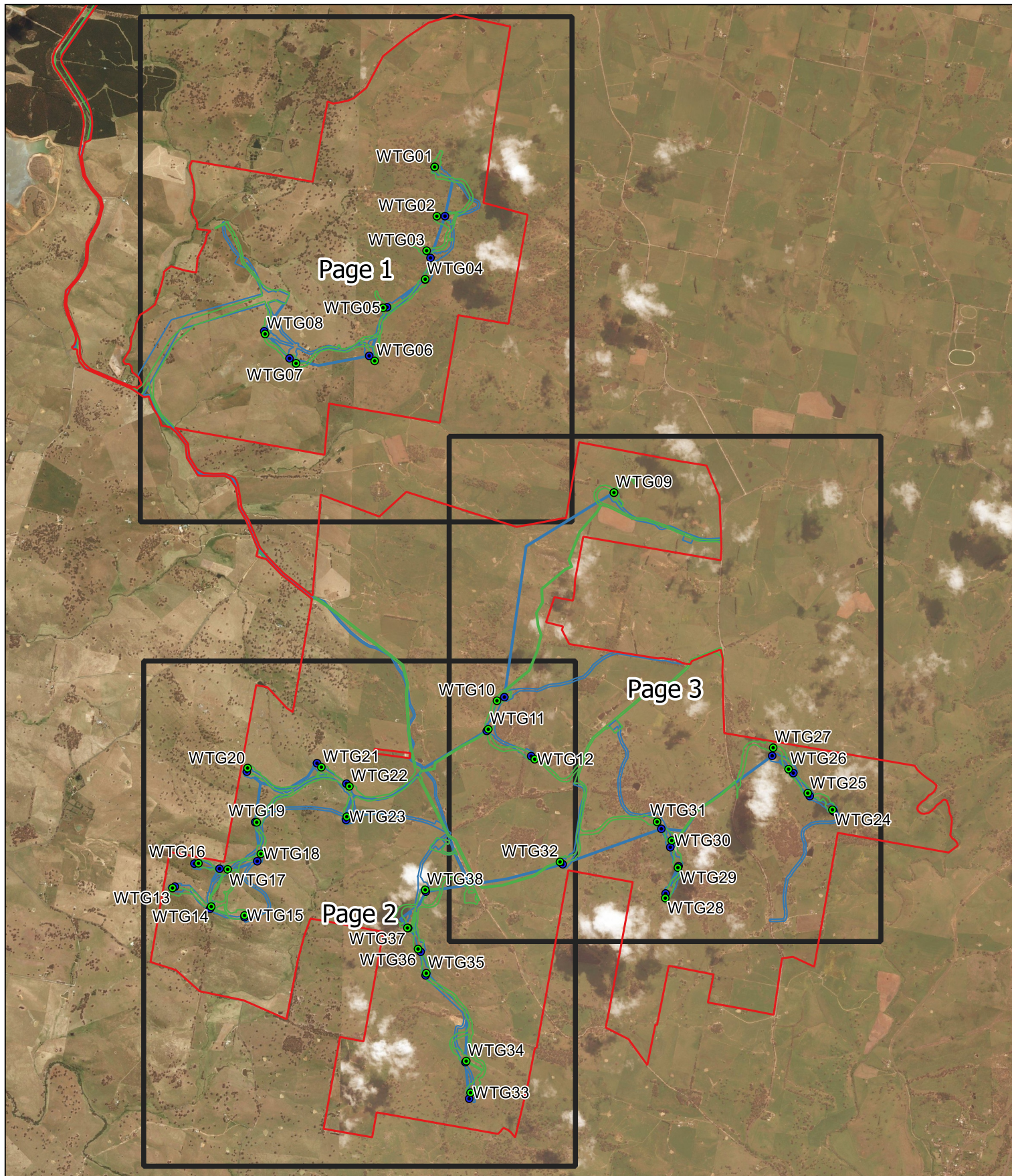
Yours sincerely,

A handwritten signature in blue ink, reading "Michelle Patrick".

Michelle Patrick

Acting Regional Manager
(Wagga and Wodonga)

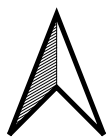
Appendix D: HBT Maps



Date published: 2022-01-20T17:10:26.290

Source: Bing Satellite

Flyers Creek Wind Farm Condition C7 - Overview Map



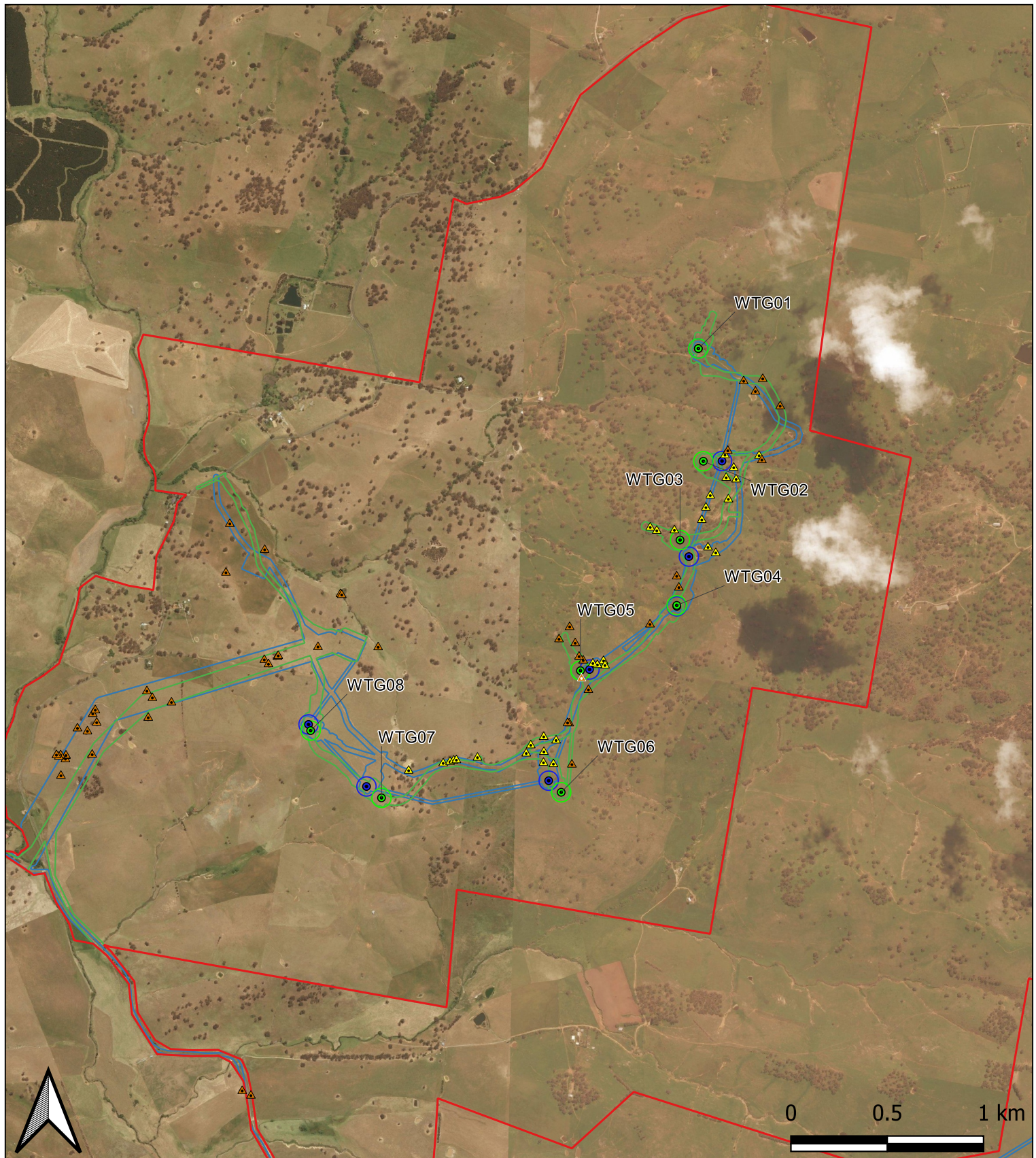
0 1 2 km



Wind Turbines

- Microsited WTG
- Approved WTG

- Final Layout
(with micrositing)
- Initial Project Layout
(refer Fig 1.1 of DA)
- Project Boundary



Date published: 2022-01-21T11:00:40.560

Source: Bing Satellite

Flyers Creek Wind Farm Condition C7 (Page 1 of 3)

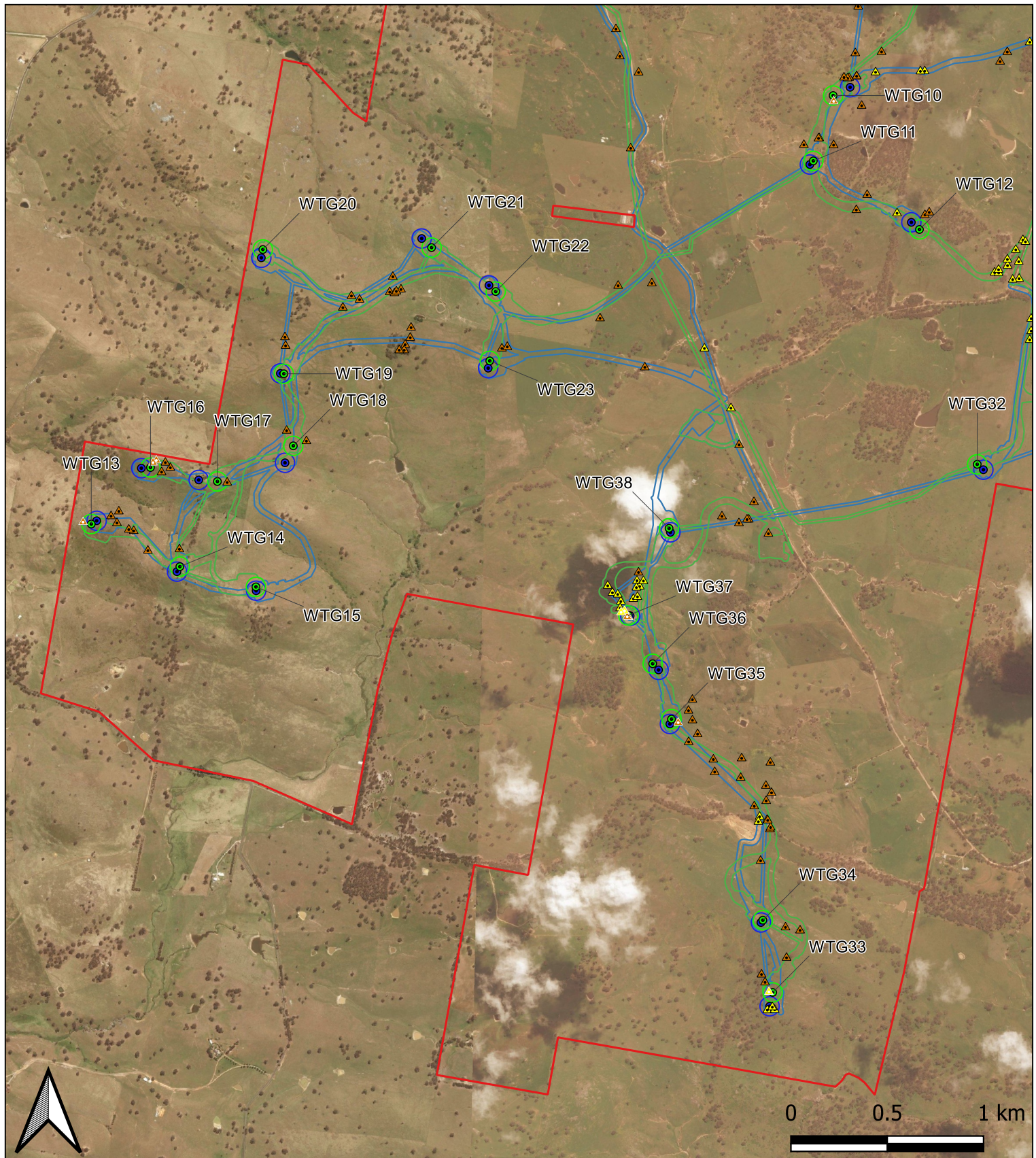
Wind Turbines

- Microsited WTG
- Approved WTG
- Microsited WTG - 50m Buffer
- Approved WTG - 50m Buffer

Hollow Bearing Trees

- ▲ Known HBTs
- ▲ Known HBTs (within 50m of microsited WTG)
- ▲ Assumed HBTs
- ▲ Assumed HBTs (within 50m of microsited WTG)

- Final Layout (with micrositing)
- Initial Project Layout (refer Fig 1.1 of DA)
- Project Boundary



Date published: 2022-01-21T11:00:42.358

Source: Bing Satellite

Flyers Creek Wind Farm Condition C7 (Page 2 of 3)

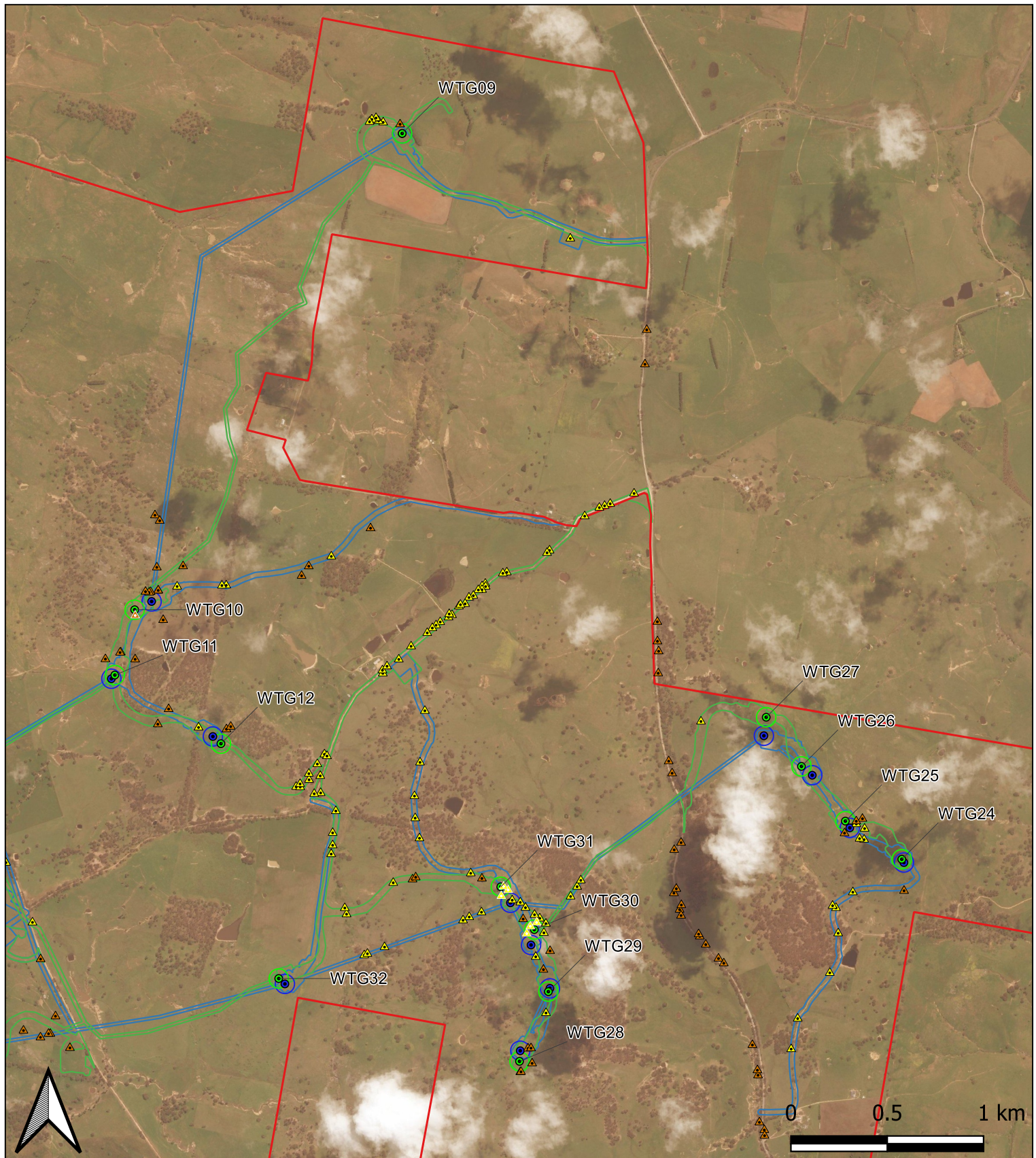
Wind Turbines

- Microsited WTG
- Approved WTG
- Microsited WTG - 50m Buffer
- Approved WTG - 50m Buffer

Hollow Bearing Trees

- ▲ Known HBTs
- ▲ Known HBTs (within 50m of microsited WTG)
- ▲ Assumed HBTs
- ▲ Assumed HBTs (within 50m of microsited WTG)

- Final Layout (with micrositing)
- Initial Project Layout (refer Fig 1.1 of DA)
- Project Boundary



Date published: 2022-01-21T11:00:44.450

Source: Bing Satellite

Flyers Creek Wind Farm Condition C7 (Page 3 of 3)

Wind Turbines

- Microsited WTG
- Approved WTG
- Microsited WTG - 50m Buffer
- Approved WTG - 50m Buffer

Hollow Bearing Trees

- ▲ Known HBTs
- ▲ Known HBTs (within 50m of microsited WTG)
- ▲ Assumed HBTs
- ▲ Assumed HBTs (within 50m of microsited WTG)

- Final Layout (with micrositing)
- Initial Project Layout (refer Fig 1.1 of DA)
- Project Boundary