



Winterbourne Wind Farm

Response to Submission

Prepared for
ERM

Issue
E

Date
18/05/2026

Project Number
2904

Revision	Date	Author	Checked	Comment
A	28/04/26	MD / AR	AR	Draft
B	29/04/26	MD/AR	AR	Draft
C	12/05/26	MD/AR	AR	Final
D	15/05/26	MD/AR	AR	Final for submission
E	18/05/26	MD/AR	AR	Update project boundary for submission



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1.0 Introduction

Moir Landscape Architecture Pty Ltd (t/a Moir Studio) prepared a Landscape and Visual Impact Assessment (LVIA) for the proposed Winterbourne Wind Farm (SSD-10471) in October 2022. The LVIA formed part of the Environmental Impact Statement (EIS) which was publicly exhibited from Friday 18th November 2022 until Monday 23rd January 2023.

The LVIA included detailed assessment from key viewpoints located within the World Heritage Area in response to the project specific SEARs. This included detailed assessments from McMillan Lookout, Apsley Gorge Bridge and bare earth 3D wire frame diagrams from Green Gully Lookout and the Rocks Lookout.

Moir subsequently prepared an Addendum Landscape and Visual Impact Assessment (LVIA) as part of the Amendment Report, which was publicly exhibited from 8 October 2024 to 4 November 2024. The Addendum LVIA included an updated assessment of the revised project layout, incorporating updated viewshed mapping, comparative dwelling assessments, and additional photomontages and wireframe visualisations, and responded to submissions and requests for further information (RFI).

Post EIS and Amendment Report lodgement, Moir have provided additional viewshed mapping to address specific requests relating to the visual impact in response to New South Wales National Parks and Wildlife Service (NPWS) .

The purpose of this report is to provide further information in response to an additional request from Department of Planning, Housing and Infrastructure (DPHI) dated 5th March 2026 to *“resolve the residual issues raised in advice from the NSW DCCEEW – Conservation Programs, Heritage & Regulation Group (CPHR) dated 4 March 2026”*. The residual issues raised from the New South Wales Department of Climate Change, Energy, the Environment and Water (DCCEEW) and recommendations have been provided in **Table 01**.

2.0 Study Method

To address the request for additional information, Moir Studio has undertaken further assessment of the visual impacts associated with the Project as viewed from Oxley Wild Rivers National Park, the World Heritage Area, and the Declared Wilderness Areas (DWA).

Additional viewshed mapping has been prepared to demonstrate the theoretical visibility of the Project to a distance of approximately 45 kilometres with all National Park, DWA and conservation area boundaries overlaid. This initial mapping is based on bare-earth topography and represents a conservative assessment of potential visibility. For the key walking routes, a 50 m buffer to the viewshed was applied to represent the zone of potential visibility experienced by users moving along the track, accounting for minor deviations in position and viewing direction. Where areas of theoretical visibility were identified, Moir Studio have undertaken a refined viewshed analysis using point-cloud LiDAR data from publicly accessible lookouts and tracks to incorporate vegetation screening. Three-dimensional (3D) visualisations were subsequently developed from key viewpoints to establish the extent of potential visibility and to inform an assessment of the likely visual impacts arising from the Project. While LiDAR provides a high-resolution representation of terrain and vegetation structure, several limitations apply. The datasets span multiple acquisition dates (2012–2025), and vegetation conditions may have changed over time. LiDAR represents vegetation height but not density, and variations in point density and coverage may introduce minor inconsistencies. The analysis assumes a static observer and does not account for atmospheric or seasonal conditions. Accordingly, the results should be interpreted as a realistic but modelled indication of potential visibility.

Residual Issue Description	Recommendation
The SEARs required “a detailed consideration of potential visual impacts on the amenity values of Oxley Wild Rivers National Park, Gondwana Rainforest of Australia World Heritage Area and areas of declared wilderness under the NSW Wilderness Act 1987”. An assessment of the landscape and visual impacts of the proposal has not been carried out consistent with the SEARs. A revised mapping of the zone of visual impact (ZVI) has been provided in Appendix J of the Response to Request Information but this still does not meet the assessment requirements of the SEARs. The only boundaries shown on the map are the Project Site Boundary and that of the world heritage area – the park and wilderness boundaries are missing. NPWS acknowledges a revised map with the park boundary was received after advice on the Amendment Report and RTS No. 2 had been prepared. This map lacked the wilderness boundary and was not supported by any assessment of impact on the wilderness. NPWS notes that the ZVI mapping in Appendix J is now focused only on the visibility of turbines with aviation lighting – not all turbines. This is a marked change when compared to the ZVI map in the Addendum to the Landscape and Visual Impact Assessment (dated September 2024) which formed Appendix H to the Amendment Report. This change in methodology is not explained. The applicant has failed to provide a detailed consideration of potential visual impacts of the proposal on the amenity of the declared wilderness. The number of turbines visible from high points in the wilderness is not stated, nor are the area of wilderness from which more than 80 turbines may be sighted, the arc over which a high number of turbines will be sighted, and the likely impact to wilderness users’ feelings of solitude arising from the visual intrusion of modern technology in the landscape viewed from within the wilderness.	Prior to determination, further assessment, consistent with the SEARs, and supported by use of a 3D Digital Elevation Model, is completed to identify those turbines that will be visible from areas of declared wilderness, and a detailed consideration of the landscape and visual impacts and the amenity experienced by those in the declared wilderness.

Table 01 Residual issues relevant to the LVIA raised in advice from the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Conservation Programs, Heritage & Regulation Group (CPHR) dated 4 March 2026

3.0 Visual Impact Assessment

In response to the request from the NSW DCCEEW to address residual issues, Moir has undertaken additional visual impact assessment through the preparation of detailed viewshed mapping using 3D elevation data.

3.1 Declared Wilderness Area (DWA)

The extent of the Declared Wilderness Area (DWA) in relation to the Project is shown in **Figure 01 (Appendix A)**. **Figure 01** also identifies publicly accessible land within the DWA from which users may experience visual and landscape amenity. There are a number of walking tracks within the Wilderness Area. The Green Gully Track is a popular 4 day walking loop for experienced bushwalkers. In addition to the Green Gully Track, the Budds Mare to Riverside walking route is also located within the DWA, approximately 10 kilometres west of the Project.

The Green Gully Track was assessed to represent potential amenity impacts to visitors accessing the Wilderness Area. The Green Gully Track generally follows the gully floor at relatively low elevations, with only short sections ascending to higher ground. The alignment of Green Gully Track is illustrated in **Figure 02 (Appendix A)**.

Use of the Green Gully Track is strictly managed by NSW National Parks and Wildlife Service (NPWS) through a booking system that limits access to a maximum of six (6) walkers per day. On this basis, the maximum theoretical annual visitation is 2,195 people per year. Actual visitation is likely to be lower due to seasonal closures, weather conditions and booking availability.

The viewshed mapping presented in **Figure 03** (Appendix A) demonstrates the theoretical visibility of the Project from within the DWA. The mapping extends to approximately 45 kilometres from the nearest proposed turbine and is based on bare-earth topography. As it does not account for vegetation or other screening elements, the results should be regarded as highly conservative.

Figure 03 indicates that the potential for views of the Project from areas within the DWA is relatively limited due to topography, with visibility confined to small pockets of elevated and largely inaccessible land.

The viewshed mapping prepared based on topography alone (see **Figure 03**) identified that there is the potential for visibility to the Project from the Green Gully Track. Detailed viewshed mapping was undertaken to specifically assess visibility from the Green Gully Track to the Project. **Figure 04** (Appendix A) illustrates sections of the track with potential visibility towards the Project and incorporates a 50-metre vegetation buffer on either side of the track based on LiDAR point-cloud data, providing a refined and realistic assessment of potential views. The use of point-cloud LiDAR data enables viewshed mapping to more accurately represent visibility by incorporating the three-dimensional structure of both terrain and vegetation. By accounting for vegetation height and density, rather than relying solely on bare-earth topography, the analysis captures screening effects provided by forest canopies and understory, resulting in a more realistic depiction of potential visibility.

The detailed viewshed mapping indicates that the Green Gully Track has very limited sections with potential visibility towards the Project. While topography is the primary limiting factor, the LiDAR assessment further demonstrates that dense vegetation, provides substantial screening along many parts of the track.

Figure 04 shows that many points of interest along the Green Gully Track have no visibility to the Project,

particularly along the western extent of the track closest to the Project site. Two (2) locations identified as having visibility were selected for the preparation of LiDAR-based visual renders to illustrate potential views. The 3D renders have been prepared using a combination of 3D terrain modelling and point cloud LiDAR. The renders from Birds Nest Trig and Rocks Lookout are provided in **Appendix B**. Both viewpoints are located in excess of 20 kilometres from the nearest WTG. Views to the Project will be available in the distance, occupying a very small extent of the vertical and horizontal extent of the view.

Views of the Project from Birds Nest Trig would occupy approximately 36 degrees of the horizontal field of view. While the Project may be perceptible in clear weather conditions due to the elevation, the nearest wind turbine generator (WTG) is located more than 25 kilometres away.

Similarly the Rocks Lookout is located 21.73 km from the nearest WTG. The 3D render prepared from this viewpoint demonstrates the Project would occupy approximately 34 degrees of the horizontal extent of the view.

Figure 05 shows the viewshed associated with the Budds Mare to Riverside walking track within the DWA. The mapping indicates that only the western portion of the track, generally in the vicinity of Budds Mare Lookout, would have potential visibility to the Project. While these views would occur at comparatively closer distances of approximately 10 kilometres compared to Green Gully Track, the Project would still only occupy a relatively small component of the broader panoramic landscape. From Budds Mare Lookout, the walking track descends steeply towards Riverside Campground, therefore outside the viewshed extent.

At these distances, the Project would appear as a minor and distant element within the broader landscape setting. As a result and considering the expansive panoramic views available from these elevated viewpoints, the visual change would be of very low magnitude and would not undermine the remote character or amenity of the DWA.

3.2 Oxley Wild Rivers National Park

Detailed viewshed mapping that incorporates vegetation screening was undertaken for publicly accessible areas within Oxley Wild Rivers National Park where theoretical visibility of the Project was identified, including the Apsley Gorge and Falls Walk and the Tia Falls walking tracks (refer to **Figure 05**). The viewshed mapping demonstrates that, due to surrounding topography and dense vegetation, only small and intermittent areas along the Tia Falls walking track have the potential for views of the Project.

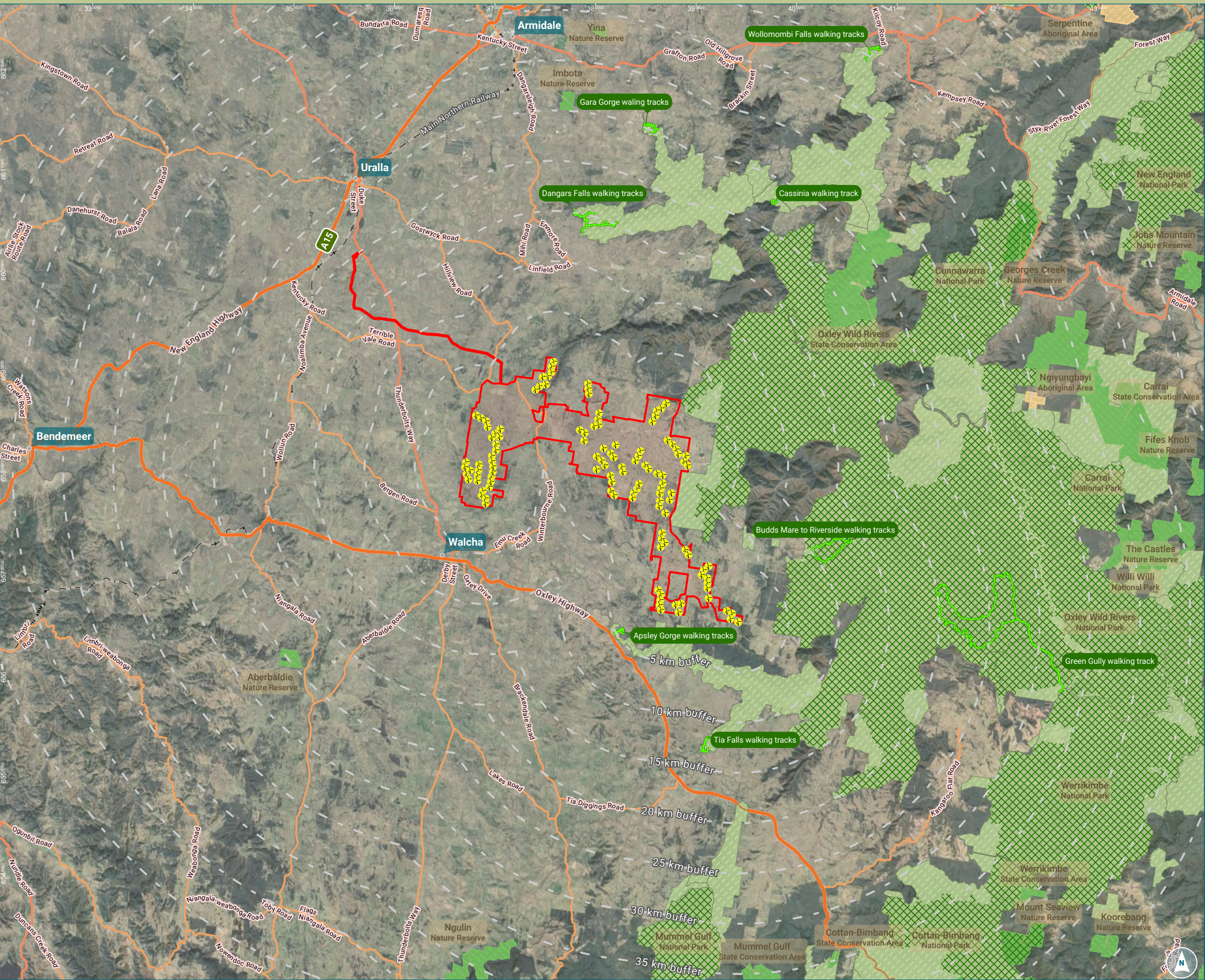
Portions of the Apsley Gorge and Falls Walk also have potential visibility towards the Project. A location along this walk closest to the Project, where theoretical visibility was identified, was selected for the preparation of a 3D visual render to illustrate potential views from the Apsley Gorge and Falls Walk.

The 3D render demonstrates that only a very small portion of the Project may be visible through occasional gaps in vegetation to the north-east (refer to Appendix B). Consistent with the findings of the LVIA, while the Project may be intermittently noticeable from limited locations within the National Park, visibility would be highly fragmented by vegetation. The Project would not form a dominant visual element, with views remaining focused on the gorge, river and surrounding natural landscape features in the foreground.

Other publicly accessible walking tracks located further north within Oxley Wild Rivers National Park, including Garga Gorge, Dangars Falls, Cassinia and Wollomombi, are located at substantially greater distances from the Project and are predominantly outside the theoretical viewshed extent illustrated in **Figure 03**. Consequently, visibility of the Project from these locations would be unlikely or absent.

Appendix A

Figures



Winterbourne Wind Farm

Figure 01

Regional Location

LEGEND

- WTGs
- Project boundary
- 5 km buffers from WTGs
- Wild Oxley NP Walking Tracks

Roads

- National or State Highway
- Arterial Road
- Sub-Arterial Road

Conservation areas

- National parks & strict conservation
- Conservation areas & reserves
- Indigenous protected areas
- Declared Wilderness Areas

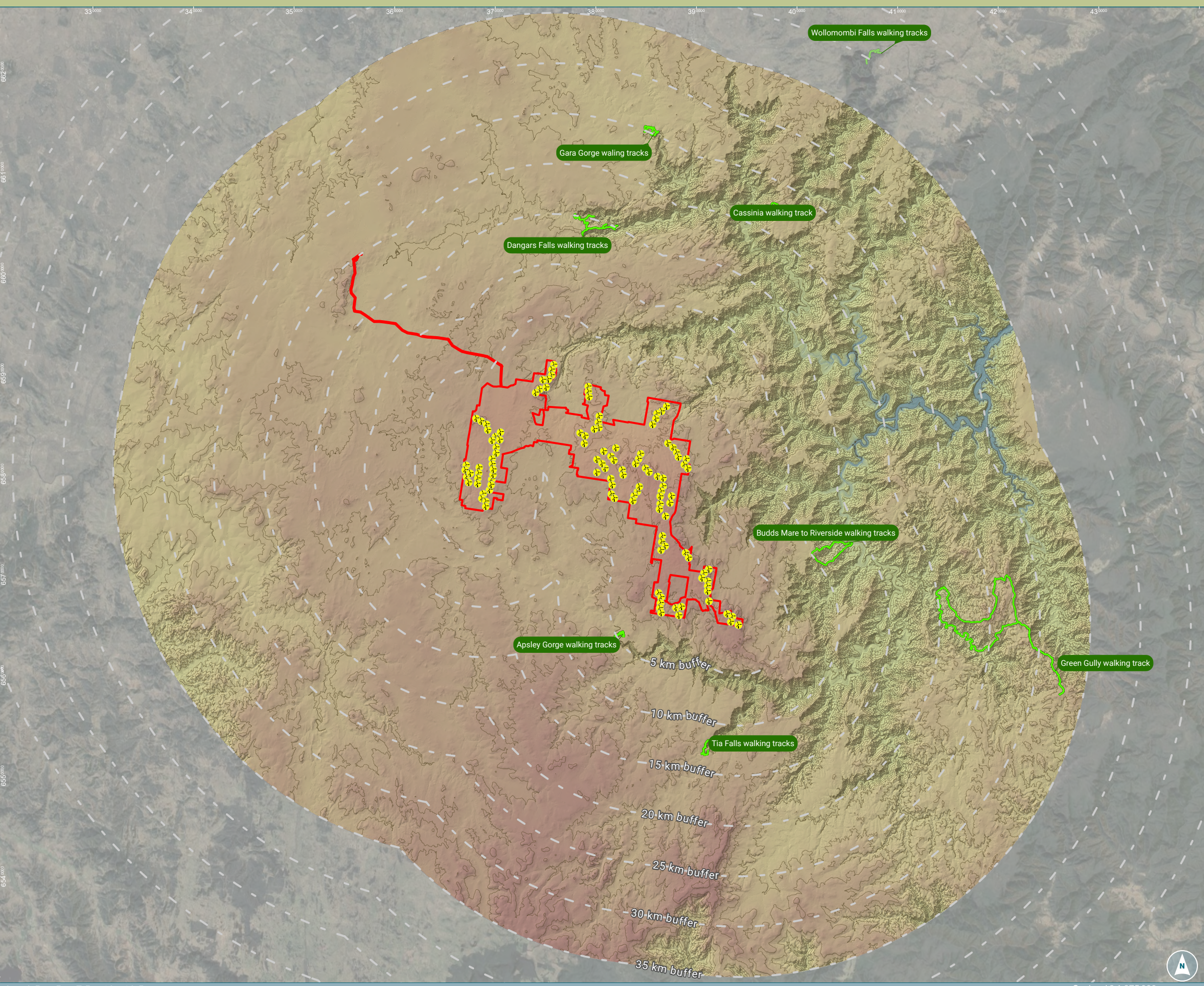
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Figure version: 3.0

Figure print date: 18/05/2026

Author: MD

Scale: A3 1:375,000
Datum: GDA 1994 MGA Zone 56



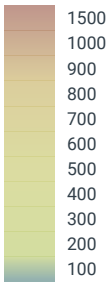
Winterbourne Wind Farm

Figure 02
Topography

LEGEND

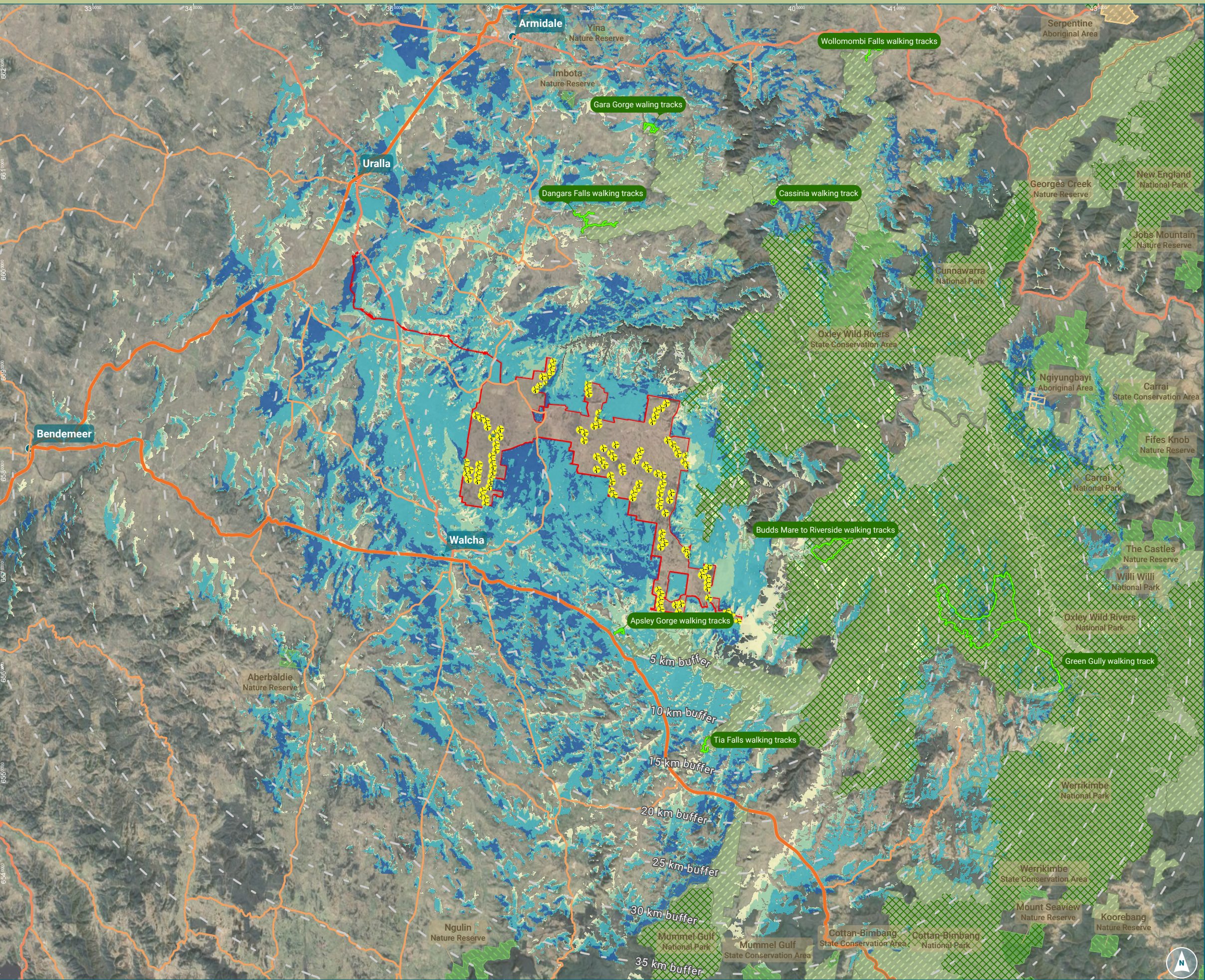
- WTGs (118)
- Project boundary
- 5 km buffers from WTGs
- Wild Oxley NP Walking Tracks
- 100 m contours

Elevation (mAHD)



Project code: 2848	Figure version: 3.0
Figure print date: 18/05/2026	Author: MD

Scale: A3 1:375,000
Datum: GDA2020 MGA Zone 56



Winterbourne Wind Farm

Figure 03

Viewshed

LEGEND

- WTGs (118)
- Project boundary
- 5 km buffers from WTGs
- Wild Oxley NP Walking Tracks
- Roads
 - National or State Highway
 - Arterial Road
 - Sub-Arterial Road
- Conservation areas
 - National parks & strict conservation
 - Conservation areas & reserves
 - Indigenous protected areas
 - Declared Wilderness Areas
- Viewshed - number of WTG visible
 - 1-5 WTGs
 - 6-18 WTGs
 - 19-46 WTGs
 - 47-82 WTGs
 - 83-118 WTGs

0 2.5 5 7.5 10 12.5 km



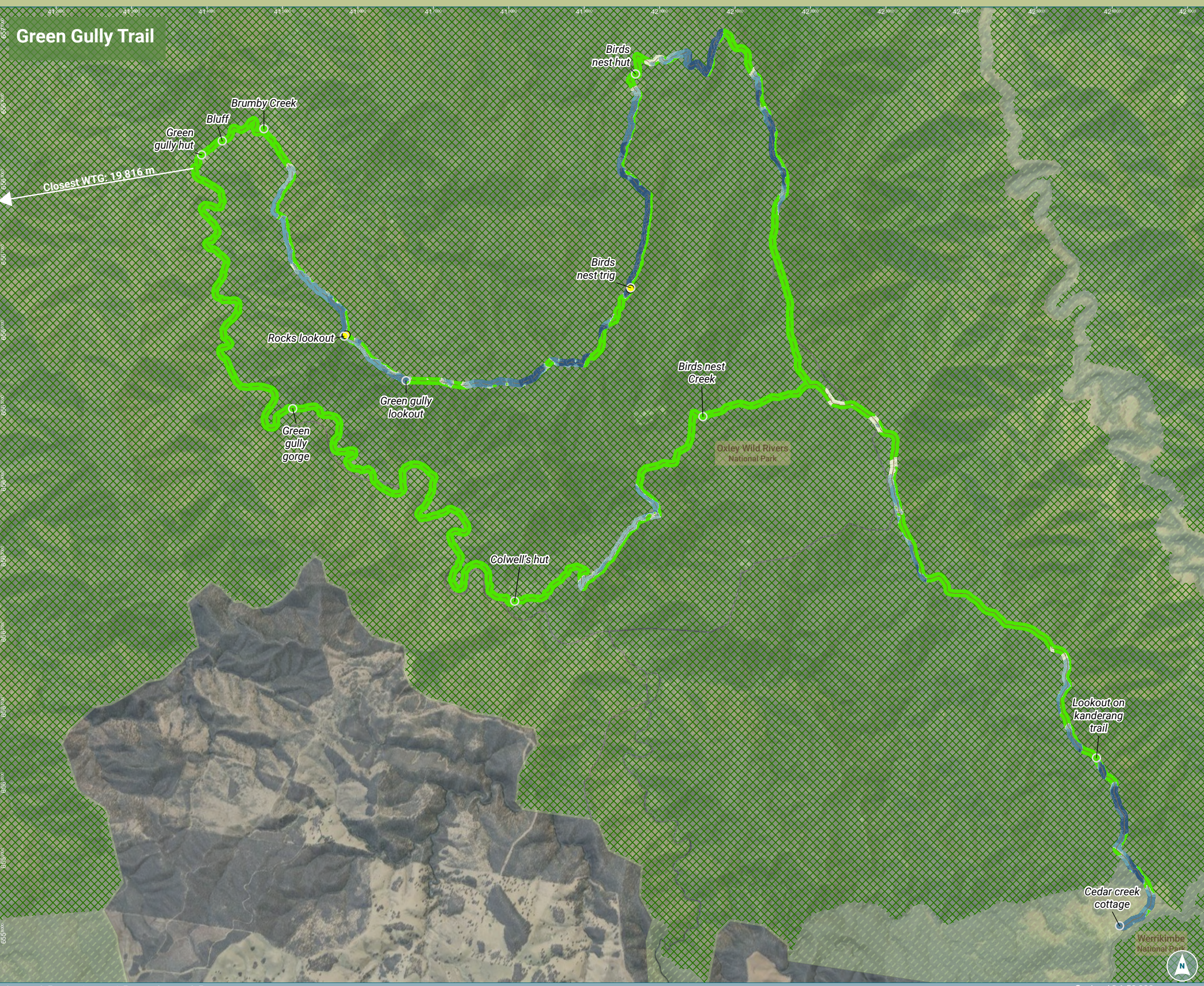
Scale: A3 1:375,000
Datum: GDA2020 MGA Zone 56

Project code: 2848	Figure version: 3.0
Figure print date: 18/05/2026	Author: MD

Green Gully Trail

Winterbourne Wind Farm

Figure 04
Viewshed - 50m buffer from Green Gully Trail



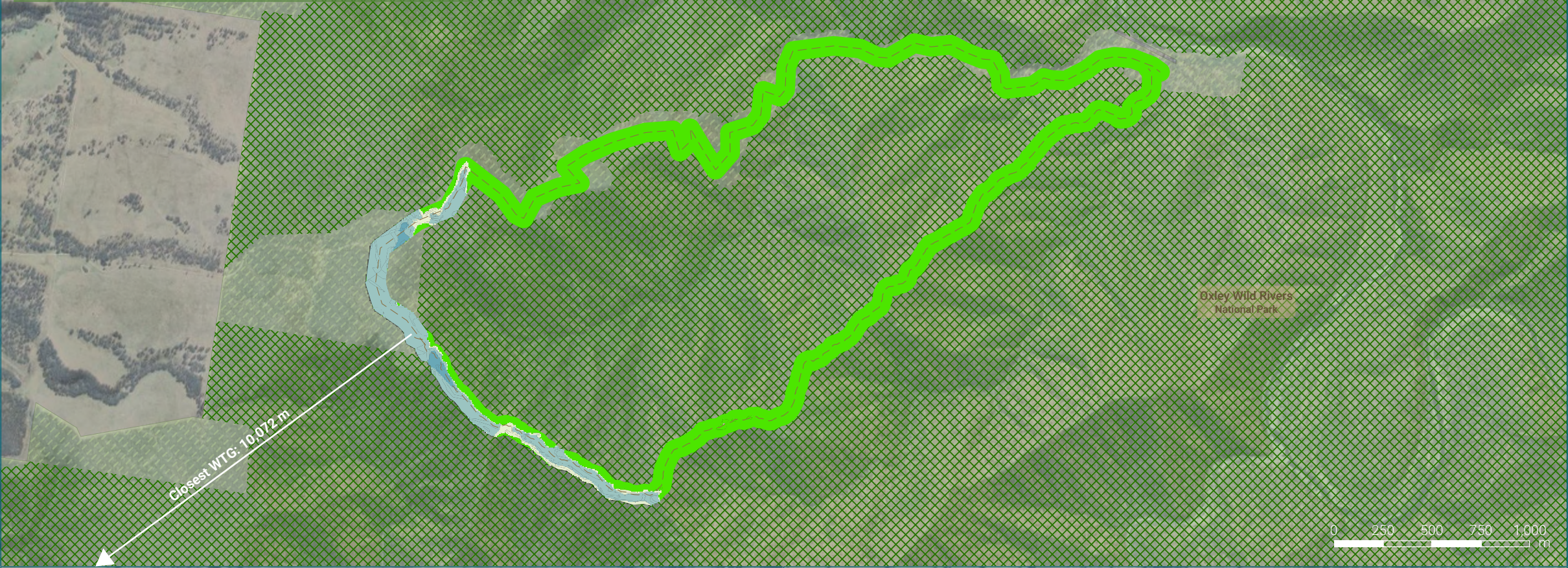
LEGEND

- Green Gully points of interest
- LiDAR render locations
- Wild Oxley NP Walking Tracks
- Viewshed - number of WTG visible
 - No visibility of WTGs
 - 1-5 WTGs
 - 6-18 WTGs
 - 19-46 WTGs
 - 47-82 WTGs
 - 83-118 WTGs
- Conservation areas
 - National parks & strict conservation
 - Declared Wilderness Areas

Project code: 2848	Figure version: 3.0
Figure print date: 18/05/2026	Author: MD

Scale: A3 1:50,000
Datum: GDA2020 MGA Zone 56

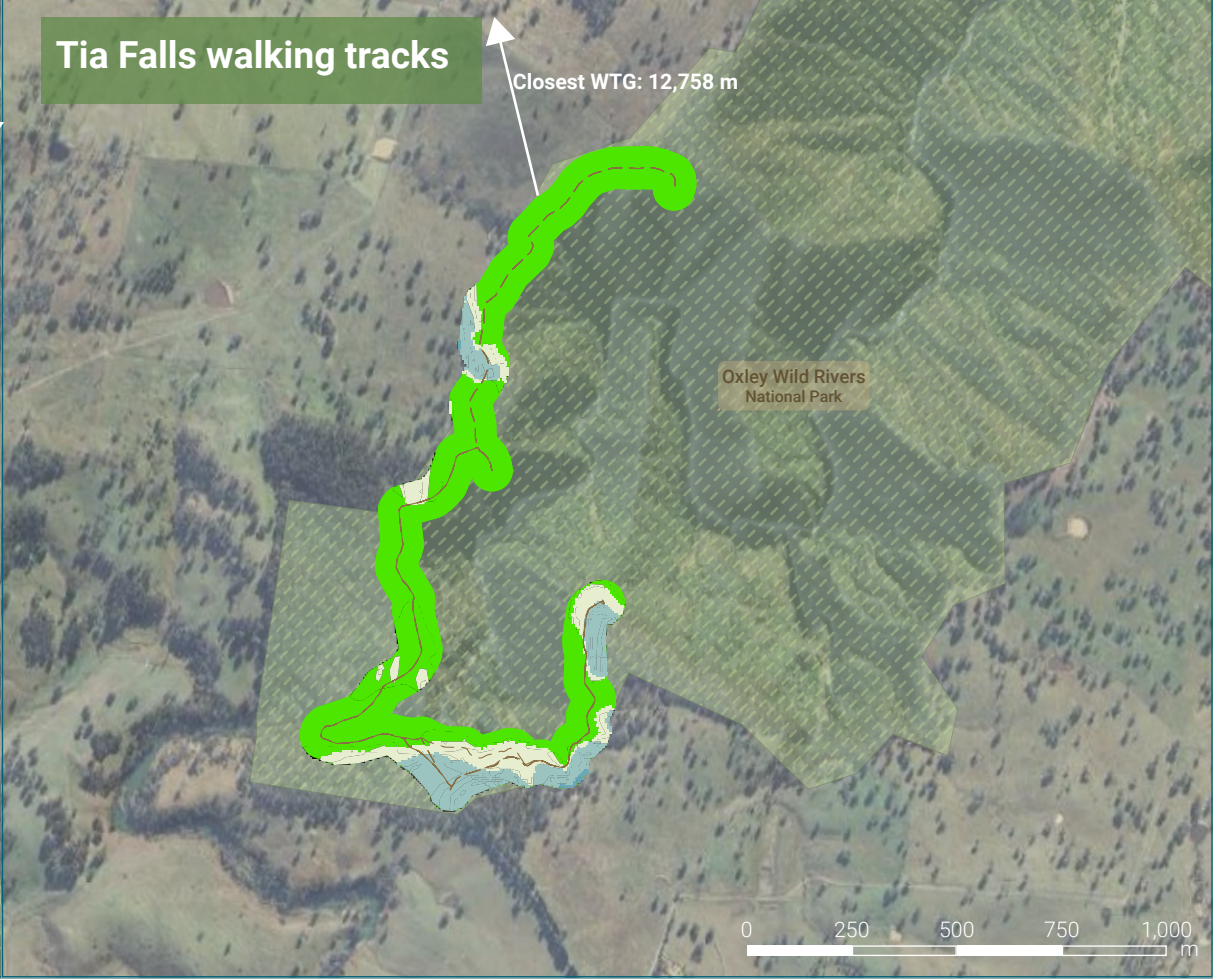
Budds Mare to Riverside walking tracks



Apsley Gorge walking tracks



Tia Falls walking tracks



Winterbourne Wind Farm

Figure 05
Viewshed - 50m buffer from Budds Mare, Apsley Gorge and Tia Falls walking tracks

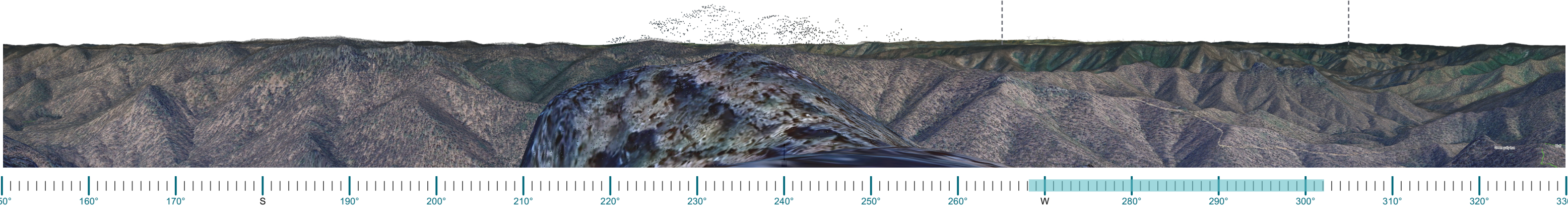
- LEGEND**
- LiDAR render locations
 - Wild Oxley NP Walking Tracks
 - Viewshed - number of WTG visible
 - No visibility of WTGs
 - 1-5 WTGs
 - 6-18 WTGs
 - 19-46 WTGs
 - 47-82 WTGs
 - 83-118 WTGs
 - Conservation areas
 - National parks & strict conservation
 - Declared Wilderness Areas

Project code: 2848	Figure version: 3.0
Figure print date: 18/05/2026	Author: MD

Rocks Lookout

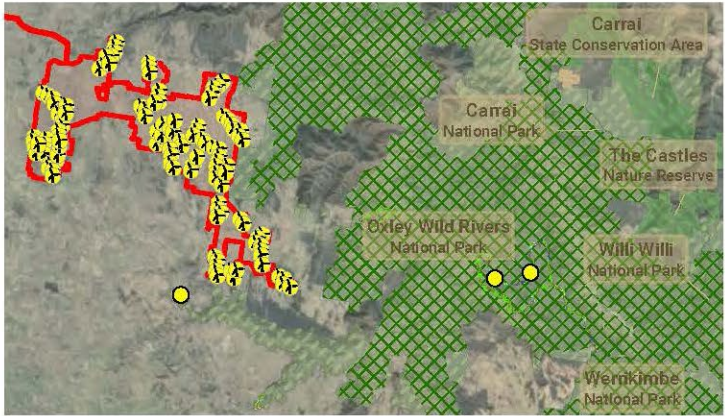
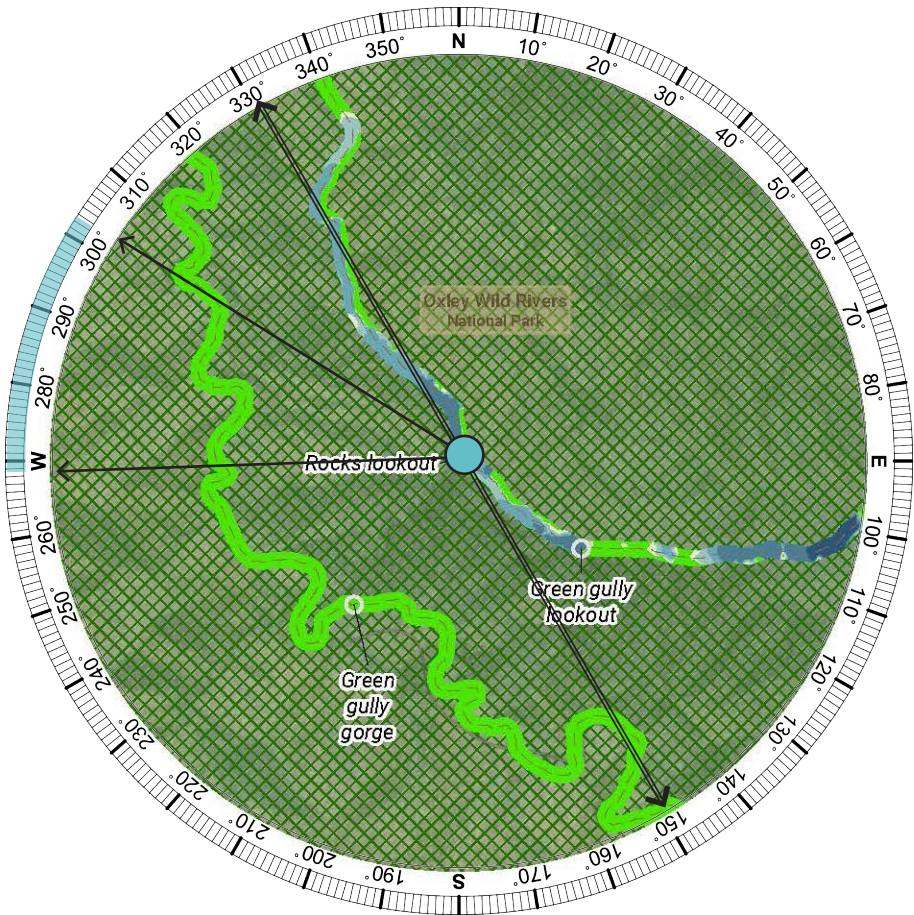
Green Gully Trail

Refer to 40° Cropped View



Viewpoint Location

Extent of Potential Visibility

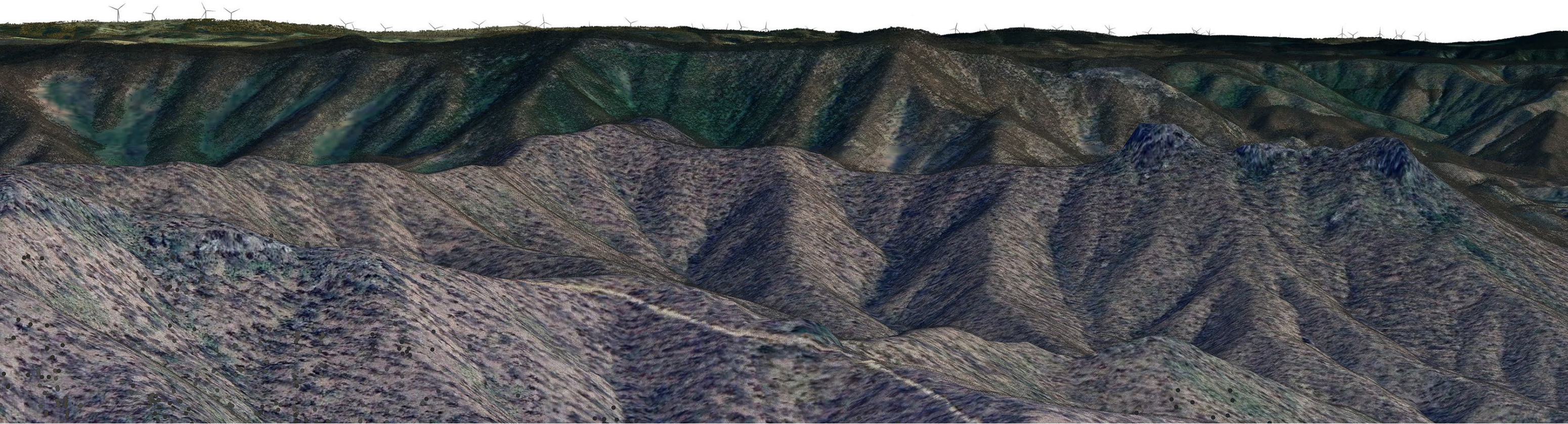


Viewpoint Summary:	
Location:	
Rocks Lookout - Green Gully Trail	
Coordinates:	Elevation:
152°07'03.53"E	946 m
31°02'15.41"S	
Viewing Direction:	Distance to Project:
South-West	21.73 km
Project layout used:	
WWF_WTG_Layout_v11-01_20240418	
Wireframe Preparation Date	
24th April 2026	

Viewpoint

Rocks Lookout

Green Gully Trail

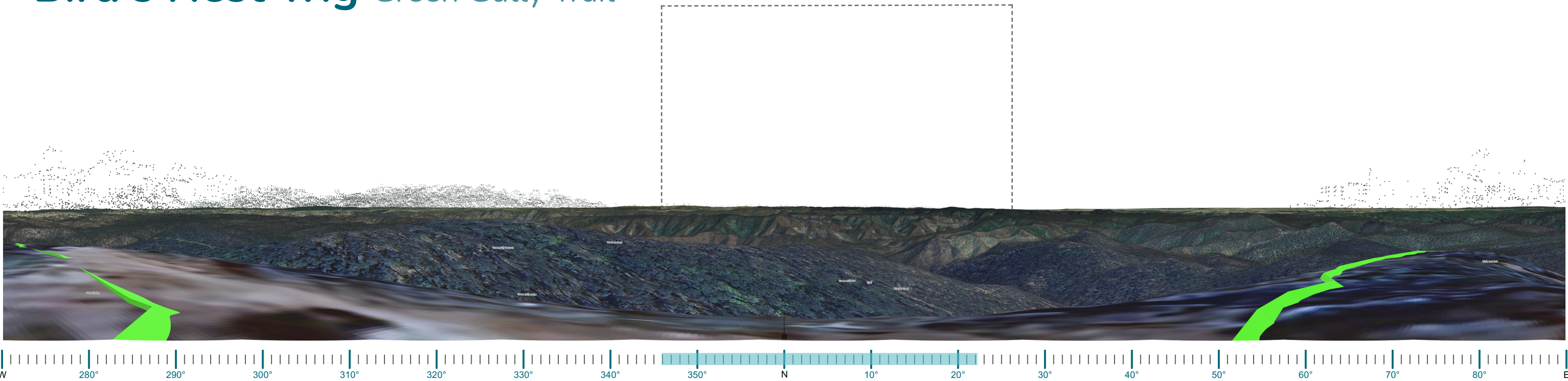


40° Cropped View

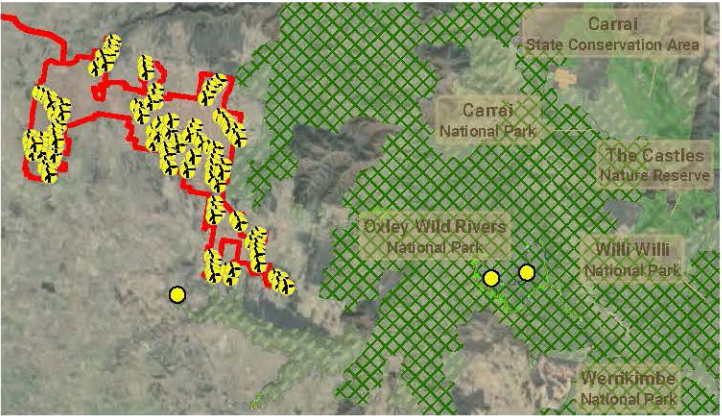
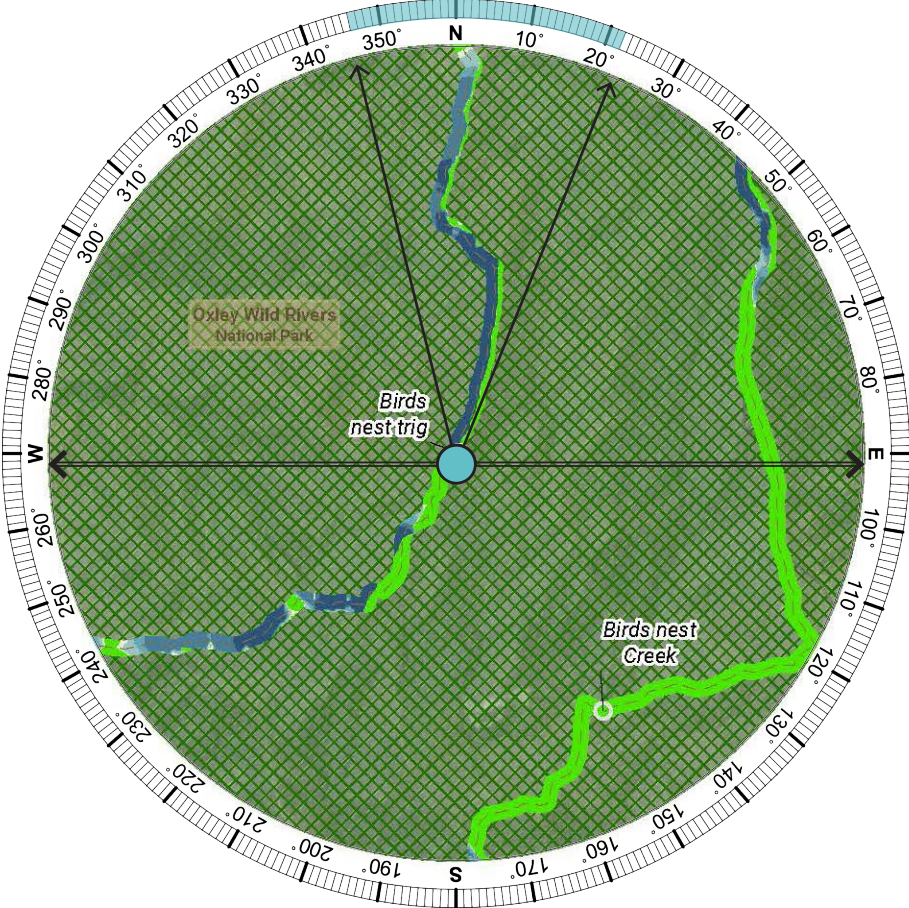
Bird's Nest Trig

Green Gully Trail

Refer to 40° Cropped View



Viewpoint Location

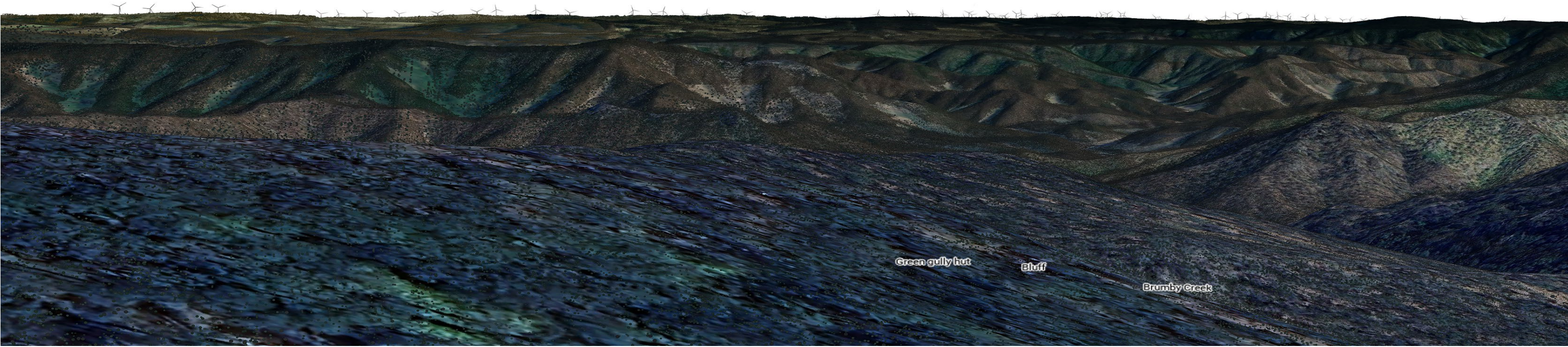


Viewpoint Summary:	
Location:	
Bird's Nest Trig - Green Gully Track	
Coordinates:	Elevation:
152°09'27.80"E	1202 m
31°01'54.85"S	
Viewing Direction:	Distance to Project:
North	25.49 km
Project layout used:	
WWF_WTG_Layout_v11-01_20240418	
Wireframe Preparation Date	
24th April 2026	

Viewpoint

Bird's Nest Trig

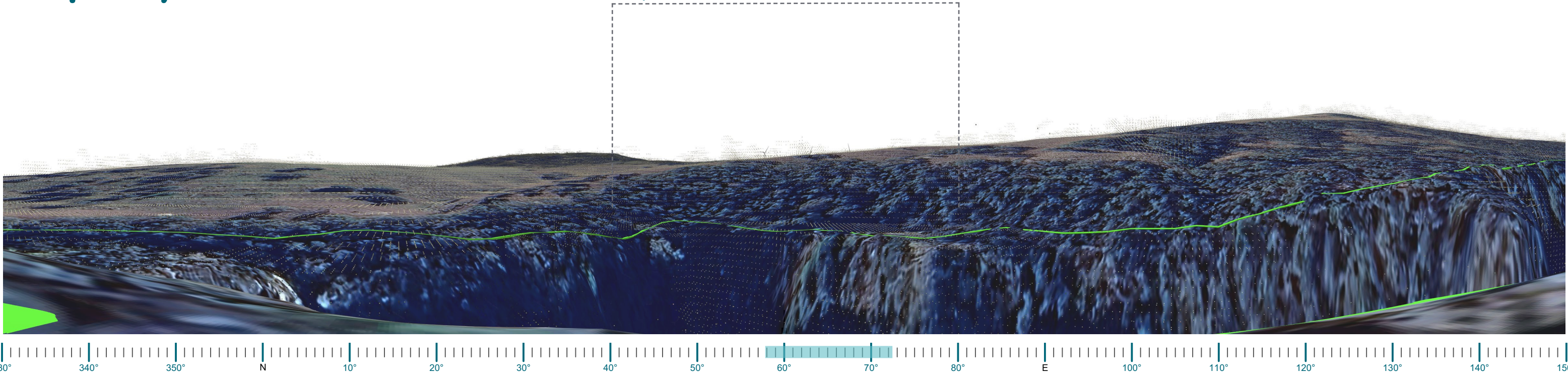
Green Gully Trail



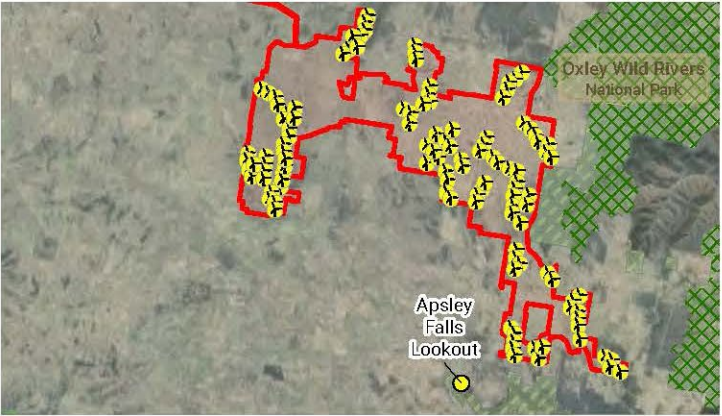
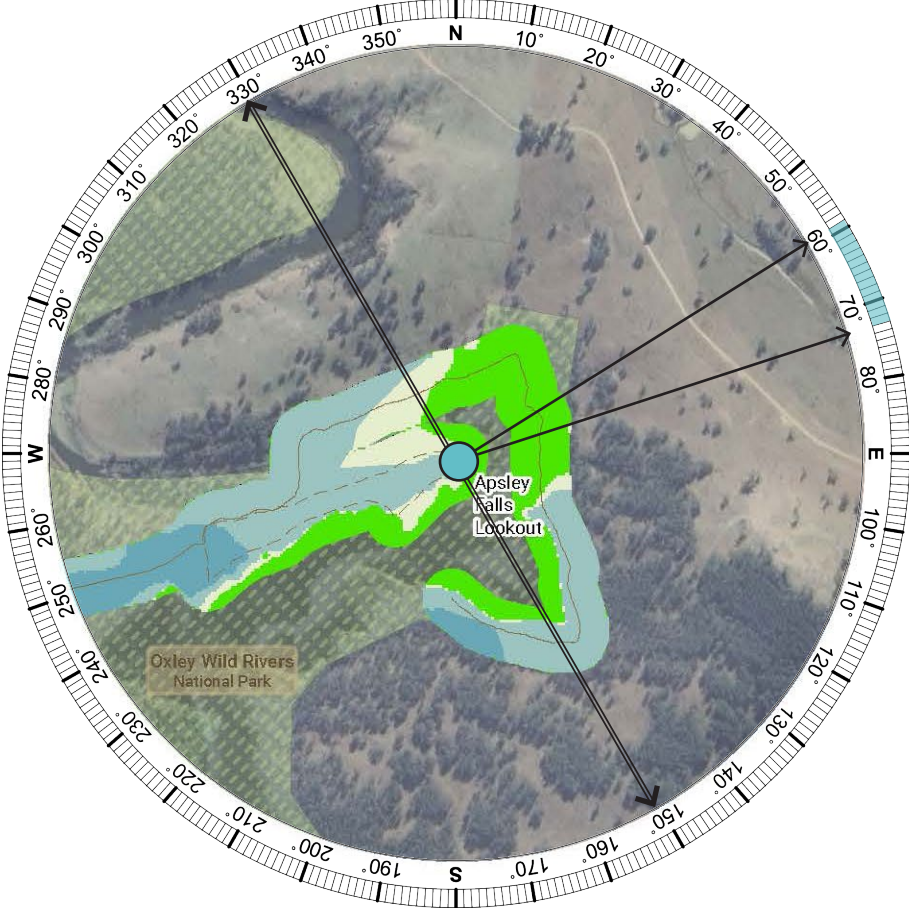
40° Cropped View

Apsley Falls Lookout Wild Oxley NP

40° Cropped View



Viewpoint Location

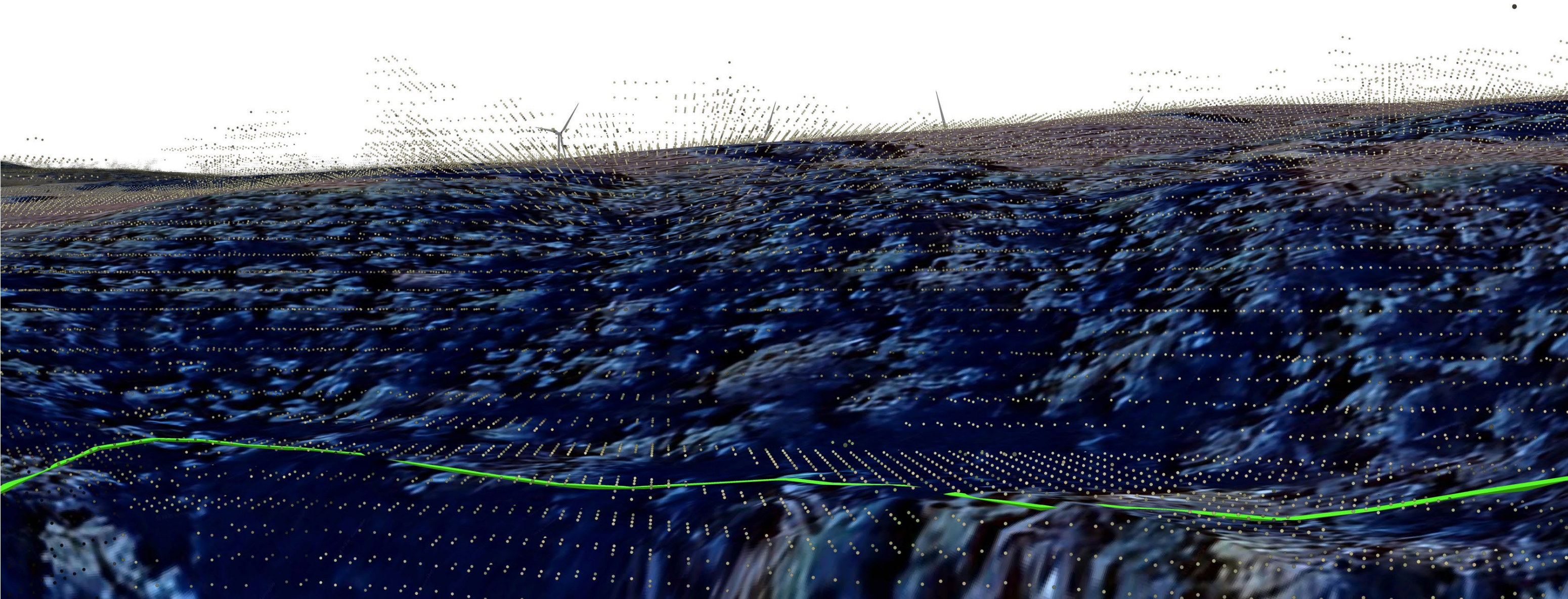


Viewpoint Summary:	
Location:	
Apsley Falls Lookout - Wild Oxley NP	
Coordinates:	Elevation:
151°46'10.71"E	1010 m
31°03'00.92"S	
Viewing Direction:	Distance to Project:
North East	4.37 km
Project layout used:	
WWF_WTG_Layout_v11-01_20240418	
Wireframe Preparation Date	
24th April 2026	

Viewpoint

Apsley Falls Lookout

Wild Oxley NP



40° Cropped View