Twin Hills Wind Farm

Shadow flicker assessment

E312166
13 March 2026

Prepared by Hydro-Electric Corporation ABN48 072 377 158

t/a Entura, 4 Elizabeth Street, Hobart TAS 7000, Australia

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Client contact	Mikhaela Gray
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Executive summary

Shadow flicker modelling results are presented for the proposed Twin Hills Wind Farm ('the Project') located approximately 30 kilometres northeast of Eneabba and 300 km north of Perth in the Mid-West region of Western Australia. The Western Australian Planning Commission's Draft Renewable Energy Planning Code methodology and requirements for Wind Farm Element 5 – Shadow Flicker are addressed in this report, with the key requirements being:

> *WF-PO5.1 Wind turbines are sited and operated to ensure that shadow flicker at any **visually sensitive land use** on non-host lots does not exceed:*
>
> *a. 30 hours per year and 30 minutes on any single day, based on theoretical shadow flicker modelling; or*
>
> *b. 10 hours per year, based on predicted actual shadow flicker modelling.*

These limits are applicable for dwellings where there is no agreement with the Project proponent (*non-host receptors*). Where the landowner has consented to permit shadow flicker durations greater than the limits (*host receptor*), the limits do not apply.

The modelled maximum shadow flicker duration results (within 50 m) predict:

- One (1) non-host receptor is modelled to receive greater than 30 hours per year and greater than 30 minutes per day.
- Four (4) host receptors would receive shadow flicker greater than 30 hours per year and greater than 30 minutes on any single day.

Entura understands that the landowners of all involved host dwellings have consent agreements in place with Twin Hills Wind Farm Pty Ltd, accepting duration of shadow flicker above the limit.

The non-host receptor was modelled to receive a total of 55 hours per year of shadow flicker and a maximum of 35 minutes of shadow flicker on any single day. Entura understands that this receptor is a decommissioned and uninhabited house, as indicated by the lot owner in communication with Twin Hills Wind Farm, and may not currently be considered a receptor with a 'visually sensitive land use'. However, if the house were to be recommissioned in the future, the Project would need to implement an Operational Management Plan including an operating curtailment to ensure 10 hours of actual shadow flicker per year is not exceeded.

Thus, the Twin Hills Wind Farm is able to achieve compliance with the planning requirements.

The annual shadow flicker duration experienced at receptors is usually significant less than the modelled maximum due to factors including cloudy skies, rotor direction that is not perpendicular to the sun, stationary wind turbine rotors, and vegetation screening.

If there are issues raised with respect to shadow flicker following the project's operations start or measured data shows shadow flicker duration exceeding the 10-hour actual limit, monitoring of this issue and mitigation measures should be employed to ensure compliance is achieved.

Blade glint is not expected to cause any issue, provided the wind turbine selected has blades that are coated with a low reflectivity treatment, which is now standard practice for all modern large wind turbines.

1. Introduction

Entura has undertaken an assessment of shadow flicker for the proposed Twin Hills Wind Farm (THWF) in Western Australia on behalf of Twin Hills Wind Farm Pty Ltd. This report documents the findings of that assessment.

The rotating blades of wind turbines can cast intermittent shadows to a person located in the shadow of the wind turbine – termed shadow flicker. Because wind turbines are tall structures, shadow flicker can be observed at considerable distances but usually only for a brief time (a matter of a few hours a year) at any given location. Even though its duration is brief, shadow flicker can impact some people and thus needs to be shown to comply with relevant standards. This is the basis and purpose for this assessment.

2. Project description

Twin Hills Wind Farm Pty Ltd (the Proponent) is developing the proposed Twin Hills Wind Farm (the Project) in Western Australia. The project will harness a high-quality wind resource and utilise existing nearby transmission infrastructure with up to 93 wind turbine generators (WTG). It is expected to operate for a period of at least 25 years following a two to three year construction period. Electricity produced by the project would be fed through underground and overhead cables to a new on-site terminal station and exported to Western Australia's South West Interconnected System (SWIS).

The project extends across approximately 10,000 hectares of land located 30 kilometres to the northeast of Eneabba and 300 kilometres to the north of Perth.

3. Legislation, policy and guidelines

In Western Australia, wind farm development is guided by the Western Australian Planning Commission's Position Statement, which outlines policies, planning frameworks, and regulations for renewable energy projects and facilities[1]. Shadow flicker is addressed in the Commission's draft Renewable Energy Planning Code [2] and this report uses it to assess the potential impacts of shadow flicker from the Project, inform any alternative project designs, and develop mitigation measures to reduce potential impacts to acceptable levels. This report addresses the shadow flicker during the operation phase of the Project.

Receptors (dwellings) around the Twin Hills Wind Farm are considered differently depending on whether they are host or non-host owned.

A host receptor is one where the owner of the land and/or building enters an agreement with the proponent of the wind farm, typically for land access or use, and may involve an acknowledgement/consent from the landowner that shadow flicker may be experienced at the receptor greater than the applicable/non-host limit.

A non-host receptor is one where the owner of the land and/or building **has not** entered an agreement with the proponent of the wind farm and for which the Project must comply with the applicable limit.

The methodology includes:

- An assessment area around each WTG defined by a radial distance of 265 multiplied by the maximum blade chord[1].
- Theoretical maximum annual shadow flicker duration calculated through modelling for each dwelling within the assessment area (as provided by Twin Hills Wind Farm Pty Ltd).
- A limit of 30 hours per year and 30 minutes on any single day of theoretical maximum shadow flicker using conservative modelling assumptions.
- A limit of 10 hours per year of actual shadow flicker, after mitigation effects or actions, noting that because of the conservatism in the modelling, where 'modelled' shadow flicker is less than 30 hours, the actual exposure limit is assumed to be met.

4. Methodology

The method of assessment of the impact of shadow flicker follows Western Australia Planning Commission's draft Renewable Energy Planning Code [2] and Guideline [3]. This approach is also generally aligned with the Draft National Wind Farm Development Guidelines [4].

Entura has used the windPRO 4.1 software package to model the maximum occurrence of shadow flicker at receptors within and immediately around the THWF development site using the following technical details detailed in Table 4.1, as provided by the Proponent.

Table 4.1: Technical specifications of the proposed wind turbine

Number of WTGs	Hub Height [m]	Max Rotor Diameter [m]	Lower Tip Height [m]	Max Tip Height [m]	Max Blade Chord [m]
93	200	200	100	300	5.5

In completing this analysis, Entura has used the following inputs, supplied by Twin Hills Wind Farm Pty Ltd:

- Shapefiles of the following project elements:
  - Dwellings (LAN_TWH_Dwellings_v029.shp). Coordinates provided in Appendix A.1
  - Wind turbine locations (WTG_TWH_V162-6_8_v062.shp). Coordinates provided in Appendix A.2
- Terrain contours (ELE_TWH_2m Contour_v003_1.shp). 2 m contour heights.

Entura has not independently validated the location and status of receptors and has relied on the information provided as a complete and accurate summary.

The modelling parameters and settings in Table 4.2 show the recommendations of the *Draft Renewable Energy Planning Code and Guidelines* [3] in the centre column, and the corresponding values used in this analysis in the right-most column.

[1] The distance from the trailing edge of the blade to the leading edge of the blade, typically the longest dimension of the blade cross-section.

Table 4.2: Shadow flicker modelling parameters

Model parameter	Settings required by the Draft Renewable Energy Planning Code and Guidelines [3] [4]	Value
Zone of influence of shadows	265 x maximum blade chord	1,458 metres
Minimum angle to the Sun	3 degrees	3 degrees
Shape of the Sun	Disk	Disk
Time and duration of modelling	One full year representing a non-leap year 12 to 15 years after the date of DA submission	The year 2039
Orientation of the rotor	Sphere or disk facing the Sun	Disk[2]
Offset between rotor and tower	Not required	-
Time step	10 minutes or less	5 minutes
Effects of topography	Include	Include
Receptor height	1.5 – 2 m	2 m
Visually sensitive land use location	Modelling should be mapped to within 50 metres of the relevant boundary of a visually sensitive land use.	See Appendix A and B. Maximum shadow flicker duration within a 50 m radius from dwelling reported.
Grid size for mapping and assessment of shadow flicker at a receptor location.	Not more than 25 m	25 m

Table 4.3 summarises the key wind turbine geometry parameters input into the model.

Table 4.3: Wind turbine modelling parameter inputs

Model parameter	Value
Wind turbine generator type	Not specified
Maximum blade chord	5.5 m
Hub height	200 m (for effective maximum tip height of 300 m)
Rotor diameter	200 m

[2] Sphere and disk facing the sun are generally equivalent and neither consider wind direction. Wind direction analysis is a mitigating measure and results in a lower 'actual' limit according to the guidelines.

5. Impact assessment

The modelled impact of shadow flicker caused by rotating wind turbine blades at the Twin Hills Wind Farm is presented in this section as a maximum theoretical duration per year.

Results are provided in Appendix A and a map of receptors and shadow flicker duration within the vicinity of the Project Area is shown in the shadow map in Appendix B.

5.1 Impact

Rotating wind turbine blades can cast intermittent (flickering) shadows to a person located in the shadow of the blades of the wind turbine. Because wind turbines are tall structures, shadow flicker can be observed at considerable distances, for a short time when the sun is low on the horizon (generally less than 30 minutes per day). Ongoing exposure to shadow flicker throughout the year can cause annoyance, and thus needs to be shown to comply with relevant standards.

The Draft National Wind Farm Guidelines [4] identify that the key impact of shadow flicker is the annoyance of residents. They state that these impacts are most closely associated with the duration of shadow flicker experienced above a certain intensity (the contrast in light level from alternating between shadow and no shadow), which decreases with distance from the source. The guideline's methodology limits the assessment to 'moderate' levels of intensity, for which an annual exposure beyond the specified limit is considered an impact.

The Draft National Wind Farm Guidelines also comment on other possible impacts, and determine that their risk of impact is negligible and do not require assessment. These include annoyance of land users other than residents and distraction of vehicle drivers.

Shadow flicker varies season to season and will be experienced differently by receptors in different, sometimes opposing seasons or times of day. This is dependent upon sun angle, direction to the turbine casting the shadow, cloud cover, weather and seasonal climate in any given year.

5.2 Design mitigation

The Proponent has developed the layout of the wind farm taking account of the duration of the occurrence of shadow flicker at receptors to the extent practical, through iterative modelling of shadow flicker to test the effect of layout modifications on impacts.

Additionally, the wind turbine parameters assumed for modelling are worst-case envelope values, and the actual turbine selected to be installed may be smaller and hence have a lower impact than modelled.

5.3 Modelled shadow flicker

The results of the modelling at receptors with non-zero hours duration predicted are detailed in Table 5.1, with figures for a maximum duration of shadow flicker within a 50-metre radius of the receptor as per the Draft Renewable Energy Planning Code and Guidelines. The distribution of shadow flicker annual totals is shown across the site in the map in Appendix B.

Table 5.1: Modelled shadow flicker duration within 50 m of receptors predicted to experience shadow flicker

Receptor (House) ID	Involvement	Duration (theoretical) (total hours per year)	Duration (theoretical) (maximum minutes on any single day)	Shadow flicker limit
D17	Host	199.0	125	Agreement in place
D21	Non-host	55.3	35	Exceeds (>30 hours/year, >30 minutes on any single day)
D49	Host	116.4	40	Agreement in place
D50	Host	94.8	70	Agreement in place
D77	Host	48.3	60	Agreement in place

At the proposed Twin Hills Wind Farm, the theoretical modelled shadow flicker duration results (within 50 m) predict:

- Four (4) host receptors would receive shadow flicker greater than 30 hours of shadow flicker per year and greater than 30 minutes on any single day.
- One (1) non-host receptor would receive shadow flicker greater than 30 hours of shadow flicker per year and greater than 30 minutes on any single day.

Entura understands that the landowners of all involved host dwellings have consent agreements in place with Twin Hills Wind Farm Pty Ltd, accepting duration of shadow flicker above the limit.

The non-host receptor was modelled to receive a total of 55 hours per year of shadow flicker and a maximum of 35 minutes of shadow flicker on any single day. Entura understands that this receptor is a decommissioned and uninhabited house, as indicated by the lot owner in communication with Twin Hills Wind Farm, and may not currently be considered a receptor with a 'visually sensitive land use'. However, if the house were to be recommissioned in the future, the Project would need to implement an Operational Management Plan including an operating curtailment to ensure 10 hours of actual shadow flicker per year is not exceeded.

Thus, the Twin Hills Wind Farm is able to achieve compliance with the planning requirements.

5.4 Actual shadow flicker

There are several environmental and operational factors which mitigate or reduce the occurrence of shadow flicker, and which are not considered in the theoretical modelling, including:

- **Wind turbine orientation and operation**: The modelling used to produce the results in Table 5.1 considered the turbine blades and hub as a sphere - facing all directions at all times – and considers the wind to be blowing sufficiently to cause the blades to spin constantly. Any shadow flicker modelled to theoretically occur is therefore considered 'worst case' or noticeable and always cast toward receptors. In reality, there will be times when the direction of the wind will change the orientation of blades, and times when the blades are not spinning.

- **Aerosols**: Atmospheric solid, liquid or vapour particles such as dust, moisture, pollution or smoke can significantly reduce shadow flicker by causing dispersion of sunlight through the atmosphere, reducing the intensity of shadows.
- **Screening**: Vegetation or other natural or anthropogenic features may screen shadow flicker.
- **Cloud cover**: Cloud cover can significantly reduce direct sunlight which causes shadows to be cast and, as a result, reduces shadow flicker.

These mitigating effects will reduce actual shadow flicker experienced, and hence the values in Table 5.1 are considered conservative estimates of resulting actual duration.

5.5 Cumulative impact

No cumulative shadow flicker impact from other wind farms is expected to occur because of the Twin Hills Wind Farm.

Based on publicly available information[3], the nearest proposed or operating wind turbine (which is located at the Warradarge Wind Farm) is more than 25 km to the south from any proposed THWF wind turbine location. As such, no dwelling would be within the extent of the modelled shadow flicker area of both wind farms, and hence would not receive cumulative shadow flicker.

5.6 Management measures

Mitigating measures to reduce shadow flicker involves either eliminating the rotation of blades or screening to block the shadows themselves.

Wind turbine control strategies are one common way of reducing the shadow flicker to within the hours of compliance. This involves both hardware (sensors) and software (control systems) to shutdown and curtail specific wind turbines when shadow flicker duration is expected to be exceeded. Light sensors at the wind turbine tower, typically installed on the nacelle, detect the intensity and direction of light and coupled with locational data can communicate with a control system to predict when specific locations (receptors) will have prominent shadow flicker or levels exceeding the maximum. This information is then used in a control system or by an operator to shutdown specific turbines for the duration of shadow flicker predicted by the system to eliminate the flickering effect. Shadows may still be cast at a sensitive location, but no impact of rotating blades will be observed.

Screening and blocking the shadow flicker is another mitigation measure which usually involves vegetation or permanent or temporary constructed screening close to a receptor to block incoming shadow flicker. This can be an effective management and mitigation measure, noting this would be required to block shadow flicker within a 50 metre radius of the receptor to meet compliance requirements.

Once operational, if measured shadow flicker is recorded above the 10-hour limit per year at non-host receptors, mitigation measures such as those described above may be required.

[3] Geoscience Australia, Foundation Electricity Infrastructure, https://services.ga.gov.au/gis/rest/services/Foundation_Electricity_Infrastructure/MapServer retrieved on 07/04/2025

Additionally, if D21, the decommissioned and uninhabited non-host dwelling, is recommissioned as a house in the future, the Project would need to implement an operating curtailment to ensure 10 hours of actual shadow flicker per year is not exceeded, through an Operational Management Plan.

5.7 Blade glint

Blade glint can potentially be produced when the sun's light is reflected from the surface of wind turbine blades.

As discussed in the *Draft National Wind Farm Development Guidelines* [4] and draft Renewable Energy Planning Code [2], all major wind turbine blade manufacturers currently finish their blades with a low reflectivity treatment. This prevents a potentially annoying reflective glint from the surface of the blades and the possibility of a strobing reflection when the turbine blades are spinning. Therefore, the risk of blade glint from a new development is very low.

6. References

[1] Department of Planning, Lands and Heritage, "Position Statement: Renewable energy facilities," 1 March 2020. [Online]. Available: https://www.wa.gov.au/system/files/2021-07/POS-Renewable-energy-facilities-position-statement.pdf. [Accessed 2 April 2025].

[2] Western Australia Planning Commission, "Draft Code - Public Consultation - Renewable Energy Planning Code," [Online]. Available: https://www.planning.wa.gov.au/docs/default-source/policy/renewable-energy-planning-code.pdf?sfvrsn=16b9b9c1_6. [Accessed 9 February 2026].

[3] Western Australia Planning Commission, "Draft Code and Guideline - Public Consultation - Renewable Energy Planning Code and Guidelines," December 2025. [Online]. Available: https://www.planning.wa.gov.au/docs/default-source/policy/renewable-energy-code-and-guideline.pdf?sfvrsn=ad67149a_6.

[4] Environment Protection Heritage Council, "National Wind Farm Development Guidelines," https://www.nepc.gov.au/publications/archive/ephc-archive/ephc-archive-future-national-wind-farm-development-guidelines, 2010.

Appendices

A Coordinates

A.1 Dwellings

Table A.1: Dwellings coordinates, type of stakeholder and shadow flicker for receptors

ID	Easting	Northing	Stakeholder category	Modelled shadow flicker duration (no mitigations)	
				Hours per year	Maximum minutes on any single day
D2	345006	6723595	Non-host	0	0
D5	338521	6711570	Non-host	0	0
D6	341679	6716564	Non-host	0	0
D7	333194	6721908	Non-host	0	0
D9	333070	6720286	Non-host	0	0
D10	332766	6717111	Non-host	0	0
D11	332804	6712504	Non-host	0	0
D14	340598	6724510	Non-host	0	0
D15	340709	6720089	Non-host	0	0
D16	343371	6705486	Non-host	0	0
D17	344359	6716699	Host	Wind farm agreement in place	
D18	344984	6708700	Non-host	0	0
D19	345269	6713552	Non-host	0	0
D20	345568	6720019	Non-host	0	0
D21	349633	6719939	Non-host	55.3	35
D23	334143	6717072	Non-host	0	0
D24	340012	6710103	Non-host	0	0
D25	337614	6704894	Non-host	0	0
D26	331671	6702347	Non-host	0	0
D28	337774	6704221	Non-host	0	0
D29	338775	6703527	Non-host	0	0

D31	333139	6699614	Non-host	0	0
D32	332610	6699447	Non-host	0	0
D33	332397	6699557	Non-host	0	0
D34	332185	6699933	Non-host	0	0
D35	332465	6700143	Non-host	0	0
D36	332961	6700125	Non-host	0	0
D37	333367	6700234	Non-host	0	0
D38	334559	6700939	Non-host	0	0
D39	339187	6683989	Non-host	0	0
D40	339656	6702381	Non-host	0	0
D41	344751	6703994	Non-host	0	0
D42	346550	6704097	Non-host	0	0
D43	351255	6702968	Non-host	0	0
D44	350638	6707859	Non-host	0	0
D45	353585	6709524	Non-host	0	0
D46	354013	6713834	Non-host	0	0
D47	351519	6726892	Non-host	0	0
D48	339656	6702381	Non-host	0	0
D49	355360	6722364	Host	Wind farm agreement in place	
D50	359702	6717538	Host	Wind farm agreement in place	
D51	364252	6722754	Non-host	0	0
D52	362590	6719014	Host	Wind farm agreement in place	
D54	358439	6701695	Non-host	0	0
D55	357480	6696690	Non-host	0	0
D56	354989	6698963	Non-host	0	0
D57	350203	6700154	Non-host	0	0
D58	350031	6699893	Non-host	0	0
D59	345388	6700620	Non-host	0	0
D60	345586	6700559	Non-host	0	0
D61	345406	6696687	Non-host	0	0
D62	345541	6692945	Non-host	0	0
D63	347476	6691322	Non-host	0	0
D64	347783	6687276	Non-host	0	0
D65	347735	6687447	Non-host	0	0

D66	345154	6688472	Non-host	0	0
D67	347829	6683542	Non-host	0	0
D68	347856	6684180	Non-host	0	0
D69	358228	6687207	Non-host	0	0
D70	355257	6692627	Non-host	0	0
D71	354100	6695099	Non-host	0	0
D72	360769	6692172	Non-host	0	0
D73	358898	6686431	Non-host	0	0
D74	359707	6684424	Non-host	0	0
D75	339873	6704212	Non-host	0	0
D76	340176	6706759	Non-host	0	0
D77	351059	6721115	Host	Wind farm agreement in place	
D78	351059	6721115	Non-host	0	0
D79	357777	6714920	Non-host	0	0
D80	369796	6721489	Non-host	0	0
D81	369476	6721609	Non-host	0	0
D82	364571	6718004	Non-host	0	0
D83	369984	6728797	Non-host	0	0
D84	328112	6721360	Non-host	0	0
D85	346120	6714924	Non-host	0	0
D86	352673	6729725	Non-host	0	0
D87	367729	6731562	Non-host	0	0
D88	342569	6732615	Non-host	0	0
D89	356555	6730094	Non-host	0	0
D90	356087	6729636	Non-host	0	0
D91	364568	6731554	Non-host	0	0
D92	339048	6723805	Non-host	0	0
D94	338447	6711550	Non-host	0	0
D95	357000	6714571	Non-host	0	0
D96	357622	6714789	Non-host	0	0

Coordinates in GDA2020, MGA Zone 50 (EPSG 7850)

A.2 Wind turbines

Table A.2: Wind turbine coordinates (Source: WTG_THW_*V162_6_8_v062.shp*)

Turbine ID	Easting	Northing	Turbine ID	Easting	Northing
T1	344187	6715574	T57	350331	6722080
T2	343803	6716231	T58	348618	6722949
T3	344638	6717475	T59	351943	6722161
T4	343863	6715127	T60	354283	6724185
T5	344507	6716329	T61	352992	6720967
T6	343818	6717834	T62	352744	6722037
T7	344074	6717187	T63	357168	6724249
T8	344334	6718141	T64	347993	6722058
T9	347003	6722234	T65	350429	6722763
T10	345181	6717786	T66	355767	6721042
T11	343661	6718702	T67	355029	6724228
T12	344866	6716753	T68	354105	6722656
T13	345797	6717191	T69	350272	6723416
T14	345748	6718051	T70	354055	6723672
T15	345661	6716657	T71	356684	6721905
T16	358168	6719599	T72	356430	6723003
T17	359079	6720159	T73	347834	6721500
T18	359388	6717131	T74	352078	6722749
T19	358615	6716609	T75	357266	6721252
T20	361400	6720158	T76	348744	6722133
T21	359718	6717949	T77	353480	6722101
T22	357718	6719249	T78	353212	6722820
T23	360801	6719502	T79	351240	6722764
T24	360615	6720178	T80	357300	6723451
T25	358600	6717206	T81	352984	6724173
T26	359039	6719336	T82	352361	6723223
T27	358058	6718540	T83	357336	6719895

T28	358548	6718912	T84	356582	6721032
T29	360498	6718982	T85	357246	6722858
T30	359881	6720103	T86	354312	6721561
T31	357336	6722056	T87	351150	6723445
T32	359681	6719535	T88	353546	6723309
T33	358298	6720145	T89	355032	6720978
T34	348473	6715584	T90	349748	6721580
T35	348322	6716294	T91	349275	6721000
T36	348796	6718120	T92	348420	6720746
T37	349135	6716367	T93	352240	6721445
T38	349601	6717130			
T39	349216	6715715			
T40	349853	6717781			
T41	348255	6717798			
T42	350160	6715613			
T43	347308	6716991			
T44	350605	6717155			
T45	347454	6717912			
T46	350159	6716228			
T47	348102	6717025			
T48	350763	6716456			
T49	349013	6718707			
T50	348312	6719394			
T51	353325	6721425			
T52	349553	6722721			
T53	356324	6724248			
T54	349585	6723317			
T55	355931	6723825			
T56	354156	6720993			

Coordinates in GDA2020, MGA Zone 50 (EPSG 7850)

B Shadow flicker map

Twin Hills Wind Farm
Shadow Flicker Assessment – Theoretical modelled hours

Client:	Twin Hills Wind Farm
Map no:	E312166 - P521195
Date:	Tuesday, 3 March 2026
Drawn:	Agung Wahyudi
Reviewed:	Lachlan McKenna
Approved:	Daniel Bennett

Map Legend:

WTG (v062)

Shadow flicker (hours/year)
- 1 - 30
- >30

Maximum Flicker Received by Non-stakeholder Dwelling (hours/year)
- 0
- > 30;

Maximum Flicker Received by Stakeholder Dwelling (hours/year)
- 0
- > 30

Roads (Simplified) (LGATE-195)
- Main, Sealed
- Minor, Sealed
- Minor, Unsealed
- Track, Unsealed
- Other

N

0 1 2 3 km

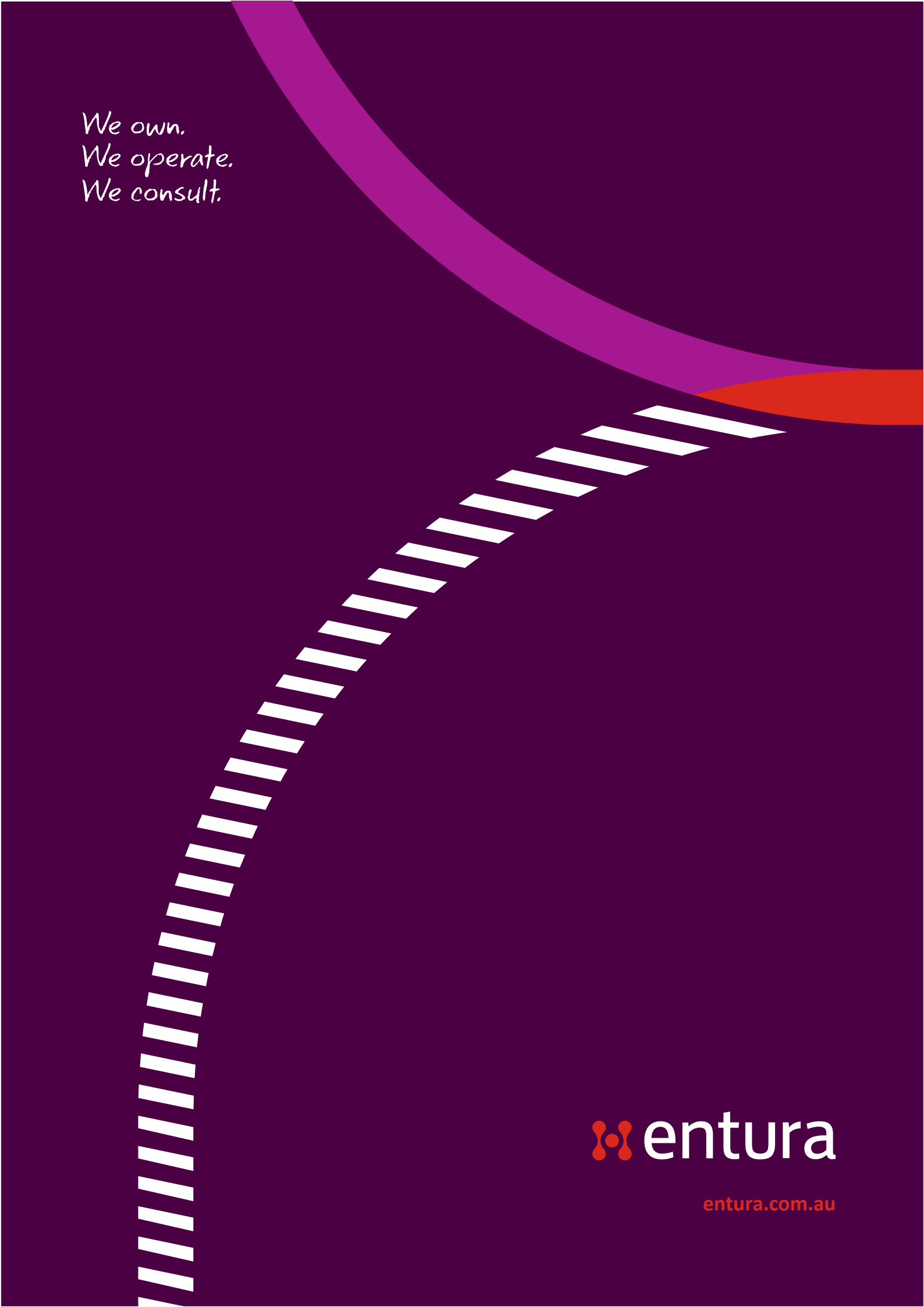
1:100,000 @ A3 paper size
Coordinate System: GDA2020 MGA Zone 50

Locality:

entura

WE OWN. WE OPERATE. WE CONSULT.

We own.
We operate.
We consult.



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