



BENALLA SOLAR FARM

SITE SELECTION ANALYSIS

11 DEC 2019

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RenewableAge 

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1. Introduction

Renewable Age works with SSE Australia to identify and secure sites for utility-scale, small-format solar farm projects in northern Victoria.

This report summarises the analyses that were carried out to identify the site at 331 Sydney Road, Benalla for a 5MW small-format solar farm project.

2. Why Benalla?

Renewable Age and SSE Australia are interested in the Benalla area for 5MW small-format solar farm development because:

- There is excellent community support for renewable energy in the Benalla area and the Hume region¹,
- There is an AusNet Services substation in Benalla that we believe has capacity for new generation connections at 22kV,
- There are 22kV feeders in Benalla that have sufficient capacity for 5MW AC export generators,
- There is vacant land of suitable zoning that is outside of residential growth corridors,
- The marginal loss factors² in Benalla are currently suitable for renewable energy investment,
- Benalla has very good solar resources for Victoria.

3. Site Selection

Suitable small-format solar farm sites in Victoria require the following characteristics:

- Vacant, cleared, flat land of at least six hectares in area,
- Suitable soil characteristics for the proposed mounting system,
- Industrial or Farming zone,
- Non-irrigated land with low agricultural value,
- Minimal visual impact to local residents and passing traffic,
- Avoidance of flood and protected vegetation overlays,
- Minimal or no native vegetation that would need to be removed,
- Adjacent to 22kV three-phase powerlines with sufficient capacity for the proposed generation,
- Must be within a minimum distance from the local zone substation.

The selected site is cleared and in a Farming zone close to industrial areas. It is outside of the residential growth area for Benalla and close to suitable 22kV powerlines and approximately 8km from the Benalla zone substation. The site is currently used for non-intensive sheep grazing.

¹ “Hume Region Renewable Energy Roadmap”, Goulburn and Ovens Murray Regional Partnerships, DELWP, www.energy.vic.gov.au/renewable-energy/victorias-renewable-energy-roadmap/hume-renewable-energy-roadmap

² “Marginal loss factors (MLFs) reflect the impact of electricity losses along the network and are applied to market settlements in the National Electricity Market (NEM), and so affect generator revenues. They represent electricity losses along the transmission network between a connection point and the regional reference node (RNN), which is used to represent the regional centre of the transmission network.”, AEMC “Fact sheet - Marginal loss factors”, <https://www.aemc.gov.au/sites/default/files/2019-03/Fact%20sheet%20marginal%20loss%20factors.pdf>



Figure 1 – Benalla Solar Farm site showing Benalla substation and the 22kV and 66kV feeders

The land is zoned FZ – Farming and the site is in a farming and industrial precinct with Industrial zoned areas in very close proximity. A discussion with a representative of the Planning department at Benalla Rural City Council indicated that Council was likely to support a small-format solar farm application at this site because of the land use nature of the area, being outside of the residential growth zone, and its proximity to industrial zones.

3.1 Local Residents

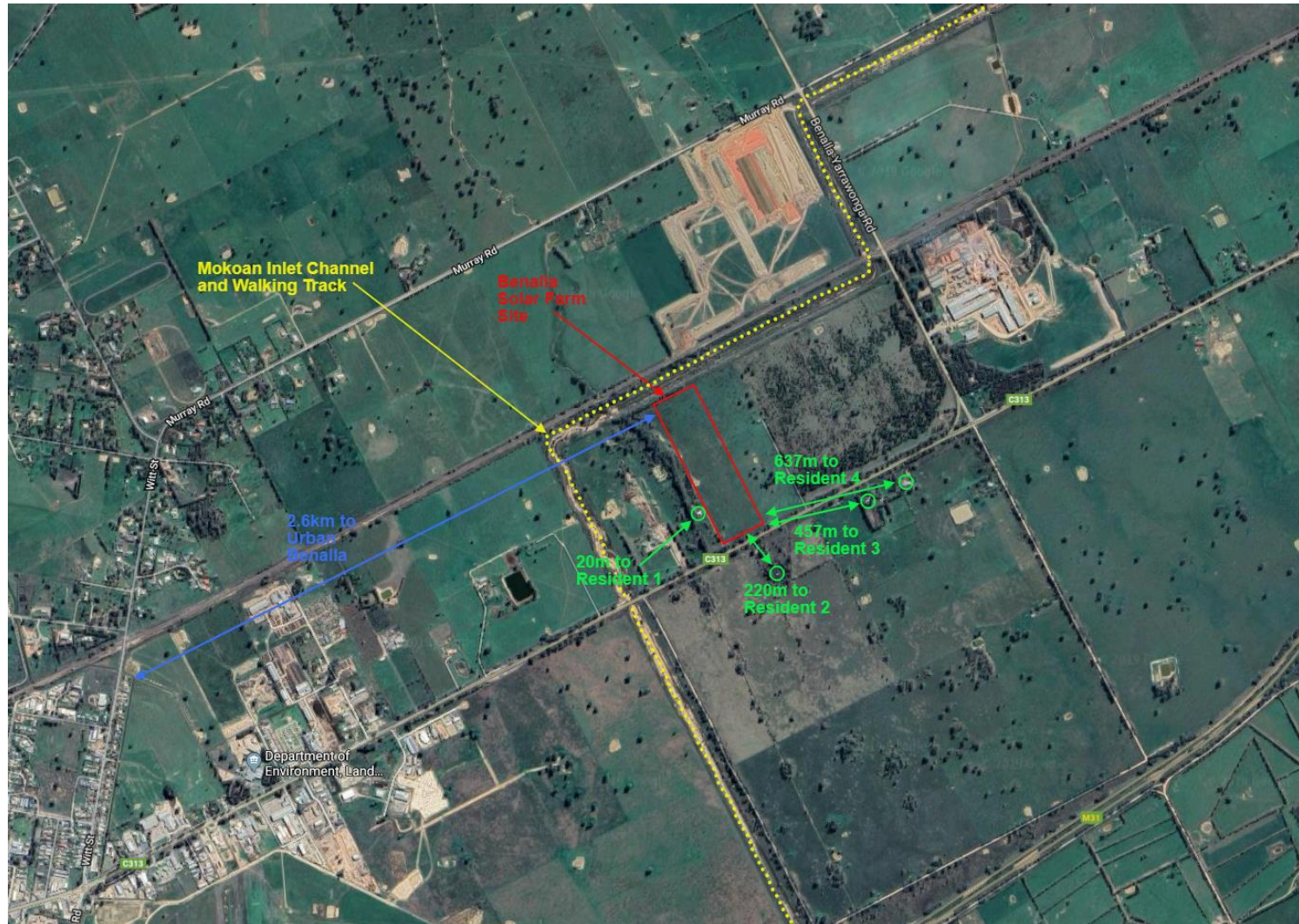


Figure 2 – Proximity of local residents

3.2 Local Land Use Characteristics

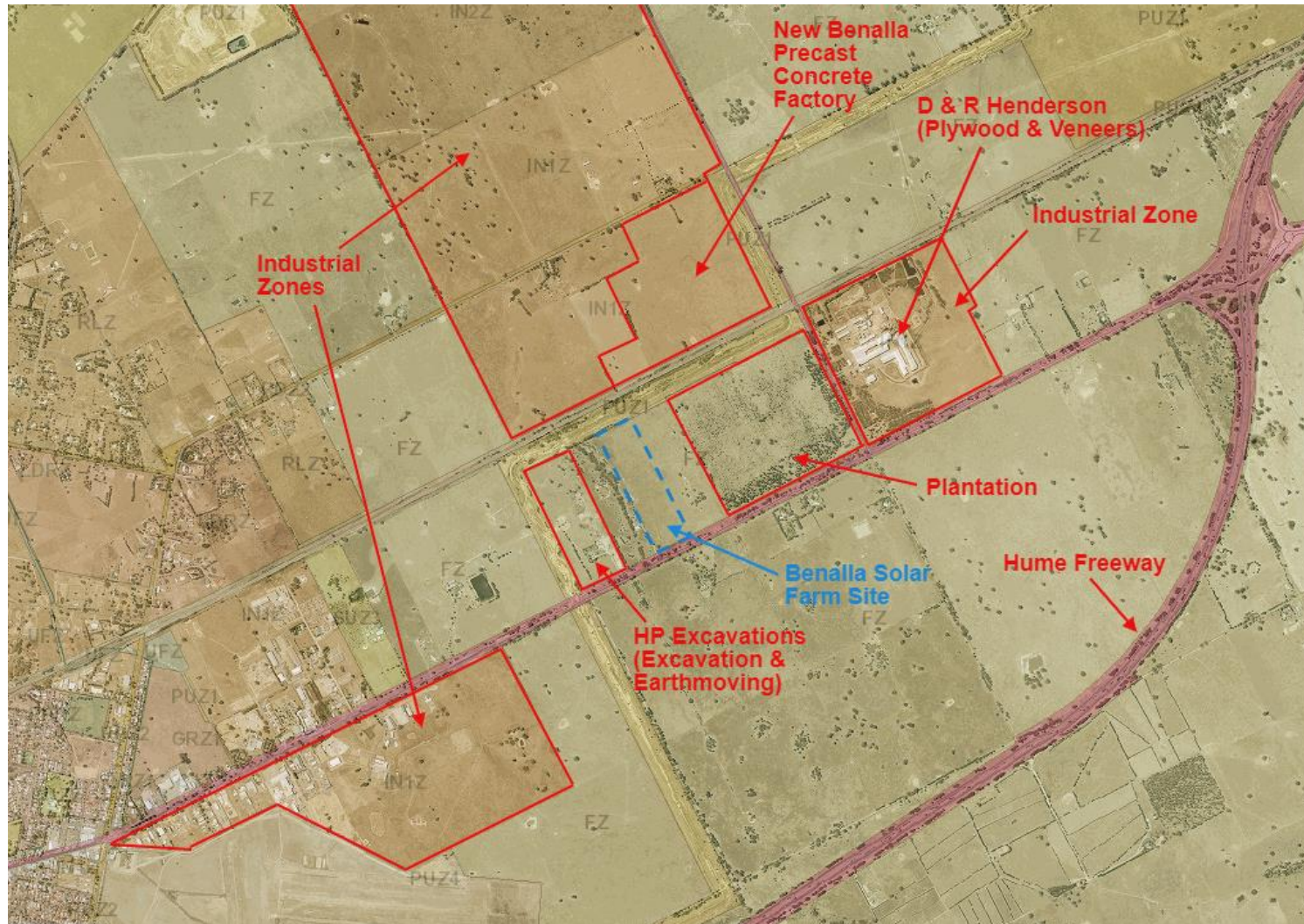


Figure 3 – Local land use characteristics showing Industrial zones

4. Alternate Sites Considered

A site immediately adjacent to the east at 355 Sydney Road was considered but the presence of trees on the site made it less suitable than 331 Sydney Road.

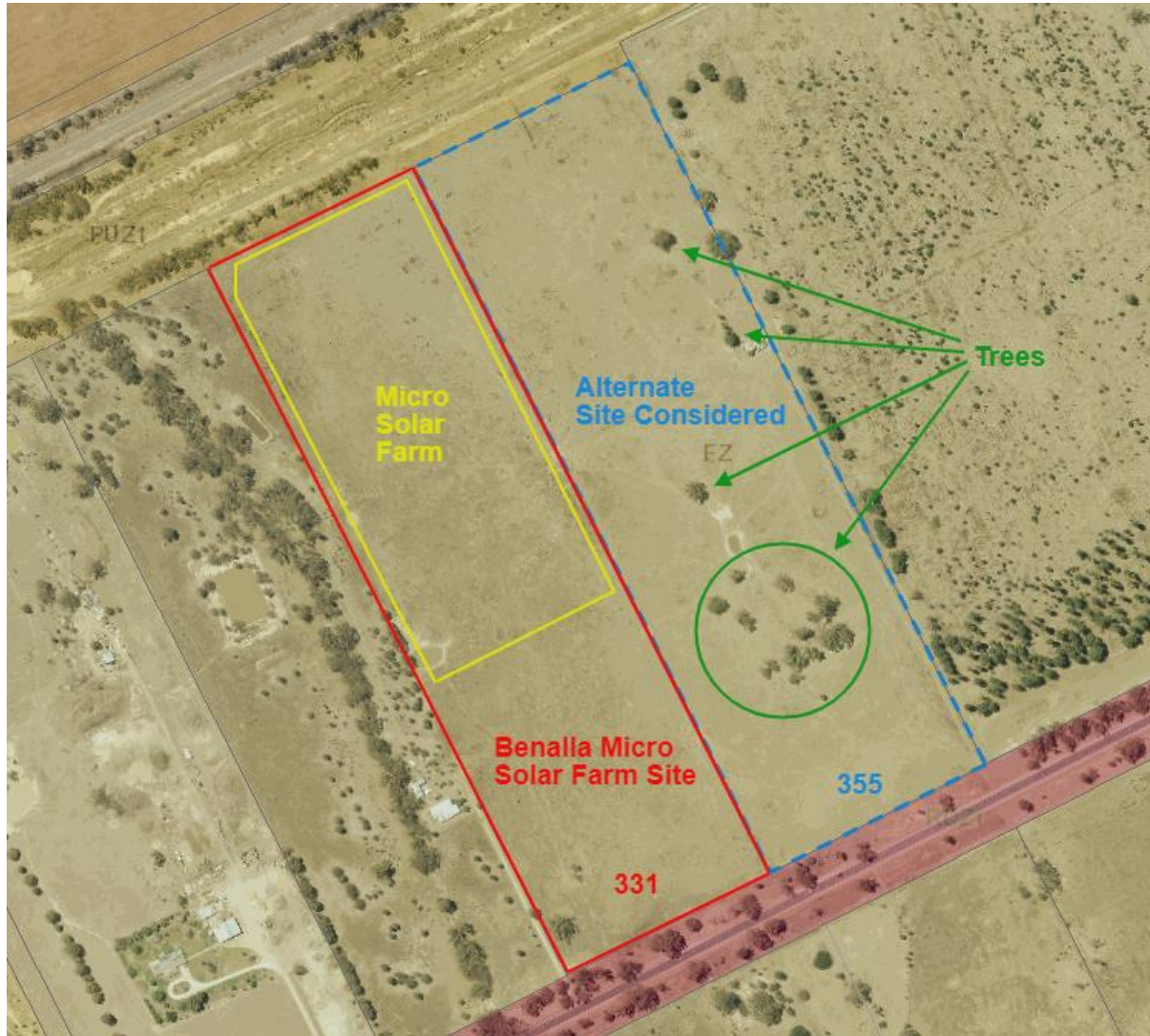


Figure 4 – Alternate site considered at 355 Sydney Road

5. Feasibility and Grid Analysis

Small-format solar farms must be built within approximately 100 metres or less of 22kV powerlines to be financially viable. There is a 22kV and 66kV feeder running along Sydney Road, across the road from the selected site. A preliminary enquiry with Ausnet Services indicated that there was likely to be sufficient capacity for a 5MW AC export small-format solar farm on the 22kV feeder. The site is 8km from the Benalla zone substation, which is within the maximum distance for a feasible connection at 22kV. SSE Australia, the planning application proponent, is currently engaged in the grid connection process with Ausnet Services.

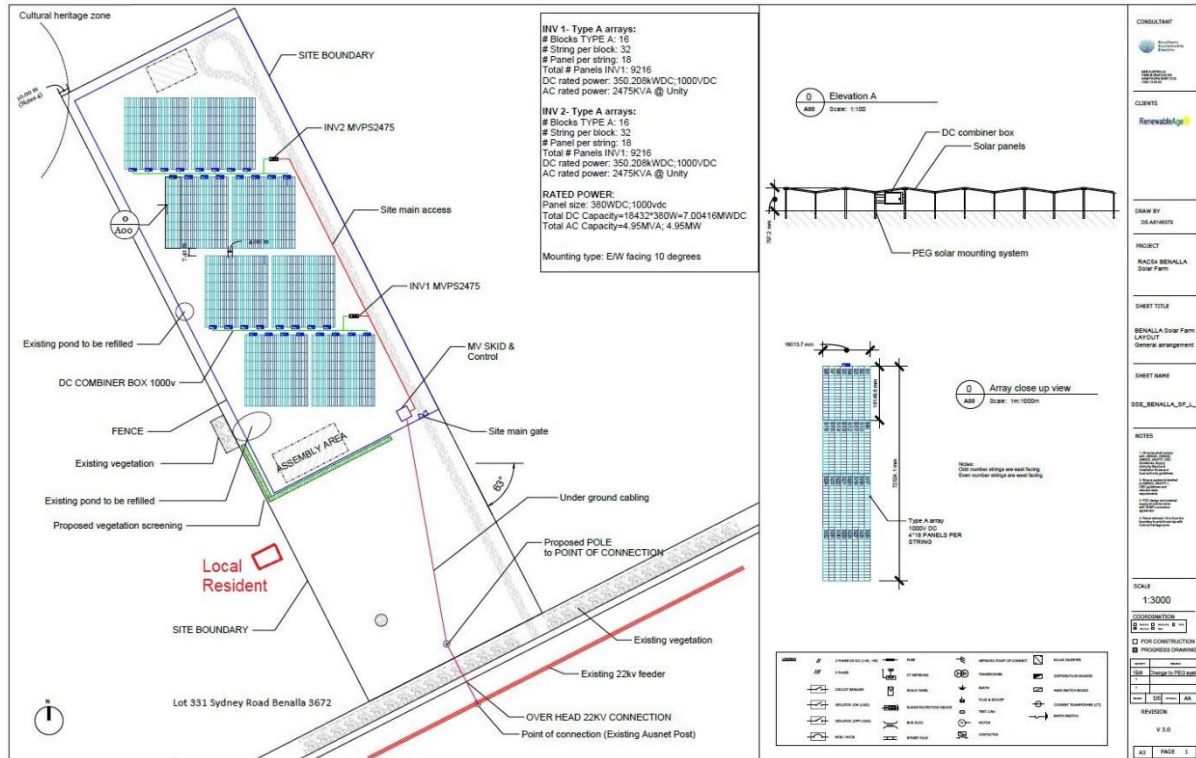


Figure 6 – Revised project plans with larger setback from Sydney Road

Two subsequent attempts were made to telephone the property owner on 19/08/2019 and 24/09/2019. Voice mail messages were left on both occasions. RA understands that at the time of the first phone call the owner may have been on holiday. The owner has not contacted RA since both voice mail messages were left.

7. Agricultural Value

Benalla is outside of Victoria's declared irrigation districts and hence no agricultural land in the area is irrigated. RA has been advised that this site has limited agricultural value. It is currently used for non-intensive sheep grazing.

Brett Neilson of Ruralco advised the following by email³ on 11/12/2019:

In an agricultural land standpoint it is of limited value for the following reasons.

1/ Lacks scale... at 33 acres with limited land available to add scale...ie fronts a major road.... Backs onto a rail line....in close proximity to higher value industrial land...either side are small allotments.

2/ Land is degraded... though the soil types are conducive to agricultural activities (a combination of shallow sandy loam and deep sandy loam over intractable clay) the soil is degraded as evidenced by long term plant productivity being half that of similar properties in the area.

3/ Lack of water.... Though town water is available for domestic purposes the catchment of water on the property is very limited....it has no viable dam within its

³ See Appendix for a copy of the email

boundaries and the slight inclination of the property of .15% is toward the seasonal creek on the property beside it would make the construction of a viable dam difficult.

It should be noted that the property is currently in a 1 in 20 year deficit and experiencing drought stress.

The following photographs show the topography and vegetation conditions, mostly grasses, with two trees in the south-west corner.



Figure 7 – View looking north from south-west corner of property, showing two trees



Figure 8 – View looking north from southern end of property, with the new concrete factory in the background



Figure 9 – View looking north to the northern boundary, showing existing vegetation screening



Figure 10 – View looking west from the eastern boundary, showing existing vegetation screening



Figure 11 – View looking south from the northern boundary



Figure12 – Sheep grazing across 331 and 355 Sydney Road



Figure 13 – Close up of on-site ground conditions showing grasses

8. Contact Details

Please do not hesitate to make contact for any questions or clarification.

Steve Phillips

Principal Consultant

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9. Appendix

Email from Brett Neilson of Ruralco:



Steve Phillips <steve.r.phillips@gmail.com>

Sydney Rd Property

5 messages

Brett Neilson <BNeilson@ruralco.com.au>
To: Steve Phillips <sphillips@renewableage.com>
Cc: Mandy Reed <mandy.reed@livinghere.com.au>

11 December 2019 at 10:24

G'day Steve,

Please find attached property report as requested.

In an agricultural land standpoint it is of limited value for the following reasons.

1/ Lacks scale... at 33 acres with limited land available to add scale....ie fronts a major road.... Backs onto a rail line....in close proximity to higher value industrial land...either side are small allotments.

2/ Land is degraded... though the soil types are conducive to agricultural activities (a combination of shallow sandy loam and deep sandy loam over intractable clay) the soil is degraded as evidenced by long term plant productivity being half that of similar properties in the area.

3/ Lack of water.... Though town water is available for domestic purposes the catchment of water on the property is very limited....it has no viable dam within its boundaries and the slight inclination of the property of .15% is toward the seasonal creek on the property beside it would make the construction of a viable dam difficult.

It should be noted that the property is currently in a 1 in 20 year deficit and experiencing drought stress.

I hope this is of assistance.

[REDACTED]

Brett Neilson

Licensed Real Estate Agent

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