Agricultural Assessment Report Ledcourt Solar Farm

Background

An agricultural assessment of the site of a proposed solar farm has been requested by ACEnergy. The site is an area of approximately 16 ha on the southern side of the Western Highway, east of the Mt Drummond Road, at Ledcourt.

The requirements of an agricultural assessment are outlined in the Victorian Solar Energy Facilities Design and Development Guidelines, July 2019.

These guidelines specify a number of issues which should be addressed in such a report.

- Whether agricultural land is strategically important or high-value at local and regional levels due to features such as high-quality soils, good rainfall, access to water, resilience to climate change, infrastructure investment and integration with industry – and including whether it is highly productive, highly versatile, or located in an irrigation district.
- Assessment of the agricultural productivity/carrying capacity of the land.
- Impacts of the proposal on the agricultural use of a site and whether any continued agricultural use (or 'agrophotovoltaics') can be achieved.
- Impacts on the agricultural values of adjacent and surrounding land (such as their ability to operate efficiently or their productivity) and impacts on the agricultural sector in a wider region (such as supply or market competition).

Site Characteristics

Soils

The soils surrounding the proposed site are derived from sedimentary materials.

The soils are part of the Glenorchy Soil Association[1] shown in tan in Figure 1. The majority soil types in this grouping are hypocalcic red sodosols. These soils have a clear or abrupt textural B horizon and in which the major part of the upper 0.2 m of the B2 horizon (or the major part of the entire B2 horizon if it is less than 0.2m thick) is sodic. Sodic soils are dispersive and tend to have poor internal drainage. These soils also have a calcareous horizon containing more than 50% of hard calcrete fragments and/or carbonate nodules or concretions and/or carbonate-coated gravel.

[1] East Wimmera Soils. Victorian Resources on-line http://vro.agriculture.vic.gov.au/dpi/vro/wimregn.nsf/pages/wim-soils-east-map

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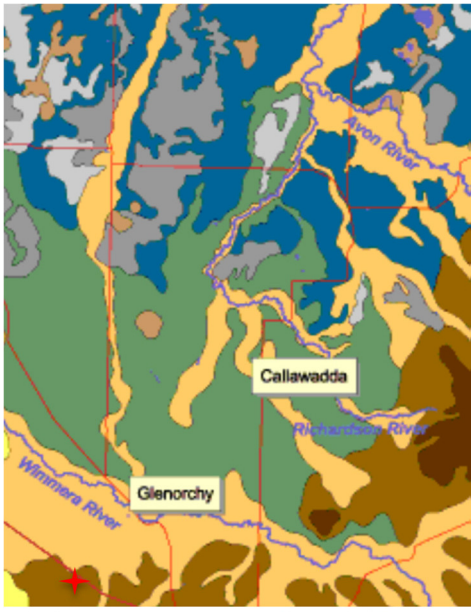

Figure 1 Approximate location **of the proposed solar farm.(✦)**

Agricultural Use

From around 2016, cropping for oats and canola has been undertaken on the property. Figure 2 shows that the paddock was cropped in 2016. All available images from Google Earth prior to this time indicate that the property was used only for grazing.

Figure 2. Aerial image of proposed site indicating cropping (Google Earth image 29/10/2016)

Potential crop yields can be inferred from the growing season rainfall (GSR). In simple terms, growing season rainfall (mm) is a combination of a 50% discount of the rain falling from February to April, plus the rainfall from May to October minus a factor for in-crop evaporation. This figure is multiplied by a factor of 20 to give the potential yield of wheat and by 10 to give the potential yield for canola.

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Rainfall data for the nearest meteorological station (Glenorchy) indicates that the average growing season rainfall for the last 20 years has been around 280mm. This equates to a potential yield of 5.4t/ha for wheat and 2.9t/ha for canola. These figures assume excellent agronomy and absence of subsoil impediments. Given the profile of these soils are described as having sodic subsoils the likely yields will be less than potential. Further a recent survey of the economics of grain production in southern Victoria[2] indicated that most growers were only achieving around conversion factors of 12 kg grain /mm GSR for wheat and 6 kg grain /mm GSR for canola. Lower yields of 3.2t/ha wheat and 1.9 t/ha for canola would be more realistic if the average water use efficiency figures are applied to this location.

For grazing, potential productivity is set by the length of the growing season [3]. Based on the rainfall data, the likely average growing season is around 5.75 months which equates to a potential stocking rate of 9.5 DSE/ha. A DSE (Dry Sheep Equivalent) is a standard animal (non lactating/non pregnant 50 kg sheep) that is used to compare carrying capacity, profitability, etc., between different stock types. For example, one breeding ewe is equivalent to two DSE over a year and a cow and calf is equivalent to 17 DSE over a year. Again, potential stocking rates are only achieved good agronomy and animal husbandry.

Agricultural Assessment

Strategic importance of land

The soils at this site are not of exceptional quality and are of lesser quality than the self-mulching soils of the Callawadda Soil Association which are found to the north of the Western Highway (shown in orange in Figure 1). As indicated above, the soils of the Glenorchy Soil Association have subsoil constraints which will impact on their potential productivity.

The site is not located in an irrigation district.

Agricultural productivity

The amount of rain and its distribution sets the upper limit for productivity for both crop yields and stock carrying capacity. Realisation of this potential depends on the consistent good agronomy and husbandry and the absence of inherent soil constraints. On the basis of the benchmark figures, the lower figures of 3.1t/ha wheat and 1.9t/ha canola are reasonable estimates of the average cropping productivity. These yields are obviously lower than those obtained for higher rainfall areas.

Similarly, the potential stocking rate is lower than what would be achieved in higher rainfall areas with milder summers that allow longer growing seasons.

[2] Cropping Zone Management Guideline Victorian High Rainfall. GRDC (2017)

[3] Saul G.R and Kearney, G.A (2003) Potential carrying capacity of grazed pastures in southern Australia, Department of Natural Resources and Environment, Victoria

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It should be noted that the area to be occupied by the solar farm is approximately 16 ha. The removal of this area of land from agricultural production will have an unmeasurable impact on the agricultural productivity of the region.

Impact on agricultural use of land

The land will not be able to be used for any agricultural activity once the solar farm is constructed and during its operation. Following decommissioning of the solar farm, there will be no residual detrimental impact on the productivity of the site.

Impact on surrounding land

The installation of the solar farm will have no effect on the ability of surrounding property owners or the owner to undertake cropping or grazing activities, nor will it impact on the agricultural sector in the wider region.

Other issues

Because the property historically has been a grazing property and more recently cropped, it is highly unlikely that there will be remnant native vegetation on the site.

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