

NOVEMBER 2020

Report on agricultural land – proposed Solar Energy Facility at 520 Meningoort Road Bookaar

Final Report

Bookaar Renewables Pty Ltd

Table of Contents

| | | |
|----------|---|-----------|
| 1 | Introduction | 2 |
| 1.1 | PURPOSE | 2 |
| 1.2 | THE NEW PROPOSAL | 2 |
| 2 | Project background and previous assessment | 4 |
| 2.1 | BACKGROUND | 4 |
| 2.2 | PREVIOUS ASSESSMENT | 4 |
| 2.3 | DESIGN RESPONSE | 4 |
| 2.4 | CURRENT LAND USE AT THE SITE | 6 |
| 2.5 | SUMMARY | 6 |
| 3 | Agricultural land assessment | 7 |
| 3.1 | AGRICULTURAL VALUE OF THE SITE | 7 |
| 3.2 | THE GUIDELINE | 9 |
| 3.3 | RESPONSE TO THE GUIDELINE | 10 |
| 3.4 | THE VCAT DECISION | 13 |
| 4 | Conclusion | 15 |
| | Appendix 1: Site plan | 16 |
| | Appendix 2: The previous assessment | 17 |

1 Introduction

1.1 PURPOSE

RM Consulting group has been engaged by Bookaar Renewables Pty Ltd (the 'Proponent') to provide an assessment of the impacts to agricultural land for a newly proposed solar farm (the 'Proposal') encompassing part of 520 Meningoort Road, Lots 51 and 52 and Res 1 on LP4677 and adjacent parts of Meningoort Road, Bookaar (the 'Site'). This report provides the agricultural land assessment with regard to the Solar Energy Facilities – Design and Development Guideline issued by DELWP in 2019, with the benefit of having provided an Expert Witness Report (the 'Previous Assessment') for a VCAT hearing (Bookaar Renewables Pty Ltd v Corangamite SC [2019] VCAT 1244), in relation to a past proposal for a solar farm (the 'Previous Application') located on the same site within the same development footprint.

1.2 THE NEW PROPOSAL

Bookaar Renewables Pty Ltd is proposing to develop a 200MWac (282MWdc) solar energy facility at the Site. The Proponent provided a Site plan (Appendix 1) and the detail of the Proposal which is presented below:

- 'Array Areas', containing Photovoltaic (PV) panels mounted on a single axis tracking system with a maximum height of 4 m above natural ground at maximum tilt. The tracking system would be supported by piles driven into the ground. Row spacing is either 12.75 m or 13 m (pile to pile);
- 82 inverters located centrally throughout the Site in pairs at 41 locations across the Site (inverter stations). Inverter stations are located at least 171 m from the Site boundary;
- Below ground cabling connecting the PV panels between trackers and inverters;
- Below ground cabling connecting the inverters to the substation;
- An internal track network of all-weather gravel tracks (4 m), including a perimeter track which forms part of a 10 m wide defendable Asset Protection Zone (APZ) that surrounds the Site;
- Four (4) gated main site access points via Meningoort Road;
- Four (4) gated emergency access points along the western boundary of the Site;
- Eight dedicated water tanks for firefighting (maximum of 3.6m high), located adjacent to each access point;
- A perimeter security fence 2.5 m high (chain mesh);
- Perimeter vegetation screens (20 m wide with 4 rows of trees and maintained to a height of at least 4 m), planted on the outside of the security fencing;
- Agricultural style fencing 1.2 m high, around the perimeter of the vegetation screens and the perimeter of the existing vegetation on the Site's western boundary;
- A SCADA system that will gather, monitor and analyse data generated through operating the Proposal;
- On-demand, downward facing lighting (restricted to 4m in height); and
- Sensor triggered CCTV security cameras located around the perimeter of the Site and adjacent to key infrastructure.

Substation Area (1.76 ha):

- Substation connecting the Proposal to the onsite 220KV transmission line, via two (2) new high voltage (HV) 220 kV transmission lines;
- A Control building (3 m high);
- Substation Operations and Maintenance building (up to 5 m high);
- A security fence (chain mesh) up to 2.5 m high, enclosing the Substation;

- A 10 m wide defendable APZ around the perimeter of the Substation; and
- Parking for 5 vehicles.

Battery Area (0.91 ha):

- A series of separate containerised battery units, connected by underground cables to the Substation (approximately 2.5 m high);
- A separate transformer adjacent to each battery; and
- A 10m defendable APZ around the perimeter of the Battery Area.

Operations Buildings Area (0.96 ha):

- A Site office building including amenities with a height of 3.6 m;
- A maintenance building and workshop with a height of 5 m;
- 3 Storage sheds with a height of 4.1 m;
- Car parking for twelve (12) vehicles;
- A septic tank and potable water tank;
- A defendable APZ of 20 m, which allows the area to function as the nominated 'Shelter in Place' location (see Bushfire Risk Assessment and Mitigation Plan).

In addition to the key components outlined above, there will be a temporary construction compound (1.44 ha) to facilitate the construction phase of the Proposal. The construction compound would include:

- Temporary construction offices (up to 5 m high);
- Car and bus parking areas for construction vehicles (51 workers cars, 5 mini vans; and additional parking space provided for delivery vehicles and construction machinery);
- Staff amenity block including portable toilets, showers and a kitchen, designed for peak staff numbers during the construction period; and
- Laydown areas.

Once the Proposal is operational, the construction compound will be decommissioned and revegetated.

The Proposal would have a total lifespan of 30 years. The construction phase would take approximately 12 months and require up to 150 full-time staff. The operational phase would be for 28 years, and is likely to generate approximately 10 full-time jobs nationally, with six likely to be based locally. Decommissioning is expected to take approximately 12 months, and would require a similar workforce to the construction period. Following decommissioning, all infrastructure associated with the solar farm would be removed from the Site.

2 Project background and previous assessment

2.1 BACKGROUND

RM Consulting group was previously engaged by the Proponent to provide an Expert Witness Report ('the Previous Assessment') for a VCAT hearing (Bookaar Renewables Pty Ltd v Corangamite SC [2019] VCAT 1244), in relation to a Previous Application located on the same land, at 520 Meningoort Road, Bookaar (the 'Site'). The Previous Assessment reviewed the agricultural implications of a solar farm at the Site and is attached in Appendix 2.

Ultimately, the VCAT hearing was unsuccessful, noting that the decision was not based on matters regarding agricultural land. In response, the Proponent has decided to submit a fresh application addressing the deficiencies identified in the VCAT decision. Importantly, with respect to the agricultural assessment, the proposed activity remains the same, the development is proposed over the same time frame of 30 years, and it is designed entirely within the same footprint.

2.2 PREVIOUS ASSESSMENT

It is noted that the Previous Assessment referred to the *Draft Solar Energy Facilities Design and Development Guidelines* (Department of Environment, Land, Water and Planning, 2018), and although the Draft Guidelines were not determinative to the final decision for the Previous Application, the majority of the key areas that need to be considered under the now adopted Guideline were covered. As the Guideline is now implemented, it is appropriate that the new assessment specifically addresses the Guideline in relation to avoiding the loss of high-value agricultural land when designing and developing a solar energy facility. Where appropriate this agricultural land assessment relies on the Previous Assessment.

2.3 DESIGN RESPONSE

As illustrated on the Site Plan (Appendix 1) and described in Section 1.1, the current Proposal has been designed in response to the VCAT decision, in particular, providing more detail on the location of infrastructure within the Site, and incorporating the findings of a bushfire risk assessment and a hydrology assessment into the final design. This process has resulted in a refinement of the Previous Application requiring a small number of changes, which are listed below:

1. The location of the substation, battery and operations buildings have been moved to avoid an area of high inundation during large flood events.
2. The main access point of the solar farm has been moved. Access will be via the Darlington Camperdown Road onto the northern part of Meningoort Road which bisects the Site.
3. Inter row spacing of the solar panels has been increased from 12m to 13m.
4. The overall number of Access Points has been increased from five to eight.
5. The number of water tanks for fire prevention has been increased from one to eight.

Although none of the changes noted above result in a change to the footprint of the Proposal, each is considered below, in terms of whether it would:

- Affect the land area required for the Proposal thus impacting on the agricultural value assessed in the Previous Application; or
- Impact the capacity of the Site to be restored to agricultural production after the solar farm has been decommissioned.

Table 2-1: Changes in application and implications on conclusions in Expert Witness Report

| CHANGE | <p>A) DOES THE CHANGE AFFECT THE LAND REQUIRED FOR THE PROPOSAL?</p> <p>B) DOES THE CHANGE IMPACT ON THE CAPACITY OF THE SITE TO REVERT BACK TO AGRICULTURAL PRODUCTION?</p> | DOES THE CHANGE HAVE ANY IMPLICATIONS TO CONCLUSIONS MADE IN THE PREVIOUS ASSESSMENT? |
|--|---|--|
| 1. The location of the substation, battery and operations buildings have been moved to avoid an area of inundation during large flood events. | <p>a) The change in location of the infrastructure is within the footprint of the Previous Proposal and therefore no additional land is impacted by this change.</p> <p>b) The change will not affect the Site's potential to be reinstated to agricultural production after decommissioning of the Proposal.</p> | There is no change to the conclusions of the Previous Assessment as a result of the change in the location of the substation, battery or operations buildings. |
| 2. The main access to the Proposal has been moved. Access will be via the Darlington Camperdown Road onto the northern part of Meningoort Road which bisects the Site. | <p>a) The change in the location of the main access point to the Site does not require any additional agricultural land.</p> <p>b) The change will not affect the Site's potential to be reinstated to agricultural production after the decommissioning of the Proposal.</p> | There is no change to the conclusions of the Previous Assessment as a result of the change in Site access location. |
| 3. Inter row spacing has been increased from 12m to 13m. | <p>a) No additional land is required to allow for the increase in inter row spacing of the rows of solar panels and therefore no additional land is impacted.</p> <p>b) The change will not affect the Site's potential to be reinstated to agricultural production after decommissioning of the Proposal.</p> | There is no change to the conclusions of the Previous Assessment as a result of the increase in inter row spacing. |
| 4. The number of Access Points has been increased from five to eight. | <p>a) The four access points on the western boundary are for Emergency Access only. The four access points along the northern part of Meningoort Rd are the same as the previous nominated access points for access across the Site. All Access Points are located within the footprint of the original Proposal and therefore no additional land is impacted.</p> <p>b) The change will not affect the Site's potential to be reinstated to agricultural production after decommissioning of the Proposal.</p> | There is no change to the Previous Assessment conclusions as a result of the change in number of Access Points. |
| 5. The number of water tanks for fire prevention has been increased from one to seven. | <p>a) The increased number of water tanks for fire prevention will be sited within the footprint of the original Proposal and therefore no additional land is impacted.</p> <p>b) The change will not affect the Site's potential to be reinstated to agricultural production after decommissioning of the Proposal.</p> | There is no change to the conclusions of the Previous Assessment as a result of the change in number of water tanks for fire prevention. |

In summary, Table 2-1, illustrates that the conclusions of the Previous Assessment are relevant to the Agricultural Assessment of the current Proposal.

2.4 CURRENT LAND USE AT THE SITE

The Farm manager has confirmed that farming practices at the Site have not changed since the Previous Assessment during a telephone call on the 15th of June 2020. As such, the baseline assumptions of the Previous Assessment regarding agricultural use at the Site remain the same.

2.5 SUMMARY

The Proposal remains a proposal for a 200MW (ac) solar farm within the same footprint as the Previous Application. The changes to the final design made in response to the VCAT decision has not changed any of the conclusions of the Previous Assessment.

3 Agricultural land assessment

3.1 AGRICULTURAL VALUE OF THE SITE

The agricultural value of the Site was assessed in the Previous Assessment and that value has not changed. The full detail of the assessment is provided in Appendix 2. A summary of the agricultural value of the Site is provided below.

The Site

The Site has been used for a mix of agricultural activities. The northern section is used for beef production (approximately 490 ha of the 588 ha) and the southern section predominately for dryland cropping (approximately 98 ha of 588 ha). The 490 ha that is used for a beef operation forms part of the larger farm operation of approximately 2,024 ha (5,000 acres)¹. The Meningoort property is running a 1,350 self-replacing beef operation with some sheep (900 wethers). The farm is generally self-sufficient for its stock feed requirements.

On inspection of the Site, it was found to be generally flat and there was some evidence of waterlogging. This will impact on the productivity of the Site.

Due to the frequency of waterlogging and the pasture species present, the farm manager verbally indicated that the carrying capacity of the area would be at best 2/3 that of the rest of the farm. Based on Site observations, this assessment agrees with the farm manager's summary.

Site Production

The current land use is a combination of beef production and crop production. Therefore, the Site's productive capability for each of these uses has been assessed. From field observations, this is an appropriate use for the Site which optimises potential agricultural production.

The total productive capability of the Site is based on the Site's current use for beef and crop production.

The current use is primarily beef production and an estimate of the beef production capability provides the basis for estimating the value of agricultural production. The average stocking rate for the whole property has been assessed at approximately 16 dry sheep equivalents (DSE)/ha based on current stock numbers on the property. This is comparable to average stocking rates in the region of 17 DSE/ha². However, the area proposed for use as a solar farm is less productive than the rest of the property due to waterlogging and the pasture species present. Thus, the carrying capacity on the proposed solar energy facility Site has been assessed at 12 DSE/ha.

Approximately 98 ha³ of the southern section of the Site has been used for dryland cropping, primarily to grow wheat. In the absence of farm records, the yield from the cropping area is based on ABS 2015-16 data for the Corangamite Shire, which has an average yield of 3.65 tonnes/ha⁴. Therefore, the current crop production potential is estimated to be 358 tonnes/year.

¹ Provided verbally by the Farm Manager - James Hart

² Livestock Farm Monitor Project Victoria – 2017-18

³ Area based on Goggle Earth measurements

⁴ <http://www.agriculture.gov.au/abares/data/agricultural-census-visualisations#gross-value-of-production>

Soil Types

The soils on the Site are capable of supporting pasture growth, however they are susceptible to waterlogging. This concurs with Site inspections and discussions with the farm manager. The majority of the Site area comprises of a black cracking clay.

Rainfall

The average rainfall is sufficient for a wide range of primary production including dairy, winter cereal crops, summer pasture and horticulture.

Drainage

Drainage and flooding impact on a site's agricultural productivity. That is, if a site has poor drainage and is within an area subject to inundation or flooding, its agricultural productivity will be negatively affected. The Hydrology of the Site has been assessed (see the 'Flood Impact Assessment'). Flood extent maps produced as part of this assessment illustrates that large parts of the Site have shallow, but widespread levels of inundation in the 1 in 5 year flood events. Discussions with the farm manager also reveal that the Site is subject to waterlogging and this restricts its stock carrying capacity and crop production potential.

Soil Fertility

The farm manager was able to provide some soil test results to give an indication of the fertility status of the soils on the Site area. While soil fertility can be improved through applications of fertiliser it does give an indication of the current fertility level at the Site.

The most recent soil results from the Site (taken in February 2018, provided as Appendix 4 of the Previous Assessment) show most soil parameters are suitable for pasture or crop production. However, soil Olsen P levels were low⁵, and the soils were found to be highly acidic. Both these factors reduce the productivity of the Site.

The farm manager verbally indicated that they run a low input system on the Site due to the limitations on grazing capacity during winter and early spring. They have not been prepared to increase inputs as they consider they would not get a return on the additional cost incurred. This is considered to be a reasonable management practice based on the Site observations.

Economic Value

The total farm income has been assessed at approximately \$1.6 million. Therefore, the farm income generated from the subject site (associated with the beef operation) is estimated at \$320,000 (\$653/ha). This is 20% of the farm's total income from beef.

Approximately 98 ha of the southern section of the Site has been used for dryland cropping, primarily wheat. In the absence of any farm records the yield and income generated from the cropping area is based on regional ABS 2015/16 data. The average income from wheat crops was \$978/ha⁶. This based on an average yield of 3.65 t/ha and a price of \$268/t. The income generated on the 98 ha of cropping area is estimated at \$95,844.

The total combined income generated from the subject Site is estimated at approximately \$460,000 (\$416,000 inflated to 2020 dollars). A typical dryland farm needs to generate about \$250,000 to \$500,000 gross income in order to have sufficient income for one employee or one family. Therefore, it is considered that the Site has the capacity to support one family. However, the value of the Site at a regional and state level is evaluated below.

⁵ Olsen P levels of 8 mg/kg were recorded compared with an optimum range 20 to 25 mg/kg.

⁶ <http://www.agriculture.gov.au/abares/data/agricultural-census-visualisations#gross-value-of-production>.

Relative value – Region and State

The production from the Site represents approximately 0.06% of the Corangamite Shire's agricultural value.

The site represents 0.15% of the Corangamite Shire's agricultural land.

Looking more specifically at the enterprises, it represents 0.17% of the value of the Shire's beef production and 0.19% of the value of the Shire's wheat production.

At a state context the economic output from this property represents 0.003% of the state's agricultural value of output.

In conclusion, the economic output from the Site is considered to be economically insignificant at both a regional and state level.

3.2 THE GUIDELINE

The guidelines which informs this assessment are the *Solar Energy Facilities Design and Development Guidelines* published by DELWP in August 2019.

As solar energy facilities are often located on or close to agricultural land, the Guideline provides specific planning strategies for the protection of agricultural land. The key policy measures noted in the Guideline are:

- *protecting strategically important agricultural and primary production land from incompatible land use*
- *protecting productive agricultural land that is of strategic significance to a local area or in a regional context*
- *avoiding the loss of productive agricultural land without considering the impact of the loss on the agricultural sector and its consequential effect on other sectors.*

The Guideline also states that “*Renewable energy generation can and does coexist with agriculture production, which contributes to the rural economy and supports farm incomes by diversifying property owners’ revenue streams*”. In addition to other site considerations for solar energy facilities, the Guideline proposes that site selection should also consider:

- *the impact on the loss of the site if it has high-quality soils, particularly soils that are niche to a type of crop or other agricultural activity*
- *the potential loss of reliable, accessible water (such as irrigated areas) and its impact at a local or regional scale*
- *the impact of fragmentation and a change of land use to non-agriculture activity on local and regional productivity and output*
- *the impact of a change of land use on recent and/or current efforts to modernise and reform agricultural activity in the area*
- *whether the land has specifically been set aside or defined for agricultural use and development in a planning scheme or other strategic document*
- *whether the change in land use is to the detriment of a government's previous or existing investment and support for the site or the area*
- *whether the proposed solar energy facility can co-locate with other agricultural activity, to help diversify farm’ income without reducing productivity.*

The Guideline states that “*A proponent should address the considerations above in a written report component of planning permit application*”.

The Guideline also provide direction in respect to solar energy facilities in irrigated districts. As the Site is not in an irrigation district this does not apply.

3.3 RESPONSE TO THE GUIDELINE

The following table outlines the key areas that the Guideline requires the Proponent to address and is referenced against the relevant information in the Previous Assessment as required.

Table 3-1: Areas to address as outlined in the Guideline

| AREAS TO ASSESS | COMMENT |
|---|---|
| <ul style="list-style-type: none"> Protecting strategically important agricultural and primary production land from incompatible land use. | <p>Soils and landscape – The soil attributes would not be considered as being high value, nor would they be considered niche or versatile (see Section 3.1; Previous Assessment – Section 6.7).</p> <p>Water and climate – The Site does not have access to irrigation infrastructure, but it is in high rainfall zone. However, according to the guidelines, high rainfall alone would not make it of strategic significance. The Site is not considered to be more resilient to the impacts of climate change (see Previous Assessment – Section 6.1).</p> <p>It is the combination of the above that would not make the Site strategically important agricultural and primary production land.</p> |
| <ul style="list-style-type: none"> Protecting productive agricultural land that is of strategic significance to a local area or in a regional context. | <p>Structural – The Site is not considered to have any structural attributes that would make it of strategic significance. The current beef production requires some post-farm processing but not considered significant. As it represents only 0.17% of the regional beef production it would have a very minor impact on any post-farm processing. It is considered that there is good access to markets through existing networks and transport infrastructure (see Section 3.1; Previous Assessment – Section 6.7).</p> <p>Economic – The Site is not within an area targeted for government investment in food production. Dairy represents the highest value agricultural activity in the shire representing 54%⁷ of the total agricultural value. The Corangamite Planning Scheme recognises the importance of dairying “<i>The dairy industry in particular makes a significant contribution at a state and national level</i>”⁸. Dairy is mainly located in a band from Camperdown in the north to Princetown in the south. The Site is not located in this area. While it is acknowledged that dairy still exists around the Site it is not the primary area for dairy production in the region (see Previous Assessment - Section 6.7).</p> <p>The strategic framework plan in the Corangamite Planning Scheme identifies an area within the Timboon , Cobden and Simpson areas as being a “<i>Premier Agricultural Region of Victoria</i>”⁹</p> <p>The location of the Site is not in this area and is not in an area identified as high-quality agricultural land by the planning scheme. The Site is also not being used for dairy production.</p> |

⁷ ABS 2015/16 Data – Catalogue number 7503.0.

⁸ Corangamite Planning Scheme – Pg 12.

⁹ Corangamite Planning Scheme – Pg 18.

| AREAS TO ASSESS | COMMENT |
|---|--|
| <ul style="list-style-type: none"> <i>Avoiding the loss of productive agricultural land without considering the impact of the loss on the agricultural sector and its consequential effect on other sectors.</i> | <p>The production from the Site represents approximately 0.06% of the Shire's agricultural value.</p> <p>Further ABS data, provided in Appendix 5 of the Previous Application, indicates that the Site represents 0.15% of the Corangamite Shire's agricultural land.</p> <p>Looking more specifically at the enterprises, it represents 0.17% of the value of the Shire's beef production and 0.19% of the value of the Shire's wheat production.</p> <p>At a state context the economic output from this property represents 0.003% of the state's agricultural value of output.</p> <p>In conclusion, the economic output from the Site is considered to be economically insignificant at both a regional and state level (Addressed in the Previous Assessment – Section 6.5).</p> |
| Additional Considerations | |
| <ul style="list-style-type: none"> <i>The impact on the loss of the site if it has high-quality soils, particularly soils that are niche to a type of crop or other agricultural activity.</i> | <p>Soils and landscape – As outlined in Section 3.1, the soil attributes would not be considered as being high value, nor would they be considered niche or versatile (also addressed in the Previous Assessment – Section 6.7).</p> |
| <ul style="list-style-type: none"> <i>The potential loss of reliable, accessible water (such as irrigated areas) and its impact at a local or regional scale.</i> | <p>The Site is not in an irrigation area nor does it have access to irrigation water.</p> |
| <ul style="list-style-type: none"> <i>The impact of fragmentation and a change of land use to non-agriculture activity on local and regional productivity and output.</i> | <p>From an inspection of the Site, the adjoining properties are dairy farms, and cropping/grazing operations. In the author's view, there would be no potential impacts on the agricultural operations on the neighbouring properties from a solar energy facility. Further research has verified this. A 2014 report by The Australia Institute¹⁰ into the health and environmental costs and benefits of solar energy states:</p> <p><i>Despite the need for large land surface areas, there is little evidence that solar resources conflict with other land uses such as farming.</i></p> <p>One detailed study¹¹ focused on a large-scale solar energy development on rural land "in Central West NSW, approximately 10 km west of the nearest township." This study followed the impacts of the proposed facility, from planning through to construction. A summary of the findings is as follows:</p> |

¹⁰ Moss, J., Coram, A. and Blashki, G., Solar Energy in Australia: Health and Environmental Costs and Benefits, The Australia Institute, 2014.

¹¹ Guerin, T.F., Evaluating expected and comparing with observed risks on a large-scale solar photovoltaic construction project: A case for reducing the regulatory burden, Renewable and Sustainable Energy Reviews, Issue 74, pp 33 – 348, 2017.

| AREAS TO ASSESS | COMMENT |
|---|---|
| | <p><i>The overall benefits of the project were compelling. With the exception of road preparation, the project did not require large-scale earthworks and all impacts to the site were reversible. The project has delivered significant social and environmental benefits on a local, state and federal level and have global environmental benefits on the basis that the development will lower emissions created in the production of electricity. The project also did not significantly affect the conservation values nor agricultural output of the locality.</i></p> <p>Therefore, it is concluded that the use of the Site will not affect the regional landholders' agricultural production capability as there are no known influencing factors from a solar energy facility that would impact on neighbouring dairy or cropping operations.</p> |
| <ul style="list-style-type: none"> ▪ <i>The impact of a change of land use on recent and/or current efforts to modernise and reform agricultural activity in the area.</i> | <p>To the author's knowledge, there are no recent and/or current efforts to modernise and reform agricultural activity in the area. However, as the proposal is unlikely to have any offsite impacts it is not likely that it would affect efforts to modernise or reform agricultural activities in the area.</p> |
| <ul style="list-style-type: none"> ▪ <i>Whether the land has specifically been set aside or defined for agricultural use and development in a planning scheme or other strategic document.</i> | <p>The strategic framework plan in the Corangamite Planning Scheme identifies an area within the Timboon , Cobden and Simpson areas as being a "Premier Agricultural Region of Victoria" ¹²</p> <p>The location of the Site is not in this area and is not in an area identified as high-quality agricultural land by the planning scheme. The Site is also not being used for dairy production.</p> |
| <ul style="list-style-type: none"> ▪ <i>Whether the change in land use is to the detriment of a government's previous or existing investment and support for the site or the area.</i> | <p>To the author's knowledge there is no government investment or support for the Site or area either previous or existing.</p> |
| <ul style="list-style-type: none"> ▪ <i>Whether the proposed solar energy facility can co-locate with other agricultural activity, to help diversify farm' income without reducing productivity.</i> | <p>The Site covers an area of approximately 588 ha. Of this, approximately 490 ha is part of a beef operation with approximately another 98 ha leased to a neighbouring farmer who is mainly using the area for dryland cropping. The 490 ha that is used for a beef operation forms part of the larger farm operation of approximately 2,024 ha (5,000 acres).¹³ The Meningoort property is running a 1,350 self-replacing beef operation with some sheep (900 wethers). The farm is generally self-sufficient for its stock feed requirements.</p> <p>As discussed in Section 3.1, the farm manager indicated that the majority of the Site is, compared to other parts of the farm, highly susceptible to water logging during the winter and early spring months. The factors that contribute to the water logging risk include:</p> <ul style="list-style-type: none"> ▪ Drainage from surrounding land adds to the water load on the Site |

¹² Corangamite Planning Scheme – Pg 18.

¹³ Provided verbally by the Farm Manager - James Hart.

| AREAS TO ASSESS | COMMENT |
|-----------------|---|
| | <ul style="list-style-type: none"> ▪ The area is very flat and overland flows move very slowly across the area ▪ Poor drainage characteristics of the soil which is a black cracking clay. <p>Due to the frequency of waterlogging events there has been limited pasture improvement conducted on the Site. The pasture species observed during the Site inspection and described by the Farm Manager was a mixture of Phalaris and unimproved pasture¹⁴. The farm manager also runs a lower stocking rate on the area compared to the more productive farm area located west of the Site. This is considered to be an appropriate management practice to manage the waterlogging risk.</p> <p>The farm manager verbally indicated that on the proposed Site, the nature of the soils, the frequency of waterlogging and the pasture species present means that the area has a lower carrying capacity than the rest of the farm. He estimates that the carrying capacity of the area would be at best 2/3 that of the rest of the farm. Based on Site observations it is considered that this is an accurate assessment.</p> <p>The farm manager had indicated that the opportunity of the Proposal would contribute to the overall stability of the business as it would provide a reliable and steady income stream. This would assist in diversifying farm income and make the operation more resilient.</p> |

In relation to avoiding the loss of high-value agricultural land as outlined in the Guideline, it is concluded that the Site is not considered to be strategically important agricultural land. All of the key areas that should be considered by a proponent when looking at a solar development according to the Guideline have been addressed, and it is concluded that the Site is suitable for use as a solar facility.

3.4 THE VCAT DECISION

The VCAT decision (VCAT reference NO. P2390/2018) concluded that:

“Although the 588ha of land proposed for the solar energy facility is productive, its agricultural attributes and potential are not of such significance that it should be precluded from consideration for a renewable energy facility as a matter of principle. It is not irrigated land or very high quality agricultural land” (para. 5).

This statement is consistent with conclusions in Section 3.1 and 3.3 above, and with conclusions in the Previous Assessment.

The VCAT decision provides further detail around the agricultural considerations of the Site that further support than on agricultural grounds, there are no material reasons why the Site could not be considered appropriate for a solar development. Those considerations from the VCAT decision are listed below:

- Para. 90 & 91 - *The Strategic Framework Plan¹⁵ sets out key strategic directions for future land use planning and development. The purpose is, among other things, to identify locations where specific land use outcomes will be supported and promoted. The plan identifies the “Premier Agricultural Region of Victoria” to the south and south-west of Cobden east of Timboon and north of Simpson. This is consistent with the major strategic issues identified on the Strategic Land Use Framework Plan that include:*

¹⁴ Unimproved pastures is defined grasses that have established in the area that have not been directly sown.

¹⁵ Clause 21.01.

- *The location of high quality agricultural land within the Timboon, Cobden and Simpson areas which is used for dairying, the need to protect this land from inappropriate development. This does not mean there is no other valuable and productive agricultural land, as is well documented in the scheme. **However, it is relevant that the subject land is not within the mapped area nor within the Timboon, Cobden and Simpson areas that is identified is of particular strategic significance by the scheme.***
- *Para. 110 - Notwithstanding that there would be ways to add value, contemplate niche industries, and possibly use the land for dairying,¹⁶ the agricultural attributes, and potential, ascribed to the subject land do not persuade us that the land is of such significance that it should be precluded from consideration for a renewable energy facility, as a matter of principle.*
- *Para.117 - We further note that neither of the agricultural experts believe that, on decommissioning, the subject land would not be unsuitable for agriculture or that the soil quality will be harmed. On one view, improvements to the land to address drainage may have the potential to also contribute positively to future agricultural opportunities.*
- *Para.118 - In most rural areas, renewable energy generation, such as solar energy facilities, can effectively coexist with agricultural production. This view is generally consistent with the Shepparton Panel¹⁷ and other recent Tribunal decisions¹⁸ where similar conclusions are reached in the circumstances applying in those cases.*
- *Para.121 - First, it is relevant that Mr Kenny and Mr Poole agree that the presence of the proposed solar energy facility, will not, per se, adversely affect primary production on adjacent land. Mr Galliène's report is consistent with this position.*
- *Para.126 - Another issue identified in some material is the loss of land currently leased by another farmer as part of his agricultural operation. We accept that this is a loss, but it is a loss that could occur at any time without any proposal for a solar energy facility. The owner of the subject land could elect to discontinue lease arrangements at any time. This is, therefore, not an impact to which we can give influential weight.*

The VCAT decision concluded that on an agricultural basis, the Site is land that should not be prevented for consideration for development of a solar facility.

¹⁶ These being among the considerations in table 1 of the draft Solar Guidelines, at page 12.

¹⁷ *Panel Report for the Greater Shepparton Solar Energy Planning Permit Applications 2017-162, 2017-274, 2017-301 and 2017-344.* It should be noted that of the four permit applications recommended for approval, only one has (to our understanding) been approved.

¹⁸ *ESCO Pacific Pty Ltd v Wangaratta RCC* [2019] VCAT 219. *Croke v Moira SC* [2019] VCAT 112.

4 Conclusion

The Proposal remains a proposal for a 200MW solar farm within the same footprint as the Previous Application. The changes to the final design made in response to the VCAT decision have not changed any of the conclusions of the Previous Assessment.

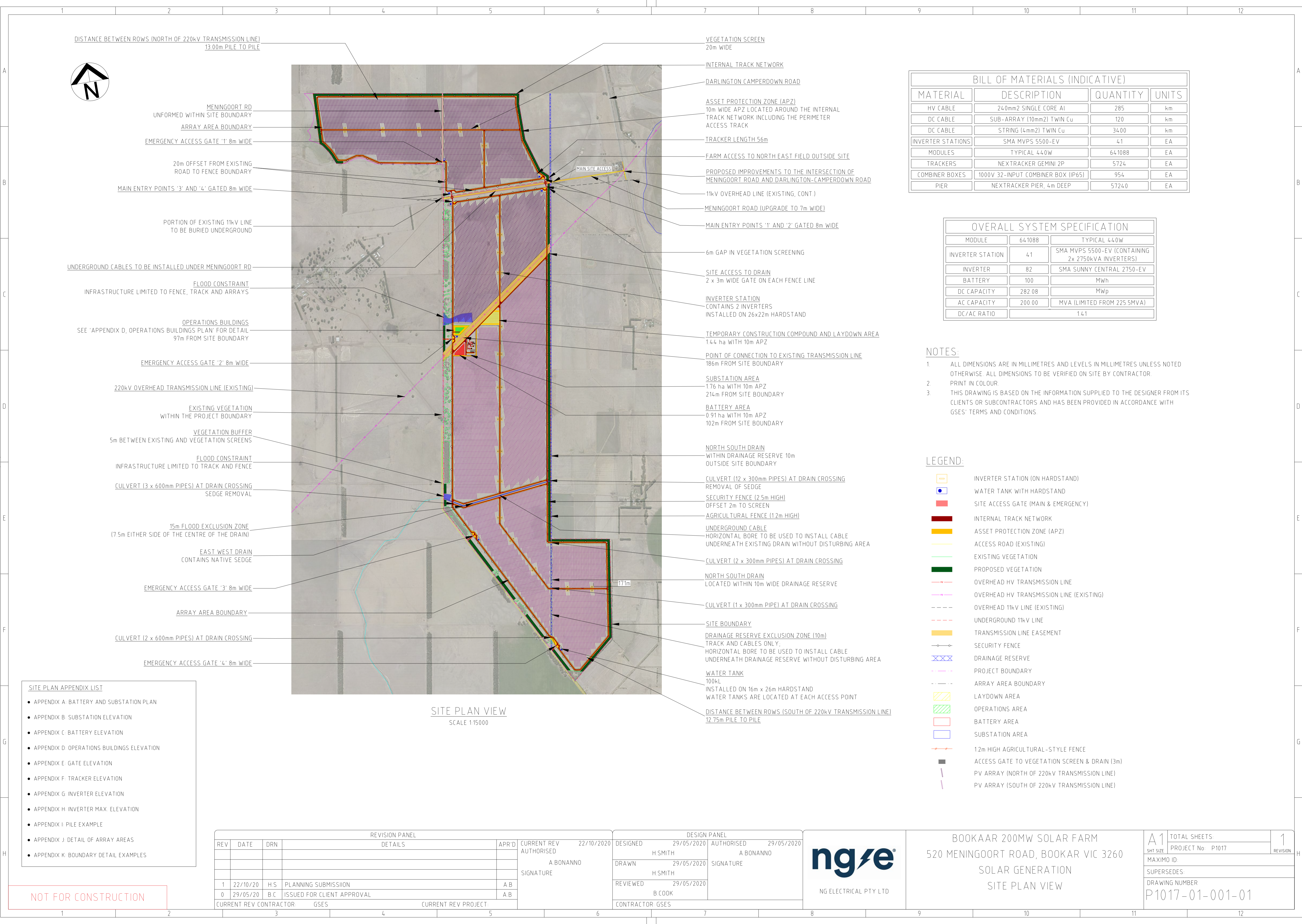
In relation to avoiding the loss of high-value agricultural land as outlined in the Guideline, it is concluded that the Site is not considered to be strategically important agricultural land. All of the key areas that should be considered by a proponent when looking at a solar development according to the Guideline have been addressed and it is concluded that the Site is suitable for use as a solar facility.

The VCAT decision (VCAT reference NO. P2390/2018) concluded that:

“Although the 588ha of land proposed for the solar energy facility is productive, its agricultural attributes and potential are not of such significance that it should be precluded from consideration for a renewable energy facility as a matter of principle. It is not irrigated land or very high quality agricultural land” (para. 5).

This statement is consistent with conclusions of this assessment.

Appendix 1: Site plan



| BILL OF MATERIALS (INDICATIVE) | | | |
|--------------------------------|------------------------------------|----------|-------|
| MATERIAL | DESCRIPTION | QUANTITY | UNITS |
| HV CABLE | 240mm2 SINGLE CORE Al | 285 | km |
| DC CABLE | SUB-ARRAY (10mm2) TWIN Cu | 120 | km |
| DC CABLE | STRING (4mm2) TWIN Cu | 3400 | km |
| INVERTER STATIONS | SMA MVPS 5500-EV | 41 | EA |
| MODULES | TYPICAL 440W | 641088 | EA |
| TRACKERS | NEXTRACKER GEMINI 2P | 5724 | EA |
| COMBINER BOXES | 1000V 32-INPUT COMBINER BOX (IP65) | 954 | EA |
| PIER | NEXTRACKER PIER, 4m DEEP | 57240 | EA |

| OVERALL SYSTEM SPECIFICATION | | |
|------------------------------|--------|--|
| MODULE | 641088 | TYPICAL 440W |
| INVERTER STATION | 41 | SMA MVPS 5500-EV (CONTAINING 2x 2750kVA INVERTERS) |
| INVERTER | 82 | SMA SUNNY CENTRAL 2750-EV |
| BATTERY | 100 | MWh |
| DC CAPACITY | 282.08 | MWp |
| AC CAPACITY | 200.00 | MVA (LIMITED FROM 225.5MVA) |
| DC/AC RATIO | 1.41 | |

- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL DIMENSIONS TO BE VERIFIED ON SITE BY CONTRACTOR.
 - PRINT IN COLOUR.
 - THIS DRAWING IS BASED ON THE INFORMATION SUPPLIED TO THE DESIGNER FROM ITS CLIENTS OR SUBCONTRACTORS AND HAS BEEN PROVIDED IN ACCORDANCE WITH GSES' TERMS AND CONDITIONS.

- LEGEND:
- INVERTER STATION (ON HARDSTAND)
 - WATER TANK WITH HARDSTAND
 - SITE ACCESS GATE (MAIN & EMERGENCY)
 - INTERNAL TRACK NETWORK
 - ASSET PROTECTION ZONE (APZ)
 - ACCESS ROAD (EXISTING)
 - EXISTING VEGETATION
 - PROPOSED VEGETATION
 - OVERHEAD HV TRANSMISSION LINE
 - OVERHEAD HV TRANSMISSION LINE (EXISTING)
 - OVERHEAD 11kV LINE (EXISTING)
 - UNDERGROUND 11kV LINE
 - TRANSMISSION LINE EASEMENT
 - SECURITY FENCE
 - DRAINAGE RESERVE
 - PROJECT BOUNDARY
 - ARRAY AREA BOUNDARY
 - LAYDOWN AREA
 - OPERATIONS AREA
 - BATTERY AREA
 - SUBSTATION AREA
 - 12m HIGH AGRICULTURAL -STYLE FENCE
 - ACCESS GATE TO VEGETATION SCREEN & DRAIN (3m)
 - PV ARRAY (NORTH OF 220kV TRANSMISSION LINE)
 - PV ARRAY (SOUTH OF 220kV TRANSMISSION LINE)

SITE PLAN VIEW
SCALE 1:15000

- SITE PLAN APPENDIX LIST
- APPENDIX A: BATTERY AND SUBSTATION PLAN
 - APPENDIX B: SUBSTATION ELEVATION
 - APPENDIX C: BATTERY ELEVATION
 - APPENDIX D: OPERATIONS BUILDINGS ELEVATION
 - APPENDIX E: GATE ELEVATION
 - APPENDIX F: TRACKER ELEVATION
 - APPENDIX G: INVERTER ELEVATION
 - APPENDIX H: INVERTER MAX. ELEVATION
 - APPENDIX I: PILE EXAMPLE
 - APPENDIX J: DETAIL OF ARRAY AREAS
 - APPENDIX K: BOUNDARY DETAIL EXAMPLES

| REVISION PANEL | | | | | DESIGN PANEL | | | | | | |
|------------------------|----------|------|----------------------------|-------|---------------------------|------------|----------|------------|------------|----------------------|--|
| REV | DATE | DRN | DETAILS | APR'D | CURRENT REV AUTHORISED | 22/10/2020 | DESIGNED | 29/05/2020 | AUTHORISED | 29/05/2020 | |
| | | | | | A BONANNO SIGNATURE | | H. SMITH | | A BONANNO | | |
| | | | | | | | DRAWN | 29/05/2020 | SIGNATURE | | |
| | | | | | | | H. SMITH | | | | |
| 1 | 22/10/20 | H. S | PLANNING SUBMISSIION | A. B | | | REVIEWED | 29/05/2020 | | | |
| 0 | 29/05/20 | B. C | ISSUED FOR CLIENT APPROVAL | A. B | | | B. COOK | | | | |
| CURRENT REV CONTRACTOR | | | | | GSES | | | | | CURRENT REV PROJECT: | |
| | | | | | | | | | | CONTRACTOR GSES | |



BOOKAAR 200MW SOLAR FARM
520 MENINGOORT ROAD, BOOKAR VIC 3260
SOLAR GENERATION
SITE PLAN VIEW

| | | |
|----------------|-------------------|----------|
| A1 | TOTAL SHEETS: | 1 |
| SHT SIZE | PROJECT No: P1017 | REVISION |
| MAXIMO ID: | | |
| SUPERSEDES: | | |
| DRAWING NUMBER | P1017-01-001-01 | |

NOT FOR CONSTRUCTION

Appendix 2: The previous assessment

MAY 2019

VCAT Ref: P2390/2018

**Permit Application
No. PP2018/060**

**520 Meningoort Road
Bookaar**

Expert Witness Report by Daryl Poole

As instructed by Best Hooper Lawyers

Acting for Bookaar Renewables Pty Ltd

Table of Contents

| | | |
|----------|---|-----------|
| 1 | Introduction | 2 |
| 1.1 | EXPERT WITNESS DETAILS | 2 |
| 1.2 | BRIEF | 2 |
| 2 | Summary of my opinion | 5 |
| 3 | Reviewed documents | 7 |
| 4 | Background | 9 |
| 4.1 | CORANGAMITE SHIRE COUNCIL FINDING | 9 |
| 4.2 | SUMMARY OF OBJECTIONS | 10 |
| 4.3 | RECENT DECISIONS ON PROPOSED SOLAR ENERGY FACILITIES | 10 |
| 4.4 | DELWP SOLAR ENERGY FACILITIES DESIGN AND DEVELOPMENT DRAFT GUIDELINES | 12 |
| 4.5 | THE CORANGAMITE PLANNING SCHEME | 13 |
| 5 | Property assessments | 14 |
| 5.1 | SITE INSPECTION | 14 |
| 5.2 | SITE PRODUCTION | 16 |
| 5.3 | SURROUNDING LAND USES AND IMPACTS | 17 |
| 5.4 | PLANNING REPORT ASSESSMENT | 17 |
| 5.5 | OBJECTIONS RELATING TO AGRICULTURAL IMPACTS | 17 |
| 5.6 | CONCLUSION | 18 |
| 6 | Analysis | 19 |
| 6.1 | AGRICULTURAL CAPABILITY | 19 |
| 6.2 | PRODUCTION LEVELS | 22 |
| 6.3 | ECONOMIC VALUE | 23 |
| 6.4 | REGIONAL ECONOMICS | 23 |
| 6.5 | RELATIVE VALUE – REGION AND STATE | 24 |
| 6.6 | ADJOINING LAND IMPACTS | 24 |
| 6.7 | ASSESSMENT OF STRATEGICALLY SIGNIFICANT AGRICULTURAL LAND | 25 |
| 7 | Expert statement | 28 |
| 8 | Expert declaration | 28 |
| | Appendix 1: Daryl Poole CV | 29 |
| | Appendix 2: Letter of Instructions | 30 |
| | Appendix 3: Landform map | 31 |
| | Appendix 4: Soil test result | 32 |
| | Appendix 5: ABS data | 33 |

1 Introduction

1.1 EXPERT WITNESS DETAILS

Name and address: Daryl Poole, 135 Mollison Street, Bendigo, Victoria 3550

Contact details: Phone 03 5441 4821, Mobile 0418 992 056, Email darylpo@rmcg.com.au

The expert's qualifications: B. Ag.Sci.(Hons), CPAg.

Experience: A copy of Daryl Poole's CV is attached as Appendix 1.

A statement identifying the expert's area of expertise to make the report:

During his 20 years working in both the government and private sectors in Victoria, Daryl has developed a wide range of experience in farm management. In particular Daryl has experience with farm business management, across a range of commodities, including land capability assessments. Daryl also has extensive experience in working effectively on a one-to-one basis with farmers covering a range of business areas including business planning, pasture management, irrigation management, fertiliser use, dairy cow nutrition, natural resource management and dairy farm analysis. Recently, Daryl has been called as an expert witness for the agricultural value of proposed solar energy facilities in Victoria.

This report has been prepared by myself with administrative assistance from Hilary Hall and Jacinta Belz within RMCG.

The expert has no private or business relationship with Best Hooper Lawyers or Bookaar Renewables Pty Ltd.

1.2 BRIEF

The instructions for this report are outlined in the attached letter (Appendix 2) from Best Hooper Lawyers who are acting for Bookaar Renewables Pty Ltd. The instructions refer to a proposed solar energy facility at 520 Meningoort Road Bookaar VIC 3260 , Lots 51 and 52 and Res 1 on LP4677 and associated parts at Meningoort.

A summary of the relevant key features of the site as specified in the Planning Report are as follows:

The Property is located at 520 Meningoort Road, Bookaar in south-western Victoria.

The Site is situated in the local area known as Bookaar, which is located within the Corangamite Shire and lies approximately 10km north-west of the town of Camperdown.

The Site and surrounding area are characterised by agricultural land use including grazing and farming activities. The area is punctuated with scattered farmhouses, sheds, windbreaks (tree lines) and fences that divide the landscape into a board patchwork of distinctive paddocks. In addition, numerous lakes dot the landscape, the closest of which is Lake Bookaar which is a designated RAMSAR wetland and lies approximately one kilometre to the east of the Site.

The Property is dominated by Mount Meningoort which is a volcanic cone that sits in its centre.

The rest of the Property is generally flat and dominated by improved open pastures and characteristic tree lines along some fence lines. The Property slopes gently in a southerly direction with a more undulating section of land located in the north east corner.

A tributary to Blind Creek originates within the Property boundary, and connects to the network of artificial drains, which have been constructed to drain excess water from western and southern areas of the Property.

In addition, a high voltage transmission line suitable for distributing electricity generated by the Proposal transects the site connecting the Terang and the Ballarat substations of the NEM [National Energy Market].

A summary of the site description as specified in the Statement of Changes (Best Hooper Lawyers, 9 May 2019):

- *Lots 1, 2, 3, 4, 5, 6, 7, 8, 9 [part], 10 [part], 11 [part] and 12 [part] and 33 [part] on Title Plan 844741K, Lots 51, 52 and Res 1 on LP4677 and Meningoort Road [Part].*

A summary of the relevant existing conditions of the site as specified in the Planning Report are as follows:

The Property is approximately 2,100 hectares in size and is predominately used to graze sheep and cattle, except for a section of land in the south-east corner which is currently used for cropping.

the Applicant has selected the land with the lowest agricultural value within the wider Property to locate the Site so the most productive areas of the Property remain unaffected by the Proposal.

A summary of the site size as specified in the Amended Plan (Eco Logical Australia, 9 May 2019) is as follows:

8. Total Site area 588 ha.

As submitted to the Agenda – Ordinary Meeting of Council 25 September 2018, the Corangamite Shire Planning Report recommended:

The Council, pursuant to section 64 of the Planning and Environment Act 1987, resolves to issue a Notice of Decision to Grant a Planning Permit PP2018/060 for the use and development of land for a renewable energy facility (Solar Farm).

On 1 October 2018 the Corangamite Shire Manager Planning and Building notified the applicant that:

On Tuesday 25 September 2018, Council decided to refuse this application.

On 29 November 2018 Best Hooper Lawyers, acting on behalf of Bookaar Renewables, submitted to VCAT an application for review of the Corangamite Shire Council's decision.

Following the VCAT orders, 28 private parties submitted Statement of Grounds, stating their objections to the proposed solar energy facility. The key objections related to scale of proposal and visual impact, rural amenity, community benefit, loss of agricultural land, impact on flora and fauna and their habitat, fire risk, traffic impacts and ongoing site management.

In February 2019 I was engaged by Best Hooper Lawyers to provide my opinion as to the agricultural value of the proposed site. The specific instruction from Best Hooper Lawyers was to:

...address the agronomy and agricultural merits of the proposal, including an assessment of the impact of the proposal on the ability to use the site area and neighbouring land for agricultural purposes.

My expert opinion specifically addresses the objections summarised by the Corangamite Shire Council Notice of Decision to Refuse to Grant a Permit, dated 1 October 2018:

The use and development will result in the loss of productive agricultural land and will create impacts on the continuation of primary production on adjacent land.

The key issues I have considered is the direct loss of productive agricultural land and impact of agricultural production on neighbouring properties.

There has been some soil test results that have been referred to in the report but there has been no experiments upon which I have relied for the preparation of this report.

2 Summary of my opinion

I have formed the following opinion:

Corangamite Shire Council finding

- A. This report concurs with the Planning Officers report and does not support item 2 expressed by Council in its refusal to grant a permit, that is, that the agricultural activities on adjacent land will be adversely impacted. I discuss this matter further in my report.

Recent decisions on proposed solar energy facilities

- B. There are a number of solar energy facilities that have been proposed within a farming zone and have been referred to VCAT or a planning panel. I have reviewed the findings of these referrals, none of which found that the proposals represented a loss of significant agricultural land, nor the ability to continue farming on neighbouring agricultural land. There is nothing from other referred proposals for solar energy facilities that highlight a reason why the proposed solar energy facility at Bookaar is any different to the previous cases determined by VCAT or a planning panel.

DELWP solar energy facilities design and development draft guidelines

- C. I have considered the draft guidelines as a tool in assessing the proposed development (noting that the matters contained in the draft guidelines are matters that would generally be considered in agricultural assessments). Each of these attributes have been identified in Section 7 of this report.
- D. In my opinion, the proposed site is not considered strategically significant agricultural land based on the DELWP draft guidelines.

The Corangamite Planning Scheme

- E. The location of the site is not identified as high quality agricultural land by the planning scheme and it is not being used for dairy production.

Site inspection

- F. The site has been used for a mix of agricultural activities. The northern section is used for beef production (approximately 490 ha of the 588 ha) and the southern section predominately for dryland cropping (approximately 98 ha of 588 ha). I found the site to be generally flat and saw evidence of waterlogging. The pasture species present is a mix of Phalaris and unimproved pastures. These features impact the productivity of the site.
- G. The current land use is running a 1,350 self-replacing beef operation with some sheep (900 wethers) on the northern section and crop production on the southern section. From my field observation, this is an appropriate use for the site and optimises the potential agricultural production.

Site production

- H. The current use is primarily beef production and an estimate of the beef production capability provides the basis for estimating the value of agricultural production. The average stocking rate of the whole property has been assessed at approximately 16 dry sheep equivalents (DSE)/ha based on current stock numbers. This is comparable to average stocking rates in the region of 17 DSE/ha. However, the site of the proposed solar energy facility is less productive than the rest of the farm area, due to frequency of waterlogging and the pasture species present. Thus, the carrying capacity on the proposed solar energy facility has been assessed at 12 DSE/ha.

- I. Approximately 98 ha of the southern section of the site has been used for dryland cropping, primarily to grow wheat. In the absence of farm records, the yield from the cropping area is based on ABS 2015-16 data for the Corangamite Shire, which has an average yield of 3.65 tonnes/ha. Therefore, the current crop production potential is estimated to be 358 tonnes/year.

Surrounding land uses and impacts

- J. Providing road access is not inhibited, I find no reason for the agricultural activities of the neighbouring properties to be impacted by construction or operation of the proposed solar energy facility.
- K. I concur with the information provided in the Tract planning report in relation to agricultural issues with specific mention that the development will not adversely impact soil quality, nor the ability of neighbouring properties to conduct their agricultural activities.

Analysis

- L. The description of the soils and geology provided by the references cited in Section 5.1 indicate that the site is capable of supporting pasture growth, however they are susceptible to waterlogging. This concurs with my site inspection and discussions with the farm manager.
- M. It is noted that all of the soil reference maps do not provide the detail to a paddock level and that the resolution of the maps do not capture the specific characteristics of the proposed site. As outlined in Section 4.1, the majority of the site is comprised of black cracking clay.
- N. The average rainfall is sufficient for a wide range of primary production including dairy, winter cereal crops, summer pasture and horticulture.
- O. The site is subject to waterlogging and this restricts its stock carrying capacity and crop production potential.
- P. The farm manager indicated that they run a low input system on the site due to the limitations on grazing capacity during winter and early spring. They have not been prepared to increase inputs as they consider they would not get a return on the additional cost incurred. This, in my opinion, is a reasonable management practice based on my observations of the site.
- Q. The site is not within a Victorian Irrigation District and has no connection to modernised irrigation infrastructure. Therefore:
 - The area is not serviced by irrigation infrastructure and therefore does not have irrigation capability.
 - That the requirements of the DELWP draft guidelines with regards to irrigation infrastructure designate the site as not strategically significant agricultural land.

Economic value

- R. The total combined income generated from the subject site is estimated at approximately \$416,000. A typical dryland farm needs to generate about \$250,000 to \$500,000 gross income in order to have sufficient income for one employee or one family. Therefore, it is considered that the site has the capacity to support approximately one family.

Regional economics

- S. Dairy is the most significant agricultural enterprise in the Corangamite Shire both in total agricultural value and value per hectare. The site is not being used for dairy production.
- T. The economic output from the site is considered to be economically insignificant at both a regional and state level.

3 Reviewed documents

The following documents have been reviewed:

- Bookaar Solar Farm Planning Report for Planning Permit Application, Tract, July 2018
- Permit Application for Review letter to VCAT, Best Hooper Lawyers, 29 November 2018
- Confirmation letter to Corangamite Shire Council, Best Hooper Lawyers, 10 December 2018
- Application letter to Corangamite Shire Council, Tract, 6 July 2018
- Planning Permit, Corangamite Shire Council, 5 July 2018
- Certificate of title, 18 January 2018
- Indicative Layout, 8 May 2018
- Typical view tracking structure and panels, 2 June 2017
- Ecological Due Diligence, Ecology & Heritage Partners, April 2018
- Solar Photovoltaic Glint and Glare Study, Pager Power, April 2018
- Bookaar Solar Farm Transport Impact Assessment, Onemilegrid, 5 April 2018
- Hydrology, Drainage and Flood Advice, Eco Logical Australia, 6 June 2018
- Addendum Letter with enclosures to Corangamite Shire Council, Tract, 4 September 2018
- Officers report, Corangamite Shire Council, 25 September 2018
- Notice of refusal letter, Corangamite Shire Council, 1 October 2018
- Grounds for refusal, Corangamite Shire Council, 1s October 2018
- Corangamite Planning Scheme, 31 July 2018
- Greater Shepparton Solar Energy Facility Planning Permit Application, Victorian state government, 23 July 2018
- Order (Lightsource BP, Naring), VCAT reference P914/2018, VCAT, 23 January 2019
- Amended plan, Eco Logical Australia, 9 May 2019
- Statement of changes, Best Hooper Lawyers, 9 May 2019
- Soil and Landforms of South-western Victoria Part 1 Inventory of soils and their associated landscapes, Department of Agriculture and Rural Affairs, undated
- Land Systems and Geomorphic Units, Land Conservation Council, 1988
- Australian Soil Resource Information System, CSIRO Land and Water, www.asris.csiro.au, accessed March 2019
- Prograze Manual – Meat and livestock Australia and NSW Department of primary industries
- Dairy Farm Monitor Report Victoria Annual Report, 2015-16
- Livestock Farm Monitor Project Victoria, 2017-18
- Livestock Farm Monitor Project Victoria, 2015-16
- ABS 2015/16 Data – Catalogue number 7503.0
- Solar Energy Facilities Design and Development Guidelines, DELWP, October 2018
- Soil test results, Nutrient Advantage, 6 March 2018
- Panel Report Greater Shepparton Solar Energy Facility Planning Permit Applications 2017-162, 2017-274, 2017-301 and 2017-344, Planning Panels Victoria, 23 July 2018
- Correction to Advisory Committee Report Wangaratta Planning Scheme, Permit Amendment Application: Pln App 16/132.01, Expansion of the Countrywide Energy Solar Farm, Wangaratta North, Planning Panels Victoria, 22 November 2017
- Order (ESCO Pacific, Glenrowan), VCAT Reference P1383/2018, VCAT, 14 February 2019
- Guerin, T.F., Evaluating expected and comparing with observed risks on a large-scale solar photovoltaic construction project: A case for reducing the regulatory burden, Renewable and Sustainable Energy Reviews, Issue 74, pp 33 – 348, 2017
- Moss, J., Coram, A. and Blashki, G., Solar Energy in Australia: Health and Environmental Costs and Benefits, The Australia Institute, 2014

These documents have been used to develop my opinion and relevant sections have been referred to in this report.

4 Background

4.1 CORANGAMITE SHIRE COUNCIL FINDING

A planning report for the planning permit application, as required by Corangamite Shire, was submitted by Tract on behalf of Bookaar Renewables Pty Ltd in July 2018. An amendment to this report was submitted in September 2018, primarily to reflect the changes to the site area, which were impacted by the *Aboriginal Heritage Regulations 2018*, which came into effect in May 2018.

The complete application was reviewed by the Corangamite Council Planning Office. As submitted to the Agenda – Ordinary Meeting of Council 25 September 2018, the Corangamite Shire Planning Report concluded that:

While the proposal will result in a new non-agricultural use in a rural area, it will not result in the permanent loss of agricultural land. The land could reasonably be returned to an agricultural use at the end of the life of the solar farm.

The use of agricultural land for the solar farm must be balanced against the need to provide infrastructure to meet community demand for energy services. On balance, the policy context provides support for the use of agricultural land for a purpose of a solar farm. The proposed solar farm will contribute to the generation of electricity from renewable resources and help to service the electricity needs of the Great South Coast region in a more sustainable manner.

It is recommended that Council issue a Notice of Decision to Grant a Planning Permit subject to conditions. Detailed permit conditions are proposed, including requirements for plan amendments, an Environmental Management Plan (including sub-management plans), Traffic Management Plan, and a Fire Prevention and Emergency Response Plan.

Despite the recommendation from Corangamite Shire Planning officers, the permit application was refused on the following grounds, as stated in Corangamite Shire Council Notice of Decision to Refuse to Grant a Permit, dated 1 October 2018:

1. *The use and development does not provide an acceptable outcome in terms of the Planning Policy Framework, including the Municipal Strategic Statement and local planning policy.*
2. *The use and development will result in the loss of productive agricultural land and will create impacts on the continuation of primary production on adjacent land.*
3. *The use and development will cause an unacceptable level of environmental impact which cannot be adequately managed.*
4. *The use and development will cause unacceptable landscape and visual impacts within the local area and from surrounding key viewpoints.*
5. *The use and development will not result in net community or social benefit.*
6. *The absence of solar farm planning and policy guidelines by the State Government provides a lack of direction for planning decision making.*

This report, as discussed later, concurs with the Planning Officers report and does not support item 2 expressed by Council in its refusal to grant a permit, that is, that the agricultural activities on adjacent land will be adversely impacted. Although some agricultural land will be used for the lifetime of the proposed solar energy facility, this does not constitute a permanent loss of productive agricultural land. I discuss these matters further in my report.

4.2 SUMMARY OF OBJECTIONS

A key reason for this report is to provide advice regarding the community objections relating to the agricultural impact of the proposal. These objections were submitted in the Statement of Grounds documents. The objections relating to agricultural impacts are summarised as:

- Inappropriate use or loss of prime agricultural land
- Impractical to graze animals once the solar panels are installed
- Impacts on the continuation of primary production on adjacent land
- Loss of agricultural land in a high rainfall area
- Detrimental impact on strategically significant farm land
- Soil degradation
- Use of the site to grow feed for neighbouring livestock.

4.3 RECENT DECISIONS ON PROPOSED SOLAR ENERGY FACILITIES

A number of large-scale solar energy facilities have been proposed in Victoria in recent years. Due to either the number of objections received or unfavourable council decisions, these proposals have been referred to VCAT or Planning Panels Victoria for a decision on their application. A summary of these applications and the findings relating to the agricultural impacts of the proposed facilities follows.

PROPOSED SOLAR ENERGY FACILITY, ESCO PACIFIC, GLENROWAN, WANGARATTA RURAL CITY COUNCIL

In July 2018 ESCO Pacific applied to VCAT for a determination on its proposal for a solar energy facility at Glenrowan. The Wangaratta Rural City Council had failed to make a determination within the 60 day timeframe required. The proposed facility consists of approximately 245 ha of agricultural land used for beef production and sits within the Wangaratta Rural City Planning Scheme farming zone.

The proposed solar energy facility is one of four proposed in the area south west of Glenrowan, with the other proposals sitting within the Benalla Rural City Shire (discussed in the following section).

Rob Rendell of RMCG completed an assessment of the agricultural value of the proposed site for the VCAT hearing.

Although the Wangaratta Rural City Council stated that it would have refused the application had it been able to, in February 2019 VCAT granted the permit following the hearing in December 2018. The VCAT findings relating to agricultural value and impacts stated that:

...we are satisfied that the removal of infrastructure could occur without permanent or substantial disturbance to the soil.

In terms of fragmentation of farming land, other than the proposed use not being an agricultural use, there is nothing inherent in the proposal that leads to a conclusion that the land will be fragmented.

...we conclude that the proposal is not contrary to the purposes of the zone or policy and will not impact in any unreasonable way with the surrounding land uses.

On the basis that available evidence indicates that any Heat Island Effect is localised to the area of the solar panels and a perimeter area of no more than 30 metres, we cannot conclude that the proposed renewable energy facility will impact farming practices on surrounding land.

PROPOSED SOLAR ENERGY FACILITY, LIGHTSOURCE RENEWABLES, NARING, MOIRA SHIRE

In April 2018 the Moira Shire Council decided in favour of a planning permit application by Lightsource Renewables for the construction of a solar energy facility at Naring, 10 km east of Numurkah in the Moira Shire. The site consists of approximately 125 ha of agricultural land used to grow barley and sits within the Moira Shire Planning Scheme farming zone.

I completed an assessment of the agricultural value of the proposed site for the VCAT hearing.

Two Applications for Review were submitted to VCAT and the hearing was conducted in November and December 2018. Following the hearing, VCAT granted the planning permit application, finding that:

Having regard to the generally benign nature of the proposed use, the proposal is unlikely to adversely impact on the capacity of surrounding agricultural land to continue to be used for that purpose.

It is of some relevance that the proposal will not permanently or irretrievably remove the site from agricultural production. Upon decommissioning of the use, the site is capable of being restored to agricultural use.

GREATER SHEPPARTON SOLAR ENERGY FACILITY PLANNING PERMIT APPLICATIONS

In November 2017, the City of Greater Shepparton resolved not to decide on the planning permits for four proposed solar energy facilities, located at Tatura East, Tallygaroopna, Lemnos and Congupna. In early 2018, the Victoria Planning Minister appointed a Panel to consider the applications. All four sites were in the Greater Shepparton Planning Scheme farming zone.

For each application, the Panel considered the application details, applicable planning policies, objections, potential impacts and evidence presented. With regards to the agricultural value and impacts of each site, the Panel considered:

- The suitability of the farming zone for solar energy facilities
- The compatibility of the proposed facilities with adjoining and nearby land uses
- The capability of the sites for the proposed use
- Impacts to soil quality, agricultural production and permanent removal of land from agricultural production
- Capacity to sustain agricultural use.

In July 2018 the Panel recommended that the Minister for Planning issue all four planning permits, with conditions. The Panel included the following findings with regards to agriculture in its report:

The Panel finds that the four proposed solar facilities can achieve State, regional and local planning policies on agriculture and renewable energy. The use of the subject land areas for solar energy facilities is consistent with priority agricultural land-use in State planning policy and uses in the Farming

Zone. Using and developing the subject sites for solar energy facilities can, subject to appropriate permit conditions, harmoniously achieve agricultural production and renewable energy outcomes. The four proposed solar energy facilities, individually and cumulatively, will not remove agricultural land to the extent that would conflict with State or local planning policy.

Any temperature increase within 30 metres will be negligible, however, any photovoltaic array should be separated by this distance from any neighbouring property boundary. Accordingly, neighbouring residences, orchards, horticulture, farming for cattle and livestock, and insect population numbers will not be impacted by the solar energy facilities.

The Farming Zone is appropriate for the four solar energy facilities. The facilities are of a scale which cannot be accommodated in existing industrial zoned areas. They will not adversely impact surrounding existing and future farm operations, or the broader Irrigation District. The soil types on the subject land are lower quality than other parts of the Irrigation District with higher value agricultural production.

PROPOSED EXPANSION OF THE COUNTRYWIDE ENERGY SOLAR FARM, WANGARATTA NORTH

In November 2017, there was a Planning Panels Victoria decision in the Rural City of Wangaratta regarding a solar farm proposed by Countrywide Energy, on four sites in North Wangaratta. The Panel found in favour of the proposed facility, however this proposal was on land zoned as industrial and therefore agricultural impacts were not considered. Therefore, it does not offer a direct comparison.

SUMMARY OF PROPOSED FACILITIES

In summary there are a number of solar energy facilities that have been proposed within a farming zone and have been referred to VCAT or a planning panel. I have reviewed the findings of these referrals, none of which found that the proposals represented a loss of significant agricultural land, nor affect the ability to continue farming on neighbouring agricultural land.

There is nothing from these referred proposals that highlight a reason why the proposed solar energy facility at Bookaar is any different to these previous cases determined by VCAT or the planning panel.

4.4 DELWP SOLAR ENERGY FACILITIES DESIGN AND DEVELOPMENT DRAFT GUIDELINES

There has been a need to develop state guidelines for solar energy facilities to assist councils making planning decisions for these developments. The Victorian Government Department of Environment, Land, Water and Planning released the draft Solar Energy Facilities Design and Development Guidelines in October 2018 (subsequently referred to as 'DELWP draft guidelines'). While only in draft at this stage, they provide a useful summary of the types of issues that are relevant to an agricultural assessment of facilities of this type.

The DELWP draft guidelines would apply to large-scale solar energy facilities which may also include battery storage. The planning report for the Bookaar Solar Farm was issued in July 2018, with an amendment issued in September 2018. This is prior to the release of the DELWP draft guidelines. Therefore, the Council Officer recommendations were made without this reference.

As solar energy facilities are often located on, or close to, agricultural land; the DELWP draft guidelines would provide specific planning strategies for the protection of agricultural land. The key measures noted in the DELWP draft guidelines are the need to:

- *Protect strategically important agricultural and primary production land from incompatible uses*
- *Protect productive farmland that is of strategic significance in the local or regional context*

- *Avoid permanent removal of productive agricultural land from the state's agricultural base without consideration of the economic importance of the land for the agricultural production and processing sectors.*

The DELWP draft guidelines state that *"Most rural land is not considered to be strategically significant land"*. In addition to other site considerations for solar energy facilities, the DELWP draft guidelines propose that councils should require permit applicants to provide an assessment of:

- *The agricultural quality of the proposed site*
- *The amount of strategically significant agricultural land in the council area and in the region (the regional assessment should include impacts across the area defined by the Regional Growth Plan boundaries, unless otherwise determined by the council)*
- *The potential impact of removing this land from agricultural production.*

Table 1 of the DELWP draft guidelines provides information that these reports should contain; that is, the land and economic attributes of strategically significant agricultural land.

Whilst not yet finalised, I have considered these draft guidelines as a tool in assessing the proposed development (noting that the matters contained in the draft guidelines are matters that would generally be considered in agricultural assessments). Each of these attributes have been identified in Section 6 of this report.

4.5 THE CORANGAMITE PLANNING SCHEME

The Great South Coast Regional Growth Plan identifies that one of the challenges for growth is managing competing demands for agricultural land, including limiting urban encroachment into highly productive agricultural areas.

The strategic framework plans under the planning scheme identify the major strategic issues being the *"location of high quality agricultural land within the Timboon, Cobden and Simpson areas which is used for dairying, the need to protect this land from inappropriate development"*¹.

The location of the site is not in area identified as high-quality agricultural land by the planning scheme and it is also not being used for dairy production.

¹ Corangamite Planning Scheme – pg 160

5 Property assessments

5.1 SITE INSPECTION

I conducted a visual site inspection with the farm manager on Thursday 14 March 2019. The following are my observations.

The site covers an area of approximately 588 ha. Of this, approximately 490 ha is part of a beef operation with approximately another 98 ha leased to a neighbouring farmer who is mainly using the area for dryland cropping. The 490 ha that is used for a beef operation forms part of the larger farm operation of approximately 2,024 ha (5,000 acres).² The Meningoort property is running a 1,350 self-replacing beef operation with some sheep (900 wethers). The farm is generally self-sufficient for its stock feed requirements.

The proposed solar energy facility site is located along the eastern side of the main property and the most distinguishing feature is that the majority of the site is at a much lower elevation compared to the rest of the farm. When observing the site from approximately half way along the western edge and looking eastward across the site, there is a distinctive drop in land elevation. After the initial drop in elevation the remaining area of the site is relatively flat.

The farm manager indicated that the majority of the site is highly susceptible to water logging during the winter and early spring months. The factors that contribute to the water logging risk include:

- Drainage from surrounding land adds to the water load on the site
- The area is very flat and overland flows move very slowly across the area
- Poor drainage characteristics of the soil which is a black cracking clay.

There is a constructed drain that runs down the eastern boundary of the site to help improve the situation. The overland flow moves in a southerly direction across the site and eventually makes its way into Blind Creek, located to the south west of the property.

Due to the frequency of waterlogging events there has been limited pasture improvement conducted on the site. The pasture species that I observed and described by the Farm Manager was a mixture of Phalaris and unimproved pasture³. The farm manager also runs a lower stocking rate on the area compared to the more productive farm area located west of the site. I would consider this to be an appropriate management practice to manage the waterlogging risk.

The farm manager verbally indicated that on the proposed solar energy facility site, the nature of the soils, the frequency of waterlogging and the pasture species present means that the area has a lower carrying capacity than the rest of the farm. He estimates that the carrying capacity of the area would be at best 2/3 that of the rest of the farm. Based on my observations I would agree with the farm manager's assessment.

The rest of the farm is located directly west of the site with the majority of the farm sown to perennial ryegrass pastures. These soils are more productive ranging from free draining red volcanic based soils to clay loams as you move from the north to the south of the property.

Based on physical observations it is clear that the site is subject to waterlogging with evidence of severe pugging in the lowest lying areas (Figure 5-1).

² Provided verbally by the Farm Manager - James Hart

³ Unimproved pastures is defined grasses that have established in the area that have not been directly sown.



Figure 5-1: Evidence of pugging on the site

The southern section of the site (98 ha) is leased to a neighbouring farmer and has different characteristics to the northern part of the site. The leased area has been supporting dryland crops on raised beds. The soil type on the southern section appears to be lighter in texture and therefore potentially not as exposed to the same level of waterlogging as the rest of the site.

Any overland flows that move from the north to the south of the site are also intercepted by the drain that cuts across the site from east to west, just to the north of the cropping area. Therefore, the cropping portion is not as exposed to overland flows from the rest of the site and neighbouring farms.

In conclusion, the site has been used for a mix of agricultural activities. The northern section is used for beef production (approximately 490 ha of the 588 ha) and the southern section predominately for dryland cropping (approximately 98 ha of 588 ha). I found the site to be generally flat and saw evidence of waterlogging. This will impact on the productivity of the site.

Due to the frequency of waterlogging and the pasture species present, the farm manager verbally indicated that the carrying capacity of the area would be at best 2/3 that of the rest of the farm. Based on my observations, I would agree with the farm manager's assessment.

5.2 SITE PRODUCTION

MIXED LAND USE

The current land use is a combination of beef production and crop production. Therefore, the site's productive capability for each of these uses has been assessed. From my field observation, this is an appropriate use for the site and optimises the potential agricultural production.

The total productive capability of the site is based on the site's current use for beef and crop production.

BEEF PRODUCTION

This is based on the stock numbers shown in Table 5-1 which have been supplied verbally by the farm manager.

Table 5-1: Dry sheep equivalent (DSE) carrying capacity

| CLASS | NUMBER | DSE VALUE ⁴ | COMMENTS |
|---------------------|--------|------------------------|--|
| Breeders | 1350 | 18.6 | DSE rating based on average for a cow and calf for the year – average weight of 600 kg |
| Replacement heifers | 300 | 11.3 | DSE based on a 400 kg animal putting on 1 kg weight gain per day |
| Weaner steers | 600 | 8.8 | DSE based on 300 kg animal putting on 1 kg day – sold at 15 months |
| Weaner heifers | 300 | 8.8 | DSE based on 300 kg animal putting on 1 kg day – sold at 15 months |
| Sheep wethers | 900 | 1 | |

The current use is primarily beef production and an estimate of the beef production capability provides the basis for estimating the value of agricultural production. The average stocking rate for the whole property has been assessed at approximately 16 dry sheep equivalents (DSE)/ha based on current stock numbers on the property. This is comparable to average stocking rates in the region of 17 DSE/ha⁵. However, the area of the solar site is less productive than the rest of the area due to waterlogging and the pasture species present. Thus, the carrying capacity on the proposed solar energy facility has been assessed at 12 DSE/ha.

CROPPING PRODUCTION

Approximately 98 ha⁶ of the southern section of the site has been used for dryland cropping, primarily to grow wheat. In the absence of farm records, the yield from the cropping area is based on ABS 2015-16 data for the Corangamite Shire, which has an average yield of 3.65 tonnes/ha⁷. Therefore, the current crop production potential is estimated to be 358 tonnes/year.

⁴ Prograze Manual – Meat and livestock Australia and NSW Department of primary industries

⁵ Livestock Farm Monitor Project Victoria – 2017-18

⁶ Area based on Goggle Earth measurements

⁷ <http://www.agriculture.gov.au/abares/data/agricultural-census-visualisations#gross-value-of-production>

5.3 SURROUNDING LAND USES AND IMPACTS

During the site visit the land immediately adjacent to the property was identified as having the following uses:

- Areas directly to the north and east of the site were supporting dairy operations
- Area directly to the south was cropping and grazing
- Area directly to the west is the remainder of the Meningoort property, supporting primarily a 1,350 self-replacing beef operation with some sheep⁸.

Providing road access is not inhibited, the construction and operation of the proposed solar energy should not impact the agricultural activities of the neighbouring properties.

5.4 PLANNING REPORT ASSESSMENT

The Bookaar Solar Farm Planning Report for Planning Permit Application (Tract, July 2018) has been reviewed, notably Section 6.1.1, relating to the appropriateness of the proposed land use on agricultural land.

I concur with the information provided in the Tract planning report in relation to agricultural issues with specific mention that the development will not adversely impact soil quality, nor the ability of neighbouring properties to conduct their agricultural activities.

5.5 OBJECTIONS RELATING TO AGRICULTURAL IMPACTS

There have been a number of objections from the public to the proposed development. A summary of the objections relating to the agricultural value of the site and surrounding land are provided in Table 5-2, along with my response.

Table 5-2: Objections and responses relating to agricultural impacts

| OBJECTION | RESPONSE |
|--|--|
| Inappropriate use or loss of prime agricultural land | I contend that this land is not considered significant agricultural land by the DELWP draft guidelines and is not inappropriate for a solar energy facility. |
| Impractical to graze animals | Sheep grazing could be possible post-construction, however this is likely to be unsuitable during wet periods, as it currently is. |
| Impacts on the continuation of primary production on adjacent land | I am not aware of any reasons why the existing dairy farming, grazing and cropping could not continue on the neighbouring land. |
| Loss of agricultural land in a high rainfall area | This land is of moderate production capability, as detailed in Section 6 of this report. |
| Detrimental impact on strategically significant farm land | I contend that this land is not considered significant agricultural land by the DELWP draft guidelines. I see no reason why grazing could not be resumed upon decommissioning of the site. |
| Soil degradation | I am not aware of any pathways for soil degradation caused by a current or historic solar energy facility. |

⁸ Sheep are considered a small sideline operation and not the primary enterprise run on the property.

| OBJECTION | RESPONSE |
|---|--|
| Use of the site to grow feed for neighbouring livestock | The southern section of the site has been leased to a neighbouring farmer, who has been growing dryland crops mainly wheat. There are numerous other sources for wheat and I contend that the impact of removing this production from the local feed supply would have minimal impact on the quantity, access or cost of local supplementary feed. |

5.6 CONCLUSION

My observation of the site is that it is of moderate agricultural value and the Proposal avoids the areas of higher productivity on the wider Meningoort property. The site is used for a mix of beef grazing and cropping with current annual production supporting a stocking rate of 12 DSE/ha and the cropping area yielding 358 tonnes of wheat. The site's current use represents an appropriate land use.

The surrounding farms are used for dairy production, grazing and cropping. I am not aware of any reason why these forms of primary production cannot continue if the proposed solar energy facility is installed.

I concur with the findings of the Corangamite Shire Council planning recommendation that the solar energy facility “*will not result in the permanent loss of agricultural land*”. To verify these assessments, detailed analysis of the agricultural capabilities, production levels and economic value has been completed in the following section.

6 Analysis

To understand the relative agronomic importance of the site in a local, regional and state context, I have investigated the agricultural attributes of this farm. The DELWP draft guidelines also reference the importance of a site's land and economic attributes in determining its strategic agricultural significance. An analysis of the agricultural capability, relative value and state significance of the property has been conducted and is detailed here.

6.1 AGRICULTURAL CAPABILITY

SOIL TYPES

Soil classification is useful for understanding the range of primary production that will thrive at this site. Although topsoil can be improved or modified to some extent, the soil classifications are an inherent characteristic of the site. Therefore, the agricultural capability of the site is predominantly determined by soil type and group classification.

The report *Soil and Landforms of South-western Victoria Part 1 Inventory of soils and their associated landscapes* (Department of Agriculture and Rural Affairs, undated) has been used to obtain soil classification information. An extract of the map is shown in Figure 6-1 with the complete map provided in Appendix 3. An approximate location of the site is shown in red.

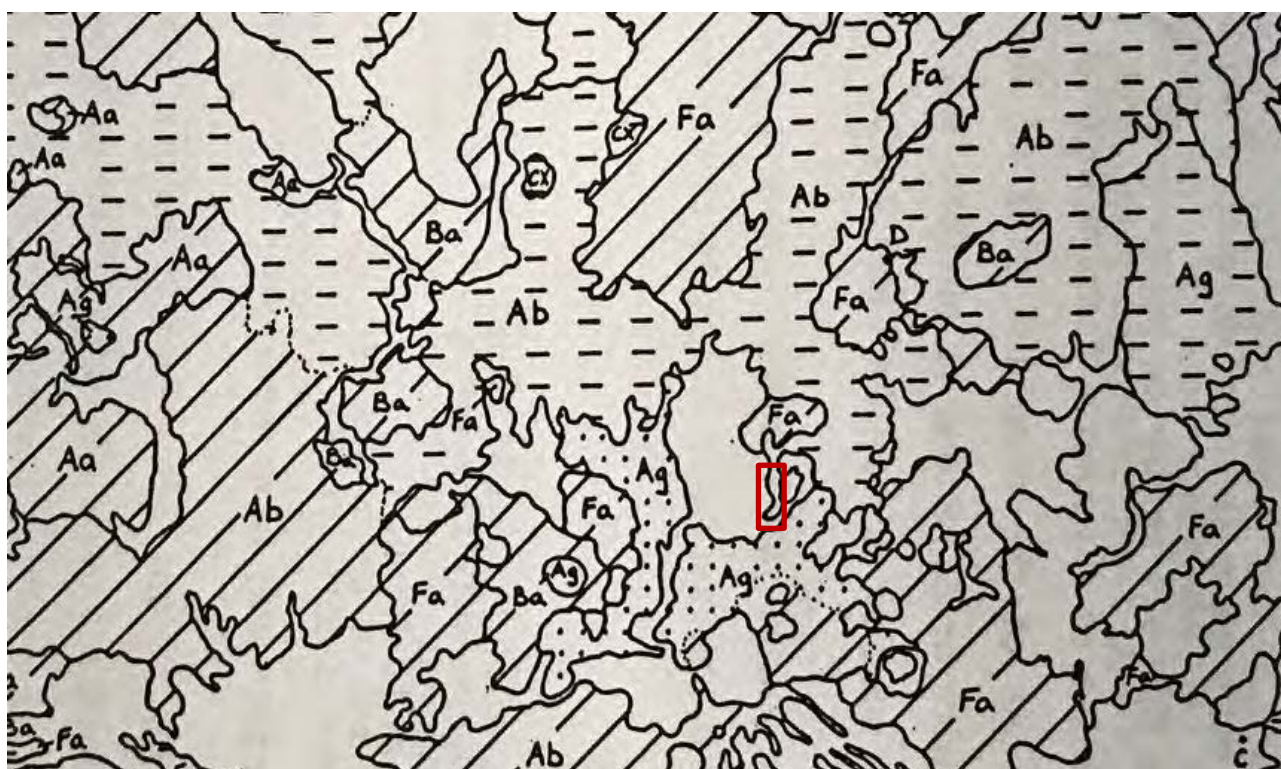


Figure 6-1: Extract from map *Distribution of dominant soil profile classes* (Department of Agriculture and Rural Affairs, undated)

This document has classified the soil as type Class Ab (alkaline), described as:

General Features: These soils have strongly developed hardsetting surface horizons over mottled clay subsoils that are yellow or yellow-grey. They are very similar to the soils of class Aa except that the subsurface horizon is sporadically bleached. Although this indicates intermittent waterlogging, it is not as severe as in the soils of class Aa.

Surface Soil:

- *Fine sandy clay loam, silty clay loam but more commonly clay loam*
- *20 cm thick, ranges from 5 – 30 cm*
- *Very dark greyish brown to dark brown*
- *Massive, immediate surface may have weak structure development under permanent pasture situation.*

The Land Systems and Geomorphic Units map prepared by the Land Conservation Council (1988) also offers a description of the site soils. An extract of the map is shown in Table 6-2. An approximate location of the site is shown in red.

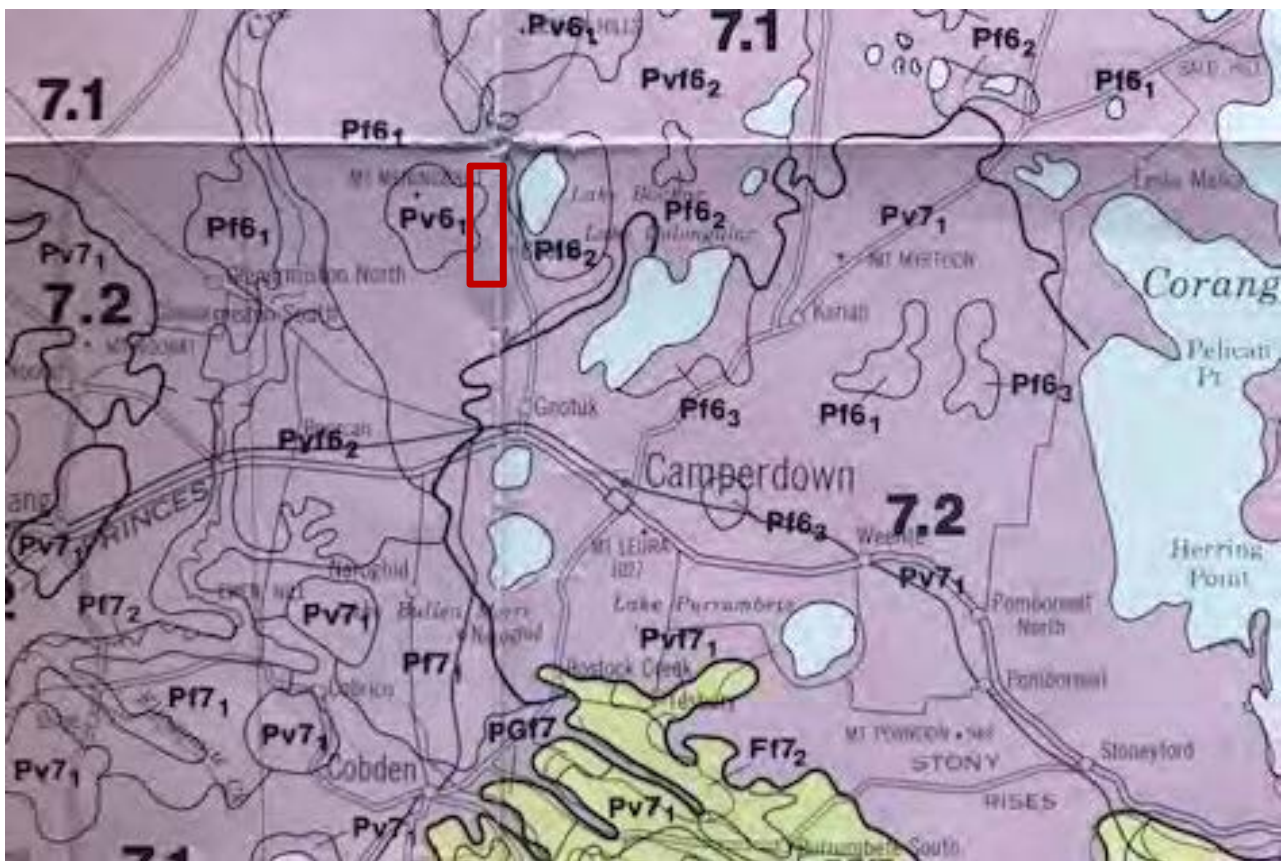


Figure 6-2: Extract from map *Land system and geomorphic units* (Land Conservation Council, 1988)

According to this map the land system can be identified as mostly **7.1 Pf6₁** which is described as:

- *West Victorian Volcanic Plains – undulating plains (Western District)*
- *Plain above flood level*
- *Finely-textured unconsolidated deposits*
- *600 – 700 mm mean annual rainfall.*

A third reference for soils information is provided online by CSIRO. An extract of the map is provided in Figure 6-3. An approximate location of the site is shown in black.

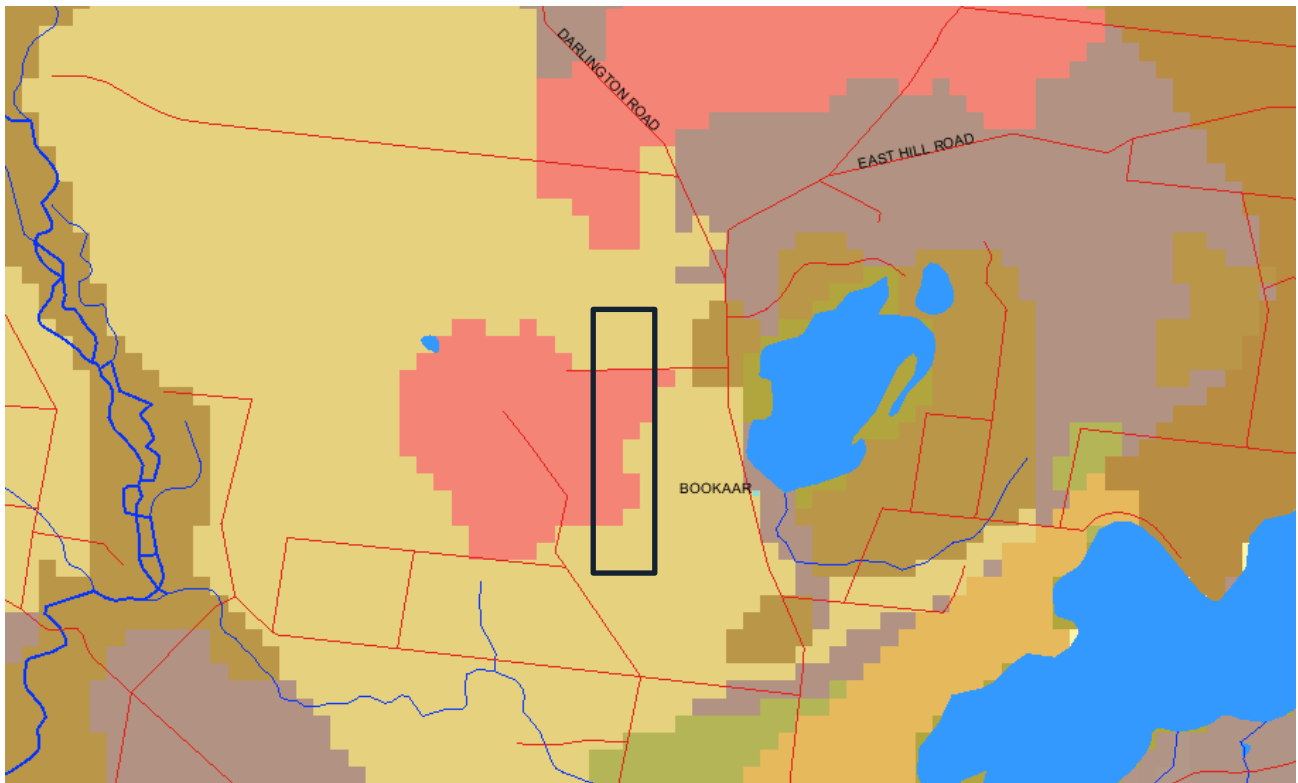


Figure 6-3: Extract from online map *Australian Soil Resource Information System* (CSIRO Land and Water, www.asris.csiro.au, accessed March 2019)

From this online resource, the land is described as predominantly Ferrosols (pink colour) and Kandosols (yellow colour).

In summary, the description of the soils and geology provided by these three references indicates that the site is capable of supporting pasture growth, however they are susceptible to waterlogging. This concurs with my site inspection and discussions with the farm manager.

It is noted that all of the soil reference maps do not provide the detail to a paddock level and that the resolution of the maps do not capture the specific characteristics of the proposed site. As outlined in Section 5.1, the majority of the site area comprises of a black cracking clay.

RAINFALL

Rainfall is another inherent site characteristic that is used to inform the agricultural capability of a site. The nearest rainfall records for Bookaar have been collected by the Bureau of Meteorology at Kolora (station 90085) which is at a similar latitude to the site. Mean annual rainfall is 664 mm⁹, based on all available data.

The average rainfall is sufficient for a wide range of primary production including dairy, winter cereal crops, summer pasture and horticulture.

DRAINAGE

Drainage and flooding impact on a site's agricultural productivity. That is, if a site has poor drainage and is within a flood or inundation overlay area, its agricultural productivity will be negatively affected. Paddock drainage lines are shown in the Proposal's flooding and drainage Technical Advice provided by Eco Logical Australia. A flood extent map was also included in this Technical Advice. This map shows that the site is not within a 1 in 100 year flood extent area.

However, the site is subject to waterlogging and this restricts its stock carrying capacity and crop production potential.

⁹ http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=090170

SOIL FERTILITY

The farm manager was able to provide some soil test results to give an indication of the fertility status of the soils on the site area. While soil fertility can be improved through applications of fertiliser it does give an indication of the current fertility level at the site.

The most recent soil results from the site (February 2018, Appendix 4) show most soil parameters are suitable for pasture or crop production. However, soil Olsen P levels were low¹⁰ and this provides another indicator of the productivity of the site. It is also considered to be highly acidic which will also have implications on productivity of the site.

The farm manager verbally indicated that they run a low input system on the site due to the limitations on grazing capacity during winter and early spring. They have not been prepared to increase inputs as they consider they would not get a return on the additional cost incurred. This, in my opinion is a reasonable management practice based on my observations of the site.

ACCESS TO IRRIGATION INFRASTRUCTURE

The DELWP draft guidelines identify that consideration of the irrigation infrastructure, stating that:

Areas serviced by modernised irrigation infrastructure are designated as strategically significant agricultural land.

The site is not within a Victorian Irrigation District and has no connection to modernised irrigation infrastructure. Therefore, I conclude that:

- The area is not serviced by irrigation infrastructure and therefore does not have irrigation capability
- That the requirements of the DELWP draft guidelines with regards to irrigation infrastructure designate the site as not strategically significant agricultural land.

6.2 PRODUCTION LEVELS

Given the agricultural assessment in Section 6.1, it is possible to determine the productive value of the site. The majority of the site is currently used for beef grazing (490 ha) and the remaining area used for dryland cropping (98 ha which is leased to a neighbouring farmer).

As outlined in Section 5.1, the carrying capacity of the solar site has been assessed at approximately 2/3 that of the rest of the property. The Meningoort property is currently supporting a herd of 1,350 self-replacing beef operation with an annual sale of 900 weaners (steers and heifers) which is the primary enterprise¹¹ run on the property. The 490 ha represents approximately 24% of the Meningoort farm area. However, as the site has a lower carrying capacity than the rest of the farm, output from the proposed solar energy facility site is assumed to contribute to 20% of the total production of the property.

It has also been assumed that the production level from the cropping area is 3.65 t/ha¹².

The economic value of the subject site has been calculated based on the stocking rate and the cropping production.

¹⁰ Olsen P levels of 8 mg/kg were recorded compared with an optimum range 20 to 25 mg/kg

¹¹ The property also has some sheep which are considered to have a minor contribution to the overall output and have not been included in the economic assessment. The economic assessment has been based on primary enterprise which is a beef operation.

¹² <http://www.agriculture.gov.au/abares/data/agricultural-census-visualisations#gross-value-of-production>

6.3 ECONOMIC VALUE

The gross economic return from the beef and cropping gives a measure of the subject site's economic value. This can then be related to the size of the farm business.

BEEF OPERATION

No farm income information has been made available, therefore the total farm income has been estimated based on industry information. Prices for 2015/16 have been used to align with 2016 ABS data for comparison of farm output to regional production that is covered in Section 6.2. The farm income estimate is summarised in Table 6-1.

Table 6-1: Farm income – beef

| CLASS | NUMBER | PRICE CENTS/KG LIVE WEIGHT ¹³ | WEIGHT KG ¹⁴ | TOTAL |
|---|--------|---|----------------------------|--------------|
| Cull cow sales (based on 20% cull rate) | 270 | 225.91 | 600 | \$ 365,974 |
| Weaner steers | 600 | 296.69 | 480 | \$ 854,467 |
| Weaner heifers ¹⁵ | 300 | 296.69 | 430 | \$ 382,730 |
| TOTAL | | | | \$ 1,603,172 |

The total farm income has been assessed at approximately \$1.6 million. Therefore, the farm income generated from the subject site (associated with the beef operation) is estimated at \$320,000 (\$653/ha). This is 20% of the farm's total income from beef.

CROPPING OPERATION

Approximately 98 ha of the southern section of the site has been used for dryland cropping, primarily wheat. In the absence of any farm records the yield and income generated from the cropping area is based on regional ABS 2015/16 data. The average income from wheat crops was \$978/ha¹⁶. This based on an average yield of 3.65 t/ha and a price of \$268/t. The income generated on the 98 ha of cropping area is estimated at \$95,844.

COMBINED OPERATION

The total combined income generated from the subject site is estimated at approximately \$416,000. A typical dryland farm needs to generate about \$250,000 to \$500,000 gross income in order to have sufficient income for one employee or one family. Therefore, it is considered that the site has the capacity to support one family. However, I have further evaluated the value of the site at a regional and state level.

6.4 REGIONAL ECONOMICS

The total value of agricultural production in the Corangamite Shire is \$740,782,895¹⁷. The key agricultural output that contribute to this production are shown in Table 6-2.

¹³ MLA – Saleyard cattle indicators – Victoria Fiscal year 2015/16.

¹⁴ Cow weights provided and numbers provided by Farm manager -James Hart

¹⁵ Approximately 300 heifers are retained for replacement stock

¹⁶ <http://www.agriculture.gov.au/abares/data/agricultural-census-visualisations#gross-value-of-production>

¹⁷ ABS 2015/16 Data – Catalogue number 7503.0

Table 6-2: Key agricultural enterprises in the Corangamite Shire

| CROP TYPE | GROSS VALUE 2015/16 | GROSS VALUE/HA | % AGRICULTURAL PRODUCTION OF CORANGAMITE SHIRE |
|---------------------------|------------------------|-------------------------|--|
| Dairy | \$397,366,394 | \$3890/ha ¹⁸ | 54% |
| Beef | \$191,188,793 | \$905/ha ¹⁹ | 26% |
| Cereal grains and legumes | \$50,592,640 | \$895/ha ²⁰ | 7% |
| Hay | \$30,386,776 | | 4% |
| Wool | \$24,204,531 | | 3% |
| Other | \$47,113,761 | | 6% |

Therefore, dairy is the most significant agricultural enterprise in the Corangamite Shire both in total agricultural value and value per ha. The site is not being used for dairy production.

6.5 RELATIVE VALUE – REGION AND STATE

I have further evaluated the value of the site at a regional and state level.

To put the value of the site into a regional perspective, the economic value of production calculated in Section 6.3 can be compared to that of the Corangamite Shire. The production from the site represents approximately 0.06% of the Shire's agricultural value.

Further ABS data, provided in Appendix 5, indicates that the site represents 0.15% of the Corangamite Shire's agricultural land.

Looking more specifically at the enterprises, it represents 0.17% of the value of the Shire's beef production and 0.19% of the value of the Shire's wheat production.

At a state context the economic output from this property represents 0.003% of the state's agricultural value of output.

In conclusion, the economic output from the site is considered to be economically insignificant at both a regional and state level.

6.6 ADJOINING LAND IMPACTS

In order to ensure that farmland that is of strategic importance is not affected, and that the objector's issues of loss of agricultural value of adjoining land is addressed, I have considered the potential agricultural impact of the operations on the adjoining properties.

From my inspection, the adjoining properties are dairy farms, and cropping/grazing operations. To my knowledge there is no potential impacts from a solar energy facility on the agricultural operations on the neighbouring properties. Further research has verified this. A 2014 report by The Australia Institute²¹ into the health and environmental costs and benefits of solar energy states:

¹⁸ Adapted from Dairy Farm Monitor Report Victoria Annual Report 2015-16 – Income based on Milking Ha

¹⁹ Adapted from Livestock Farm Monitor Project Victoria 2015-16

²⁰ ABS 2015/16 Data – Catalogue number 7503.0

²¹ Moss, J., Coram, A. and Blashki, G., Solar Energy in Australia: Health and Environmental Costs and Benefits, The Australia Institute, 2014

Despite the need for large land surface areas, there is little evidence that solar resources conflict with other land uses such as farming.

One detailed study²² focused on a large-scale solar energy development on rural land “in Central West NSW, approximately 10 km west of the nearest township.” This study followed the impacts of the proposed facility, from planning through to construction. A summary of the findings is as follows:

The overall benefits of the project were compelling. With the exception of road preparation, the project did not require large-scale earthworks and all impacts to the site were reversible. The project has delivered significant social and environmental benefits on a local, state and federal level and have global environmental benefits on the basis that the development will lower emissions created in the production of electricity. The project also did not significantly affect the conservation values nor agricultural output of the locality.

Therefore, I conclude that the proposed site will not affect the regional landholders’ agricultural production capability as in my view there are no known influencing factors from a solar energy facility that would impact on neighbouring dairy or cropping operations.

6.7 ASSESSMENT OF STRATEGICALLY SIGNIFICANT AGRICULTURAL LAND

The DELWP draft guidelines include specific discussion regarding the suitability of agricultural land for solar energy developments. Whilst not finalised, they will provide a useful basis to assess impact. They include matters that would typically be taken into account as part of an agricultural assessment. As noted in the DELWP draft guidelines:

Most rural land is not considered to be strategically significant agricultural land.

However the proponents should provide an assessment of this.

Table 1 in the DELWP draft guidelines specifically lists site attributes, as reproduced in Figure 6-4.

²² Guerin, T.F., Evaluating expected and comparing with observed risks on a large-scale solar photovoltaic construction project: A case for reducing the regulatory burden, Renewable and Sustainable Energy Reviews, Issue 74, pp 33 – 348, 2017

| Table 1 - ATTRIBUTES OF STRATEGICALLY SIGNIFICANT AGRICULTURAL LAND | |
|---|--|
| Land attributes | |
| Soils and landscape | <p>The following soil characteristics can be important to agricultural productivity depending on the locality:</p> <ul style="list-style-type: none"> • Inherent soil quality: soils that are high value due to their year-round and multi-purpose properties • Niche soil: soils that are particularly good for certain crops and support niche industries • Versatile soil: soils that assist in risk mitigation by being suitable for a range of cropping, horticulture and pasture purposes in industries that require different soil types |
| Water and climate | <p>Access to secure water supply and resilience to the impacts of climate change</p> <ul style="list-style-type: none"> • Access to modernised irrigation infrastructure: access to modernised irrigation delivery is a high priority for agricultural regions, including significant existing and planned areas requiring infrastructure investment by government and water authorities (See assessment criteria below) • Resilience and adaptability: resilience of land to the potential impacts of climate change, such as through access to a recycled water supply |
| Economic attributes | |
| Structural | <ul style="list-style-type: none"> • Favourable subdivision: a pattern of subdivision that favours sustainable agricultural production • Post-farm-gate processing and value adding: areas that support industries with critical links including processing plants and major packing houses • Industry clusters: areas where industries have successfully clustered to achieve significant efficiencies • Access: good access to existing markets, labour and transport, including airports and logistics facilities |
| Economic | <ul style="list-style-type: none"> • Government investment: areas of significant government investment targeted at food production and other agricultural economic development • Market trends: the potential for commercial agricultural growth based on commodity market trends |

Figure 6-4: DELWP draft guidelines, Table 1.

Below is a summary of strategic significance of the proposed site in line with Table 1 of the DELWP guidelines:

Soils and landscape – As outlined in Section 6.1, the soil attributes would not be considered as being high value, nor would they be considered niche or versatile.

Water and climate – As outlined in Section 6.1, the site does not have access to irrigation infrastructure, but it is in high rainfall zone. However, according to the guidelines, high rainfall alone would not make it of strategic significance. The site is not considered to be more resilient to the impacts of climate change.

Structural – The site is not considered to have any structural attributes that would make it of strategic significance. The current beef production requires some post-farm processing but not considered significant. As it represents only 0.17% of the regional beef production it would have a very minor impact on any post-farm processing. It is considered that there is good access to markets through existing networks and transport infrastructure.

Economic – The site is not within an area targeted for government investment in food production. Dairy represents the highest value agricultural activity in the shire representing 54%²³ of the total agricultural value. The Corangamite Planning Scheme 21.04-1 identifies dairy as mainly being located in a band from Camperdown in the north to Princetown in the south. The site is not located in this area. While it is acknowledged that dairy still exists around the site it is not the primary area for dairy production in the region.

The planning scheme describes the northern part of the shire where the site is located as supporting primarily beef, sheep and cropping that have a lower agricultural value compared to dairy.

Based on the area of land available for beef production and cropping there is no market trends to suggest any significant growth from these activities. Upon decommissioning of the proposed solar energy facility, the site could be returned to beef and crop production.

²³ ABS 2015/16 Data – Catalogue number 7503.0

7 Expert statement

To my knowledge there is no part of my opinion that is not fully researched.

8 Expert declaration

'I have made all the inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Tribunal.'

Signed

A handwritten signature in blue ink, appearing to be 'J. H. Mark', written in a cursive style.

Appendix 1: Daryl Poole CV



Daryl Poole

B.Ag.Sci. (Hons), CPAg., GAICD

03 5441 4821

0418 992 056

daryl@rmcg.com.au

Daryl has extensive facilitation and strategic planning experience and utilises these skills to assist farming businesses and organisations to achieve their goals.

During his 20 years working in both the government and private sectors in northern Victoria, Daryl has developed a wide range of experience in farm management primarily involved with the irrigated dairy industry.

He has worked with many regional and national organisations and structures that support the dairy industry including Dairy Australia, Murray Dairy, United Dairy Farmers of Victoria, VFF, NFF, Dairy Food Safety Victoria and the Department of Primary Industries.

Daryl also has extensive experience in working effectively on a one-to-one basis with farmers covering a range of business areas including business planning, pasture management, irrigation management, fertiliser use, dairy cow nutrition, natural resource management and dairy farm analysis.

QUALIFICATIONS

- Bachelor of Agricultural Science (Hons)
- Diploma - Australian Institute of Company Directors
- Diploma Human Resource Management (Dairy)
- Certificate IV in Training and Assessment

EXPERTISE

- Business planning, financial management and farm productivity
- Coordinating extension programs
- Facilitation
- Identifying and implementing research projects that benefit the dairy industry
- Analytical skills and the ability to assess the financial and technical position of an individual business
- Natural resource management

PROFESSIONAL EXPERIENCE

| | | |
|--|---------------------------|---|
| 2004-present: | RMCG | - Associate - Senior Consultant |
| <i>(Daryl commenced as a Senior Consultant and progressed to Associate in 2017.)</i> | | |
| 1997-2004: | Bonlac Foods Limited | - Milk Supply Officer |
| 1993-1997: | Department of Agriculture | - Dairy Extension Officer |
| 1992-1993: | Cambridge University | - Research Assistant |
| 1990-1992: | Department of Agriculture | - Technical Assistant - Agricultural Farm Worker |

Project Examples

DAIRY AND FARMING

- Priority setting for the farm sector – a national consultation process to identify key priorities from the farming sector for the Australian dairy industry
- Water and the Australian dairy industry – a national consultation process to better understand water use in the Australian dairy industry to assist in the development of an industry blueprint for irrigation
- Assessment of Research and Development needs for the Northern Victorian Dairy Industry on behalf of the Department of Primary Industries and Dairy Australia
- Dairy Australia project to assess the changes in Carryover rules for Dairy Farmers in Northern Victoria

WATER

- Facilitation of community consultations for draft Water Allocations Plans for South East South Australia on behalf of the South East Natural Resource Management Board
- Coordination and facilitation of UDV District Council 2's response to the draft Northern Region Sustainable Water Strategy
- A Murray Dairy project to develop a Water Trading Tool Kit for use by dairy farmers to accommodate changes in water policy

DROUGHT IMPACT

- Drought Impact Study – Murray Dairy Region
- Drought Impact Study – Hunter Valley
- Coordination and implementation of Dairy Australia's drought support program – Dealing with Today Planning for Tomorrow

BUSINESS & STRATEGIC

PLANNING, AND RISK

MANAGEMENT

- Development and delivery of a business-planning program for the Tasmanian Dairy Industry
- Strategy assessment of recycled water strategy – Goulburn Valley Water – Shepparton Waste Management Facility
- Development and delivery of an irrigation risk management course for the Department of Primary Industries Victoria

PROFESSIONAL AFFILIATIONS

- Murray Dairy – Director (2010-present)
- Fairly Fellow – Fairly Leadership 2001
- Australian Association of Agricultural Consultants – Victorian representative on the executive
- GVAgcare – Rural Counselling Service – general committee member
- Australian Institute of Agricultural Science and Technology
- Australian Institute of Company Directors
- Australian Association of Agricultural Consultants

Appendix 2: Letter of Instructions

Contact: Edward Mahony
Direct line: 03 9691 0228
Email: emahony@besthooper.com.au
Principal: John Cicero
Our Ref: JDC:EJM:181273



4 February 2019

RMCG

Attention: Mr Daryl Poole

Suite 1, Level 1, 357 Camberwell Road
CAMBERWELL VIC 3124

By email only: darylpo@rmcg.com.au

Dear Daryl,

520 Meningoort Road, Lots 51 & 52 and Res 1 on LP4677, Bookaar VIC 3260

We act for the Permit Applicant/Applicant for Review, Bookaar Renewables Pty Ltd, in relation to the above matter, which relates to a renewable energy facility and associated works.

Our client wishes to retain you to review the application and should you be in a position to support it, to prepare an expert evidence statement at the hearing of this matter. Your statement should address the agronomy and agricultural merits of the proposal, including an assessment of the impact of the proposal on the ability to use the site area and neighbouring land for agricultural purposes.

Compulsory Conference: 3 May 2019

Hearing: 17-19 June, 24-27 June and 1-2 July 2019.

The review site is located in a Farming Zone, Schedule 1 (FZ1) with a portion of the larger land holding also subject to a Heritage Overlay (HO80) and Significant Landscape Overlay, Schedule 1 (SLO1). The review site is however not affected by the overlays.

A permit application was submitted to Corangamite Shire Council in July 2018 for a Renewable Energy Facility (Solar Farm), associated Buildings and Works and Removal of Native Vegetation. The planning permit application was supported by the following information:

- Certificates of title;
- 'Planning Report' prepared by Tract Consultants;
- 'Indicative Layout', prepared by RINA Consulting;
- 'Typical view of tracking structure and panels', documentation provided by Soltec;
- 'Ecological Due Diligence', prepared by Ecology and Heritage Partners Pty Ltd;
- 'Preliminary Cultural Heritage Study', Ecology and Heritage Partners Pty Ltd;

Best Hooper Pty Ltd

Level 9/451 Little Bourke Street
Melbourne VIC 3000, Australia

PO Box 13312
Law Courts 8010

T (03) 9670 8951
F (03) 9670 2954

www.besthooper.com.au
ACN 137 307 692

- 'European Heritage Advice', prepared by GJM Heritage;
- 'Landscape & Visual Impact Assessment' prepared by OneMileGrid Traffic Engineering;
- 'Solar Photovoltaic Glint and Glare Study', prepared by Page Power; and
- 'Hydrology, Drainage and Floor Advice', prepared by EcoLogical Australia.

The Council requested further information on 2 August 2018 which was responded to by our client on 30 August 2018. On 4 September 2018, our client submitted a Section 57A Application to amend the planning permit application to exclude that area of cultural heritage sensitivity from the site area. Council did not require further advertising of this amendment to the application.

Despite a favourable Council Officer recommendation to approve a planning permit (subject to conditions), the Council decided to refuse this application on the following grounds:-

1. *The use and development does not provide an acceptable outcome in terms of the Planning Policy Framework, including the Municipal Strategic Statement and local planning policy;*
2. *The use and development will result in the loss of productive agricultural land and will create impacts on the continuation of primary production on adjacent land;*
3. *The use and development will result in an unacceptable level of environmental impact which cannot be adequately managed;*
4. *The use and development will cause unacceptable landscape and visual impacts within the local area and from surrounding key viewpoints;*
5. *The use and development will not result in new community or social benefit; and*
6. *The absence of solar farm planning and policy guidelines by the State Government provides a lack of directions for planning decision making.*

An Application for Review was lodged with VCAT under Section 77 of the *Planning and Environment Act 1987* (Vic) by our office. This application also included a request to include lots 51, 52 and Res on LP4677 within the site description of the review site.

A meeting has been scheduled to take place at Best Hooper Lawyers on **7 February 2019**, which we would like you to attend.

Our client will be directly responsible for your fees, therefore please ensure your fee proposal is sent directly to the client. Our client's details are as follows:

Bookaar Renewables Pty Ltd
Contact: Jane Ross and Richard Seymour
44 Quayle Street, Sandy Bay, TAS 7005
J.Ross@infinergy.co.uk / R.Seymour@infinergy.co.uk
0418 632 727 / +64 22 033 1587

We enclose an electronic brief of documents for your review. Please advise if you require any further information to complete your evidence statement. Your expert evidence is due no later than **27 May 2019**.

Yours faithfully

BEST HOOPER

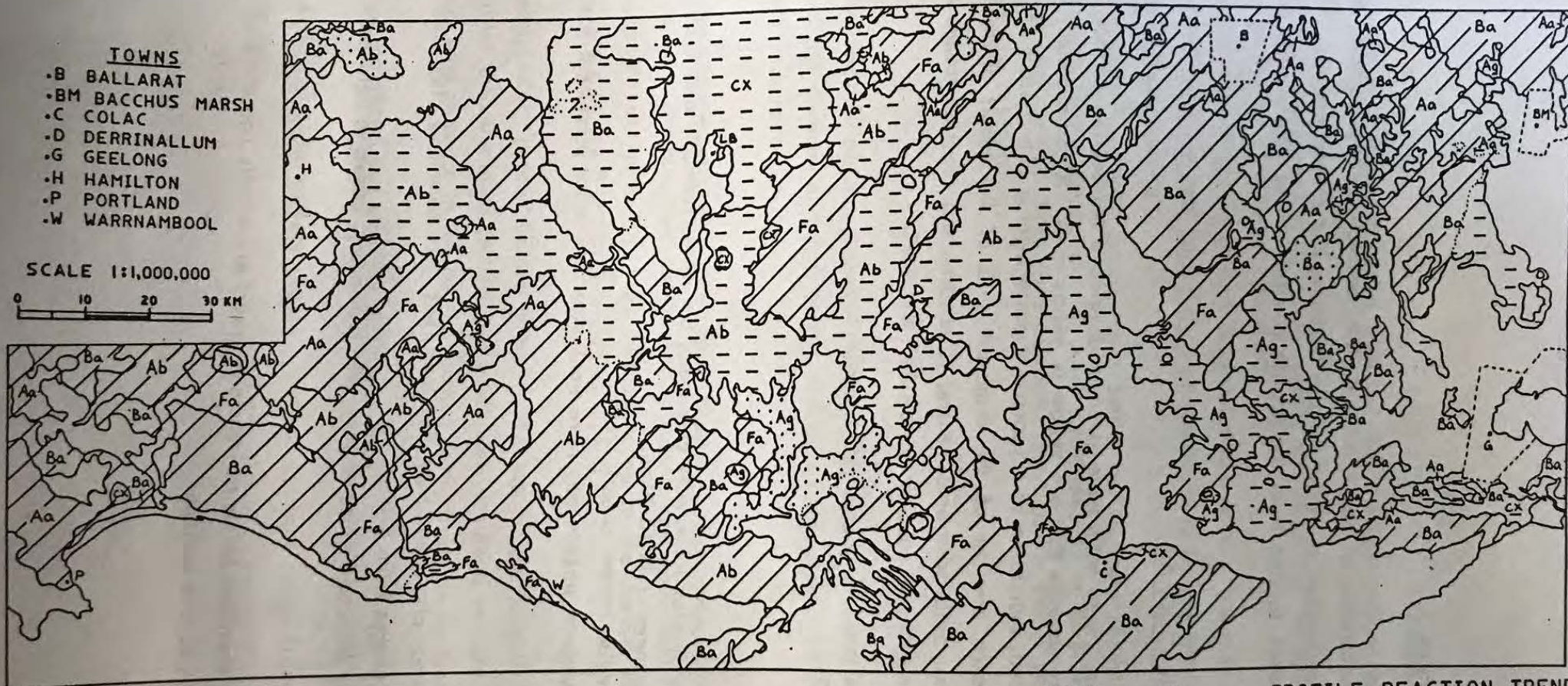
John Cicero
Principal

Enc.

Appendix 3: Landform map

Excerpt from *The Soil and Landforms of South-western Victoria, Part 1, Inventory of soils and their associated landscapes*, Department of Agriculture and Rural Affairs (undated).

FIG. 3. DISTRIBUTION OF DOMINANT SOIL PROFILE CLASSES



SOIL PROFILE CLASS

| | |
|----|--|
| Aa | hard, mottled-yellow duplex soils, prominent subsurface bleach |
| Ab | hard, mottled-yellow duplex soils, partial subsurface bleach |
| CX | complex unit, Aa and Ab co-dominant |
| Ag | hard, mottled-black duplex soils, partial subsurface bleach |
| Ba | soft to firm, mottled-yellow duplex soils, prominent subsurface bleach |
| Fa | shallow friable loams |

| % | AREA ha x 10 ⁵ |
|----|---------------------------|
| 9 | 2.3 |
| 15 | 3.7 |
| 4 | 1.0 |
| 5 | 1.2 |
| 18 | 4.2 |
| 11 | 2.5 |
| 62 | 14.9 |

PROFILE REACTION TREND

| | |
|--|-------------------------------|
| | acid; acid to neutral |
| | neutral |
| | alkaline; alkaline to neutral |

Appendix 4: Soil test result



Nutrient Advantage®

Nutrient Advantage Advice® Recommendation Report

meningoort

Report Print Date: 06/03/2018
Agent/Dealer:
Advisor/Contact: Neil Palmer
Phone: 03 5594 6294
Purchase Order No: Menningoort

Grower Name: meningoort
Sample No: 021909229
Paddock Name: nab b fitz bank
Sample Name:
Sample Depth (cm) 0 To 10

Nearest Town: BOOKAR
Test Code: 2016-024
Sample Type: Soil
Sampling Date: 07/02/2018

| Analyte / Assay | Unit | Value | Very Low | Marginal | Optimum | High | Excess | Optimal |
|-------------------------------------|------------|-------|---|----------|---------|------|--------|-----------|
| Soil Colour | | Grey | | | | | | |
| Soil Texture | | Clay | | | | | | |
| pH (1:5 Water) | | 5.1 | Strongly acidic | | | | | 6.0 - 7.0 |
| pH (1:5 CaCl ₂) | | 4.4 | May vary depending on plant species | | | | | 5.2 - 6.0 |
| Elect. Conductivity (EC) | dS/m | 0.13 | Not saline. | | | | | < 0.4 |
| Electrical Conductivity (Sat. Ext.) | dS/m | 0.8 | Suitable for pasture growth | | | | | < 1.5 |
| Phosphorus (Olsen) | mg/kg | 8 | | | | | | |
| Phosphorus (Colwell) | mg/kg | 25 | | | | | | 44 - 57 |
| Phosphorus Buffer Index | | 270 | Moderate phosphorus fixation capacity | | | | | |
| Phosphorus Environmental Risk Index | | 0.09 | Low risk of P loss to the environment | | | | | |
| Potassium (Colwell) | mg/kg | 170 | | | | | | 190 - 245 |
| Sulphur (KCl40) | mg/kg | 19 | | | | | | 9 - 12 |
| Cation Exch. Cap. (CEC) | cmol(+)/kg | 9.7 | | | | | | |
| Calcium | cmol(+)/kg | 6.0 | | | | | | 3 - 5 |
| Magnesium | cmol(+)/kg | 2.2 | | | | | | 1 - 2 |
| Sodium | cmol(+)/kg | 0.42 | Low risk of being harmful to plant growth | | | | | < 0.7 |
| Potassium | cmol(+)/kg | 0.46 | | | | | | |
| Aluminium | cmol(+)/kg | 0.6 | | | | | | |
| Aluminium % of Cations | % | 6.0 | There are no problems with Aluminium toxicity | | | | | <= 15 |
| Grass Tetany Risk Index | | 0.06 | | | | | | |
| Calcium % of Cations | % | 62.0 | Satisfactory for soil structure, check sodici | | | | | 60 - 85 |
| Magnesium % of Cations | % | 23.0 | Stable soil structure likely, check sodicity | | | | | < 25 |
| Sodium % of Cations (ESP) | % | 4.30 | Non sodic soil, stable soil structure likely | | | | | < 6.0 |
| Potassium % of Cations | % | 4.80 | | | | | | |



Analyses conducted by Nutrient Advantage Laboratory Services

For a copy of Laboratory Methods of Analysis please go to www.nutrientadvantage.com.au

NATA Accreditation No: 11958
Certificate of Analysis is available upon request.

8 South Road, Werribee VIC 3030

Tel: 1800 803 453

Email: lab.feedback@incitecpivot.com.au



Appendix 5: ABS data

Australian Bureau of Statistics

Catalogue number 7503.0

| Crop type | Camperdown | Corangamite - North | Corangamite - South | Grand Total (=Corangamite Shire) |
|--------------------------------------|----------------------|-----------------------|-----------------------|----------------------------------|
| All other cereals for grain or seed | | \$121,385 | | \$ 121,385 |
| All other crops n.e.c. | | \$43,004 | \$10,424 | \$ 53,428 |
| All other vegetables n.e.c. | | | \$3,577 | \$ 3,577 |
| Barley for grain | \$16,350 | \$7,096,538 | | \$ 7,112,887 |
| Canola | \$12,044 | \$10,261,390 | | \$ 10,273,434 |
| Cattle and calves | \$7,745,825 | \$55,185,561 | \$128,187,407 | \$ 191,118,793 |
| Cereal cut for hay | \$104,606 | \$4,361,867 | \$489,389 | \$ 4,955,862 |
| Cut flowers Outdoor | \$49,733 | | | \$ 49,733 |
| Eggs | | \$34,006 | \$3,779 | \$ 37,785 |
| Faba beans | | \$2,403,331 | | \$ 2,403,331 |
| Goats | | \$411,744 | \$44,713 | \$ 456,457 |
| Lucerne cut for hay | \$40,020 | \$740,419 | \$308,723 | \$ 1,089,161 |
| Milk | \$10,125,823 | \$88,820,277 | \$298,420,294 | \$ 397,366,394 |
| Mung beans | | \$67,751 | | \$ 67,751 |
| Nurseries Outdoor | | | \$97,345 | \$ 97,345 |
| Nurseries Undercover | | | \$298,659 | \$ 298,659 |
| Oats for grain | | \$3,243,386 | \$37,305 | \$ 3,280,691 |
| Other crops cut for hay | | \$623,903 | \$69,626 | \$ 693,529 |
| Other n.e.c. | \$0 | \$0 | \$0 | \$ - |
| Other oilseeds | | \$328,371 | | \$ 328,371 |
| Other pasture cut for hay | \$688,576 | \$6,052,316 | \$16,907,333 | \$ 23,648,225 |
| Other pulses | | \$142,363 | | \$ 142,363 |
| Pigs | | \$1,032,513 | \$52,885 | \$ 1,085,397 |
| Potatoes Fresh market and processing | | \$11,704 | \$337,753 | \$ 349,457 |
| Poultry | | \$43,501 | \$5,272 | \$ 48,773 |
| Sheep and lambs | \$586,807 | \$38,250,496 | \$5,841,835 | \$ 44,679,137 |
| Sorghum for grain | | | \$1,633 | \$ 1,633 |
| Triticale for grain | | \$234,266 | \$106,867 | \$ 341,133 |
| Wheat for grain | | \$26,466,234 | | \$ 26,466,234 |
| Wine production | | | \$7,439 | \$ 7,439 |
| Wool | \$276,031 | \$21,332,568 | \$2,595,933 | \$ 24,204,531 |
| Grand Total | \$ 19,645,813 | \$ 267,308,893 | \$ 453,828,190 | \$ 740,782,895 |

Total for Victoria

\$ 13,079,964,644

Catalogue number 7121.0

| | Camperdown | Corangamite - North | Corangamite - South | Grand Total (=Corangamite Shire) |
|-----------------------------------|------------|---------------------|---------------------|----------------------------------|
| Area of holding - Total area (ha) | 10,217 | 201,176 | 133,024 | 344,418 |

This report has been prepared by:

RM Consulting Group Pty Ltd trading as RMCG

135 Mollison Street, Bendigo, Victoria 3550

(03) 5441 4821 — rmcg.com.au — ABN 73 613 135 247

Offices in Bendigo, Melbourne, Torquay and Penguin (Tasmania)

Key Project Contact

Daryl Poole

0418 992 056 — darylp@rmcg.com.au



This report has been prepared by:

RM Consulting Group Pty Ltd trading as RMCG

135 Mollison Street, Bendigo Victoria 3550

(03) 5441 4821 — rmcg.com.au — ABN 73 613 135 247

Offices in Victoria, Tasmania, ACT and NSW



Key RMCG contact

Daryl Poole

0418 992 056 — darylpoole@rmcg.com.au

Document review and authorisation

Project Number: #0445

| Doc Version | Final/Draft | Date | Author | Project Director review | BST QA review | Release approved by | Issued to |
|-------------|-------------|------------|----------|-------------------------|---------------|---------------------|------------------------|
| 1.0 | Draft | 23/6/2020 | D. Poole | R. Rendell | - | R. Rendell | R. Seymour for review. |
| 2.0 | Draft | 24/07/2020 | D. Poole | - | - | D. Poole | R. Seymour for review. |
| 3.0 | Draft | 11/08/2020 | D. Poole | - | - | D. Poole | R. Seymour |
| 4.0 | Final | 15/10/2020 | D. Poole | D. Poole | M. Sandford | D. Poole | R. Seymour |
| 5.0 | Final | 30/10/2020 | D. Poole | D. Poole | J. Belz | D. Poole | R. Seymour |