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GRAZING AND AGRICULTURAL PRODUCTION SOLUTIONS


# Agronomy Report – "Sherraloy"

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## Introduction

Grazag has been contracted to provide expert agronomy advice regarding the installation of a solar farm at 'Sherraloy', 597 Gara Road, Metz. The following issues have been explored in this report:

- Nature of the soils occurring onsite and the potential for erosion;
- Existing Productivity of the Site
- Effects of removing the Site from agricultural production; and
- The ability to maintain ground cover across the Site to prevent soil erosion during the operation of a solar farm.

## The Proposal

Ecological Australia has described the construction, operational and decommissioning phases of the proposed solar farm. I have also read the Project Description provided in the Statement of Environmental Effects (SEE) as part of this assessment.

It is understood that construction would not result in the complete removal of the existing groundcover at the Site. The support structures for the solar panels would be installed on a series of piles which are mechanically hammered (piled) into the ground at intervals between 5m and 10m (very similar to the installation of trellis systems for vineyards or orchards but at a reduced density). The minimum distance between the rows of panels would be 5.5 m to avoid one row of panels shading the next. The row spacing also allows access to each row for panel maintenance, occasional cleaning and groundcover management. As such, in addition to vegetation growing under the panels there would also be significant swathes of vegetation between the rows. Due to the infrastructure proposed for the Site (single axis tracking solar farm as described above and in the SEE), it is not expected that there will be large scale soil disturbance in relation to the construction of a solar farm. As such, as far as possible, a pasture base would be maintained across the Site and a program of reinstatement would be implemented where disturbance does occur.

Groundcover would be removed to form Site access tracks, tracks to the inverters and the fire access track around the permitter of the Site. These tracks would be used to access the solar farm for day to day activities to avoid soil compaction at the site. Note, as the tracks are more or less impervious, they may increase local runoff, however this would be adequately managed by drainage and erosion control measures that would be detailed within the Site's Stormwater, Erosion and Sediment Control Plans which will be developed as part of the post-approval Environmental Management Plans prior to construction, operation and decommissioning.

## Soil Types

The proposed site for the solar farm is comprised predominantly of what is known locally as "Traprock" soils. Trap soils are a duplex soil type which are generally a fine-grained sedimentary loam overlaying a clay subsoil, or an impervious rock layer. The trap soils do vary widely in their physical properties, fertility, acidity and depth, making them a hard soil type to generalise. The loam topsoil can often set hard, which can be a physical constraint on the usage, and they are also of low to moderate fertility.

Depending on the depth of the loamy layer on top, they can be very pebbly or stony with protruding rock visible in ridges or parallel intervals. Trap soils have a lower potential to erode than the Granite

soils of the region, but are not as low as the basalt based soils. At the date of the report, I would estimate the property had approx. 90% ground cover, which is excellent given the total lack of rainfall.

For significant erosion potential to occur, you would need much lower ground cover percentages combined with high intensity storms and a greater degree of slope. At present there is some potential for loss of topsoil as raised dust in high winds, and given the fact that sheep are grazing the property, we may see some erosion down the sheep tracks (going to water supplies) if high intensity storms occur. Under solar panels I cannot see how the erosion would increase.

Due to the high rainfall (generally) in the New England, the soils are normally acidic to strongly acidic, with a soil pH in the range of 4.4-5.0 (CaCl), which can impact on pasture production and land usage.

There are some Basalt soil caps on some of the higher ridges on the property but outside the area proposed for the solar farm.

## Average Production in current state

In its current state, "Sherraloy" is 100% native-based pastures with no sign of pasture improvement or renovation. The current drought has seen the local area around "Sherraloy" receive only 148mm of rainfall for the year, which is 463mm below average. As a consequence, pasture growth is negligible, with the first signs of green shoots emerging from the Couch which is prolific on the property.

Without knowing a soil test result or a topdressing history, in the current native pasture state, I would rate the carrying capacity of the property at 4-5DSE/Ha (1.6-2.0/Acre). To substantially increase this carrying capacity, you would need a solid top-dressing program, or significant pasture renovation with improved species.

The 90Ha area proposed to go under solar panels would have an overall carrying capacity of 450 DSE. Should this area be taken out of agricultural production, the overall loss to the region would be 450DSE, which equates to 450 dry sheep, or 45 x 400kg steers, which is not a significant loss from the region. It should be noted, that it is possible that some grazing could be continued under the solar panels to maintain grass heights, as such there may not be a 100% loss to agricultural production at the Site. Although it is acknowledged that stocking rates would be significantly reduced.

Once the Site is under solar panels, I see no reason why there would be an increased risk of erosion potential if ground cover at the Site is well maintained. Water being shed off the panels may be more concentrated in heavy rainfall, but it would not be in the same area each time, as the panels will be at different angles depending on the time of the day and where they are tracking. Having a pasture species composition that will tolerate acid soils, moderate to low fertility and handle shading, would greatly minimise any risk of erosion under the new system.

## Species Composition

The proposed species to establish into the disturbed areas would be Cocksfoot. Cocksfoot is a deep-rooted perennial species that would provide a permanent solution to the site. Cocksfoot is also a species that will tolerate shaded sites, so would provide a solution under the solar panels. A companion species that would fit would be a Grazing Brome, which would also handle shaded sites. If grazing management is going to be a problem (i.e. we don't want the grass to get high), Spanish Cocksfoot (such as Uplands Hispanic cocksfoot) is suggested, this is more compact and doesn't grow as much bulk as a typical continental cocksfoot, but will give 100% ground cover. Amenities grasses are used in many areas where ground cover is needed but extra maintenance (eg mowing/slashing) is not.

Shading generally leads to less growth, so leads to lower overall dry matter production. Certain species such as Cocksfoot (which is generally prolific under trees in grazing systems) will tolerate shading but it stills comes with a yield penalty. Given the fact that the proposed site is primarily needed for solar panels, the potential grazing would only be a secondary consideration, as such grass production would be more important for ground cover than any potential grazing gains.

It would be highly unlikely that there would be a 100% failure on establishing a grass base under the solar panels, but if we there was a problem with slow to establish cocksfoot, a very cheap annual ryegrass, which has a fibrous root system and is extremely quick to establish, even from broadcasting is suggested. A second consideration could be the use of a rhizomatous species such as Couch (from runners or seed) that would fill in the bare areas.

Alternatives would be weed matting that could be pegged down to the ground with seed broadcast into it, very much like the RMS use on disturbed roadside areas.

## Pasture Management

Ideally the pastures would be established before the solar panels are erected as it will give 100% establishment prior to getting shaded. However, pastures can still be established through broadcasting under the panels as long as higher seeding rates are used to compensate. Once established the pastures would be managed in a similar manner to those in vineyards and orchards. The grass height can be kept under control through grazing (sheep), or via mechanical means such as slashing/mowing. Fertiliser management will be difficult as topdressing fertilisers are corrosive, so once again a species that will tolerate low fertility, such as cocksfoot ticks the box. In conjunction with the existing native grass base high ground cover percentages should be maintained.

## Other potential constraints

I saw no evidence of contamination risks (eg old sheep dips, rubbish tips, abandoned sheds, etc) that would cause major issues with the solar farm erection.

Yours Sincerely

Matt Foster

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