



Level 8, 91 William St, Melbourne
P O Box 23040, Docklands 8012
Victoria, Australia

13/08/19

Shane Melotte: 0429 778 080

Fi Cotter: 0408 587 095

Natasha Homsey
Environmental Assessment Officer
Energy & Resources | Planning & Assessments
320 Pitt Street Sydney 2000

Dear Ms Brewer,

RE: Suntop 2 Solar Farm - Request to Amend Secretary's Environmental Assessment Requirements

Further to the submission of our Preliminary Environmental Assessment for this project we have been advised by our client that they wish to include the option for additional grid connection support infrastructure for the Suntop 2 Solar Farm in the form of the following:

- Synchronous Condenser (Capacity to be determined)
- Battery Energy Storage System (Capacity estimated to be 80MW)

The Synchronous Condenser and BESS are proposed to be located on the eastern side of the Suntop 2 Solar Farm approximately 1.1km from the frontage to Suntop Road as shown in the Site Layout Plan below in Figure 1 and also attached in full. The land designated for this infrastructure storage has an area of approximately 3.5Ha. Further details of the infrastructure are provided below for reference.

The ultimate need for this infrastructure and final layout will be determined through the ongoing grid connection process being undertaken with the Transmission Network Operator (TransGrid). As such, an estimation of the capacity and technology type for the BESS and has been made to enable a determination of the level of impact assessment required for this addition. It is understood that any future changes to these elements would be subject to assessment under the relevant legislation and regulations.

On this basis it is requested that the Sectary update and re-issue the Environmental Assessment Requirement's as deemed necessary to account for these proposed additions.

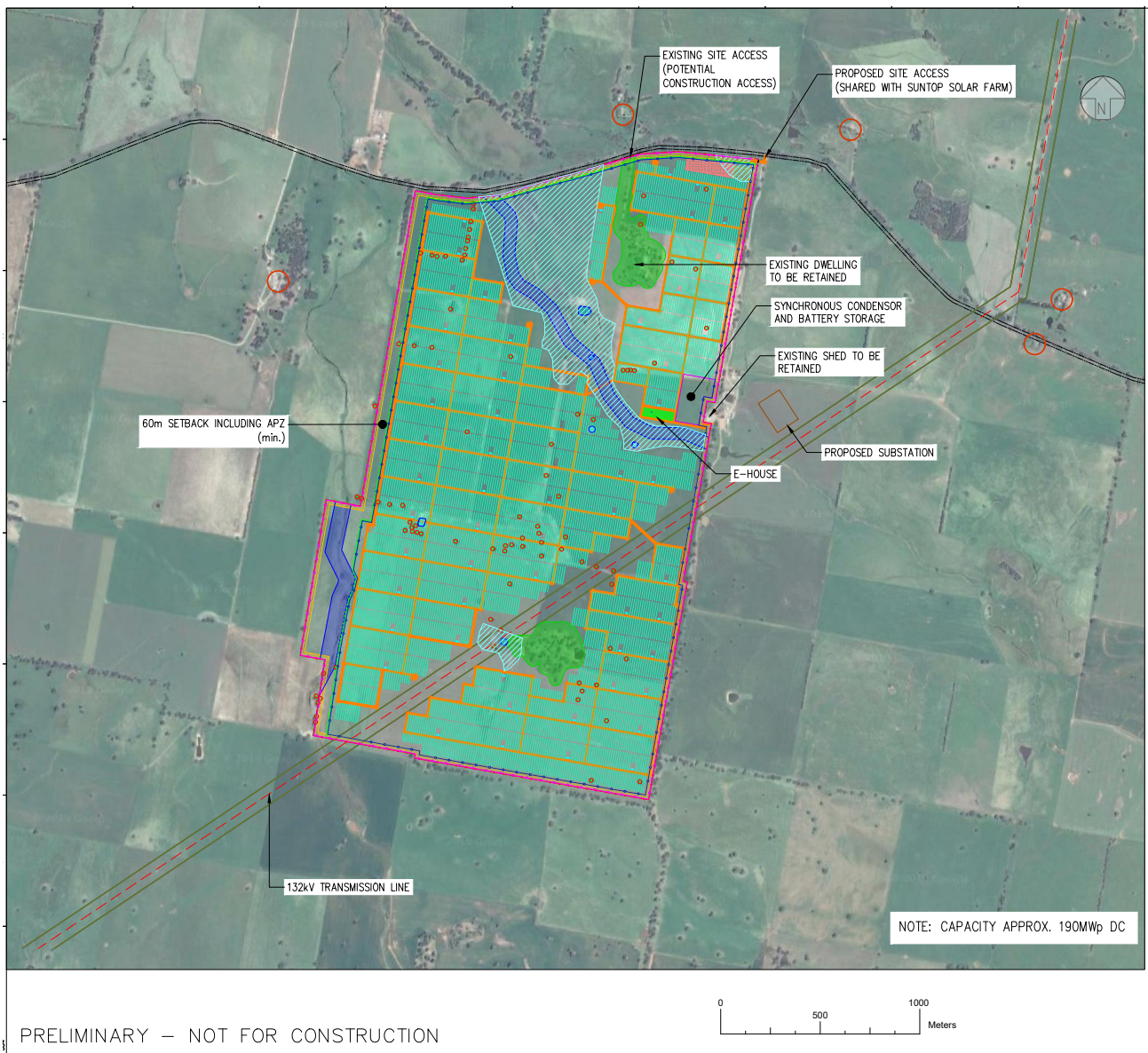


Figure 1: Suntop 2 Solar Farm Site Constraints and Layout (extract)

Synchronous Condenser

The Suntop 2 Solar Farm may require the installation of a synchronous condenser to enable compliance to the National Electricity Rules. A synchronous condenser (sometimes called a synchronous capacitor or synchronous compensator) is a DC-excited synchronous motor, whose shaft is not connected to anything but spins freely. Its purpose is not to convert electric power to mechanical power or vice versa, but to adjust conditions on the electric power transmission grid. The purpose of the Synchronous Condenser in this context is to improve system strength by providing inertia to the grid.

Inertia is a property of the grid which limits frequency variations in the case of sudden load or generation changes. High penetrations of renewable energy reduce the inherent inertia of the grid. Synthetic inertia can be introduced using smart grid techniques to overcome this problem. The synchronous condenser will be air cooled and will not be hydrogen cooled. There will be no other dangerous goods or chemicals used in association with the synchronous condenser.

A synchronous condenser is likely to be housed in a shed similar to a large farm shed with a maximum

height of approximately 10 metres, a length of approximately 30 metres and width of approximately 20 metres.

Depending on the technology provider it may also include a number of ground mounted cooling fans outside of the shed with height of approximately 3 metres above ground level. This images below represents the likely scale and appearance of this component of the project however it will ultimately be determined by detailed design.



Figure 2: Example of Synchronous Condenser

(Source: <http://www.think-grid.org/synchronous-condensers-better-grid-stability>)



Figure 3 Example of Synchronous Condenser

(Source: <https://new.siemens.com/global/en/products/energy/high-voltage/facts/portfolio/synchronouscondenser.html>)

Battery Energy Storage System (BESS)

It may be required to install on site battery storage of approximately 80MW/160MWhrs capacity to either support the grid connection through smoothing the power that is being exported to the grid or enabling generation of energy outside of sunlight hours. A battery storage installation is typically comprised of a number of energy storage units housed in structures that are similar in scale and appearance to 40 foot shipping containers and additional electrical infrastructure for controlling the storage units and for connecting the project to the substation. The energy storage units will have a height of approximately 3 metres, a width of 3 metres and length of approximately 12 metres. There could be approximately 50-60 of these units forming the storage system with approximately 20 small control system units that would also be approximately 3 metres in height and width but have a length of 6 metres. The BESS will also contain a number of small kiosk buildings that may house smaller transformers and protection equipment depending on the final design and purpose of the BESS.

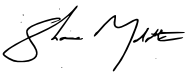


Figure 4 Example of Batter Energy Storage System

(Source: Edify Energy, Ganawarra Energy Storage System)

If you have any queries regarding the additional information and assessments, please contact Shane Melotte on 0429 778 080.

Regards,



Shane Melotte - Director