BENALLA SOLAR FARM

331 Sydney Road, Benalla VIC

Project Construction Brief

Benalla Solar Farm construction details to assist DELWP with planning consent, outlining construction timeline, traffic management, hours of operation and project life cycle.

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Construction Description for RAC 54 Benalla Solar Farm

The proposed Benalla Solar Farm (RAC 54) is a 8.192MWp/4.95MVA installation utilising the revolutionary Belectric PEG solar module mounting sub-structure.

The PEG substructure can be seen below.

The PEG system allows for a rapid deployment and reduced Civil effort due to its design.

There are minimal earthworks required due to the PEG installation and this allows for less disruption and earthworks and subsequently less dust being produced along with less construction noise.

Typically, the PEG installation requires a pneumatic drill to drive the PEGs into position, then clamp the base and top plates before the modules are installed.

After this the only works required are:

- Equipment foundations
- Equipment installation
- Cable installation
- Commissioning

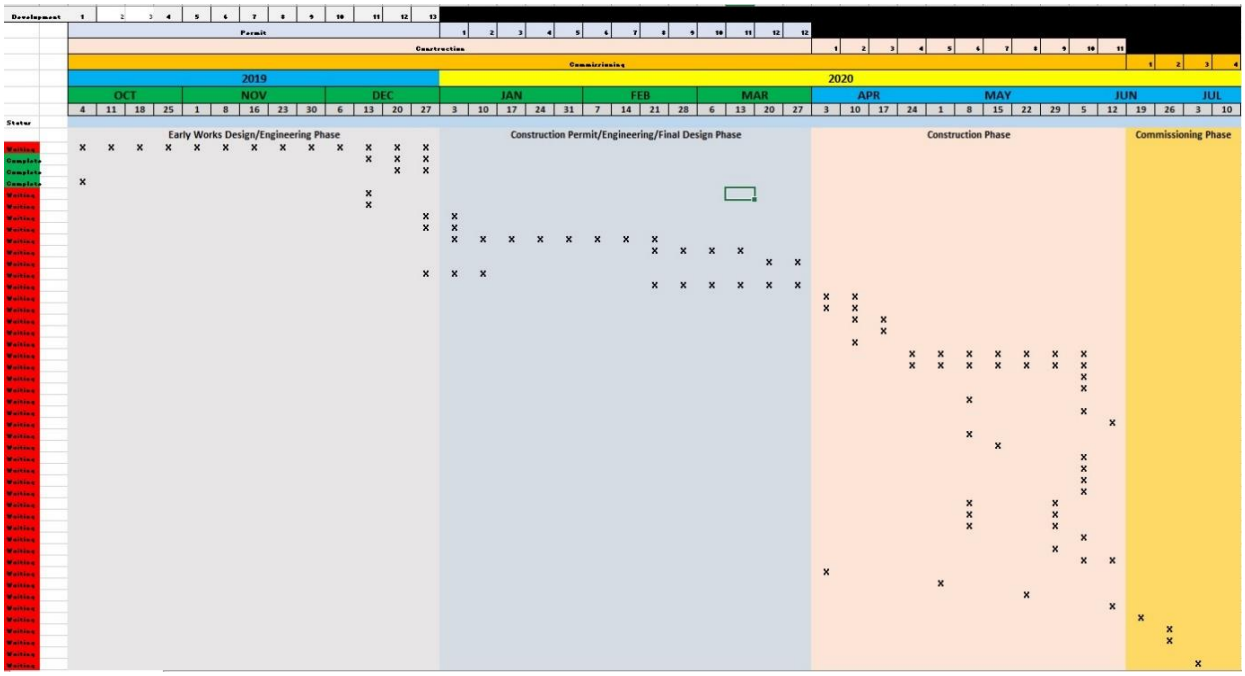
The installation Construction phase is proposed to be a 11-week process with a further 4 weeks for Commissioning. The Construction will be completed by the Commissioning Phase and only a few (~5 people) will be present for this phase.

The number of workers is scaled up then down again as the project progresses.

We propose a condensed and overlapping program to minimise the construction phase to a minimum.

Construction GANTT for RAC 54 Benalla Solar Farm

The Construction GANTT chart image below highlights the construction activity for the installation.



Above image is the conceptual construction GANTT Chart, a high-level detailed version will be refined in coming months and available to provide prior to construction getting underway.

The breakdown of the project is as follows:

- Development and permit cycle a combined 25 weeks (underway).
- Construction duration a total of 11 weeks (max of 46 workers for 1 week only, average is ~20 per week).
- Commissioning duration a total of 4 weeks with around 2-5 personnel on site for this period.

Furthermore, this is a snapshot of worker numbers during the construction phase:

RAC 54	APR				MAY					JUN	
Construction task	3	10	17	24	1	8	15	22	29	5	12
Site Clear & Grub	2	2									
Survey	2	2									
Fence		3	3								
Mobilise			3								
PEG Markout		2									
PEG install				12	12	12	12	12	12	12	
Panel install				12	12	12	12	12	12	12	
Cable Tray Install										4	
DC Cable install										2	
DC Switch Foundation installation						3					
DC Switch install										2	
DC COLD Commissioning											2
MV foundation prep						3					
MV foundation pour							3				
MV equipment install										2	
MV Equipment terminate										2	
Inverter install										2	
Inverter cabling install										2	
Pump Trench						2					
Pump Trench Pit install						4					
Pump MV Conduit install						4					
Pump MV Cable Install										4	
Pump Comms Cable install									2		
Pump MV Terminate										2	2
SSE Commissioning Plan to SAPN for Review	1										
SAPN MV installation of new pole					6						
SAPN installation of SCADA to new pole								X			
SAPN to witness MV connection to OH tails											2
SAPN MV inspection (de-energised for compliance)											
SAPN MV energisation (to RMU and INV with DC lock-out) Mike Villiams											
MV equipment protection Testing											
DC Commissioning VARM											
SAPN INVERTER Witness Inspection - Michael Abbott											
DC Commissioning HOT											
SCADA installation											2
total of workers each week for construction phase	5	9	6	24	30	40	27	24	26	46	8

Site Logistics and Traffic Management

The solar modules and PEG logistics phase of the project will be all performed in the first three weeks of the project, as the PEG installation completes the substructure and panel mounting concurrently.

The proposed number of 40-foot shipping containers to be transported to site is 30. We can look to do in single truck or B-Double to reduce the time for onsite unloading subject to council recommendations.

A low bed truck will deliver the site telehandler which is used for the construction phase to layout the materials as needed around the site.

Also, a return trip required to collect the telehandler in week 11.

A site toilet and site lunch shed/site office will be transported to site and unloaded week 2 and collected week 11.

A small excavator will be used to complete the electrical trenching portion this is expected to be onsite for 2 weeks then returned.

We propose a laydown/delivery area with road base and watered prior to delivery to reduce any dust during the deliveries.

It is anticipated we will have our logistics provider have the trucks in rotation with an average of 4-6 containers delivered each day.

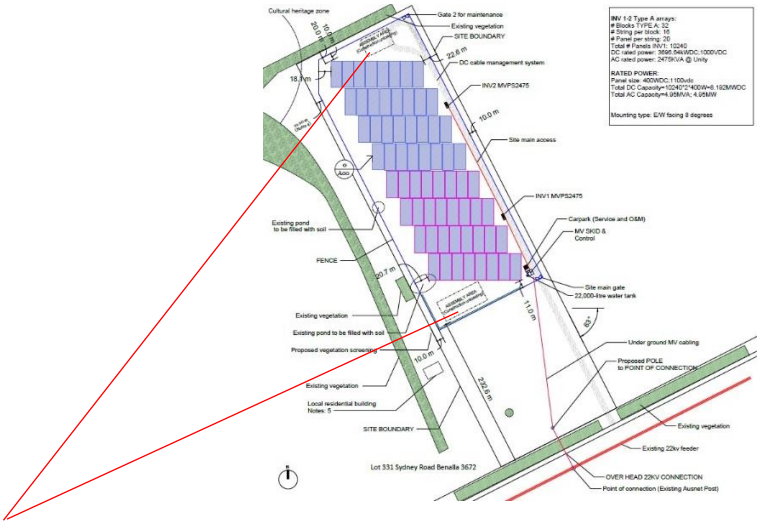
There will be one delivery of Electrical Cables and Cable Tray which will be a flat bed truck, one delivery and about hour to complete.

There will be one other day of truck delivery and this will be for the Medium Voltage Switchgear, this would be two trucks (Flatbed) and a Franner Truck/Crane (25t) will need to unload onto the pre-formed foundations. This will all be performed in around 4 hours on site and occur in construction week 10.

Other than the deliveries the site work force will be encouraged to carpool to keep the number of worker related vehicles to ~20 in total. The vehicles will be parked in the site laydown area and kept off any nature strips/roadside.

Once again, a water truck will be able to water the site down should at any stage of construction dust suppression be required.

The PEG area has a weed matt installed with light aggregate to suppress dust and to avoid weed growth after installation.



Assembly Area is used for parking to ensure no vehicles on roadside.

Construction Hours

During the installation the following hours of work are planned for:

Monday to Friday 7:15 – 5:30 work hours are planned; we will look to work in with weather and the majority of construction work will cease at 3:30. Some sub-contractors will be permitted to work up to 5:30, generally these tasks are not expected to be generating much noise (no rattle guns etc). Notwithstanding this, should weather or other factors interfere with the construction program, weekend work may become occasionally necessary.

Accordingly, the following hours of construction are requested:

Monday – Friday: 7am – 6pm

Saturday: 8am-4pm (if required) *

*note recommended maximum noise levels for evening apply after 1pm Saturday and all-day Sunday and public holidays

** Pre-Construction "Toolbox Meetings" to be conducted from 7:00-7:15

Environmental Management Plan

As part of the development of the RAC 54 Benalla Solar Farm SSE and Renewable Age will produce a detailed Environmental Plan and outline every aspect relating to the local environment and habitat.

The PEG with its reduced footprint isn't expected to have any negative impact to the local surrounds.

During the feasibility phase for the project, Renewable Age and SSE Australia have engaged third party feedback to ascertain any requirements to fulfil our obligations under the Heritage and Environmental Acts which affect the site.

Also, we have engaged the neighbour in working towards an acceptable layout to reduce impact of the development to locals.

SSE will develop a detailed communication plan for construction phase and provide clear processes for addressing any concerns or complaints for the construction and operation of the installation.

SSE and RA have also sought guidance from CFA to ensure the project meets the required setbacks and access to electrical infrastructure.

The design has ensured that transformers are provided with integrated oil-bund containment to prevent any oil entering the environment or waterways.

SSE will ensure during the construction phase that the construction site is maintained in a clean manner and all building waste is handled in the correct manner, this is including any surplus fill.

Any fill required to bring to site will be sourced locally and be free of any contamination to ensure no risk of contamination to the surrounds and waterways.

The Construction ablution block will be self-contained and have regular cleaning performed.

The Construction site will be a smoke, drug and alcohol-free site.

Site Preparation Phase

The site has been selected with the design in mind, there is minimal preparation required for the development.

The tasks involved include:

- Site Grub and level within 2 degrees
- Survey of all fence and structure key points
- Preparation of any water run-off swales
- Preparation of equipment foundations
- Excavation of Electrical and Comms routes
- PEG installation

As mentioned, these will predominantly be completed in weeks 1-5 of the construction phase.

Site Management, Ongoing Operations and De-commissioning

The Solar Farm has a life cycle of 30 years. The ongoing maintenance is expected to be performed Bi-Annually with some small tasks required such as module cleaning, ventilation cleaning and some electrical testing performed from time to time.

The site is monitored remotely from SSE Operations Centre in real time. We have local sub-contractors who will be able to attend n event of any response.

The site will have contact details displayed for local communications.

The site has a 30-year life cycle, after this time it is most likely a module replacement will occur to enable continuation of the installation. In the event the installation is to be removed due to a land lease expiring then the site is easily removed with the site being able to be fully de-constructed.

The solar modules would be recycled at an approved recycling facility, the module sub-structure would also be recycled as scrap metal.

The electrical cabling can be recycled or re-purposed, the electrical conduits can be removed with ease, and are very limited, with most cabling above ground.

The weed, matting beneath the PEG can also be removed and a new topsoil (locally sourced) can be placed down and some more local native vegetation planted to rejuvenate the site.

The site perimeter fence can stay or be removed and consultation with landowner and council will at the time of De-construction will enable an acceptable outcome to all parties.

It would be envisaged that the native vegetation screening would be fully mature at this time.

Example of Proposed Equipment for the Benalla Solar Farm

Below are some images of the proposed electrical equipment to be used on the Benalla Solar Farm

Above is the Belectric PEG solar mounting sub-structure

Above is an example of Skid mount inverter/transformer station

Typical Container delivery and storage on site