

## Walla Walla Solar Farm FREQUENTLY ASKED QUESTIONS



Powering a Sustainable Future

### GENERAL

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#### **Q** What is the Walla Walla Solar Farm?

**A** The Walla Walla Solar Farm is a 300-megawatt (MWac) utility-scale solar project developed by FRV to provide a significant source of clean, renewable energy for NSW. Now fully constructed and operational, the solar farm generates enough electricity to power approximately 90,000 homes across the State and contributes to substantial reductions in carbon emissions each year.

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#### **Q** Who is FRV?

**A** FRV is an experienced and capable renewable energy developer and has developed over 2 gigawatts (GW) of renewable energy globally. FRV was the first company in Australia to deliver a project-financed solar farm; the Royalla Solar Farm near Canberra. FRV is also responsible for the Moree Solar Farm, the first solar farm in Australia using single axis tracking. FRV has four solar farms in operation across Australia with a further two projects currently in construction in NSW and VIC, along with multiple other projects under development.

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#### **Q** Where does this project connect to?

**A** The project connects to the existing 330kV transmission line, which is owned and operated by the transmission provider, TransGrid. This power line runs parallel with the western boundary of the project (west of Schneiders Road).

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#### **Q** Will FRV stay on as the project owner?

**A** Our approach is to develop and acquire large-scale solar energy projects that we can then own and operate for the long-term. FRV have sold assets in the past but our core business model is to retain assets as this provides us

with a sustainable return on investment and ensures we manage the running of our solar farms directly. For us, it is important that our assets are operated responsibly and perform well over their lifetime.

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**Q How long will this project operate for?**

**A** The operational life of the project is expected to be 30 years. After this time, the site will either be rehabilitated and returned to its original purpose as freehold land or depending on future energy requirements the project may be reutilised, subject to landowner agreements and planning approvals.

## DESIGN CONSIDERATIONS

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**Q Why has this specific site been chosen?**

**A** Solar developers consider a long list of ‘conditions’ when choosing an appropriate site. These key conditions help narrow the search to specific geographical areas. One of the main factors is economical and low-impact access to the high voltage electricity grid network.

Typically, a developer will follow the following steps;

1. Identify parts of the electricity network with available capacity and near a growing customer base;
2. Identify land along this part of the network;
3. Review the suitability of this land – including protected ecology areas, cultural sensitivity, steep terrain etc.;
4. Define combinations of suitable land parcels that provide enough land area to make a project viable; and
5. Approach landowners of suitable land -landowners to secure access to larger, continuous land parcels.

Most suitable sites will present some degree of restrictions such as creek lines, easements, etc. FRV works to incorporate these restrictions so that they can co-exist alongside the solar farm footprint. FRV have developed projects across Australia with similar restrictions to those on the proposed Walla Walla Solar Farm site.

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**Q What about loss of agricultural land?**

1. FRV have calculated all the infrastructure and vegetation buffers which are proposed as part of this project. Results highlight that more than 85% of the project area will remain for agricultural purposes, in particular, sheep grazing. Suitable grasses will be sown allowing for the continued grazing by Landholders’ stock (sheep) and/or the production of grazing fodder.

Following the submissions, FRV have updated the design further and have also retained an area for cropping. It should be noted that at the end of this project, the land can be restored to full agricultural use, *unlike other* energy developments where the land would be absorbed fully and indefinitely.

Allowing sheep grazing and a solar farm provides dual use of the land and further sustains the local economy through job retention in the agricultural sector. The term ‘AgriSolar’ is commonly used to show the mutually beneficial relationship between both enterprises.

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**Q What key changes have FRV made in the design?**

**A** FRV have been conscious to incorporate feedback from neighbours, the local community and relevant agencies where practical. The concept design has been continually reviewed and while not all impacts can be fully mitigated, FRV have made practical and positive changes to enhance the design to help mitigate neighbours' concerns where practicable. Updates to the design have included a review and relocation of site access points, re-location of key infrastructure away from adjacent neighbours, improved plans for management of biodiversity and additional vegetation screening. Following the review of the submissions, the design was further reviewed and updated.

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**Q How is the site accessed?**

**A** The main site access is located at the north-eastern corner of the site from Benambra Road via the Olympic Highway. The access was changed to this location to protect the amenity of surrounding neighbours, with this main entrance now over 1.4 kilometres from the nearest dwelling. Two auxiliary access points are proposed to cross Schneiders Road. All access points will be manned along with appropriate safety signage.

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**Q Has Cultural Heritage been considered in the design?**

**A** Yes. A Cultural Heritage assessment has been completed in consultation with the relevant parties. A detailed Cultural Heritage Management Plan will be created prior to construction if the project is approved. Identified Cultural and Scarred trees will also be retained and have been protected within the design of the project.

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**Q Will the value of by neighbouring property decrease due to the Solar Farm?**

**A** FRV understand this is a key question for individuals who may neighbour a proposed project. Mitigation measures are therefore vitally important to reduce the impact on adjacent properties. FRV has incorporated numerous practical and positive mitigation measures into the concept design for Walla Walla Solar Farm, including asset setbacks, vegetation screening and the considered location of infrastructure to protect the amenity and value of surrounding properties. These measures will protect rural character and preserve the visual qualities that contribute to the value of the surrounding region.

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## **TECHNICAL**

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**Q How does a solar farm create electricity?**

Walla Walla Solar Farm's solar panels will be installed on ground-mounted frames that will move to allow the panels to track the daily movement of the sun. Using the solar energy they absorb, these solar panels then generate electricity that will be fed into an onsite power reticulation system before being dispatched to the local electricity distribution network. This technology operates best in direct, bright sunlight but can also produce power in low light or cloudy conditions.

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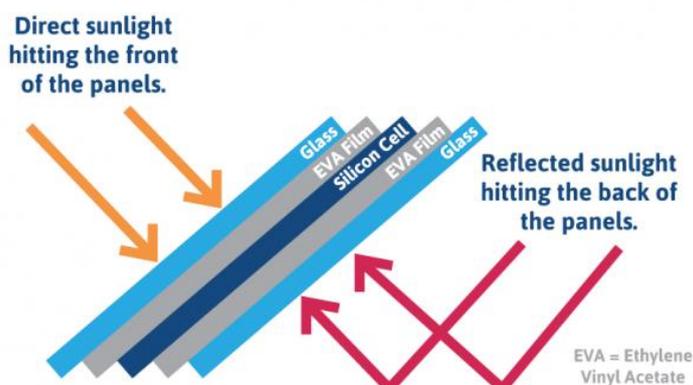
**Q What type of panels is used?**

- A** The latest technology single axis tracker panels are used on this project. These trackers change their orientation throughout the day to follow the sun from sunrise to sunset to maximise the energy captured. Solar cells within each panel are made from silicon wafers.

**Q** What materials are included in a solar panel? Are they hazardous to my neighbouring land or family?

- A** The solar panels FRV install are made entirely of inert materials, meaning that they do not react with anything and thus cause no harm to either the environment or to people.

### Bifacial Solar Panel Cross Section



There is glass layering on the front and back of the panels, as well as the aluminium frame that runs around the edge of the panel. Both of these materials are harmless, and we handle them every day as bottles and cans.

Inside the glass layers are an Ethylene Vinyl Acetate (EVA) film, which is a glue that is used to attach the glass to the silicon cell. This glue is safe and has even been approved by the FDA for use in food production, packaging and transport.<sup>1</sup>

The active layer is made from monocrystalline silicon, a solid material which generates electricity by absorbing the sun's rays and doesn't require any chemical reaction to do so. Silicon is one of the most abundant minerals on Earth and is found in all soils around the world in the form of quartz or sand.

Finally, the fine circuitry inside the panel which allows the flow of electricity is made from tin plated copper and silver. Both of which can be found in households as water pipes and collectors, so do not pose any risk to the people and environment around the farm. All circuitry inside the panel is compliant with the globally adopted Restriction of Hazardous Substances (RoHS) Directive and verified by independent certification laboratories.

**Q** Do the panels contain Cadmium?

- A** No. We do not use solar panels which contain Cadmium. These are related to a different panel chemistry which are not found in silicon modules.

<sup>1</sup> Agency for Toxic Substances & Disease Registry: <https://www.atsdr.cdc.gov/phs/phs.asp?id=669&tid=124>

**Q How high are the panels?**

**A** Panels are installed on low-lying structures expected to be around 4.5m in height. When the panels are stowed horizontally, they are approx. 2m in height.

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**Q Do solar panels cause glare?**

**A** The purpose of solar panels is to absorb the sunlight, not reflect it. The panels are covered in an anti-reflective coating and only reflect a small amount (less than 2%) of the sunlight that falls on them. This reflective percentage is less than most other everyday objects like water surfaces and the glass windows on your home.

In addition, a vegetation buffers will be planted along parts of the solar farm to reduce the visual impact on neighbours and the local community.

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**Q Are there known health risks associated with living near solar technology?**

**A** Many Australian homes, airports, schools, hospitals etc have solar panels placed on their roofs as they are considered a mature and safe technology. The operation of a solar panel generates no emissions such as CO<sub>2</sub> or any other harmful gases and there are no toxic substances within panels that - if damaged - could cause health impacts. There are no situations in which being in the proximity of a solar farm can have adverse health effects and has been demonstrated by the gigawatts of solar farm installations throughout the world.

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**Q Will the panel design exacerbate wind from the west over neighbouring paddocks used for cropping, grazing?**

**A** No. Walla Walla Solar Farm uses single axis tracking solar panel arrays that will be spaced between 8 – 14 metres apart. This increased distance between panel rows, combined with vegetation buffers, avoids the creation of a 'solar mass' and will prevent any build-up of wind speed or density over the solar farm that could impact neighbouring properties. This design layout will also protect the solar farm infrastructure itself, which is a key consideration for FRV in its desire to protect the wellbeing of its workers and optimise the performance of its asset.

## ENVIRONMENTAL

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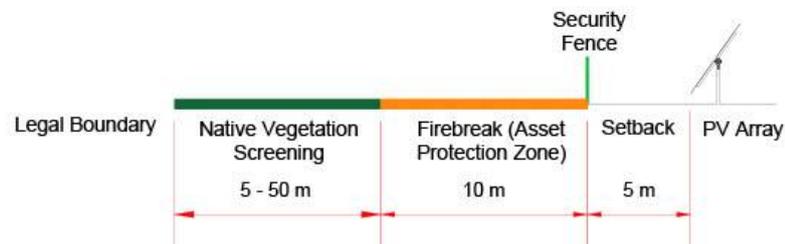
**Q How do you manage fire risk?**

Fire is a risk considered during the planning of a solar farm to ensure appropriate measures are included within the design to prevent, mitigate and manage any impacts to project personnel, assets and the wider community.

Full detail can be found within the EIS, however key items FRV have implemented into the design include;

- 6 proposed locations across the site with 20,000L Tank x2 (40,000L at each location)
- Additional Emergency Access points have been proposed across the site
- Proposed 2x Standpipes at existing RWCC waterpipe
- Quick fill pump unit at main entrance to site
- Sheep grazing to reduce fuel load
- 15 of the 17 farm dams on site to be retained
- A 10m wide Asset Protection Zone will be implemented around the entire perimeter of the project

Setbacks are a primary means of preventing widescale impacts from an unforeseen fire event. Below is a simple illustration of the clear setbacks which are implemented from legal property boundaries to the positioning of the PV Array - this includes the 10-metre Fire Protection Zone.



Additionally, a detailed Fire Management Plan is always required if the project is approved. This Plan is always completed in consultation with the local RFS.

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**Q How will you manage Hairy Panic & control weeds?**

**A** Through community consultation, FRV have been made aware of Hairy Panic. This weed will be addressed in project development, construction and operational management stages with clear guidance on how to monitor and mitigate any issues related to Hairy Panic.

FRV have implemented a strict 'wash down procedure' for all contractors, visitors and surveyors who need to visit the site - a practise which will continue throughout the full lifecycle of the solar farm. FRV have worked with local suppliers and will utilise local washdown facilities to assist in this matter to ensure the wash down and weed control is locally managed and local employment is supported.

During operations, a dedicated team member will be in charge of managing weeds within and around the solar farm which, when coupled with sheep grazing, will keep weeds to a minimum. FRV are also working with the landowners and local farming groups to ensure any land is sown with nitrogen rich plants such as clover and Lucerne to provide valuable food stock but that also assists with weed control.

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**Q Can sheep graze within the solar farm?**

**A** Yes. Sheep grazing currently co-exists with operating solar farms across Australia and the world. Sheep grazing also reduces weeds and fire fuel load.

**Q Will my neighbouring livestock and crops be impacted by any ‘heat island’ effects?**

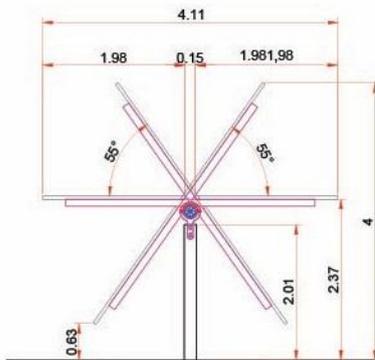
**A** Around the world and within Australia, sheep graze within solar farms. Livestock – including those proposed to be within the Walla Walla Solar Farm site during operations - will not be impacted as the design of the solar farm will ensure no significant build-up of heat at the site. Likewise, animals and crops on neighbouring properties will not be affected.

This is because the structure of the solar farm will not be thermally massive, i.e. there is no significant structure bulky enough to absorb and re-radiate an unsafe level of heat.

Walla Walla Solar Farm will also use single axis tracking technology, not ‘fixed’ panels, therefore avoiding ‘trapping’ heat underneath. These solar panels are thin (< 4cm) so they do not retain heat over the long term. During the daytime, panels track the sun, moving through the positions shown on the right, from sunrise to sunset.



*Sheep grazing at an existing FRV solar farm.*



Spacing between rows will be between 8-14 metres. The tracking mount system will be programmed to store panels in stow position (i.e. facing up to the sky, approx. horizontal to the ground) at night for cooling. In the stow position panels are approx. 2 metres off the ground.

Although not a requirement under NSW State Authority (DPIE) guidelines, FRV have implemented the conservative Victorian State Authority (DELWP) guidelines by implementing a minimum width of 30 metres between any solar panels and the legal boundary of neighbouring farming land. FRV have combined these setbacks with extensive vegetation screening across the project.

FRV are also installing a meteorological station on the land to capture data of the specific site.

**Q What is your flood analysis?**

**A** Detailed hydrology is not a requirement during the initial planning process however FRV has been pro-active and commissioned for this work to undertaken, to address community concerns on this matter. This study is a site-specific in-depth analysis of the hydrology of the land and identifies flow rates and flooding depths using sophisticated LIDAR measurements taken by a Drone.

*Indicative profile view of a row of panels on tracking mount system. At night panels will be stowed in the horizontal position. (Dimensions in metres)*

Based on this detailed survey, review of flood mapping, combined with the opinion of inhouse experts and information from local experience indicates that the site is not subject to a level of flooding that would impact the project. Detailed design work will mitigate any risks associated with periods of flooding.

To ensure that the creek is able to flow freely during the unusual periods of flood FRV are installing flood gates within the solar farm fence which also assist the ingress and exit of water. These will be installed and importantly, maintained throughout the life of the solar farm. In addition, FRV intend to upgrade a section of the creek which currently inhibits water flow.

In addition, the large areas between rows of solar panels allow for normal ground absorption of rain fall and no additional run off is perceived.

During the construction phase careful attention will be paid to minimising run off from tracks and this will be conditioned by the DPIE under the Construction Management Plan.

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**Q How many dams will be removed?**

**A** There are 17 dams across the project site. 15 will be retained and only 2 are proposed to be removed. 10 of the retained dams will be enhanced for wildlife.

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**Q Fog occurs in this area; has it been taken this into consideration?**

**A** Solar technology operates best in direct, bright sunlight but can also produce power in low light or cloudy conditions. Seasonal weather changes including fog are considered when calculating the energy production over the life of the solar farm. We use climate data from the Bureau of meteorology, and also install our own weather stations to measure irradiance and collect other weather data throughout the year on the specific site.

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**Q Can solar panels be recycled?**

**A** Over 90% of a solar panel can be recycled. The main materials of a solar panel are glass, aluminium and silicon. All these items can be recycled. As the demand grows, so will the supply of recycling facilities with dedicated Australian based solar panel recycling companies already in operation.

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**Q What will happen at the end of the project?**

**A** If a decision is made to decommission the solar farm then the asset will be disconnected from the electricity network and all infrastructure and assets will be removed from the site. Cabling will also be removed and materials will be either recycled or disposed of offsite. Building foundations would also be removed and the site ripped and sown so that it can be returned to full agricultural use. The substation will be owned and operated by TransGrid and therefore decommissioning of this asset will be under their control.

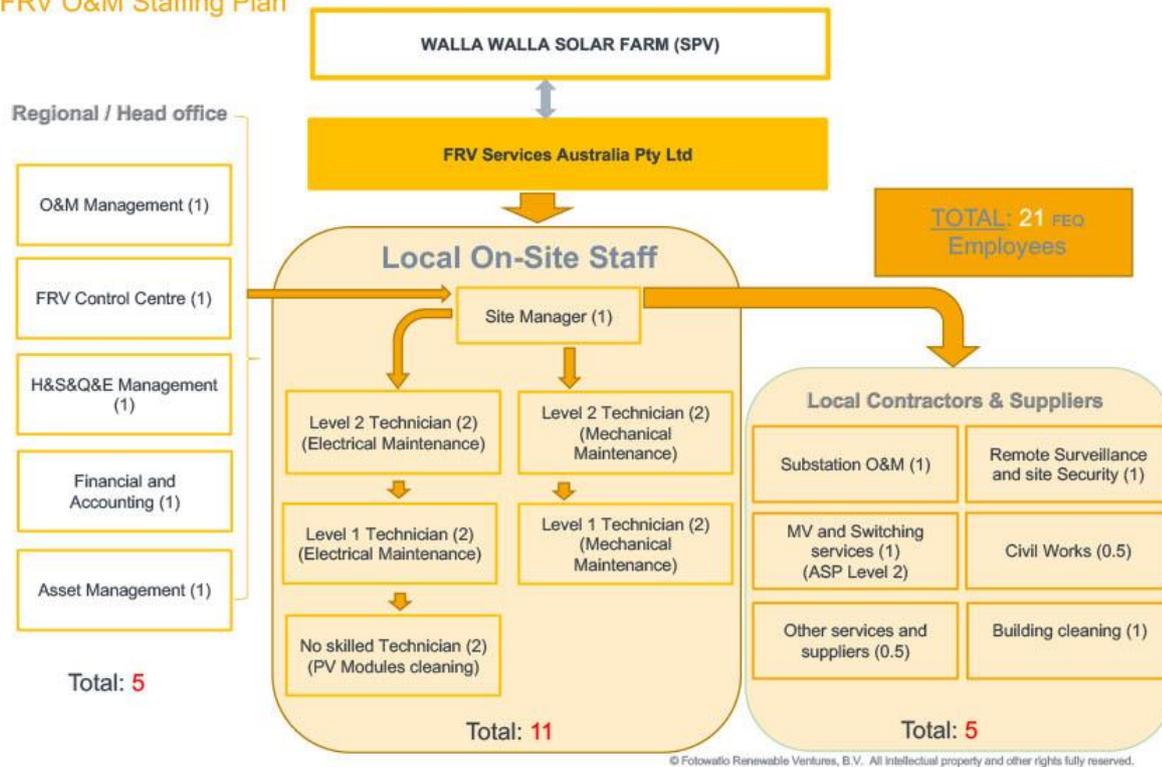
## **SOCIAL AND ECONOMIC**

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**Q** How many jobs will be available during operations of the Solar Farm?

**A** 21 jobs are likely to be required during the 30-year project. The jobs available will include the following:

O&M Services  
FRV O&M Staffing Plan



**Q** With the exception of job creation, what other benefits will the community receive?

**A** As the solar farm will be operating for 30 years, FRV is committed to giving back to the local community and will be working with Greater Hume Shire Council, local groups and organisations, to determine where funds can be best allocated to provide optimum benefit to the community. FRV have committed to a Voluntary Planning Agreement (VPA) with Greater Hume Shire Council.

**Q** Will there be a contact onsite at all times in case of emergency?

**A** The plant is fully maintained throughout the life of the solar farm. There will be a 24/7 contact. An Operations Manager and other staff members will be based in close proximity to the solar farm. The Solar Farm will also be monitored 24/7 by remote CCTV and regular security and operational patrols.

**Q** What is a Power Purchase Agreement (PPA)?

**A** A power purchase agreement or a PPA is simply a contract to buy power. The contract will specify the price of which the power is bought and length of the contract. Sellers of these agreements are utility scale generators e.g. Solar and Wind Farms. Purchasers of these contracts have significant electricity requirements which allows them to purchase all or some of the output of a project. Examples of buyers include utilities, governments and major

corporates. Examples of companies which have entered into PPAs across Australia include E.g. Telstra, Mars, Blue Scope Steel, Snowy Hydro, UNSW, Coles etc with many others considering this option. FRV have secured PPA's for both our Goonumbla Solar Farm & Sebastopol Solar Farm in NSW.

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**Q What are the insurance implications for neighbouring properties to a solar farm?**

**A** As a global and well-established company, FRV have extensive insurance policies in place for all our projects. In the unlikely event that the solar farm is damaged due to a bushfire, FRV would seek to claim from this insurance. It is important to note, that this is a valuable and important asset to FRV and therefore will be implementing all the necessary requirements to protect the project. A detailed Bushfire Management Plan is prepared for all our projects. Due to the level of detail in mitigation measures, compared to the original use of the land, it can make a project a comparatively benign proposition and reduce the risk presented to the site.

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