Solar Energy Facilities

Design and Development Guideline

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Acknowledgment

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.
We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

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About this guideline

Purpose of the guideline

The *Solar energy facilities – design and development guideline* provides an overview of the policy, legislative and statutory planning arrangements for solar energy facility projects in Victoria.

This guideline should be used to guide the development of, and assist in the granting of a permit for, ground-mounted photovoltaic (PV) solar structures the main purpose of which is to export electricity generated onsite to the National Electricity Market (NEM), either directly or via battery storage. This guideline does not apply to roof-mounted solar panel arrays, which mainly supply energy to an existing use on the land on which it is located.

This guideline provides:

- information for solar farm developers (proponents), the community, regulators and decision-makers (responsible authorities) relating to the *Planning and Environment Act 1987* (the P&E Act) and the Victoria Planning Provisions (VPP)
- information and direction about the policy, legislative and statutory planning requirements relating to the siting and design of solar energy facilities
- an overview of best-practice advice relating to each stage of the site selection, design, construction, operation and decommissioning continuum.

This guideline is intended as a resource for:

- proponents considering developing ground-mounted solar energy facilities in Victoria
- responsible authorities and stakeholders who provide advice and consider the appropriateness of a solar energy facility in any given location
- any party interested in understanding the process to develop solar energy facilities in Victoria.

Support and advice

Seek expert planning advice and assistance from the outset

The Department of Environment, Land, Water and Planning (DELWP) recommends proponents engage a town planning consultant, to help them navigate the planning permit application process. This will save time and cost, as well as avoid confusion. A planning consultant can help prepare the plans, reports and other documents needed to comply with the requirements of the P&E Act and other regulatory requirements.

An application will generally need to be accompanied by assessments of the ecological, visual, noise, traffic, Aboriginal cultural heritage and other environmental impacts (as applicable) of the proposal. Suitably qualified professionals must prepare these assessments. The proponent should seek expert advice about these matters early, to inform the selection of a site and the preparation of the site analysis and design response. Assessments submitted with the application should clearly state the facts, matters and all assumptions on which the assessments were based.

Engage DELWP and key stakeholders early in the process

There are several Victorian Government agencies that provide information to support the siting of a solar energy facility. DELWP encourages early engagement, which helps to facilitate appropriate site selection and a more-streamlined planning permit assessment process. The department can help a proponent with:

- the planning permit application and assessment process
- state and Commonwealth environmental impact assessment processes
- information requirements for the removal of native vegetation and for other flora and fauna requirements
- site selection within a declared irrigation district
- information for cultural heritage, traffic management and other studies or plans an application may need.

DELWP invites proponents to discuss the selection of a site and the preparation of an application. To do so, call 1800 789 386 or email development.approvals@delwp.vic.gov.au.

Solar energy facilities proposed within declared irrigation districts

A proponent must engage DELWP Water and Catchments Group (solar.water@delwp.vic.gov.au) early in the site selection phase of a project.

DELWP Water and Catchments Group will connect proponents with the relevant rural water corporation who can assist by providing initial site-specific information on whether a proposed site is within a declared irrigation district and serviced by irrigation infrastructure that the rural water corporation manages.

DELWP Water and Catchments Group can also assist proponents by providing advice (based on rural water corporation site-specific information) on appropriate siting considerations with respect to this Guideline and VPP Clause 14.02-3S Protection of declared irrigation districts.

Early engagement will contribute to appropriate site selection decisions which is essential to a project's success. Further information about this can be found on page 16 of this Guideline.

Structure of the guideline

This guideline leads proponents and decision-makers through the various stages of the siting, design and development assessment process. It identifies, and addresses issues they may need to consider during each stage. Below is an overview of how the guideline is structured.

Section	What's in it
About this guideline	What the guideline is, who it's for and with whom to engage at the start of the process
Solar energy facilities in Victoria	What a large-scale solar energy facility is and Victorian Government policies and strategies to encourage more renewable energy in Victoria
Identifying a suitable location	Policy, strategy and legislative matters to consider at the site selection stage and approvals that might be needed at or before the planning permit stage
Best practice for proponents	Things to consider to engage the community and to design, construct, operate and decommission a facility, to inform preparation of a planning permit application
Applying for a planning permit	The Victoria Planning Provisions framework for the assessment of a planning permit for a solar energy facility and its associated infrastructure, and information about the administration of a planning permit

Solar energy facilities in Victoria

The Victorian Government's objective is to accelerate the development of well-sited and well-designed renewable energy generation facilities in Victoria, to reduce emissions, create jobs and put downward pressure on energy prices, while meeting legislated generation targets.

What is a large-scale solar energy facility?

This guideline addresses the most-common type of solar energy facility, which uses ground-mounted PV solar panel arrays to generate electricity by converting sunlight directly into electricity. Panels are laid out in groups, called pods or zones, which are connected to inverters that convert the direct current electricity the panels generate into alternating current. The electricity is then either stored onsite in batteries or fed straight into the national electricity transmission network.

Concentrated solar thermal (CST) technology, which is less common, uses mirrors to reflect and concentrate sunlight onto a central thermal receiver. The resulting heat in the receiver can then be used to generate power using conventional steam turbines, or it can be stored for several hours then used. This energy-storage capacity enables CST to produce dispatchable electricity to the network.

The guideline defines a large-scale solar energy facility as a facility located on land used to generate electrical energy using ground-mounted photovoltaic or CST technology structures, starting at one megawatt installed capacity, where the primary role is to export power to the national electricity transmission network. The guideline does not include solar panel arrays located on rooftops, and/or where the generation of electricity is principally to be used by an existing use on the land.

For the purposes of a planning permit application, VPP Clause 73.03 Land use terms defines 'Solar energy facility'.

The Renewable Energy Action Plan

The *Renewable Energy (Jobs and Investment) Act 2017* supports a target of 25% renewable energy generation by 2020 and 40% by 2025. In 2018, the Victorian Government announced a commitment to increasing the target to 50% by 2030.

Victoria's Renewable Energy Action Plan outlines the action the Victorian Government is taking to encourage investment in the renewable energy sector, to ensure Victorians benefit from a renewable, affordable and reliable energy system into the future. The plan aims to ensure:

- supply remains affordable, as more consumers and communities gain greater control over the energy they use, generate and store
- the energy system remains safe and secure, so Victorians can continue to enjoy the current high levels of energy reliability
- the sector creates jobs, attracts investment and grows the economy, for the benefit of all Victorians.

The plan sets out a long-term renewable energy policy agenda and pathway, and it connects a suite of initiatives that will drive investment and action in renewable energy.

Identifying suitable locations

Ideal siting conditions

Most well-sited, carefully designed solar energy facilities have minimal impacts on surrounding communities, the environment and other land use activities. However, a proposal to construct a solar energy facility can lead to community concern about the facility's potential impacts.

It is important that the siting of solar energy facilities in declared irrigation districts aligns with rural water corporation assets and future planning, to ensure the future viability of irrigation districts is protected. This is discussed further on page 16.

A solar energy facility should not lead to:

- the loss or interruption of supply to the immediate or broader electricity transmission network
- the loss of vegetation, habitat or species of environmental importance
- the loss of cultural heritage or landscape values of significance
- the loss of productive, state-significant agricultural land
- increased exposure of the area to fire, flood or other natural or environmental hazard.

Ideally, a solar energy facility should be located:

- on land with topographical conditions that avoids the need for unnecessary or excessive earthworks or changes to the natural landscape
- to avoid the loss of native vegetation and biodiversity and if losses cannot be avoided, they are minimised and can be offset
- close to the electricity grid network, to minimise the need for additional infrastructure and associated impacts
- a sufficient distance from existing urban areas or designated urban growth areas
- where there can be adequate space between facilities within an area to avoid cumulative impacts of built form concentration
- away from the floodplain of a major water course or wetland
- where it has ready access to main roads
- to avoid land in a declared irrigation district that is serviced, or was serviced at 17 September 2019, by irrigation infrastructure managed by a rural water corporation, unless the infrastructure has been, or is planned to be, decommissioned.

Connecting to the electricity transmission network

Electricity transmission network connections

Solar energy facilities connect into the NEM through the Victorian electricity transmission network. Electricity generated from a solar energy facility is transferred via high-voltage transmission lines to energy users.

Victoria's electricity transmission network is planned by the Australian Energy Market Operator (AEMO). In Victoria, the transmission network is owned, operated and maintained by licensed transmission network service providers (NSPs) including AusNet Services, TransGrid and Powercor.

A solar energy facility seeking to connect to the NEM must have its generator performance standards approved by AEMO, in accordance with the National Electricity Rules. In Victoria, AEMO administers connection applications to the electricity transmission network, and NSPs administer connections to the distribution network.

Proponents seeking to connect to the NEM should be familiar with the transmission and distribution network and should identify any likely constraints, loss factors or additional infrastructure they may require.

Proponents should also review strategic documents the AEMO and the relevant NSP have produced, and they should discuss their proposed connection with both organisations as early as possible. Ideally, the proponent should have acknowledgments in writing from the AEMO and the relevant NSP of their intention to connect to the NEM before starting the planning permit application process.

Managing cumulative effects in an area

The clustering of solar energy (or other renewable energy) facilities in an area can result in efficiencies by sharing existing, or augmenting, electricity network infrastructure. However, too many facilities in an area can:

- reduce the availability and/or productivity of strategic agricultural land
- result in landscape-scale visual impacts, due to an overconcentration of built form in an area
- impact the area's biodiversity, habitat or wildlife, due to an overconcentration of built form.

The cumulative impacts of solar energy facilities on an area can be reduced by:

- having a mix of land use activities including solar energy facilities in the area
- agrophotovoltaics — the dual use of a site with agriculture
- having enough distance between solar energy facilities within an area to minimise or avoid environmental impacts and natural hazard risk exposure.

Protecting environmental values

Victoria's natural environment is richly diverse, unique and beautiful, and it is fundamental to the health and wellbeing of all Victorians. The good management and protection of native vegetation and areas of biodiversity significance is essential for maintaining healthy, vibrant ecosystems.

Crown land

Access to public (Crown) land including government roads (unused or unmade) for a solar energy facility requires the prior approval (except where provided for by legislation) of the responsible land management agency. This is usually DELWP.

Ideally, commercial infrastructure should not be located on, over, under, and should not affect public land and government roads, where it can be located on private land or where exception is provided for under legislation. The proponent must seek DELWP's approval if it requires access to public land.

DELWP may require a proponent to undertake an environmental assessment, Native Title assessment and/or community consultation, which is separate to planning approvals requirements under the P&E Act. DELWP encourages proponents who require access and use of public land to undertake such approval concurrently with the planning application process. Applications made after the granting of a planning permit is discouraged.

If DELWP approves the proponent accessing public land, it will require the proponent to enter into a tenure or occupation agreement and to pay fees and charges as required.

DELWP may consider the following uses and developments for public land:

- installing underground cabling
- installing overhead power lines and power poles
- accessing government roads
- building new or upgrading existing access over and across the public land, other than government roads
- constructing large-scale transmission lines and associated infrastructure
- constructing a solar energy facility and its associated infrastructure.

A proponent should consult the relevant public land manager (such as DELWP and Parks Victoria) and seek advice as early as possible, to ensure it understands the necessary processes and information requirements prior to progressing a planning permit application.

Flora and fauna

A proponent can avoid or minimise impacts on flora and fauna species and habitats by a solar energy facility and its associated infrastructure by addressing siting and design considerations at the site selection and project planning stages.

Flora and fauna on a site might be protected by either national or state arrangements. The Commonwealth ***Environment Protection and Biodiversity Act 1999*** (EPBC Act) provides for the protection of matters of national environmental significance including nationally significant threatened species and wetlands protected under the Ramsar Convention of Wetlands of International Importance. The habitat values of wetlands and wetland wildlife habitats used by designated species are also protected under the Japan-Australia Migratory Birds Agreement, the China-Australia Migratory Birds Agreement and the Republic of Korea-Australia Migratory Birds Agreement.

The ***Flora and Fauna Guarantee Act 1988*** is Victoria's key legislative instrument used to protect and conserve threatened species and communities and to manage potentially threatening processes. Under section 20, a permit may be required to remove protected vegetation if it is part of the declared critical habitat of that flora. Matters listed under this Act can also form the basis for referral to the Minister for Planning for a decision about the need for an environment effects statement (EES) under the ***Environment Effects Act 1978***.

Protecting Victoria's Environment – Biodiversity 2037 is the Victorian Government's strategy for prioritising the care and protection of Victoria's natural environment.

Project-specific impacts vary widely with location and species. The proponent should arrange for an assessment of the proposed site and the impact of the development on flora and fauna species, to identify risks and how to avoid or minimise them.

For further information about protection of flora and fauna in Victoria, please visit: environment.vic.gov.au.

Native vegetation and biodiversity

Native vegetation are plants that are indigenous to Victoria which includes trees, shrubs, herbs and grasses and mapped wetlands. Native vegetation provides habitat for plants and animals, and ecosystem services that make land more productive and contribute to human wellbeing.

VPP Clause 12.01-1S Protection of biodiversity and Clause 12.01-2S Native vegetation management sets out the policy objectives and strategies to protect biodiversity and native vegetation across Victoria. If native vegetation is to be removed, lopped or destroyed, it will require a planning permit under VPP Clause 52.17 Native vegetation.

Victoria's objective to protecting native vegetation is to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation. This can be achieved by applying the following three step approach in accordance with the guidelines:

- avoiding the removal, destruction or lopping of native vegetation
- minimising any impacts of the removal, destruction or lopping of native vegetation that cannot be avoided
- providing an offset to compensate for the biodiversity impact if a permit is granted to remove, destroy or lop native vegetation.

A proponent should consult *Guidelines for the removal, destruction or lopping of native vegetation* and *Applicant's guide - Applications to remove, destroy or lop native vegetation*. These explain how native vegetation requirements can be met.

A proponent should discuss the need to remove, lop or destroy vegetation with DELWP as early as possible, to ensure the solar energy facility is sited and designed with minimal impact on native vegetation.

For further information about native vegetation in Victoria and the process for assessing and applying for a permit to remove, lop or destroy native vegetation, please visit: environment.vic.gov.au/native-vegetation.

Protecting cultural heritage

A solar energy facility and its associated infrastructure can potentially impact Aboriginal cultural heritage and other historic heritage values. Aboriginal cultural heritage values are protected by ***Victoria's Aboriginal Heritage Act 2006*** and ***Aboriginal Heritage Regulations 2007***. A proponent must consider potential impacts and the views of relevant Aboriginal people before lodging a planning application.

VPP Clause 15.03-2S Aboriginal cultural heritage sets out the policy and objectives to protect and conserve places of Aboriginal cultural heritage significance. Land used to generate electricity is defined as a high-impact activity under Division 5 of the ***Aboriginal Heritage Regulations 2007***. A Cultural Heritage Management Plan (CHMP) may be required under these regulations if the proposal:

- requires an EES under the ***Environment Effects Act 1978***
- is in an area of cultural heritage sensitivity that has not previously had significant ground disturbance.

If a CHMP is required, a proponent must arrange for a heritage adviser to prepare it. Where a CHMP is required under the Aboriginal Heritage Act 2006, it must be approved before a planning permit application can be determined. Proponents should consult *Planning Practice Note 45 – The Aboriginal Heritage Act 2006* for information about the regulations and process for developing a CHMP.

Protecting sustainability of agricultural production

Victoria produces over 30% of Australia's food and fibre, and it accounts for about one-quarter of Australia's agricultural production including meat, grains, fruit, vegetables and dairy products. Renewable energy generation can and does coexist with agricultural production, which contributes to the rural economy and supports farm incomes by diversifying property owners' revenue streams.

Avoiding strategically important agricultural land

Agricultural land may be considered to be high-value and strategically important due to a combination of features such as high-quality soils, good rainfall, access to water, resilience to climate change, infrastructure investment and integration with industry.

VPP Clause 14.01-01S Protection of agricultural land sets out policy objectives and strategies to manage and protect agricultural land. Proponents should consult the regional and local segments of the relevant planning scheme, as areas of strategically significant agricultural land may also be identified at these levels. Key policy measures include:

- 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.

As part of the site selection process, decision-makers should also consider the policy objectives and strategies outlined above and 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.

A proponent should address the considerations above in the written report component of the planning permit application.

Avoiding land serviced by irrigation infrastructure

The Victorian Government's policy on protection of declared irrigation districts, as reflected in the planning framework, is to protect agricultural land serviced by irrigation infrastructure to ensure the future viability of an irrigation district.

The Victorian Government has invested over $2 billion in modernising irrigation infrastructure across the state to support ongoing productivity and viability of irrigation districts. A return on this public investment requires the utilisation of these assets for the purpose of agricultural production.

This investment forms part of a suite of Victorian Government policies and programs that support irrigation districts to actively respond and adapt to a range of challenges, including those linked to changing water availability, regulatory reforms, and global commodity markets.

The cumulative effect of land use changes away from agricultural production in declared irrigation districts has the potential to undermine their viability and the State's significant investment in modernising the irrigation infrastructure that supports these declared irrigation districts.

Rural water corporations need to be able to strategically adjust the irrigation infrastructure footprint to optimise their services, based on a whole-of-system asset management and planning perspective. Ad hoc land-use change away from irrigated agriculture on irrigation serviced properties reduces scope for whole-of-system asset management and planning, undermining efforts to sustain the integrity and viability of these important assets and the agricultural communities they support.

The Victorian Government is committed to ensuring that the siting of solar energy facilities aligns with rural water corporation assets and future planning, enabling optimal use of resources and assets within irrigation districts for the purpose of agricultural production and allowing for future strategic adjustments of the irrigation district footprint where sustainable.

Victoria's irrigation districts are managed by rural water corporations established under the ***Water Act 1989***. The irrigation districts and the rural water corporations that manage them are:

- the Goulburn Murray, Nyah and Tresco irrigation districts: Goulburn Murray Water
- the Merbein, Red Cliffs, Robinvale and First Mildura irrigation districts: Lower Murray Water
- the Macalister, Werribee and Bacchus Marsh irrigation districts: Southern Rural Water.

If a proponent plans to locate a solar energy facility on a site that is potentially within an irrigation district, it should make early contact with DELWP Water and Catchments Group (solar.water@delwp.vic.gov.au). DELWP will connect the proponent to the relevant rural water corporation for initial site-specific information on whether the proposed site is within a declared irrigation district, and if so, whether it is serviced by rural water corporation irrigation infrastructure.

DELWP Water and Catchments Group can assist proponents by providing advice (based on rural water corporation site-specific information) on appropriate siting considerations with respect to this Guideline and VPP Clause 14.02-3S Protection of declared irrigation districts.

Clause 14.02-3S sets out state-wide policy objectives and strategies for protecting declared irrigated districts. The policy objective is to plan and manage for sustainable change within declared irrigation districts. The strategies to achieve this objective are:

- Identify and plan for the future needs of communities to adapt and adjust to strategic land use change in a declared irrigation district.
- Ensure the future viability of a declared irrigation district by preventing non-agricultural use of land in a declared irrigation district where the land is serviced, or was serviced as at 17 September 2019, by rural water corporation irrigation infrastructure, unless the rural water corporation infrastructure has been, or is planned to be, decommissioned.
- Ensure non-agricultural land use does not undermine the integrity of the irrigation network and complements existing and future agricultural use and productivity.
- Ensure land use change in a declared irrigation district does not negate the potential opportunities for a rural water corporation to make adjustments to the footprint of a declared irrigation district that are identified under an approved plan or strategy.
- Ensure land use change does not limit the ability of future investment in irrigation infrastructure to realise the intended benefits of minimising water loss, improving irrigation service efficiency to the farm gate and increasing overall agricultural productivity.

Given the importance of the irrigation districts to Victoria, VPP Clause 66.02 Use and development Referrals has a statutory referral arrangement to ensure a planning permit assessment considers the above matters.

The Decision guidelines section has further information about this and other referral arrangements.

Minimising impacts on landscape values

The Victorian community places a high value on landscapes with significant visual amenity due to their environmental, social and economic benefits. The visual impact of a solar energy facility and its associated infrastructure can impact its immediate location and have a causal effect on a broader setting.

Solar energy facilities are not encouraged, in recognition of their landscape and environmental values, in:

- national parks and other land subject to the *National Parks Act 1975*
- Ramsar wetlands as defined under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

VPP Clause 12 Environmental and landscape values sets out the policy and strategy considerations along with a number of landscape and environmental reference documents to support them including:

- regional growth plans
- coastal and regional landscape assessment studies
- green wedge management plans.

These and other documents, and their component parts may be represented in planning schemes through overlays such as the Environmental Significance Overlay, Vegetation Protection Overlay and the Significant Landscape Overlay. Where an overlay applies to a proposed site, a proponent should consider the matters in the documents and overlay as part of the site selection process, and it should address any measures adopted or required by them in the written report component of the planning permit application.

The visual impact of a solar energy facility relates to:

- the sensitivity of the landscape and its ability to absorb change
- the size, height, scale, spacing, colour and surface reflectivity of the facility's components
- the number of solar energy facilities located close to each other another within the same landscape
- the excessive removal, or planting of inappropriate species of vegetation
- the location and scale of other ancillary uses, buildings and works including transmission lines, battery storage units and associated access roads
- the proximity to environmentally sensitive areas such as public land, water courses and low-lying areas.

An understanding of the site and its immediate landscape should include:

- the topography of the land
- the amount and type of existing vegetation, flora and fauna and habitat
- the relationship to natural features such as waterways, cliffs, escarpments, hills, gullies and valleys
- the type, pattern, scale and character of built form including roads and walking tracks
- relationships to any known cultural heritage sites
- the ability to avoid or minimise impacts with landscaping mitigation or other measures.

A proponent should discuss landscape assessment matters with the responsible authority, to ensure they obtain the correct information and assessments to inform the Application Requirements explained in this guideline.

Natural hazard management

The Victorian landscape has a range of natural and environmental hazards that a proponent should consider as part of site selection and operation of the facility. It should consider exposure to bushfire, flood, landslip, salinity and erosion and avoid risks where possible and manage them if avoidance is not possible.

Bushfire management

VPP Clause 13.02-1 Bushfire planning sets out policy objectives and strategies for managing bushfire risk in Victoria.

Local planning schemes may identify an area as bushfire-prone by applying the Bushfire Management Overlay (BMO). If a site is located within the BMO, a referral to a relevant fire management authority will be required as part of the planning permit application process. Not all areas requiring bushfire risk management are within the BMO. A site might be located in a Bushfire Prone Area (BPA) with fire management requirements linked with the ***Building Act 1993***.

Proponents should consult the relevant fire management authority early in the site selection and design process, to ensure a facility avoids unnecessary bushfire risk exposure and has fire management planning in place to manage risk. Relevant authorities include the Country Fire Authority (CFA), Metropolitan Fire Brigade (MFB) and DELWP.

Within rural and regional areas, a proponent should consult the CFA's *Design guidelines and model requirements for renewable energy facilities* for information about bushfire risk management and other risk management matters.

Flood management

VPP Clause 13.03-1 Floodplain management sets out policy objectives and strategies for managing development within floodplain environments. Floods can impact a facility located close to or within the floodplain of a water course or river system, as can overland flows where very flat, low-lying areas can collect and discharge flood waters slowly.

A proponent should avoid siting a solar energy facility within an identified floodplain to a major river system and a mapped wetland area, to avoid unnecessary risk to the facility and its associated infrastructure and the consequential need for flood attenuation measures such as flood levies and barriers.

A solar energy facility can occupy a large site, and earthworks to grade or level a site can change the overland flow of water, which can change natural and constructed drainage patterns. This can increase the risk from future flood events on the site and neighbouring land.

Local planning schemes may identify if an area is flood-prone by applying one of either the Flood Overlay, the Land Subject to Inundation Overlay or the Urban Flood Zone to an area. If a site is located within one of these controls, a referral to a Floodplain Management Authority (FMA) will be required, as part of the planning permit application process.

FMAs are established under the ***Water Act 1989*** and provide guidance and approvals for developments within identified floodplain areas. In rural and regional Victoria, Catchment Management Authorities (CMAs) are the FMA and Melbourne Water is the FMA in metropolitan Melbourne.

Best practice for proponents

Engaging the community

Community engagement refers to the processes by which a proponent interacts with the community in relation to the development of the solar energy facility project. How best to engage the community is an important step in the development process.

A community includes people or groups who live in, and/or identify with, the area surrounding a proposed site including stakeholders and decision-makers such as residents, farmers and Traditional Owners.

Early community consultation is important

Community engagement is most effective in developing constructive relationships and trust if it starts as early as possible. Therefore, community engagement should start well before a planning permit application is lodged with the responsible authority, to understand the community's views and to address any concerns.

Under section 52 of the P&E Act, notice of a planning permit application must be given. Undertaking early consultation before lodging an application is important preparation for this part of the process.

Engaging Traditional Owners

Proponents are encouraged to consider engaging with Traditional Owner groups at the inception stage of the project. The Victorian Government is committed to supporting Victoria's Traditional Owners' cultural values and access to Country, and it works with them in partnership to manage public land. Acknowledgment of and respect for Aboriginal cultures, values and practices is at the heart of successful engagement.

There are many Traditional Owner groups and Aboriginal communities across Victoria. DELWP's Traditional Owner Agreement Unit and Aboriginal Inclusion Branch can provide advice and support about how best to engage with Victoria's Traditional Owners and Aboriginal communities.

Developing well-planned consultation

Community engagement and benefit-sharing are fundamental to generating community support and delivering positive and effective outcomes for solar energy facility projects.

The Victorian Government's *Community engagement and benefit sharing in renewable energy development in Victoria - A guide for renewable energy developers* provides best-practice guidance about community engagement for renewable energy projects including solar energy facilities.

A well-developed community engagement plan is the basis for an effective, efficient engagement program. Effective engagement not only informs communities about project decisions and actions: it also involves them in the process. The engagement principles that should inform a plan are:

- mutual benefit
- mutual respect
- relationship-building
- authenticity
- appropriateness
- ongoing engagement
- transparency and responsiveness.

The plan should be clear, transparent and tailored to the site context. It should include monitoring actions and opportunities for the community to give feedback, to inform the planning process. The plan should cover the entire project lifecycle from site selection to decommissioning.

Important questions to address when developing a community engagement plan include:

- has the development process and timeline been clearly communicated to the local community through a range of engagement activities
- has the local community had the opportunity to understand the proposal through information sessions or site visits to other facilities?
- is clear information available about the efficiency of the proposed facility and its effects on the price of electricity?
- is clear information available about the types of services and jobs required for the project, and are there opportunities for locals?
- are the project details such as visual simulations and project timelines available on a website?
- is clear information available about any technical or environmental risks associated with the facility, including planning documentation?
- have potential impacts on cultural heritage, environmental, landscape or other values been proactively addressed and communicated?

Benefit-sharing

A benefit-sharing program aims to add value to the locality over the facility's lifecycle, and a proponent should consider how the facility can benefit the local community and other stakeholders. Community engagement will inform this consideration.

A proponent can demonstrate its commitment to benefit-sharing by:

- conducting social sustainability activities
- investing in local community infrastructure
- supporting local community groups, project and facilities
- contributing to the local economy through a local industry participation plan.

A proponent may also consider other community engagement plans provided by local government authorities where relevant.

Ongoing engagement

Once a solar energy facility is built, it becomes an ongoing feature of the local community. After construction, the facility operator should shift its engagement focus to maintaining positive, mutually beneficial relationships with the community.

When planning the decommissioning process, the community should be engaged with any plan to rehabilitate the land, or to refurbish and upgrade the facility to extend its operating life.

Design stage

Siting facility components

Careful siting of the facility's components and its associated infrastructure will help avoid or minimise their impacts. Siting inverters and other large buildings and structures away from the boundaries of adjoining property and establishing boundary setbacks which includes landscape screening will avoid the heat island effect, reduce visual and noise impacts and support emergency management.

A proponent should consider:

- providing a minimum setback of 30m from any part of a component that makes up a solar pod or zone, or other building or structure, measured from the neighbouring property boundary
- increasing the minimum setback to an appropriate distance to manage bushfire hazard areas, interface with sensitive wetlands or environmental areas
- providing a minimum 6m of separation between each solar pod or zone, to allow emergency vehicle access for firefighting or other management purposes
- locating inverters that service a solar zone/pod towards the interior of the site, away for neighbouring property boundaries
- grouping large electrical transfer, substation, battery storage unit, carparking or other ancillary buildings or structures in a single location accessible from a main road
- providing an appropriate separation distance from any battery storage unit and other solar component, as required by the relevant fire authority
- providing appropriate landscaping in an agreed setback area, to screen any buildings or solar components from view from a neighbouring sensitive use, main road or other highly visible public vantage point.

Depending on its height and associated infrastructure, larger setbacks and a more-tailored landscaping approach is required for a CST facility, to adequately ameliorate visual impacts and any other impacts on neighbouring sensitive uses and public vantage points.

A proponent should seek advice from the relevant fire authority about the siting of a battery storage facility relative to other structures and property boundaries, to ensure compliance with the *Dangerous Goods (Storage and Handling) Regulations 2012*.

Landscape screening

A proponent should establish landscape screening to reduce the visual impacts of the facility on neighbouring sensitive uses, or on public views from a main road. Landscape screening also reduces noise and light spill, helps manage dust and helps provide habitat. Landscape screening can include vegetation, earth mounds or another method to screen an area from view. A proponent should:

- use vegetation species that are indigenous to the area or region
- locate vegetation along the perimeter of a site, within proposed setbacks
- ensure vegetation will be of sufficient height, width and foliage density at maturity to screen relevant solar components and the associated built form from view
- plant vegetation early in the construction stage
- plant vegetation in accordance with any fire management plan arrangements, to avoid increased bushfire risk exposure.

Some boundaries may not need screening. A proponent should consider screening within proposed setbacks along any external main roads, along boundaries where there may be a sensitive land use or at strategic locations on a site, to limit visibility from other public vantage points.

Screening may not be appropriate if it could impact on neighbouring agricultural or horticultural activity. Screening should be planned in consultation and preferably with the agreement of neighbouring property owners.

Glint and glare management

Glint which is the momentary flashes of light, and glare which is continuous, excessive brightness, can affect nearby sensitive land uses under particular conditions. 'Receptors' of glint and glare from a solar energy facility can include residents in surrounding dwellings, road users and aviation service providers including pilots and air traffic controllers.

Glint can be caused by direct reflection of the sun from the surface of an object, whereas glare is a continuous source of brightness. Glare is much less intense than glint. A CST system is likely to have levels of glare greater than a ground-mounted solar PV system, and requires a more tailored impact assessment approach. To avoid glint and glare, a proponent should:

- site and design solar components and associated buildings and infrastructure to ameliorate glint and glare impacts to within acceptable levels
- use anti-reflective solar panel coatings and non-reflective frames and avoid using reflective materials and paints on buildings and infrastructure
- adjust the orientation of panels relative to glare risks such as oncoming traffic coming down a road from an elevated area
- locate landscape screening of a sufficient height, width and foliage density at maturity to reduce glint and glare impacts.

Any assessment of glint and glare should use an accepted methodology based on best practice and consider impacts on:

- dwellings and roads within 1 km of the proposed facility, taking into consideration their height within the landscape
- aviation infrastructure including any air traffic control tower or runway approach path close to the proposed facility
- any other receptor to which a responsible authority considers solar reflection may be a hazard.

The impacts of solar reflection vary for each type of receptor. The following criteria for glint and glare effects, should be used to guide an assessment.

- **No impact:** a solar reflection is not geometrically possible, or it will not be visible from the assessed receptor. No mitigation is required.
- **Low impact:** a solar reflection is geometrically possible, but the intensity and duration of an impact is considered to be small and can be mitigated with screening or other measure.
- **Moderate impact:** a solar reflection is geometrically possible and visible, but the intensity and duration of an impact varies according to conditions. Mitigation measures (such as through design, orientation, landscaping or other screening method) to reduce impacts to an acceptable level will be required.
- **Major impact:** a solar reflection is geometrically possible and visible under a range of conditions that will produce impacts with significant intensity and duration. Significant mitigation measures are required if the proposed development is to proceed.

The responsible authority will require a glint and glare assessment, and a proponent should agree a methodology for the assessment with the responsibility authority. Where a solar energy facility is proposed close to an airfield, airport or road network, the proponent should consultant the owner/operator of the facility and the relevant roads corporation.

Designing security measures

Measures to keep the site secure at all times can be visually intrusive and can restrict the movement of wildlife in the area, given the type and size of fencing, lighting and other measures that are required. Security measures should be designed to minimise their visual impact and impacts on native flora and fauna. Security measures should:

- prevent light spill to nearby sensitive land uses and vegetated areas
- use external lighting of a lux and colour output that provides safe levels of illumination while avoiding impacts on neighbouring habitat
- be designed to consider the impact on the movement of wildlife within the area
- be set back an appropriate distance from a property boundary and use landscaping or vegetation to screen security fencing and lighting
- provide appropriately located emergency access points as required by the relevant emergency management authority.

If security fencing is to replace current fencing that forms the property boundary, it should be by agreement with the adjoining landholder.

Traffic impacts

Traffic generated by solar energy facilities can affect the operation of and cause damage to the road network, particularly during the construction stage. During this stage, congestion on the road network due to large volumes of construction vehicles can cause delays and damage to roads.

A traffic impact assessment (TIA) must be prepared as part of a planning permit application. A TIA should:

- identify access routes and all roads that will be used to transport construction materials
- identify access routes, types of vehicles and traffic generation when the facility operates
- specify the timing, type of vehicle, daily volume and scheduled delivery times of construction materials
- provide timelines for the whole construction stage
- identify intersection upgrades and any road works required to accommodate access to the site, and specify if these are temporary arrangements.

Depending on the outcome of the TIA, the responsible authority and/or relevant roads corporation may require a traffic management plan as a planning permit condition. The Construction and operation stage section of this guideline explains this further.

Noise

A facility should manage noise impacts in accordance with the Environment Protection Regulations under the ***Environment Protection Act 2017***. More information about the laws that control noise is available on the EPA Victoria website.

Noise attenuation measures could include:

- ensuring any components operate to relevant standards
- acoustic housing or baffles at the noise source
- conducting maintenance and other operational activity during the daytime
- using landscaping or locating noisier components centrally within a site.

Earthworks and dust management

A solar energy facility can occupy a large area and can reshape the topography through extensive grading and other land disturbance processes, changing the way water flows over land and potentially contributing to altered flood flows or creating erosion. Soil removed by erosion may become airborne as dust or be carried into waterways, causing pollution.

A proponent should minimise changes to the topography of the site caused by grading or other ground works, to avoid significant changes to the overland flow of water and visual impacts on the landscape. It should determine appropriate dust suppression measures for the construction and operation stages of the facility.

Topsoil excavated onsite should ideally be stored for future decommissioning processes. Topsoil can be used to create visual barriers with landscaping, helping to screen a facility from view.

Natural hazard risk management

Bushfire

Building a solar energy facility should not increase the risk of bushfire in the area. A proponent can take practical measures in consultation with the relevant fire authority to mitigate any risks.

The MFB, CFA and DELWP are the relevant fire management authorities in Victoria. A solar energy facility built within the BMO or BPA must maintain site vegetation to appropriate management levels. This includes:

- maintaining grass at below 100mm in height during a declared fire danger period
- establishing fire breaks around the perimeter of the facility
- providing adequate onsite water supply and firefighting equipment
- meeting site access management requirements.

Flooding

A solar energy facility should not increase flood risks on the site or in the immediate area. Flood risks (unlike most other natural hazards) are predictable in terms of their location, depth and extent. This means a proponent can implement measures to reduce flood damage, including:

- minimising grading or levelling of the site, to avoid changes to overland water flow and discharge patterns
- avoiding locations within the immediate floodplain or a watercourse or river system
- elevating structures above the floodplain as recommended by the relevant FMA.

DELWP has information about where flooding occurs and the systems in place to manage them. Proponents should contact the relevant FMA to obtain site-specific advice to inform the planning permit process.

Other matters

Dangerous goods and building fire safety

If a facility is to include battery storage, the relevant fire authority will be required to provide written advice under regulations 54 and 55 of the *Dangerous Goods (Storage and Handling) Regulations 2012*.

Any onsite building is required to comply with the National Construction Code. The proponent should consult the relevant fire authority if it seeks dispensation from the code's requirements for a building over 500m².

Electromagnetic radiation and interference

Electrical equipment produces electromagnetic radiation. Radiation produced by transformers and inverters is reduced through performance standards that apply to standard components.

The Australian Radiation Protection and Nuclear Safety Agency advises that the strength of this radiation will decrease with distance from the source, and it will become indistinguishable from background radiation within 50m of a high-voltage power line and within 5 to 10m of a substation. The design and layout of the facility should account for this information.

Heat island effect

Where a solar energy facility is proposed adjacent to existing horticultural or cropping activities, a minimum 30m separation distance is appropriate, measured from the property boundary to any part of the physical structure of the facility.

The PV heat island effect on sensitive vegetation (such as cold-climate horticultural cropping) describes the transfer of heat from built form to its surrounds, where the ambient temperature around the built form is higher than that of surrounding vegetated areas, particularly at night.

While there are few studies of spatial heat dissipation from solar infrastructure, those that exist acknowledge the potential for ambient air temperatures within the perimeter of a solar energy facility to potentially increase by 3 to 4 degrees Celsius. However, those studies also found that the heat that was generated dissipated rapidly over a short distance. Some found that at 30m from the solar PV array, the air temperature variation was indistinguishable from ambient air temperature[1].

1 Barron-Gafford, Greg A., et al, 'The Photovoltaic Heat Island Effect: Large solar power plants increase local temperatures', ***Nature***, 13 October 2016.

Construction and operation stage

Environmental management plan

The matters outlined in this section may form part of an environmental management plan (EMP). For more information about the EMP component of a planning permit application, see the Application requirements and Decision guidelines section of these guidelines.

Where a planning permit is granted for a solar energy facility, the responsible authority will require several construction and operation matters to be addressed as part of an EMP. The requirement for an EMP will be a permit condition, and it must be submitted to, and approved by, the responsible authority before any activity starts on the site. The EMP can include:

- an overview of construction methods including management of construction zones, site preparation, schedule and timing of works
- the management structure and site roles including any environmental audit processes needed under any applicable planning or legislative requirements
- the management of environmental matters or mitigation requirements for erosion or sediment, surface water pollution, dust, odour noise, waste/hazardous material handling, natural hazard management, terrestrial or aquatic ecology.

Proponents should discuss the requirements of an EMP with the responsible authority.

Risk and emergency management planning

The CFA requires a solar energy facility to have an emergency management plan, incorporating a fire management plan, consistent with the requirements of *AS 3745-2010 Planning for emergencies in facilities*. This plan can include:

- emergency prevention, preparedness and mitigation activities
- activities to prepare for and prevent emergencies (such as training and maintenance)
- control and coordination arrangements for emergency response (such as evacuation procedures, emergency assembly areas and procedures for responding to hazards)
- the agreed roles and responsibilities of onsite personnel (such as equipment isolation, fire brigade liaison and evacuation management).

The CFA expects the fire management plan to form part of the emergency management plan; where hazards, risks and controls are identified and implemented to ensure fire risk is managed so far as is reasonably practicable, and fuel reduction and maintenance activities are part of the facility's standard operating procedures.

Proponents should consult the CFA's *Design guidelines and model requirements for renewable energy facilities* for guidance about how to prepare and submit an emergency management plan incorporating a fire management plan.

Site access and traffic management

Where access is required to a major road, a planning permit application must be referred to the relevant roads corporation, and a traffic management plan (TMP) will likely be a condition of a planning permit. A TMP details works to be undertaken during the construction stage, the impacts of these works on the surrounding road network and measures to mitigate impacts.

Before construction begins, permit conditions may require a proponent to conduct an existing survey of public roads for us during the construction and operation of the solar energy facility.

This survey must be prepared in consultation with and to the satisfaction of the responsible authority and the relevant roads corporation. If an existing conditions survey is required, it should:

- assess the suitability, design, condition and construction standard of the relevant public roads and access points
- recommend any required upgrades to accommodate construction traffic
- be prepared by a suitably qualified and experienced independent civil or traffic engineer

A proponent should discuss traffic impacts with the responsible authority, relevant roads corporation and local council early in the planning stage of the project, to ensure it is well-informed about their requirements and any other required approvals.

Construction noise and dust management

To address impacts on nearby sensitive land uses, a proponent should reduce the potential noise from vehicles servicing the site, from fixed machinery onsite and from construction activities, for example by limiting times when noisy operations are allowed. It should also engage with stakeholders to address any potential impacts.

Dust suppression measures (such as promptly watering exposed areas when dust is seen or by installing temporary wind fences) should be used during construction and operation of the facility. Dust impacts can be further reduced by maintaining an established ground cover across the site once works have been completed.

The EMP should outline measures to address noise and the disturbance of dust and sediment during construction and operation of the facility.

EPA Victoria's *Civil construction, building and demolition guide* has best-practice guidelines for general construction.

Decommissioning

The operational lifespan of a solar energy facility typically ranges from 20–30 years, depending on onsite environmental conditions, what maintenance occurs and the type of technology used. Decommissioning requires care to ensure the land is returned to its original condition.

A proponent should consider:

- who will be responsible for decommissioning the facility
- at what stage the responsible authority will be advised the facility will be decommissioned
- the processes, plans and procedures for removing all built form and for restoring the land to its pre-developed or natural state
- where the panels and other equipment will be disposed and if they can be recycled
- the timeline for the decommissioning work.

Applying for a planning permit

The planning framework

State planning policy

VPP's Clause 19.01 'Energy' outlines the policy objectives and strategies that support the development of solar energy facilities, which are broadly to:

- support the development of energy facilities in appropriate locations, where they take advantage of existing infrastructure and provide benefits to industry and the community
- support the transition to a low-carbon economy with renewable energy and greenhouse emission reductions
- facilitate local energy generation, to help diversify local economies and improve sustainability outcomes
- consider the economic and environmental benefits of renewable energy generation to the community, while addressing the need to minimise the effects of a proposal on the local community and environment.

Who is the responsible authority?

VPP Clause 72.01 Responsible Authority for this Planning Scheme specifies the Minister for Planning as the responsible authority for:

- an application to use and develop land for a Renewable energy facility (which includes a solar energy facility) with an installed capacity of 1 MW or greater
- an application to use and develop land for a Utility installation used to transmit or distribute electricity generated by a Renewable energy facility with an installed capacity of 1MW or greater.

If an application is for a facility of below 1 MW installed capacity, the responsible authority is the council specified in the relevant planning scheme.

Decision-making framework for a planning permit application

Land use definition

VPP Clause 73.03 Land use terms defines 'Renewable energy facilities' as a land use term, and a solar energy facility is within this definition. It is defined as follows.

> ***Solar energy facility***
>
> *Land used to generate electrical energy using ground mounted photovoltaic and thermal technology structures, where the primary role is to export power to the electricity network. It does not include the generation of electricity principally for an existing use of the land.*

Planning control

VPP Clause 53.13 Renewable energy facility requires a planning permit for the use and development of land for the purpose of a solar energy facility.

The clause outlines application requirements (such as what information is required when submitting an application and the decision guidelines to be considered for assessment). This guideline is a reference document to this clause, and it must be considered as part of any application and assessment process.

The Application requirements and Decision guidelines sections of this guideline explains the details of this control.

What is associated development to a solar energy facility?

A single planning permit application for a solar energy facility can include a battery storage unit and components which connect the facility to the electricity transmission network.

Battery storage unit

Battery storage is becoming an important component of a solar energy facility. VPP Clause 73.03 Land use terms defines 'Utility installation' as a land use term, and a battery storage unit is within this definition.

For the purposes of this guideline, a battery storage unit is considered to be associated with a solar energy facility if the unit is located on the same land as the solar energy facility and it is used to store electricity generated by the solar energy facility for export to the national electricity transmission network.

Battery storage units that contain dangerous goods and may have to comply with the *Dangerous Goods Act 1985*, with the Dangerous Goods (Storage and Handling) Regulations 2012 and with any relevant standards.

Where a solar energy facility includes a battery storage unit, the CFA or MFB may need to provide written advice and approval under Regulations 54 and 55 of the *Dangerous Goods Act 1985*.

The siting and design of a battery storage unit must meet the relevant fire protection and containment requirements in the CFA's *Design guidelines and model requirements for renewable energy facilities*.

Electricity transmission network connections

A solar energy facility may require a transmission or distribution system including powerlines, substations, converter installations and other works to connect it to the electricity network. These connection components can be located both onsite and offsite to the facility.

VPP Clause 73.03 Land use terms defines 'Utility installation' as a land use term, and electricity network infrastructure is within this definition.

The planning scheme and the planning permit process

Under the P&E Act, DELWP assesses planning permit applications on behalf of the Minister for Planning.

Using Victoria's Planning System provides a comprehensive overview of Victoria's land use planning system, and chapter 3 explains the permit application process.

Planning schemes contain various state and local policies, as well as provisions such as zones and overlays. The current version of the VPP and local planning schemes are available at Browse planning schemes.

Pre-application consultation

Pre-application consultation with DELWP and other stakeholders provides an opportunity for a proponent to gather and exchange information. A proponent should develop a community engagement plan. This will enable it to implement an effective, efficient consultative program before lodging a planning permit application. Pre-application consultation is not a statutory requirement of the planning process, but it offers many benefits for proponents and interested parties alike.

The Engaging the community section of this guideline has more information about community engagement best practice.

Lodgement and processing of an application

A proponent must lodge an application with the Minister for Planning, who is the responsible authority for a Renewable energy facility with an installed capacity of 1MW or greater, via DELWP.

The responsible authority will proceed with a public notice and referral after receiving all relevant information and determining it is satisfactory. After the public notice and referral stages, the responsible authority will determine the application.

An application is unlikely to proceed until the responsible authority receives all the information it requires. The Application requirements section of this guideline overviews the required information.

Notification and referrals

Notification process

Notice of an application to use and develop land for a solar energy facility must be given in line with section 52(1) of the P&E Act. Generally, notice is given to owners and occupiers of adjoining land, to the local council and to any person to which the proposal may cause material detriment.

Referral authorities

An application for a solar energy facility must be referred to a person or body specified as the referral authority in VPP Clause 66, in line with section 55 of the P&E Act.

A requirement for referral under this section of the planning scheme does not apply if, in the opinion of the responsible authority, the proposal satisfies requirements or conditions previously agreed to in writing between the responsible authority and the referral authority.

Proponents should discuss the need for referral of an application with DELWP. A proposal for a facility may require several referrals, depending on its location and circumstance. Below are the main types of referrals.

Solar energy facility located within a declared irrigation district

An application to use and develop land for a solar energy facility within a 'Declared Irrigation District' is required to be referred to the Secretary of the department administering the *Water Act 1989*.

Removing, destroying or lopping native vegetation

An application to remove, destroy or lop native vegetation in the Detailed Assessment Pathway as defined in the *Guidelines for the removal, destruction or lopping of native vegetation (DELWP, 2017)* must be referred to the Secretary of DELWP, as constituted under Part 2 of the *Conservation Forests and Lands Act 1987*.

Development next to a major electricity line or easement

An application to construct a building or to construct or carry out works on land within 60m of a major electricity transmission line (220 KV or more) or an electricity transmission easement must be referred to the relevant electricity transmission authority.

Development within a special water supply catchment area

To use, subdivide or consolidate land, to construct a building or to construct or carry out works that are within a Special Water Supply Catchment Area listed in Schedule 5 of the *Catchment and Land Protection Act 1994* must be referred to the relevant water board or water supply authority.

Development within the Bushfire Management Overlay

An application to use and develop land for a solar energy facility within the BMO must be referred to the relevant fire management authority (CFA, MFB or DELWP).

Access to, or development adjacent to, a major road

An application to create or alter access to or subdivide land adjacent to a road declared as a freeway or an arterial road under the *Road Management Act 2004* must be referred to the relevant roads corporation (VicRoads).

Development within an identified floodplain

An application under the Floodway Overlay or Land Subject to Inundation Overlay must be referred to the relevant FMA.

Permit decision options

The responsible authority may decide to:

- grant or refuse to grant a permit
- where objections have been received, issue a notice of decision to grant a permit, giving objectors an opportunity to lodge an application for review at the Victorian Civil and Administrative Tribunal (VCAT)

When drafting a planning permit, a responsible authority must comply with Form 4 of the *Planning and Environment Regulations 2005*. If a permit is granted or a notice of decision to grant a permit is issued, the permit will contain conditions that must be met for the permit to be valid and for construction to start.

Other statutory approvals

Proponents may need to meet other regulatory requirements at the state or national level, as well as get a planning permit. Some of these requirements must be met before a planning permit application can be determined. Failure to meet the requirements early in the process can result in delays to the determination of a planning permit application.

For Victoria, these include:

- *Environment Effects Act 1978*
- *Aboriginal Heritage Act 2006*
- *Water Act 1989*
- *Heritage Act 1995*
- *National Parks Act 1975*
- *Wildlife Act 1975*
- *Livestock Disease Control Act 1994*
- *Plant Health and Plant Products Act 1995*
- *Flora and Fauna Guarantee Act 1988*
- *Catchment and Land Protection Act 1994*.

Commonwealth requirements include requirements under the *Environment Protection and Biodiversity Conservation Act 1999* and the *Native Title Act 1993*.

State environmental assessment

If an EES is required for a solar energy facility, it must be completed before the planning permit application can be determined.

The Minister for Planning is responsible for administering the *Environment Effects Act 1978* and decides if an EES is required under the Act. If a proposal is likely to have a significant effect on the environment, the proponent should refer it to the Minister for a decision about the need for an EES. 'Environment' in this context includes biological, heritage, cultural, social, health, safety and economic aspects of human surroundings including the wider ecological and physical systems within which people live.

The onus is on the proponent to refer a proposal to the Minister for Planning to determine whether an EES is required.

There is more information about EES processes in the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* and at Environmental assessment.

Commonwealth environmental assessment

A proposal may also need approval under the EPBC Act if it is likely to have a significant impact on matters of national environmental significance (such as on listed threatened or migratory species).

If a proponent believes its proposal may need approval under the EPBC Act, it must refer the proposal to the Australian Government environment minister. If the minister determines an approval is required, the proposal must be assessed under the EPBC Act.

Further information on the operation of the EPBC Act is available from the Commonwealth Department of Climate Change, Energy, the Environment and Water. For help in deciding whether an action should be referred, proponents should consult the significant impact guidelines at environment.gov.au/epbc/publications.

If approval is required under the EPBC Act, the proposal may need to be assessed using an assessment process specified under the Act, or it might be possible to use an accredited state impact assessment process.

Under a 2014 bilateral agreement between Victoria and the Commonwealth, the Victorian EES process, the advisory committee process and the planning permit process can be accredited.

The Australian Government environment minister will make the final decision under the EPBC Act, even if a project is assessed using an accredited state impact assessment process.

Application requirements

VPP Clause 53.13 Renewable energy facilities sets out the information that must accompany an application for a planning permit for a solar energy facility. A local planning scheme may also set out requirements a proponent must address in a planning permit application relating to other controls (such as overlays applying to the site).

A proponent should discuss the information requirements of an application with DELWP before lodging it. The responsible authority will consider the information needed on a site-by-site basis.

Site and context analysis

The site and context analysis is intended to show the current lie of the land and the immediate surrounds of the proposed solar energy facility. It should include:

- a site plan, photographs and/or other techniques to accurately describe the site and the surrounding area
- a location plan showing the full site area, electricity transmission network, access roads to the site and any other notable features, constraints or other characteristics of the site and the surrounding area.

Site-related information in the analysis might include:

- its shape, dimensions and size
- its orientation and contours
- the current land use including any agricultural values and irrigation infrastructure
- whether or not the site is a serviced property within a declared irrigation district (or was as at 17 September 2019), including any statements of water entitlements on land
- whether or not the rural water corporation's irrigation infrastructure is planned to be decommissioned
- the existing use and siting of buildings or works on the land
- existing vegetation types and their condition and coverage
- species of flora and fauna listed under the *Flora and Fauna Guarantee Act 1988* and the *Environment Protection and Biodiversity Conservation Act 1999*
- the landscape of the site
- any areas and/or values of cultural heritage significance
- its solar characteristics
- any other notable features, constraints or other characteristics.

Information related to surrounding areas in the analysis might include:

- existing land uses
- above-ground utilities
- the electricity transmission network including access
- the directions of and distances to nearby dwellings, towns, urban areas, significant conservation and recreation areas, water features, tourist routes, walking tracks, major roads and existing and proposed renewable energy facilities
- the siting and use of buildings on adjacent properties
- views to and from the site including views from existing dwellings and key vantage points including major roads, walking tracks, tourist routes and regional population growth corridors
- sites of flora and fauna listed under the *Flora and Fauna Guarantee Act 1988* and the *Environment Protection and Biodiversity Conservation Act 1999* including significant habitat corridors, and movement corridors for these fauna
- sites of cultural heritage significance
- national parks, state parks, coastal reserves and other land subject to the *National Parks Act 1975*
- land declared a Ramsar wetland as defined under section 17 of the *Environment Protection and Biodiversity Conservation Act 1999*
- bushfire risks
- any other notable features, constraints or characteristics.

Design response

The purpose of the design response is to outline the proposed use and development of land relative to the site and its immediate location. Design response documentation includes:

- detailed plans and elevations of the proposed development including the layout and height of the facility and associated building and works, and their materials, reflectivity, colour, lighting and landscaping
- detailed plans and elevations of the proposed transmission infrastructure and electricity utility works required to connect the facility to the electricity network, access roads and parking areas
- accurate visual simulations illustrating the development in the context of the surrounding area and from key public viewpoints
- the extent and assessment of any vegetation removal
- a rehabilitation plan for the site.

The design response should also include one or more written reports and assessments including:

- a description of the proposal including the types of process to be utilised, materials to be stored and the treatment of waste
- an explanation of how the proposed design derives from and responds to the site analysis including cumulative impacts with any other existing and proposed renewable energy facilities in the surrounding area
- an explanation of agricultural values and production including irrigation infrastructure impacts and whether any land is productive farmland of strategic significance
- whether a works approval or licence is required from EPA Victoria or another authority administering the regulatory requirements of the *Dangerous Goods Act 1985*
- a description of how the proposal responds to any significant landscape features for the area identified in the planning scheme
- an assessment of:
  - the potential amenity impacts (such as noise; glint or glare; light spill; emissions to air, land or water; vibration; smell and electromagnetic interference)
  - the effects of traffic to be generated on roads
  - the visual impact of the proposal on the surrounding landscape
  - the visual impact on abutting land that is described in a schedule to the *National Parks Act 1975* and Ramsar wetlands and coastal areas
  - the impact of the proposal on any species (including birds and bats) listed under the *Flora and Fauna Guarantee Act 1988* or the *Environment Protection and Biodiversity Conservation Act 1999*
  - the impacts on Aboriginal or non-Aboriginal cultural heritage
- a statement of why the site is suitable for a Renewable energy facility including a calculation of the greenhouse benefits
- an EMP including a construction management plan as well as any rehabilitation and monitoring requirements
- any other matter required by the responsible authority.

Decision guidelines

Clause 65 Decision guidelines

The responsible authority must decide whether the proposal will produce acceptable outcomes in terms of the decision guidelines outlined under VPP Clause 65.01 Approval of an application or plan. This includes:

- the matters set out in section 60 of the P&E Act
- the Municipal Planning Strategy and the Planning Policy Framework
- the purpose of the zone, overlay or other provision and any matter required to be considered in the zone, overlay or other provision
- the orderly planning of the area
- the effect on the amenity of the area
- the proximity of the land to any public land
- factors likely to cause or contribute to land degradation or salinity or to reduce water quality
- whether the proposed development is designed to maintain or improve the quality of stormwater within and exiting the site
- the extent and character of native vegetation and the likelihood of its destruction; and whether native vegetation is to be or can be protected, planted or allowed to regenerate
- the degree of flood, erosion or fire hazard associated with the location of the land and the use, development or management of the land to minimise any such hazard
- the adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.

Clause 53.13 Renewable energy facility

The following matters outlined in the decision guidelines to VPP Clause 53.13 Renewable energy facilities must be considered by a responsible authority before deciding on an application. The content underneath each heading provides guidance to a responsible authority on how each can be considered. The following is a guide. The matters requiring considering are at the discretion of the responsible authority and will depend on the location, type and size of a solar energy facility.

- **The effect of the proposal on the surrounding area in terms of noise, glint, light spill, vibration, smell and electromagnetic interference.**
  - whether the impact is acceptable of can be managed in accordance with relevant Australian and New Zealand standards or other regulatory requirements.
  - if the assessment was undertaken by a suitably qualified person
  - the spatial extent, length and duration of the impact and whether it is for a limited or extended period
  - whether the impact can be mitigated via an appropriate built form, landscaping or other management response.

- **The impact of the proposal on significant views including visual corridors and sightlines**
  - the amount of change proposed by works including earthworks, and the sensitivity of the landscape features to that change
  - the visibility of the solar energy facility from vantage points accessible to the public and the ability to screen areas of development from view
  - the locations and distances from which a solar energy facility can be viewed from a sensitive land use
  - the significance of the landscape as described in the planning scheme including in an overlay, a relevant strategic study or by landscape features referenced in the planning scheme
  - landscape values associated with nearby land such as specified areas of landscape and environmental significance, specified coastal locations and areas identified to accommodate future population growth of regional cities and centres.
- **The impact of the proposal on strategically important agricultural land**
  - 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 impact of the proposal on the protection of declared irrigation districts**

  The Victorian Government's policy on protection of declared irrigation districts, as reflected in the planning framework, is to protect agricultural land serviced by irrigation infrastructure to ensure the future viability of an irrigation district. Further information on this policy is outlined on page 16.

  Assessment of a proposal will consider:

  - whether or not the site is a serviced property within a declared irrigation district, or was serviced as at 17 September 2019
  - whether or not there is or was a water-use licence[2] in place or was in place as at 17 September 2019
  - whether or not the rural water corporation's irrigation infrastructure is planned to be decommissioned, or could be decommissioned subject to advice from the rural water corporation.

  If the site is a serviced property, has a water use licence in place, and the infrastructure is planned to be retained by the rural water corporation (not decommissioned), then these three factors, collectively, will mean that this site is unlikely to be a suitable location for development of a solar energy facility.

2 A water-use licence (as defined under Division 3 of Part 4B of the *Water Act 1989*) is an entitlement to irrigate a specific parcel or parcels of land. The licence sets out the conditions for use, such as how much water you can use on your land in a single irrigation season. You need a water-use licence if you're supplied with water for irrigation from the regulated Murray, Goulburn, Broken, Loddon, Campaspe, Bullarook, Werribee or Macalister systems. The licence is tied to the land. If you sell your property the water-use licence automatically transfers to the new owner unless part of the property is sold separately (source: waterregister.vic.gov.au/water-entitlements/about-entitlements/water-use-licences).

Administration and enforcement

Administration and enforcement of planning permits

VPP Clause 72.01 Responsible Authority for this Planning Scheme specifies the Minister for Planning as the responsible authority for considering and determining planning permit applications, amendments to planning permits and for matters required by a permit or the scheme to be done to the satisfaction of the responsible authority for the use and development of land for a Renewable energy facility with an installed capacity of 1MW or greater.

For applications lodged, or permits issued for the use and development of land for a renewable energy facility (other than a wind energy facility), or for a utility installation used to store transmit or distribute electricity by a renewable energy facility before Amendment VC161 came into effect under Division 1 of Part 4 of the P&E Act, the council is the responsible authority for:

- extensions of time
- corrections and amendment applications
- matters required by the permit or the scheme to be done to the satisfaction of the responsible authority.

Planning permit conditions

Planning permit conditions must be consistent with the provisions of VPP Clause 53.13 Renewable energy facility, and they should be generally consistent with this guideline. DELWP can provide example planning permit conditions on request. The responsible authority can customise conditions provided to reflect local planning policy and project-specific circumstances.

The following is an overview of the types of plans that may be required by a responsible authority as a condition of a planning permit. The written condition will outline the requirement needing to be met to satisfy the responsible authority. The following is an overview of some of the plans that may be required as a condition of permit:

Development Plans

The responsible authority may require amendments to be made to the development plan documentation provided as part of the application. The written conditions of the permit will specify the nature of the amendments required.

Landscape Plan

A landscape plan will identify all proposed new vegetation to be planted on-site or existing vegetation to be retained. Details in the plan will confirm planting locations, species, and a schedule. The landscape plan can also include earthworks or other elements aimed at preventing views to the facility.

Traffic management plan (TMP)

A TMP identifies measures to manage the movement of vehicles onsite, to and from the site and within the road network. The TMP will need consultation with, and the endorsement of, the relevant roads corporation.

Environmental management plan (EMP)

An EMP brings together a range of construction and environmental matters. An EMP can have subplans to address specific issues including:

- measures to minimise the amenity and environmental impacts during the construction, operation and decommissioning of the solar energy facility (such as dust, noise, erosion mud and stormwater run-off)
- a drainage and stormwater plan detailing how water is to be managed onsite and addressing other requirements of the relevant FMA
- a wildlife management plan detailing how animal or bird species affected by the proposal are to be managed
- a glint, glare and light spill management plan detailing ongoing arrangements for the management of these matters.

Fire and emergency management plan

A fire and emergency management plan is prepared to the satisfaction of the relevant fire management authority. It should include agreed measures to manage fire breaking out from a site and to manage fuvel loads. The fire and emergency management plan should also indicate how any battery storage unit complies with the requirements of the *Dangerous Goods Act 1985* and its regulations and with the fire management authority's requirements.

Complaint investigation and response plan

A complaint investigation and response plan sets out how complaints during the construction and operation stages will be logged, handled and resolved.

Applications to amend a planning permit

An application to amend a planning permit can be made under sections 72 or 97I of the P&E Act.

Proponents should discuss any proposed amendments with the responsible authority at the earliest opportunity.

Glossary

Initialism/acronym	Spelt out
AEMO	Australian Energy Market Operator
BMO	Bushfire Management Overlay
CFA	Country Fire Authority
CHMP	Cultural heritage management plan
CST	Concentrated solar thermal
DELWP	Department of Environment, Land, Water and Planning
EES	Environment effects statement
EMP	Environmental management plan
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Act 1999*

Initialism/acronym	Spelt out
FMA	Floodplain management authority
MFB	Metropolitan Fire Brigade
NEM	National Electricity Market
NSP	Network service provider
P&E Act	*Planning and Environment Act 1987*
PV	Photovoltaic
TIA	Traffic impact assessment
TMP	Traffic management plan
VCAT	Victorian Civil and Administrative Tribunal
VPP	Victoria Planning Provisions