Ordinary Meeting

Tuesday, 14 May 2024

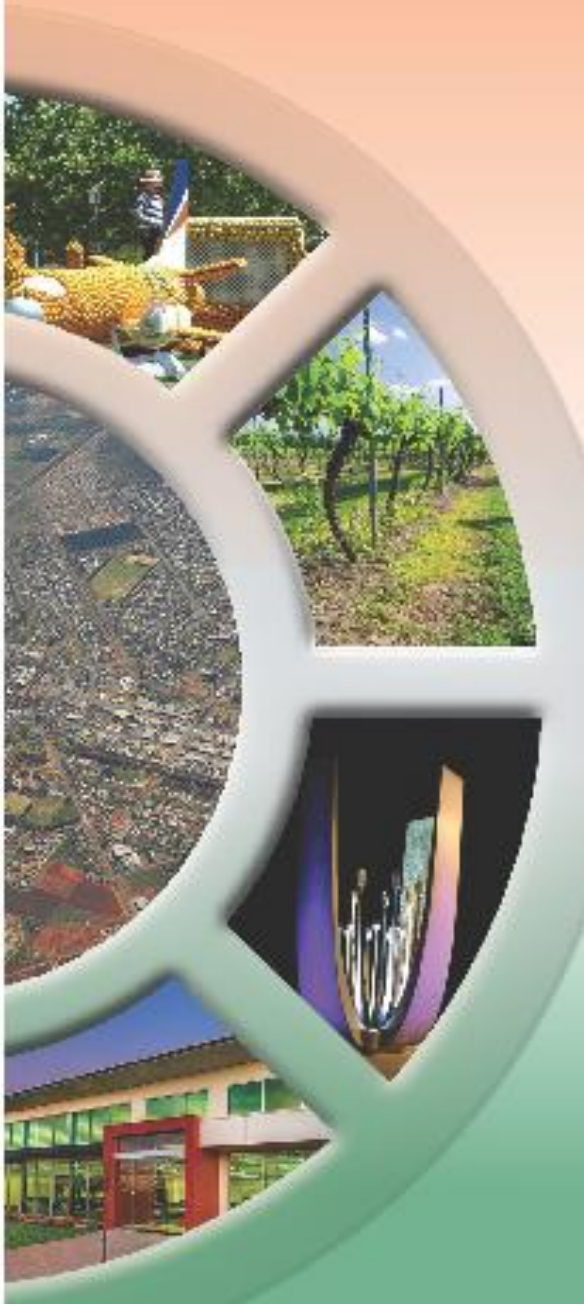
ATTACHMENTS UNDER SEPARATE COVER

CL01 Draft Solar Energy Farms and Battery Energy Storage Systems Policy

(a) Draft Griffith Solar Energy Farms and Battery Storage Systems (BESS) Policy

(b) DPHI Large Scale Solar Energy Guidelines

(c) FRNSW - Large-scale external lithium-ion battery energy storage systems - fire safety considerations



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Solar Energy Farms and Battery Energy Storage Systems (BESS) Policy XX-CP-000

(LOCAL POLICY)

1 Policy History

Revision No.	Council Meeting Date	Minute No.	Adoption Date
1	dd/mm/yyyy	xx/xxxx	dd/mm/yyyy

2 Policy Objectives

The objectives of the policy are as follows:

- To minimise potential land use conflicts.
- To ensure any visual impacts of the development are mitigated.
- To avoid the sterilisation of productive agricultural land where possible.
- To ensure that adequate provisions are made to restore developed land at the end of the life of the development including financial assurances for land owners.
- To ensure hazards and risks associated with Battery Energy Storage Systems (BESS) are assessed with mitigation measures (if required) proposed to avoid offsite impacts.

3 Policy Application

Land to which this policy applies

This policy applies to all land within the Griffith local government area.

Application of the Policy

This policy applies to all new development applications for electricity generating works involving solar photovoltaic systems (solar farms) with a capacity of more than 1.0 MW which are not co-located with a large-scale electricity user such as an industry. The policy also applies to all development applications for electricity generating works involving Battery Energy Storage Systems (BESS). The policy does not apply to electricity generating works which can be installed under State Environmental Planning Policy (Transport and Infrastructure) 2021 or State Environmental Planning Policy (Exempt and Complying Development) 2008 as exempt or complying development.

4 Background

Solar farm and BESS developments are considered forms of electrical generating works as defined in the Griffith Local Environmental Plan 2014 and State Environmental Planning Policy (Transport and Infrastructure) 2021.

Consent Authority

The consent authority for electricity generating works varies based on the capital investment value of the development. State Environmental Planning Policy (Planning Systems) 2021 includes triggers for Regionally significant development and State significant development:

i) Regionally significant development: Electricity generating works with a Capital Investment Value (CIV) of more than $5 million, but less than $30 million. The Regional Planning Panel is the consent authority for Regionally significant development.
ii) State significant development: Electricity generating works with a CIV of more than $30 million. The Minster for Planning or delegate is the consent authority for State significant development.
iii) Local development: Electricity generating works with a CIV of less than $5 million. Griffith City Council or delegate is the consent authority for local development.

5 Site Selection

Site selection is an important component of a solar farm or BESS development. The Applicant must carefully consider a range of sites and carry out a constraints and opportunities analysis to justify the proposed location of a solar farm or BESS development.

The following types of sites must be avoided:

a) Sites which contain class 1 – 3 (land and soil capability class) (LSC) soils as depicted on the Land and Soil Capability Mapping for NSW (available at: https://espade.environment.nsw.gov.au).
b) Sites which have a delivery entitlement and volume of water available under that entitlement that is or will be adequate for the use of the land for the purpose of intensive plant agriculture and the lands are currently or have historically been cultivated for intensive plant agriculture crops without severe limitations.
c) Sites which are located in low lying areas visible from elevated perspectives from visual receivers.
d) Sites which are located less than 1 km from land zoned R1 – General Residential, R5 – Large Lot Residential or RU5 – Village.
e) Sites located on classified or arterial roads.
f) Sites which are located in positions which would have a visual impact on nearby properties, especially existing dwellings and lots on which dwellings could be constructed in the future.

6 Mandatory Assessment Requirements

a) The Assessment issues and requirements detailed in the NSW Department of Planning, Housing and Infrastructure (DPHI) **Large Scale Solar Energy Guidelines** (the Guidelines) (Section 5 and Appendix A and C) must be followed in the preparation and submission of a development application for any solar farm or BESS to which this policy applies, including (but not limited to) the following technical studies, plans or considerations:
   i) Visual Impact Assessment.
   ii) Landscape Character Assessment and Concept Landscape Plan.
   iii) Agricultural Impact Assessment.
   iv) Waste Management and Circular Design assessment and plan.
   v) Decommissioning Plan.
   vi) Glint and Glare Assessment in accordance Appendix C of the Guidelines.
   vii) Traffic Impact Assessment.

viii) Noise and Vibration Assessment.
ix) Concept Civil Plans for stormwater, services and site access.
x) Consideration of the power frequency and electric and magnetic field exposure guidelines referenced by the Australian Radiation Protection and Nuclear Safety Agency.

b) Other Assessment Requirements (which will be required by Council based on the selected site and particulars of the proposal):
i) Biodiversity Assessment in accordance with the *Biodiversity Conservation Act 2016*.
ii) Aboriginal Cultural Heritage Assessment.
iii) Flood Impact Assessment.
iv) Air Quality Assessment.
v) Preliminary Hazard Analysis (PHA) is required for all developments which include BESS. The PHA must be prepared in accordance with Hazardous Industry Planning Advisory Paper No 4 – Risk Criteria for Land Use Safety Planning, Hazardous Industry Planning Advisory Paper No 6 – Hazard Analysis and Multi-level Risk Assessment.
vi) Workforce management plan including workforce accommodation considerations during construction.
vii) Geotechnical Investigation.
viii) Preliminary Site Investigation (contamination).

7 Development Controls

The following development controls must be considered by the Applicant and will be considered by Council in the assessment of the development application.

a) The development must be sited and carried out to minimise the impacts on farming, residential, tourism and business operations in the locality.
b) The developer should assess the cumulative impact of the development having regard to solar energy farms already built and those approved but not yet constructed. Council does not favour large expanses of land being covered with solar energy farms where there is significant cumulative impact.
c) Where the proposal is located within a 5km radius from the extent of urban and villages, the proposal (including the Visual Impact Assessment) must demonstrate that it will not impact on the scenic value and character of the locality.
d) Solar farms should be located at least 25 m from all property boundaries and 200 m of any dwelling not associated with the development or residential zoned land.
e) BESS should be located at least 50 m from all property boundaries and 500 m from any dwelling not associated with the development or residential zoned land.
f) A 10 metre wide landscape buffer with native species designed to screen solar farms or BESS from roads and dwellings must be installed to ensure a minimum height at maturity of 3 metres.

8 Conditions of Consent for Solar Farms and BESS

The following conditions of consent will be imposed by Council on development consents for Solar Farms and BESS to ensure adequate financial assurances for site rehabilitation are in place:

a) Prior to the commencement of works, the Applicant must provide a mechanism to ensure sufficient funding is available to rehabilitate the site following the lifespan of the solar farm or BESS. This could include a form of financial assurance (bond) held by the landowner of the site or other suitable mechanism. Proof of this ongoing financial assurance must be submitted to Council prior to the commencement of works.

***Note**: Other conditions would be imposed by Council based on the assessment of the development and in consideration of standard conditions of consent.*

9 Conditions of Consent for BESS

The following conditions of consent will be imposed by Council on development consents for BESS:

a) Prior to the commencement works, the Applicant must prepare a Fire Safety Study (FSS) in accordance with Hazardous Industry *Planning Advisory Paper No 2 (HIPAP No.2) Fire Safety Study Guidelines* (Department of Planning, Housing and Infrastructure 2011) and *Large-scale external lithium-ion battery energy storage systems – Fire safety study considerations* (Fire and Rescue NSW, 2023).

b) Prior to the commencement works, the Applicant must prepare an Emergency Response Plan in accordance with *Hazardous Industry Planning Advisory Paper No 1 (HIPAP No.1) Emergency Planning* (Department of Planning, Housing and Infrastructure 2011).

***Note**: Other conditions may be imposed based on the findings and recommendations of the PHA and a peer review carried out by or on behalf of Griffith City Council.*

10 Definitions

Term	Definition
Applicant	The Applicant of a proposal seeking consent for a development application or modification application.
Consent Authority	The authority responsible for granting or refusing consent for a development application or modification application.
Decommissioning	The removal of solar panels and ancillary infrastructure and the re-establishment of the site for its previous use.
Glare	A continuous source of bright or strong light caused by the reflection of sunlight on a solar energy project.
Glint	A momentary flash of bright or strong light caused by the reflection of sunlight on a solar energy project.
Landscape	A holistic area comprised of its various parts including landform, vegetation, buildings, villages, towns, cities and infrastructure
Landscape Character	An area or sense of place definable by the quality of its built, natural and cultural elements.
Electricity Generating Works	means a building or place used for the purpose of— (a) making or generating electricity, or (b) electricity storage.
Visual Receiver	An individual and or defined groups of people who have the potential to be affected by a proposal from a view location.
View Location	A place or situation from which a proposed development may be visible.

11 Legislation

Environmental Planning and Assessment Act 1979
Environmental Planning and Assessment Regulation 2000
State Environmental Planning Policy (Exempt and Complying Development) 2008
State Environmental Planning Policy (Hazards and Resilience) 2021
State Environmental Planning Policy (Transport and Infrastructure) 2021
State Environmental Planning Policy (Planning Systems) 2021
Griffith Local Environmental Plan 2014

12 Related Documents

NSW Department of Planning, Housing and Infrastructure (DPHI) Large Scale Solar Energy Guidelines (as amended)
Hazardous Industry Planning Advisory Paper No 1 (HIPAP No.1) Emergency Planning (Department of Planning, Housing and Infrastructure 2011)
Hazardous Industry *Planning Advisory Paper No 2 (HIPAP No.2) Fire safety Study Guidelines* (Department of Planning, Housing and Infrastructure 2011)
Large-scale external lithium-ion battery energy storage systems – Fire safety study considerations (Fire and Rescue NSW, 2023)

13 Directorate

Sustainable Development

Department of Planning and Environment

NSW GOVERNMENT

Large-Scale Solar Energy Guideline

August 2022

dpie.nsw.gov.au

Acknowledgment of country

The Department of Planning and Environment acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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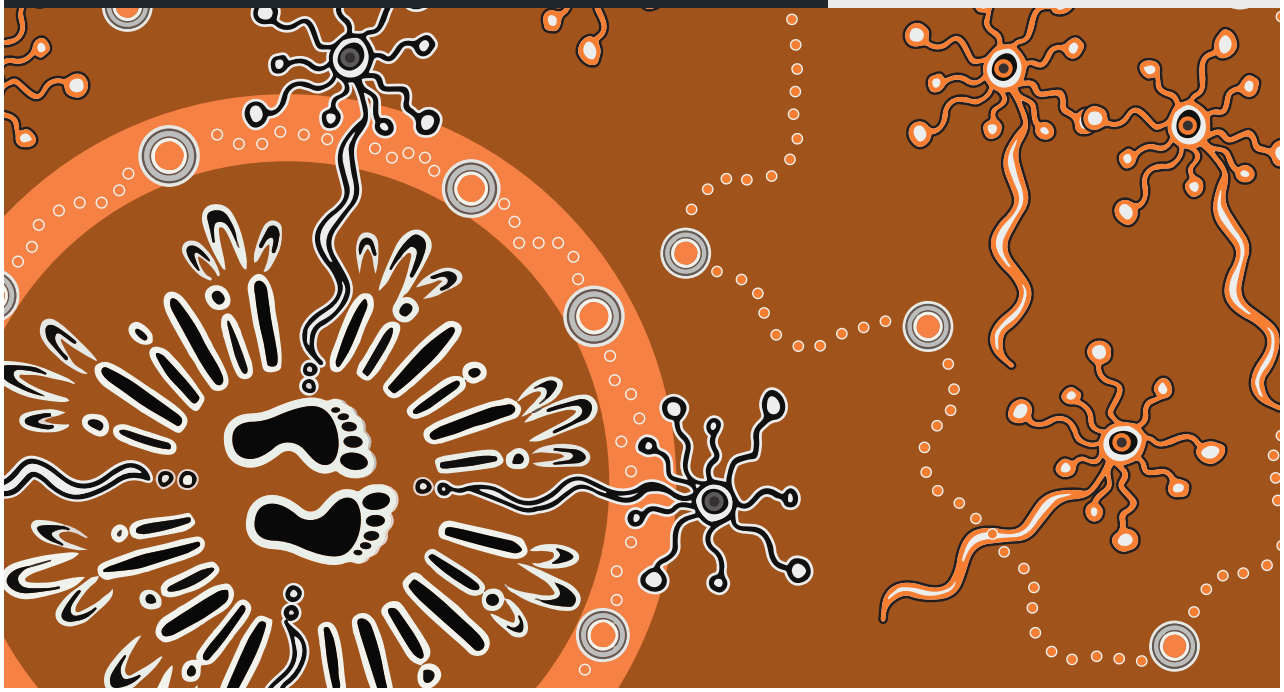

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Abbreviations

BDAR	Biodiversity development assessment report
BSAL	Biophysical strategic agricultural land
CIC	Critical industry cluster
CIV	Capital investment value
DA	Development application
EIS	Environmental impact statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Reg	*Environmental Planning and Assessment Regulation 2021*
EPA	NSW Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPI	Environmental planning instrument
EPL	Environment protection licence
LEP	Local environmental plan
LSC Class	Land and soil capability class
PV	Photovoltaic
REZ	Renewable energy zone
RSD	Regionally significant development
SEARs	Secretary's environmental assessment requirements
Transport and Infrastructure SEPP	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
SSD	State significant development
VPA	Voluntary planning agreement

Glossary of terms

Applicant	The applicant of an SSD project seeking consent for a development application or modification application
Associated residence	A residence on privately-owned land in respect of which the owner has reached an agreement with the applicant in relation to the development and management of impacts
Benefit sharing	Benefit sharing aims to distribute benefits generated by a project between the applicant and the community through mutually agreed opportunities such as funding or sponsoring local community initiatives, programs or projects
Consent authority	The authority responsible for granting or refusing consent for a development application or modification application
Department	The Department of Planning and Environment
Decommissioning	The removal of solar panels and ancillary infrastructure
Development application (DA)	An application made seeking consent for SSD or RSD under Part 4 of the EP&A Act
Environmental impact statement (EIS)	An environmental impact statement prepared by or on behalf of the applicant to accompany a DA. It involves a comprehensive assessment of the environmental, social and economic impacts of a project.
Glare	A continuous source of bright or strong light caused by the reflection of sunlight on a solar energy project
Glint	A momentary flash of bright or strong light caused by the reflection of sunlight on a solar energy project
Important agricultural land	Land mapped as BSAL or a critical industry cluster, land of LSC classes 1–3 and farmland mapped as state or regionally significant on the north coast
Large-scale solar energy project	Works, infrastructure and buildings for the purpose of generating electricity using ground-mounted photovoltaic panels that are state significant development (SSD)
Landscape	A holistic area comprised of its various parts including landform, vegetation, buildings, villages, towns, cities and infrastructure
Landscape character	An area or sense of place definable by the quality of its built, natural and cultural elements
Modification application	An application seeking to modify a development consent, which may include revoking or varying a condition of consent A modification requires consent under the EP&A Act

Magnitude	The apparent size of a solar energy project in the landscape or when viewed from a given viewpoint
Non-associated residence	A residence on privately-owned land in respect of which the owner has not reached an agreement with the applicant in relation to the development or A residence on privately-owned land in respect of which the owner has reached an agreement with the applicant in relation to the development, but the agreement does not cover the relevant impact or The performance measure for such impact under that agreement has been exceeded
Planning Secretary	The Secretary of the Department of Planning and Environment
Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
Renewable Energy Zone (REZ)	A designated area to support renewable energy development as declared in the *Electricity Infrastructure Investment Act 2020*
Regionally significant development	A development deemed to have regional significance due to its size, economic value or potential impacts
SEARs	The Planning Secretary's environmental assessment requirements, which set out the matters that must be addressed in an EIS
Sensitivity	An element of landscape and visual impact assessment that defines the capacity to absorb the impacts from a proposed land use change and/or built form
State significant development	A development declared to have state significance due to its size, economic value or potential impacts
Viewpoint	A location within the private or public domain with a potential view of a large-scale solar energy project
Visual magnitude	The apparent size of a solar energy project in the landscape or when viewed from a given viewpoint

1 Introduction

1. Introduction

The transformation of the global energy sector presents a huge opportunity for Australia. Renewables are now the cheapest form of new generation, and technology is available to support large-scale energy storage.

Australia has world-class renewable energy sources and the highest average solar radiation per square metre of any continent in the world. New South Wales (NSW) has an abundance of excellent solar resources and established electricity infrastructure that, along with declining technology costs, makes it an attractive location for solar energy development.

The NSW Government supports the development of a sustainable solar energy industry in the state. Solar energy will help reduce reliance on fossil fuels, air pollution and greenhouse gas emissions and deliver a reliable and affordable energy supply to the people of NSW.

This Large-Scale Solar Energy Guideline provides the community, industry, applicants and regulators with guidance on the planning framework for the assessment of large-scale solar energy projects under the *Environmental Planning and Assessment Act 1979 (EP&A Act)*.

The guideline is supported by a technical supplement for landscape and visual impact assessment which provides additional guidance and tools for assessing, evaluating, and mitigating visual and landscape impacts.

The Department of Planning and Environment will review and update this guideline from time to time to ensure it reflects any changes in knowledge and technology as the solar industry continues to develop and evolve.

1.1 Objectives

The objectives of the guideline are to:

- support the development of a sustainable solar industry in NSW by providing a clear, consistent and responsive policy framework
- encourage industry to select suitable sites for projects to avoid or reduce the likelihood and extent of land use conflicts and environmental and social impacts
- provide clear and consistent guidance on how to measure and assess key environmental impacts of large-scale solar energy projects in NSW
- promote meaningful, respectful, effective and best practice community and stakeholder engagement throughout the development assessment process.

1.2 Application of the guideline

This guideline applies to the development of large-scale solar energy projects that are declared as a state significant development (SSD) and include works, infrastructure and buildings (including battery energy storage systems) for electricity generation using ground-mounted photovoltaic (PV) panels.

Large-scale solar energy projects that use other technologies (such as concentrated thermal, lens concentrators) are not covered in this guideline as they are likely to have different site selection and impact assessment issues.

Applicants of large-scale solar energy projects must consider the guideline and supporting technical supplement for landscape and visual impact assessment where it is referenced in the Secretary's environmental assessment requirements (SEARs) and prepare its environmental impact statement (EIS) in accordance with the technical guidance.

The guideline and supporting technical supplement for landscape and visual impact assessment should also be considered when preparing and assessing applications to modify an SSD consent for large-scale solar energy development. Applicants are encouraged to consult with the department when determining the level of assessment that should be undertaken.

Although large-scale solar energy projects are the focus of this guideline, applicants, councils and planning panels are encouraged to consider the objectives and principles when preparing, assessing and determining solar energy development applications (DAs) for regionally significant development. The assessment process and level of detail required in a statement of environmental effects should be proportionate to the scale of the development and the likely impacts.

1.3 Strategic context

In March 2020, the NSW Government released the first stage of its Net Zero Plan, which outlines a clear objective to achieve net zero emissions by 2050 while also creating new jobs, reducing household costs and attracting investment to NSW. To achieve these targets, 4 of 5 coal-fired power stations will come to their scheduled end of life in the next 15 years. These 4 power stations currently generate approximately 75% of NSW's annual electricity.

An increasing supply of renewable energy generation, including solar power, will be required over the coming decades to meet the NSW Government's net zero target. The NSW Government's Electricity Infrastructure Roadmap sets out a 20-year plan to deliver this generation infrastructure, as well as the storage, firming and transmission infrastructure required to ensure NSW has continued access to cheap, clean and reliable energy as coal-fired power stations are retired.

Large-scale solar energy projects can support jobs and investment in regional NSW and have the potential to increase the resilience of regional towns during the state's transition to renewable energy generation. The roadmap is estimated to attract up to $32 billion of private sector investment in electricity infrastructure by 2030, supporting 6,300 construction jobs and 2,800 ongoing jobs, most of which will be in regional NSW.

1.3.1 Renewable energy zones

As part of the roadmap, the NSW Government has introduced 'renewable energy zones' (REZs) that will expand transmission and generation capabilities in strategic areas across NSW.

REZs are modern-day power stations. They combine renewable energy generation such as wind and solar, storage such as batteries, and network infrastructure such as high-voltage poles and wires in dedicated areas in NSW.

The NSW Government will deliver at least 5 REZs in the Central-West Orana, New England, South-West, Hunter Central Coast and Illawarra regions of NSW under the roadmap. The Energy Corporation of NSW will lead the coordination and delivery of these REZs.

The NSW Government will encourage development in REZs to support a transition to renewable energy. This will ensure that development occurs in appropriate areas close to existing transmission and distribution infrastructure and has fewer environmental, heritage and land-use constraints than some other parts of NSW.

Notwithstanding, a large portion (approximately 70%) of existing solar development is currently located outside REZs and continued development outside of the REZs will be required to support a transition to renewable energy. This guideline applies to large-scale solar energy projects both inside and outside the REZs.

2 Planning framework

2. Planning framework

The EP&A Act sets out the environmental planning and assessment framework for all development in NSW. This framework identifies where large-scale solar energy development may be permitted and the process by which it must be assessed and determined.

2.1 When is a solar energy project a 'state significant development'?

A solar energy project is SSD[1] if it requires development consent and has:

- a capital investment value of more than $30 million, or
- a capital investment value of more than $10 million and is in an environmentally sensitive area of state significance[2].

The Minister for Planning may also, by way of an order, declare specified development on specified land to be SSD. The Minister for Planning is generally the consent authority for SSD, and a senior departmental officer may exercise the minister's consent authority functions in accordance with certain delegations.

However, the Independent Planning Commission is the consent authority for SSD applications in the following circumstances (unless the application to carry out the development is made by or on behalf of a public authority or unless the development is declared to be SSI related development):

- 50 submissions of objection (other than from council) are made during the exhibition of the application
- the local council objects to the SSD application
- the applicant has disclosed a reportable political donation.

2.2 Where is large-scale solar energy development allowed?

The EP&A Act and relevant environmental planning instruments (EPIs), including local environmental plans (LEPs) and state environmental planning policies (SEPPs), determine where large-scale solar energy development is permitted.

Key provisions include:

- the zoning and land use provisions of the relevant LEP/s
- Part 2.3, Division 4 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP) (electricity generating works).

In general, large-scale solar energy development is permissible with consent on any land zoned for rural (RU1, RU2, RU3, RU4), industrial (IN1, IN2, IN3, IN4), or special purpose (SP1, SP2) uses in the relevant LEP[3].

Where large-scale solar energy development is permitted with consent, the applicant can lodge a DA for determination by the relevant consent authority if it has the consent of the owner of the land.

1 4.36, EP&A Act; section 2.6 and schedule 1, section 20, *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP).
2 'Environmentally sensitive area of State significance' is defined in section 2.2, Planning Systems SEPP.
3 Section 2.36(1)(b), TI SEPP.

2.2.1 Landowners' consent

If the applicant is not the owner of the land to which the DA relates (or is not the only owner), the DA may only be made with the consent of the owner of the land[4]. If there is more than one landowner, the consent of all landowners must be obtained (subject to the exceptions in s 23(2) EP&A Regulation 2021).

The consent of the owner of the land is not required for a DA made by a public authority provided the applicant gives notice in accordance with sections 23(3) and (4) of the EP&A Regulation.

It should be noted that the landowner is not required to carry out the development if approved.

If there is more than one landowner, the consent of all landowners must be obtained (subject to the exceptions in s 23(2) EP&A Regulation 2021).

If a project is proposing changes to an existing substation, consent must be obtained from Transgrid or the relevant provider.

2.2.2 Regional cities

The NSW Government's regional plans identify cities that are strategically important to the ongoing growth and development of regional NSW.

Over the next few decades, significant population growth is predicted in regional cities and investment in these cities is important as they represent major centres for housing, employment, commerce, tourism, education, health and other regional infrastructure and services.

For large-scale solar energy development to be approved near certain regional cities, the consent authority will need to be satisfied that any urban land conflicts, impacts on urban growth potential and important scenic values are not significant.

The Transport and Infrastructure SEPP provides for the specific consideration of renewable energy proposals in regional cities[5]. The provisions apply to SSD development for solar energy generation located on mapped land for the regional cities of Albury, Armidale, Bathurst, Dubbo, Griffith, Orange, Tamworth and Wagga Wagga.

While these provisions do not prohibit solar development in these areas, a consent authority must not grant development consent unless it is satisfied that the development:

- is located to avoid significant conflict with existing or approved residential or commercial uses of land surrounding the development, and
- is unlikely to have an adverse impact on the regional city's capacity for growth, or scenic quality and landscape character.

In considering these matters, the consent authority must factor in any proposed measures to avoid or mitigate those conflicts and adverse impacts.

4 Section 23(1)(b), *Environmental Planning and Assessment Regulation 2021* (EP&A Reg).
5 Section 2.42, TI SEPP.

2.3 Process for assessing large-scale solar energy projects

2.3.1 Development applications

All DAs for large-scale solar energy development will be subject to a comprehensive assessment that includes extensive community consultation and a detailed consideration of any environmental, social and economic impacts.

The main steps in the assessment process are shown in **Figure 1** and summarised below. The process is explained in more detail in the department's State Significant Development Guidelines.

All SSD DAs must be accompanied by an EIS. The purpose of the EIS is to help the community, councils, government agencies and the consent authority understand the impacts of a project so they can make informed submissions or a decision about a project's merits.

The EIS must be prepared in accordance with the SEARs. The SEARs identify the information that must be provided in the EIS, and the community engagement that must be carried out.

Large-scale solar energy developments may be eligible for industry-specific SEARs, which are tailored specifically to the relevant industry and are issued by the department within 7 days of an application being made. A project will be eligible if it is wholly permissible with consent, would not meet the criteria for designated development and is not a concept DA. Large-scale solar energy development would meet the criteria for designated development (if it was not SSD) if it:

- includes a battery storage facility that can supply more than 30 megawatts of power[6]
- is located on a floodplain and includes photovoltaics that can supply more than 30 megawatts of power[7].

In all other circumstances the department will issue project-specific SEARs and the applicant must submit a scoping report with its SEARs application. This scoping report must be prepared to a high standard having regard to the department's State Significant Development Guidelines.

Once the department receives the EIS, it will exhibit the DA for at least 28 days, or longer if the exhibition period extends over the Christmas and New Year period[8]. This gives the community an opportunity to have a say on the merits of a project before any final decision is made.

The consent authority will assess the overall significance of any impacts by reviewing the environmental assessment and any relevant submissions received and considering the broader public interest.

2.3.2 Modification applications

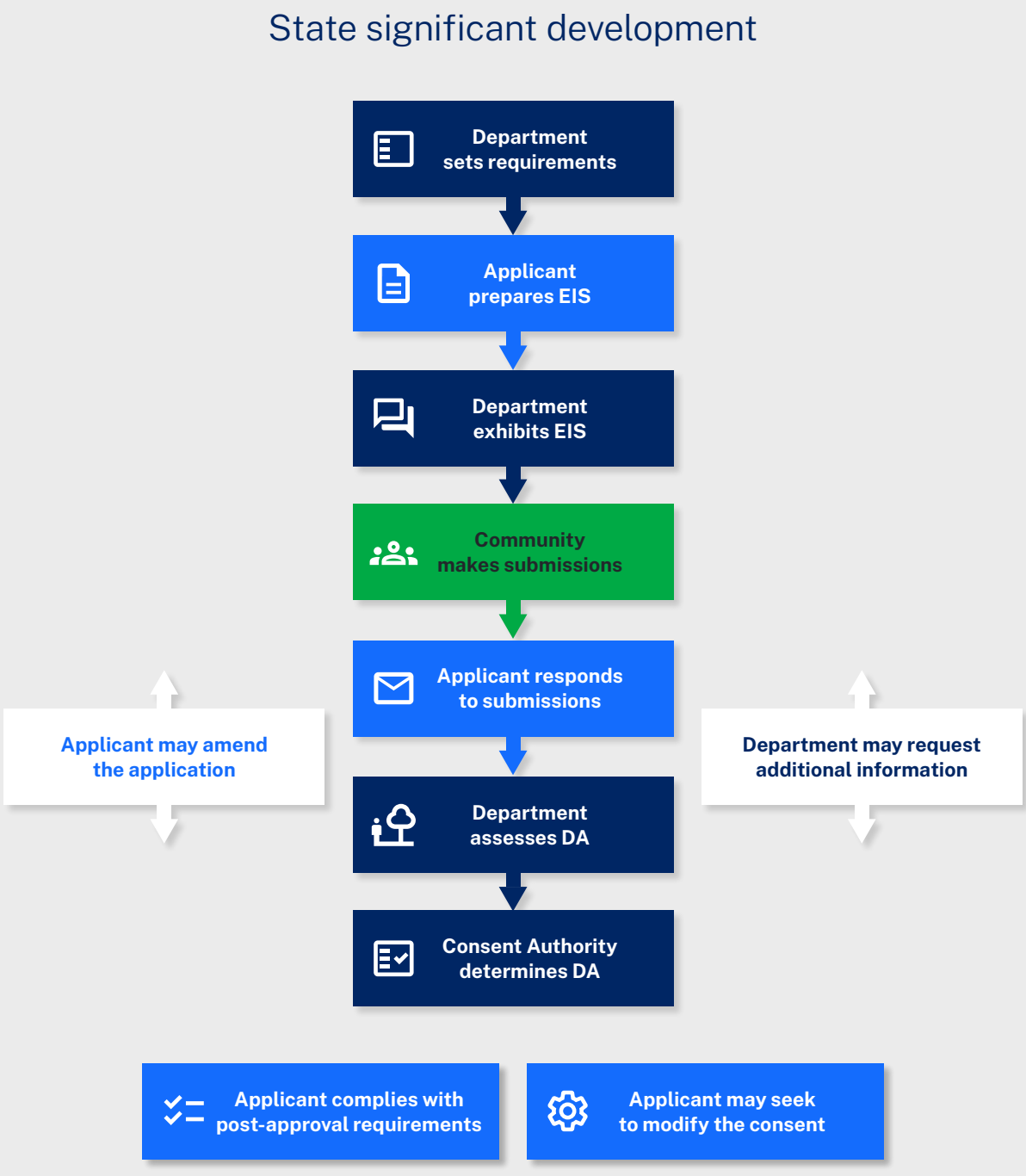
An applicant may apply, under the EP&A Act, to amend an SSD development consent. A consent authority may modify consent for an SSD provided that, among other matters, the development as modified will be substantially the same as the development for which the consent was originally granted.

Modifications may be necessary to change or improve the design of the project (for example, by adding battery storage, increasing the size and height of solar panels) or to change the conditions of the development consent.

A modification of a development consent must be assessed and determined under the EP&A Act and in accordance with the process described in the department's State Significant Development Guidelines.

6 Section 7 and schedule 3, EP&A Reg.
7 Section 7 and schedule 3, section 24(3), EP&A Reg.
8 Schedule 1, Clause 16, Environmental Planning and Assessment Act 1979.

Figure 1: SSD assessment steps



2.4 Other approvals that may be needed

This section outlines some of the other approvals that may be required in addition to the development consent. If in doubt about what approvals are required, applicants should consult the department or relevant government agency for further information.

2.4.1 Commonwealth approval

Under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act), an approval from the Commonwealth Government may be required if a development is likely to have a significant impact on matters of national environmental significance or other protected matters. This includes, but is not limited to, listed threatened species and ecological communities.

An applicant must refer their project to the Commonwealth Department of Climate Change, Energy, the Environment and Water if it is likely to have a significant impact on matters of national environmental significance. The Commonwealth Government's Significant Impact Guidelines provide guidance on whether or not an impact is likely to be significant. Referrals can be made on the Commonwealth Government's EPBC Act Business Portal.

2.4.2 Subdivisions

Some sites may require the subdivision of land to support the proposed development. For example, subdivisions may be required for substations within a project site, or for land that will be leased for longer than 5 years[9].

If an applicant wishes to include a subdivision in the scope of its SSD application, it should first discuss subdivision options with the relevant council This consultation with allow applicants to make an informed decision regarding whether to include the subdivision in its SSD application.

2.4.3 Network connections

Large-scale solar energy developments will generally need connections to the electricity transmission network or distribution grid to enable the distribution of the generated electricity. This may also include associated infrastructure such as substations, access roads and transmission lines.

Applicants are encouraged to consult with the relevant transmission or distribution network service provider early in the project planning process to identify the scope of works required to enable connection, and to determine the planning assessment pathway for those works.

Applicants should include network connection works as part of their DA to help streamline stakeholder engagement and to ensure that all aspects of the development are considered by the department during the assessment process. The potential environmental impacts of network connections, including impacts to agricultural land and biodiversity values, must be assessed in the EIS.

9 Section 7A, Conveyancing Act 1919 (NSW).

2.5 Regulation of approved large-scale solar developments

Development consent for a large-scale solar energy development will typically be subject to a range of conditions for managing and mitigating the impacts of the development, including but not limited to:

- visual impact mitigation, such as landscaped screening at affected dwellings
- road upgrades, site access and maintenance requirements
- stormwater management, erosion and sediment control and flood mitigation works
- biodiversity management and mitigation measures
- heritage protection measures
- obligations to manage risks associated with bushfire and dangerous goods
- decommissioning and rehabilitation of the site including performance objectives
- requirements for the minimisation and management of waste.

If development consent is granted for a large-scale solar energy development, the conditions of consent will continue to apply to the project and the land on which it is located throughout its construction and operational life as well as during decommissioning and rehabilitation phases.

2.5.1 Compliance

Applicants are responsible for complying with the conditions of consent under the EP&A Act.

The department's compliance teams are responsible for monitoring compliance with the conditions of consent for approved SSD solar energy projects, including following up suspected breaches reported by members of the public.

Compliance-related complaints regarding SSD solar development consents can be made by completing and submitting the Make a complaint form. The department's compliance team will contact the complainant within 14 days to seek further information or provide a progress update.

All large-scale solar energy development must comply with the Protection of the *Environment Operations Act 1997* (POEO Act), which aims to prevent the degradation of the environment by promoting pollution prevention, elimination of harmful wastes and the re-use, recovery or recycling of materials.

Local councils and other local authorities are generally the appropriate regulatory authority for the purposes of the POEO Act in relation to large-scale solar energy development, except in circumstances where activities relate to the exercise of functions under an environment protection licence.

An environment protection licence under the POEO Act is generally not required for a large-scale solar development. However, an environment protection licence is required in circumstances where the solar energy development is a hybrid system or combined energy generating system that incorporates other energy sources such as gas. In these limited circumstances, the NSW Environment Protection Authority is the regulatory authority for the purpose of the POEO Act.

3

Community and stakeholder engagement

3. Community and stakeholder engagement

Effective community and stakeholder engagement is essential for the development of the large-scale solar energy industry and the environmental assessment process. It is important for applicants to consider a diverse range of views to achieve positive outcomes.

Applicants must undertake meaningful engagement with stakeholders throughout the environmental impact assessment process and during the construction and operation phases of a project. This consultation must be undertaken in accordance with the Undertaking Engagement Guidelines for State Significant Projects (PDF 1,773 KB) (November 2021).

These guidelines include requirements for applicants to:

- provide clear and concise information to the community and stakeholders about projects and their impacts
- implement activities that encourage and facilitate public participation
- report back on what was heard and what has or hasn't changed in response to this feedback and why.

The SEARs and consent conditions may include additional consultation requirements that must also be complied with.

The community should be engaged as early as possible to identify potential opportunities and constraints associated with the proposed development. The applicant should identify the elements of the project and the environmental assessment that can be influenced or shaped by the community. These could relate to the design of the project, the characterisation of the area and/or the management and mitigation measures that can be implemented. Examples include:

- positioning and siting of the project including any setbacks
- characterisation of the scenic quality and sensitivity of the landscape and viewpoints (see the technical supplement for landscape and visual impact assessment)
- visual impacts including mitigation measures.

Applicants must also ensure that stakeholders are given the opportunity to participate in the engagement process in a meaningful way. Details of consultation activities undertaken with surrounding residents, community members, relevant authorities and councils should be clearly outlined in the EIS. This should include key matters raised and how feedback was considered and incorporated into the project.

Where multiple projects are being proposed in close proximity, applicants may consider conducting combined engagement activities to reduce consultation fatigue and provide greater transparency to the community.

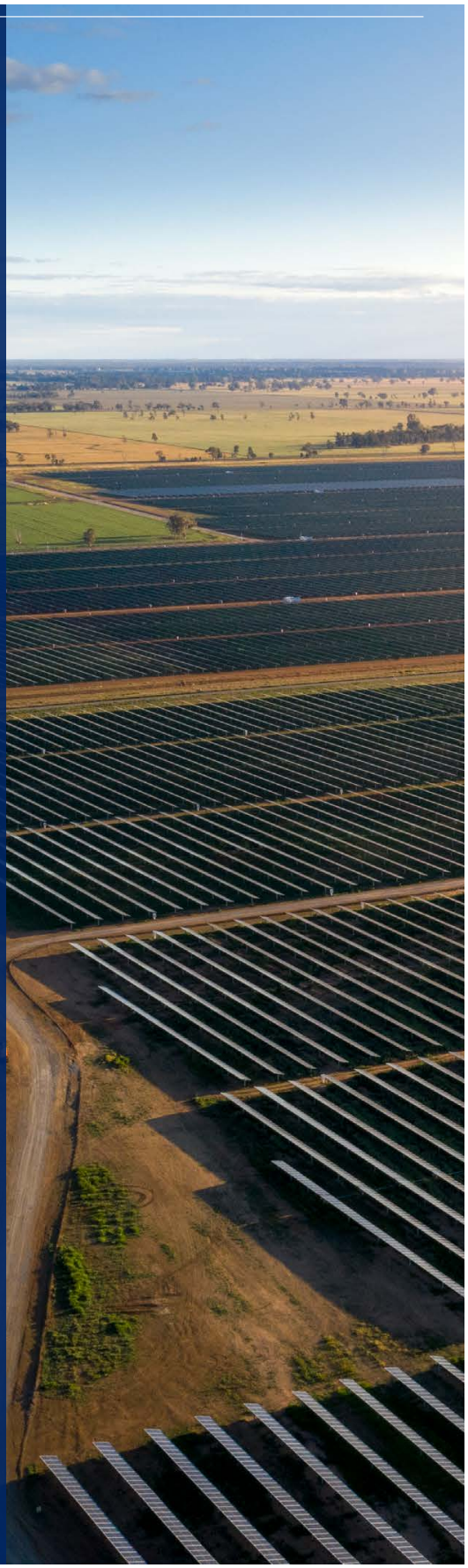
Applicants should continue to engage with stakeholders after any development consent has been granted and must have an effective complaint handling system which ensures that community concerns are addressed in a timely manner.

The department also has a role to play in consulting with stakeholders and the community. It is required to:

- consult with relevant government agencies and councils
- exhibit the EIS for public comment for a minimum of 28 days
- publish documents and submissions relating to the project on the planning portal
- ask the applicant to respond to issues raised in submissions to help the community and stakeholders understand how issues have been addressed and considered
- outline its decision or recommendation, including how community feedback was considered.

4

Site selection



4. Site selection

Good site selection provides an opportunity to avoid or minimise negative impacts at the outset of a development, allowing the design and assessment of a project to focus on mitigating and managing unavoidable impacts.

4.1 Importance of site selection

Well-sited solar energy projects can have minimal impacts on the environment, surrounding land uses and the community. A good site may result in greater social licence to operate, shorter assessment timeframes, reduced offset obligations and fewer conditions of consent to manage residual impacts.

Sites with multiple environmental and planning constraints may still be capable of being developed in a suitable manner with good design, innovation and appropriate mitigation measures in place. The consent authority is obliged to consider the merits of each application.

If the applicant is not proposing to avoid constraints, justification for site selection and the layout of the development must be clearly outlined in the EIS.

4.2 Process of site selection

There are many technical and commercial factors that need to be considered when selecting a site for large-scale solar energy development. These include:

- proximity to the existing transmission infrastructure
- available connection capacity
- level of solar radiation
- distance to major towns, cities or other major energy users
- proximity to major roads and transport infrastructure
- size and shape of land parcels
- development restrictions including land use zoning and proximity to regional cities.

These considerations limit the areas that are suitable for large-scale solar development.

Applicants must also consider other environmental issues and land use conflicts when selecting a site, such as the agricultural productivity of the land, visibility and topography of the site and biodiversity values.

Variations in topography can reduce the usability of land and minimise the efficiency of energy production (by increasing the potential for panels to overshadow each other). Higher gradients will also increase construction costs, create access challenges and increase the potential for erosion and sedimentation unless substantial controls are implemented.

As shown in **Figure 2**, site selection factors often compete with each other. With the growing demand for solar energy, it is becoming difficult to select sites that do not present some challenges. Consequently, the site selection process should avoid impacts as far as possible while striking an appropriate balance between competing environmental and social factors.

Applicants should undertake a 'constraints mapping' exercise that is informed by early engagement with local communities and councils. This should provide an overview of the key environmental and land use constraints on and around the project site.

The constraints mapping exercise should include, but not necessarily be limited to:

- nearby residences (including those subject to any impact agreements – see **Appendix B**)
- rural villages and urban land
- important agricultural land and soil capability (LSC) class of subject land and surrounding land
- indigenous and non-indigenous heritage items and places of significance
- threatened species, native vegetation (including grasses) and endangered ecological communities
- watercourses
- flood prone and bushfire prone land
- existing infrastructure, including transmission infrastructure, airports, and roads
- existing and approved solar energy developments in the area
- land use zoning
- view lines of particular significance
- existing potential visual screening.

A final version of the constraints map, like that shown in **Figure 3**, should be included in the EIS.

Figure 2: Site selection considerations

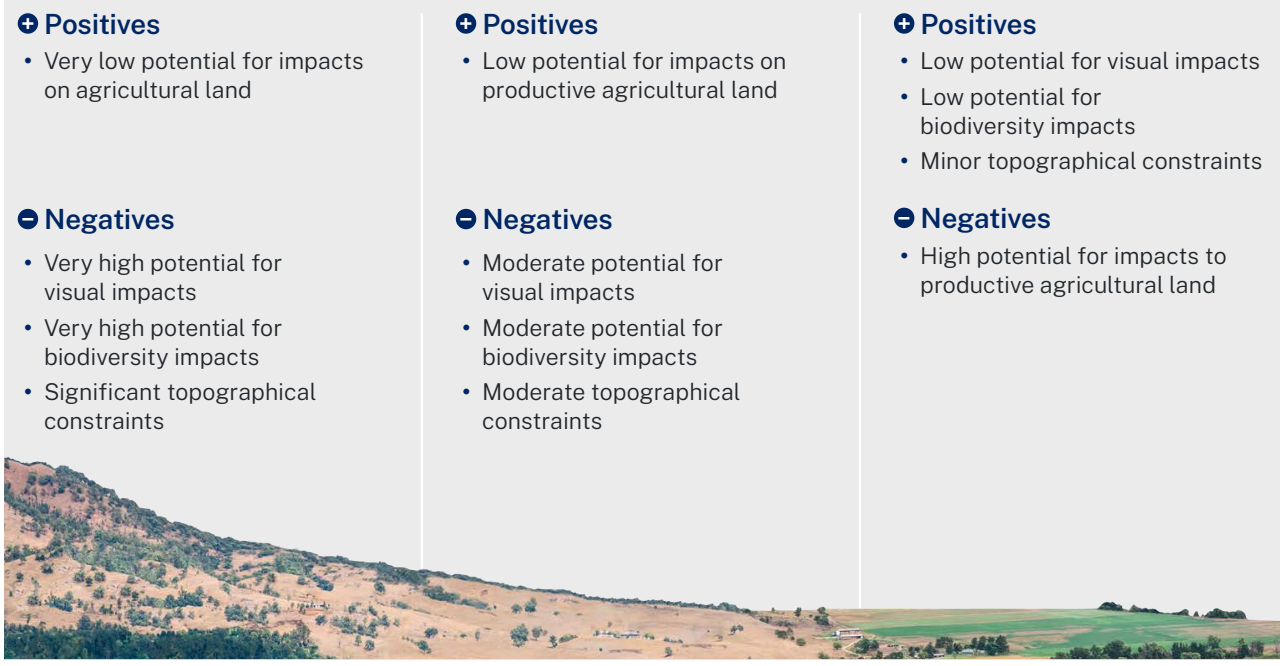
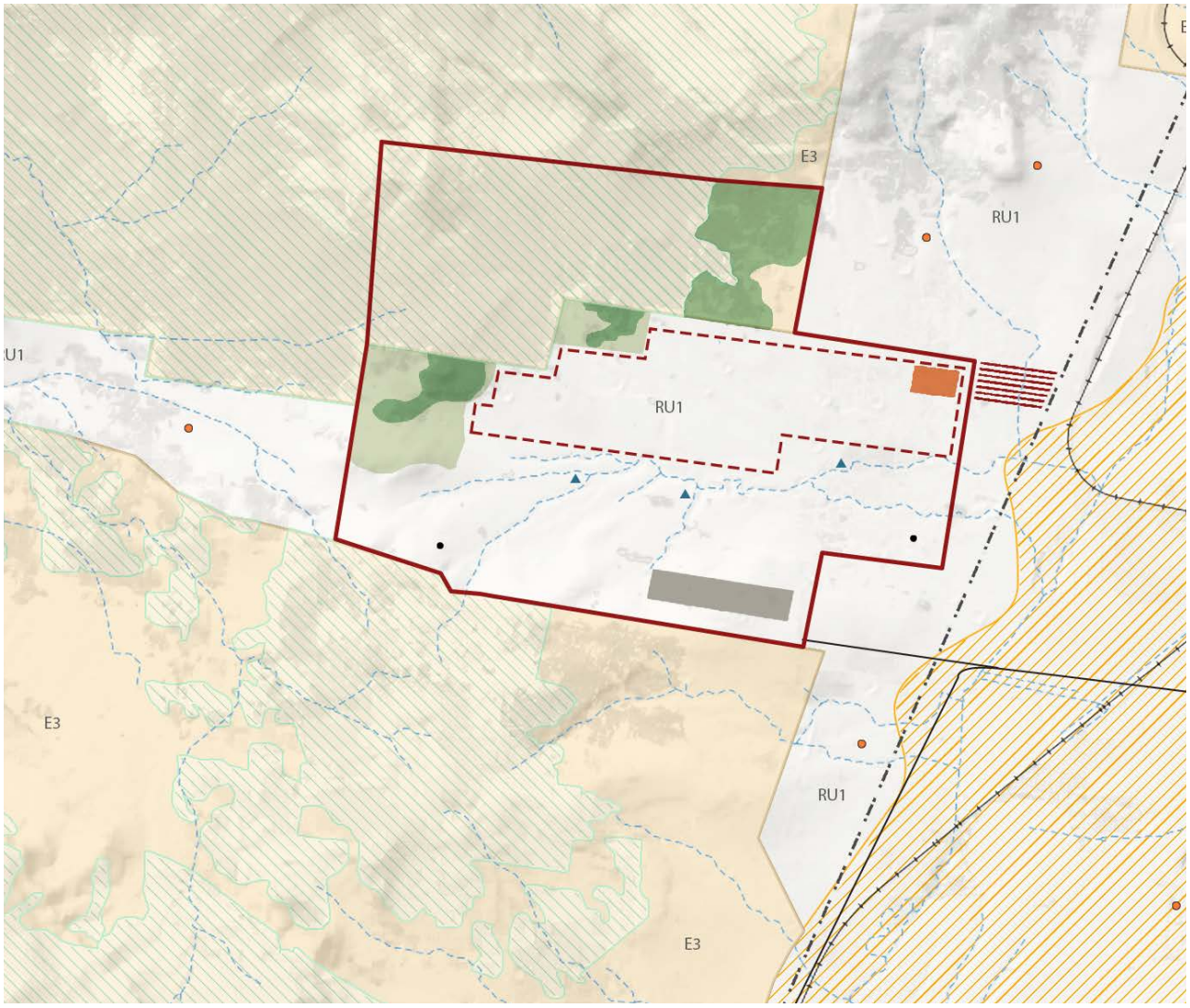
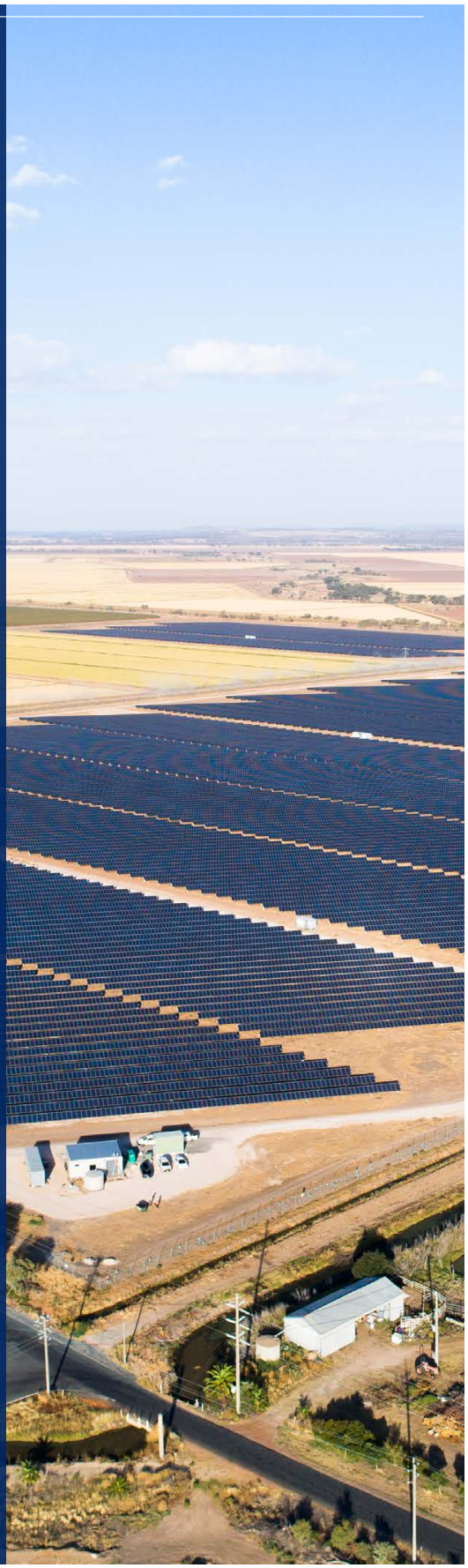


Figure 3: Constraints map



5

Assessment issues and requirements



5. Assessment issues and requirements

This section highlights some of the common assessment issues for large-scale solar energy development and detailed requirements for issues including visual amenity impacts, glint and glare, agricultural land use conflict, rehabilitation and decommissioning and waste management. This section also includes key principles that should be considered in site selection, siting, and detailed assessment of projects.

5.1 Landscape and visual impacts

5.1.1 Introduction

Large-scale solar energy development can contrast with existing rural areas and landscapes. Despite this, the potential for landscape and visual impacts in many settings is relatively low, especially when compared to other types of energy development (such as wind energy). This is particularly the case when the site and surrounding areas are relatively flat.

This section should be read in conjunction with the supporting *Technical supplement for landscape and visual impact assessment*.

5.1.2 Key principles

Consent authorities will consider the following principles in determining the significance of impacts and any mitigation measures to reduce visual impacts.

Visual amenity principles

1. The baseline character of the landscape must be determined through engagement with the community.
2. Applicants must consider landscape character and visual impacts early in the site selection and design process to minimise impacts and conflicts where possible.
3. Solar energy projects should be sited and designed to avoid areas with topographical constraints that would increase the visibility of a development.
4. Where solar energy projects are likely to result in moderate or high visual impacts, mitigation strategies must be adopted to reduce or manage impacts.

5.1.3 Assessment

The applicant must prepare a landscape and visual impact assessment in accordance with the technical supplement which is described briefly below.

Landscape character assessment

The purpose of undertaking a landscape character assessment is to understand the sensitivities of the landscape and to help determine the overall impact of a project on an area's character and sense of place.

This should be informed by a baseline analysis that establishes the existing character of the area and its sensitivity. It is important that the baseline analysis is prepared in consultation with the community, local council and affected landholders to ensure that landscape values and characteristics are accurately identified.

The impact of the proposal on the landscape should be determined by evaluating the sensitivity of the landscape and the magnitude of the project's effects in that area.

Visual impact assessment

An assessment must be completed for all viewpoints that would have the potential to experience moderate or high impacts. The technical supplement includes a preliminary assessment tool that identifies these viewpoints based on distance from the project and the relative height difference.

The overall visual impact for each viewpoint must be determined by combining the visual magnitude of the proposed solar energy development and the visual sensitivity of the viewpoint, using the tools available in the technical supplement.

These tools consider factors such as:

- a view from a residence is more sensitive to change than from a local road where views are more intermittent and less frequent
- a view from a rural residence is more sensitive if it is from principal living spaces and the front and rear of the dwelling than from other areas
- a view is more sensitive to change if it has higher scenic qualities and more valued landscape features
- a distant solar energy development would have a lesser magnitude than one closer
- magnitude is likely to be higher from areas overlooking a solar array as more of the project would be visible than if the viewer were at a similar elevation.

Visual impacts must be assigned a rating from very low to high having regard to these considerations. Applicants must seek to avoid high impacts (unless the impacts can be justified) and ensure effective mitigation is provided for moderate impacts such as vegetation screening.

The technical supplement sets out a range of visual impact examples.

5.2 Agricultural land use

5.2.1 Introduction

Agricultural land in NSW can be desirable for the development of large-scale solar energy projects. This is because:

- agricultural land is often flat, which reduces the scale and likelihood of visual impacts
- agricultural land is often cleared of vegetation, which limits any biodiversity impacts
- large-scale solar energy projects require large portions of contiguous land (approximately 500 ha on average) comparative to other types of industrial development
- solar energy development is permissible on land zoned for agricultural and rural land uses

Despite these factors, the cumulative risk to agricultural land and productivity because of large-scale solar development is very low. The Australian Energy Market Operator estimates that NSW will need approximately 20,000 MW of large-scale solar generation by 2050. This would require approximately 40,000 ha of land or only 0.06% of rural land in NSW. Even in the highly unlikely scenario that all of NSW's solar generation were located on important agricultural land (this land covers around 13.8% of the state and is 6 to 7 times more agriculturally productive than the remaining 86.2% of the state) only 0.4% of this land would be required.

While the cumulative risk to both rural land and important agricultural land is relatively low, it is important to balance the need for renewable energy with the need to safeguard important agricultural land for food and fibre production and to ensure that any use of this land would not have a significant impact on the local and regional agricultural industry.

Agricultural land mapping

LSC mapping classifies land into 8 classes based on the agricultural practices that could be sustained on the land including ease of management and risk of degradation. The limitations to agricultural use are determined by factors such as soil properties and climate.

Class 1 represents land capable of sustaining most land uses including those that have a high impact on the soil (such as regular cultivation), while Class 8 represents land that can only sustain very low impact land uses (such as nature conservation). The different LSC classes are described in the Office of Environment and Heritage's Land and Soil Capability Scheme (PDF 1,390 KB) and can be viewed on the NSW Government's SEED portal.

BSAL is land with high quality soil and water resources capable of sustaining high levels of productivity. BSAL data can be downloaded from the department's website.

Co-location of large-scale solar development and agriculture

Large-scale solar energy development and agricultural practices can work and exist together to benefit both landholders and solar development applicants.

There are many examples of co-location within Australia and internationally.[10] Examples of activities that support co-location include sheep grazing, beekeeping and/or horticultural activities.[11] Solar panels can offer shade for sheep, protection from the elements and green pasture during droughts.[12]

10 Clean Energy Council, March 2021, Australian Guide to Agrisolar for Large-Scale Solar, p. 2.
11 Clean Energy Council, March 2021, Australian Guide to Agrisolar for Large-Scale Solar, p. 6-7.
12 Clean Energy Council, March 2021, Australian Guide to Agrisolar for Large-Scale Solar, p. 8.

5.2.2 Key principles

Agricultural land use principles

1. Applicants should consider the agricultural capability of the land during the site selection process.
2. Applicants should avoid siting solar energy projects on important agricultural land as far as possible.
3. Agricultural assessment should be proportionate to the quality of the land and the likely impacts of a project.
4. Mitigation strategies should be adopted to ensure that any significant impacts on agricultural land are minimised.

5.2.3 Agricultural impact assessment

An agricultural impact assessment may be required for a large-scale solar energy project. **Appendix A** provides detailed guidance to assist applicants to determine the level and content of any agricultural assessment that may be required.

The purpose of an assessment is to ensure that applicants, communities and consent authorities have a detailed understanding of:

- the agricultural capability and productivity of land subject to the project site
- potential impacts of the solar energy project on agricultural land and associated industries
- the ways in which potential impacts may be mitigated.

If a large-scale solar energy project is located on or adjacent to important agricultural land, or located on moderate capability land (LSC class 4), the applicant must verify the agricultural quality and capability of the land. They should then use the results of this verification process (which includes completion of a soil survey) to design the layout of their project and avoid impacts on productive land.

Once the capability of the land is verified, applicants may be required to undertake an assessment of the proposed layout. The triggers for, and level of assessment required, are summarised in **Table 1** and explained in further detail in **Appendix A**.

Table 1: Levels of agricultural impact assessment

Project location	Level of assessment	Content of assessment
Located adjacent to rural zoned land	Level 1 – basic	Ensure that applicants, in consultation with landholders, identify and consider potential impacts on immediately adjacent agricultural land.
Located on rural zoned land verified as LSC class 4	Level 2 – reduced	Consider impacts and conflicts with the agricultural land subject to the project site.
Located on rural zoned land verified as LSC class 1-3	Level 3 – detailed	Provide a detailed justification for the project, include an assessment of whether the project would significantly impact the local or regional agricultural industry.
Other scenarios	No assessment required	

5.3 Infrastructure contributions, benefit sharing and private agreements

5.3.1 Infrastructure contributions

Local infrastructure contributions are collected by councils to help fund local infrastructure needs resulting from development including stormwater drainage, traffic management and community facilities.

Large-scale solar energy development typically has limited impacts on local infrastructure with the exception of very specific impacts such as the requirement for road upgrades to facilitate site access. Specific impacts of this nature should be addressed through conditions of development consent rather than through local contribution mechanisms or planning agreements.

Notwithstanding, a local contribution mechanism or planning agreement can be used if there is a link between the development and the infrastructure to be funded.

5.3.2 Benefit sharing

Large-scale solar energy development has significant benefits for the state of NSW including reduced reliance on fossil fuel, reduced air quality emissions, and ensuring a secure and affordable power supply.

However, many of these benefits are not directly realised by the local and regional communities that host and are impacted by solar energy development. Solar infrastructure, especially when it is large scale, can result in changes to the local landscape and community that are difficult to foresee and plan for.

Sharing the financial and other benefits of a project can assist in building community support by ensuring that the project delivers positive, tangible and long term social and economic outcomes for the local community.

Consequently, the NSW Government strongly supports benefit sharing programs, and will continue to investigate how benefits could be better coordinated for communities.

However, benefit sharing programs are voluntary and there is no scheme requiring these programs to be implemented for major projects under the NSW planning system. It is up to applicants to design their own programs and/or enter into planning agreements with local councils to fund community programs and projects. The details of any benefit sharing program should be included in the EIS or be provided during the department's assessment process.

Irrespective of how the funds are administered, benefits sharing programs should:

- be informed by consultation with the community or community representatives
- produce outcomes that align with the general values and priorities of the public
- have a positive, lasting and meaningful impact for the local community and protect the overall public interest
- be proportionate to the scale of the project and the level of change experienced by the community
- include public benefits that are not wholly unrelated to the development.

Community benefit sharing involves initiatives that benefit the community as a whole, not individual landowners. If the consent authority finds that a development would have significant impacts on a landholder, it will ensure there are appropriate measures in place to deal with these issues in the conditions of consent. These might include the requirement for vegetation screening or amendments to the design of a project.

If benefit sharing will be administered through a planning agreement, that planning agreement must be prepared in accordance with the department's Practice Note on Planning Agreements (February 2021, or latest version).

As a general guide, the total funding for benefit sharing (including planning agreements and any other programs facilitated by the applicant) should be between $200 and $300 per megawatt per annum (indexed to CPI) over the life of the development (i.e. until the project is decommissioned).

A portion of these payments may be made upfront or brought forward to provide capital funding for larger projects and initiatives. In these circumstances, the funding must be tied to a project and should consider the time value of money (i.e. a sum of money paid now has more value that the same sum paid at a future date).

The total funding for benefit sharing must not include the cost of private agreements with landowners to either host infrastructure or manage impacts from the development.

Appropriate projects and initiatives for inclusion in a benefit sharing program might include:

- recurrent costs of infrastructure, services or facilities
- additional or better-quality open spaces, public facilities or infrastructure including upgrades to local parks, libraries, galleries, community centres, showgrounds, museums, active transport infrastructure
- sponsorship of community events (fundraising events, local produce markets, nature walks, community clean-up events, gardening days) or groups (local sporting clubs, biodiversity volunteering groups, community gardens)
- promotion of available employment opportunities including managing an online register where local contractors and suppliers can be updated on upcoming contract opportunities
- training programs for local community members for employment opportunities in maintenance, operation and community liaison aspects of projects
- initiatives delivered in partnership with local organisations including scholarship programs to enable local students to complete courses in specific fields (i.e. engineering, project management)
- installation or funding of installation for residential solar panels or solar PV facilities for neighbourhood community facilities
- offering neighbours and/or wider community a share in the equity of a project or other co-ownership arrangements.

Further examples of benefit-sharing schemes and ways to design these programs are outlined by the Clean Energy Council in A Guide to Benefit Sharing Options for Renewable Energy Projects (PDF 3,641 KB).

5.3.3 Private agreements

The two most common forms of private commercial agreements are described briefly below. Further information, including advice for landholders, and can be found in **Appendix B**.

Host Agreements

The planning system allows applicants to enter into agreements with 'host' landholders who are willing to have project infrastructure located on their land. These agreements are essentially commercial leases and should set out the terms to enable the applicant or project owner to install, operate and maintain the project infrastructure as well as arrangements for decommissioning and rehabilitation of the project infrastructure.

Impact Agreements

Large-scale renewable energy projects may significantly impact some neighbours, and the planning system allows for agreements to be negotiated to manage and mitigate these impacts For example, impact agreements are commonly negotiated to provide for the implementation of landscaping or screening to mitigate high visual impacts from a project.

Assessment Requirements

Where an agreement is in place between an applicant and a landholder/s, the affected residence will be considered an 'associated' residence in the assessment if it relates to the relevant impact/s.

Where an agreement is not in place between an applicant and a landholder/s, the affected residence should be identified as 'non-associated' in the EIS (see **Figure 3** for an example) as it relates to the relevant impact/s. Applicants should also identify the nature, extent and duration of any impacts covered by way of an agreement and other relevant information including the project elements covered by the agreement and relevant phases to which it relates (construction, operation and decommissioning). Applicants do not need to disclose any commercial terms of these agreements.

5.4 Waste management and circular design

5.4.1 Introduction

Solar energy projects can generate different waste streams throughout the various phases of their lifecycle. Waste is typically minimal during the operation of a solar energy project. However, large volumes of waste may be generated during the construction period and again during the decommissioning phase. Waste generated during the construction of a solar energy project will typically comprise of cardboard packaging, wooden pallets and plastic wrapping associated with the PV panels. Most of this waste is likely to be classified as general solid waste (non-putrescible) and has the potential for recovery through reuse and/or recycling.

Waste generated throughout the operation of a solar energy project is typically negligible, except for waste generated from repair and maintenance activities.

When a solar energy project is decommissioned, a large amount of waste can be generated in association with the discarding of infrastructure, including PV panels. A typical PV panel and its associated infrastructure is comprised of glass, copper cabling, aluminium framing, silicon wafers, silver and other materials.

The current volume of PV panel waste from large-scale solar energy projects is not significant but is expected to grow over the next few decades. The entire solar industry (including household solar energy systems) currently generates less than 2,000 tonnes of solar panel waste per year. By 2025, solar energy systems in NSW are anticipated to generate approximately 3,000–10,000 tonnes of waste and this is expected to grow to 34,000–63,000 tonnes per year by 2035.

The NSW Government is committed to reducing waste to landfill and has created a $10 million Circular Solar Fund which supports the adoption of technologies to manage end of life solar waste and a transition to a circular economy.

5.4.2 Key principles

Waste management principles

1. Construction waste from large-scale solar energy projects must be minimised and the use of reusable and recyclable materials should be prioritised where possible.
2. Impacts on local waste management facilities must be minimised as far as practicable during construction, operation and decommissioning.
3. Recycling of photovoltaic panels and associated equipment should be prioritised and maximised as far as possible to avoid landfill.

5.4.3 Assessment

Applicants should clearly demonstrate how waste will be minimised at all stages of the development and how reuse and recycling will be optimised.

The EIS must include:

- identification of waste types (including the appropriate waste classification) and estimates of waste expected to be generated at each stage of the project
- identification of end markets for waste materials generated at each stage of the project
- evidence from local councils or facilities that the identified waste classifications and volume can be accepted at the appropriate stage of the project's life cycle
- consideration of circular design principles and strategies to mitigate impacts and reduce waste generation throughout all stages of the project (such as using recycled, reusable and low-impact raw materials where possible)
- end-of-life reuse, refurbishment and recycling strategies for PV panels and associated equipment that maximise high recovery methods.

The applicant should also consider appropriate mitigation measures that include:

- selecting manufacturers, distributors and installers of PV panels that are members of relevant product stewardship schemes
- selecting manufacturers and distributors of PV panels and associated infrastructure that minimise packaging and/or maximise the recyclable components of packaging
- separating waste streams on site prior to transport to waste management facilities
- ensuring all recyclable materials are sent to the appropriate recycling facilities and minimising waste sent to landfill
- consulting with local councils to ensure that impacts on local waste management facilities are minimised as far as practicable
- developing and implementing strategies that prioritise and maximise waste avoidance and re-use, including exploration of 'second-life' options
- selecting waste management providers that specialise in recycling end-of-life PV panels and associated infrastructure.

5.5 Decommissioning and rehabilitation

5.5.1 Introduction

The operational life of a large-scale energy project is likely to range between 20 to 30 years.

Large-scale solar energy projects have the potential to operate for a long period of time if solar panels are refurbished regularly or upgraded over time.

In most circumstances, the refurbishment of solar panels and infrastructure will not require a new DA or a modification to the existing consent, as refurbishment may be authorised by the terms of the existing consent.

Alternatively, an applicant may choose to cease operation of a large-scale solar energy project and decommission and rehabilitate the project site.

Decommissioning involves dismantling and removing solar panels, structures and ancillary infrastructure (cables, inverters, fencing) from the site and recycling, reusing or disposing materials and waste products, and returning the site to its pre-existing use and LSC Class. It also involves disconnecting the development from the electricity network.

The owner or operator of a solar energy project should be responsible for decommissioning and rehabilitation, and this should be reflected in a host agreement with the landholder. This agreement may also prescribe assurances to fund decommissioning, including ongoing evidence that the applicant has the capacity to fund decommissioning activities. See **Appendix B** for information regarding host agreements.

If an applicant or landholder fails to meet the decommissioning and rehabilitation obligations prescribed by the relevant development consent, the department can use its enforcement powers under the EP&A Act to address any breaches of the consent conditions.

5.5.2 Key principles

Decommissioning and rehabilitation principles

1. The land on which a large-scale solar energy project and supporting infrastructure is developed must be returned to pre-existing use if the project is decommissioned.
2. If operations cease, infrastructure (including underground infrastructure) should be removed unless there is significant justification for retaining it.
3. Land must be rehabilitated and restored to pre-existing use, including the pre-existing LSC class, if previously used for agricultural purposes.
4. The owner or operator of a solar energy project should be responsible for decommissioning and rehabilitation, and this should be reflected in an agreement with the host landholder.

5.5.3 Assessment

Applicants must identify the decommissioning and rehabilitation activities that will take place and address all relevant issues for decommissioning and rehabilitation in the project EIS.

This may include dust and noise impacts from earthwork activities and vehicles, traffic generation and/or traffic disruptions and risks to biosecurity, particularly related to pests, diseases and weeds.

The consent authority should impose conditions of consent to ensure that the above principles are met. Because the decommissioning and rehabilitation of large-scale solar energy projects is relatively straightforward, approval conditions should be outcomes-based and not include post approval requirements such as management plans.

It is the NSW Government's policy that financial assurances should not be required by conditions of consent, and any financial assurances should be dealt with in commercial arrangements outside of the planning system.

5.6 Glint and glare

5.6.1 Introduction

Glint (a momentary flash of light) and glare (a continuous, excessive brightness) can affect people and land uses near large-scale solar energy developments including residents, road users, rail operators and airport operations.

However, significant glint and glare impacts are uncommon with large-scale solar energy developments for several reasons. Firstly, solar panels are designed to absorb light and typically reflect less than 2% of incoming sunlight[13]. Secondly, glint and glare typically occur for short periods of time and require very specific geometric and atmospheric conditions. Lastly, many solar energy projects are now fitted with tracking panels that can be adjusted to avoid or minimise the geometric conditions required.

While glint and glare impacts can be relatively uncommon, it is important to model and assess these impacts to ensure any potential significant impact is avoided or mitigated appropriately.

5.6.2 Key principles

Glint and glare principles

1. Solar panels should be sited to reduce the likely impacts of glint and glare.
2. Solar panels and other infrastructure should be constructed of materials and/or treated to minimise glint and glare.
3. If a large scale-solar energy development is likely to exceed the relevant criteria for glare and standards for glint, mitigation strategies must be adopted to reduce impacts.

5.6.3 Assessment

A glint and glare assessment should be undertaken in accordance with the requirements in **Appendix C**. This assessment must demonstrate that glint and glare would not pose a significant risk to motorists or pilots and that nuisance from glare is minimised for residential locations in accordance with the objectives outlined in **Table 2**.

Table 2: Impact rating and performance objectives for glare impacts to residential dwellings

High glare impact	Moderate glare impact	Low glare impact
> 30 minutes per day > 30 hours per year	< 30 minutes & > 10 minutes per day < 30 hours & > 10 hours per year	< 10 minutes per day < 10 hours per year
Significant amount of glare that should be avoided.	Implement mitigation measures to reduce impacts as far as practicable.	No mitigation required.

13 Spaven Consulting 2011, Solar Photovoltaic Energy Facilities: Assessment of Potential for Impact of Aviation, Report No.10/344/RPS/1.

5.7 Other assessment issues

Other matters may be relevant to a project and require careful consideration. These matters are outlined in **Table 3**.

Table 3: Other assessments issues

Biodiversity	Where the proposed site contains native vegetation, habitat of threatened species or ecological communities, and requires clearing, an assessment must be undertaken in accordance with the *Biodiversity Conservation Act 2016,* the Biodiversity Assessment Method and documented in a biodiversity development assessment report (BDAR). The Planning Secretary has the power to waive the requirement for a BDAR if an applicant can demonstrate that the proposed development is not likely to have a significant impact on biodiversity values. Applicants are expected to demonstrate that they have applied principles of avoidance, minimisation and mitigation of impacts in project design.
Traffic and transport	Applicants should consider whether the local and classified road network can accommodate the traffic generated by the construction of the solar energy project, having regard to any advice from relevant road authorities. Applicants should provide a clear list of road upgrades required and an assessment of the relevant impacts of these upgrades, having regard to advice from relevant road authorities. Applicants must identify whether the road upgrades require landowner's consent.
Water management	Surface water-related impacts, such as flooding, discharge/run-off and erosion, must be assessed. Appropriate mitigation measures, such as sediment controls, must be proposed where warranted. Applicants should consult with landholders regarding potential surface-water related impacts of the project on neighbouring properties and any mitigation measures. Any assessment of surface water-related impacts must be informed by a soil survey that considers the potential for erosion. If there is any water take associated with the project, the applicant should identify the source of water (both potable and non-potable) and may need to acquire water access licences if the project is approved.
Noise and vibration	Construction noise impacts should be assessed in accordance with the Interim Construction Noise Guideline and operational noise impacts in accordance with the NSW Noise Policy for Industry.
Air quality	Dust suppression measures that will be used during construction and operation, such as water carts during land preparation, temporary wind fences and re-vegetation of disturbed areas, should be considered.

Social and economic impacts	A social impact assessment is required for all state significant projects and must be undertaken in accordance with the department's Social Impact Assessment Guideline for State Significant Projects (PDF 2,181 KB). The assessment will include both positive and negative impacts of the proposed development on potentially affected people and groups, including how the impacts are distributed. This includes workforce accommodation, job creation opportunities and flow-on economic impacts to local communities.
Aboriginal cultural heritage	The loss of Aboriginal cultural heritage should be avoided. If losses cannot be avoided, impacts must be minimised. An assessment of the likely impacts on Aboriginal cultural heritage must be undertaken and should include consultation with the Aboriginal community undertaken in accordance with the Aboriginal cultural heritage consultation requirements for proponents and test excavations, if required.
Non-Aboriginal heritage	An assessment is required of the likely impacts on archaeological objects and places.
Cumulative impacts	Any cumulative impacts from other developments (proposed, approved and operative), especially biodiversity, socio-economic and construction traffic, must be assessed in accordance with the department's Cumulative Impact Assessment Guidelines for State Significant Projects (PDF 1,393 KB) (July 2021, or its latest version).
Regional cities	Where an applicant proposes a large-scale solar development within a mapped area in proximity to a regional city, the provisions within the Transport and Infrastructure SEPP should be clearly and comprehensively addressed. Residential and commercial developments that have been approved (but not yet commenced) should be included when identifying the surrounding urban environment. The applicant should consult with the relevant council and identify any land identified for future growth in strategic planning documents including local strategic planning statements and housing strategies.
Hazards	The location of solar energy infrastructure should avoid any land subject to identified natural hazards (such bushfires, flooding or land instability) and should not contribute to an increase in risk of a natural hazard. Any natural hazards or risks associated with the construction, operation and decommissioning of the solar energy project must be assessed. These include those associated with hazardous materials (for instance, from PV panels and battery storage), and the threat of fire spreading to a solar development or being caused by associated infrastructure such as cables, panels or transmission lines. If the project is located in a bushfire prone area, applicants must prepare a strategic bushfire study in accordance with the NSW Rural Fire Service's Planning for Bush Fire Protection.

Assessment issues and requirements

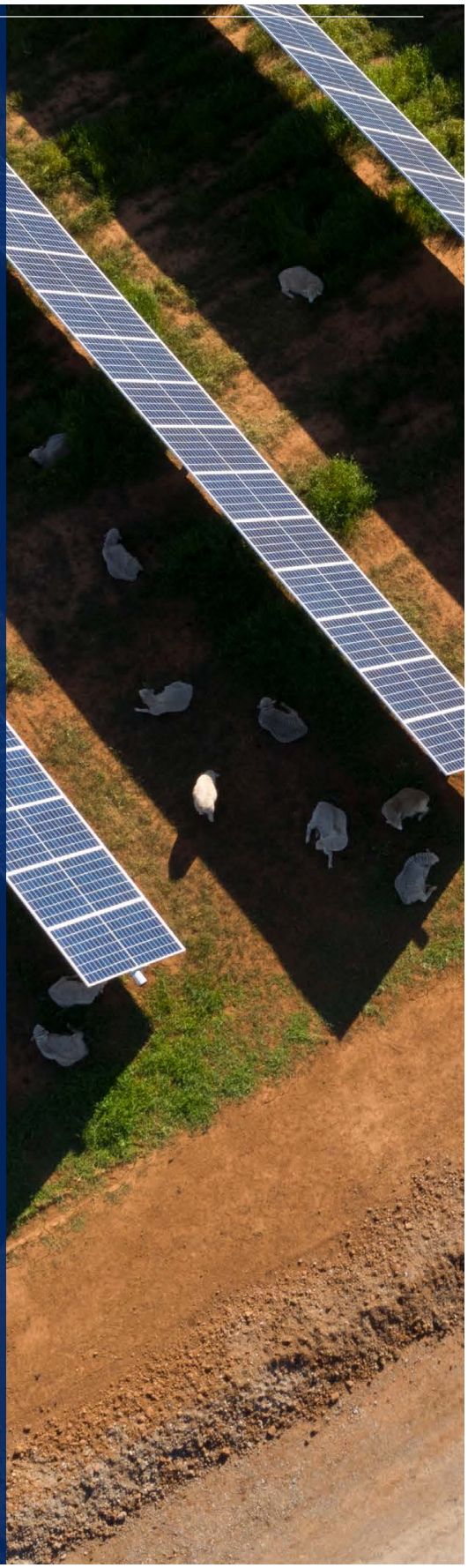
Heat island	Where a solar energy project is located adjacent to a horticultural or cropping activity, the solar array should be setback from the property boundary by at least 30m to mitigate any heat island effect.
Batteries	If the project includes battery energy storage that has a capacity of more than 30 MW, the applicant must undertake a preliminary hazard analysis in accordance with Hazardous Industry Planning Advisory Paper No 4 – Risk Criteria for Land Use Safety Planning (PDF 367 KB), Hazardous Industry Planning Advisory Paper No 6 – Hazard Analysis (PDF 525 KB) and Multi-level Risk Assessment (PDF 624 KB).
Health	Applicants should consider the power frequency and electric and magnetic field exposure guidelines[14] referenced by the Australian Radiation Protection and Nuclear Safety Agency.
Public interest	Applicants should consider an analysis of the public interest, including the public interest in renewable energy, the objects of the EP&A Act and the principles of ecologically sustainable development.
Strategic context	Applicants should consider whether the project is consistent with local or state planning strategies, and government policies such as climate change and energy policies, including the capability of the project to contribute to energy security and reliability[15].

14 ICNIRP Guidelines for Limiting Exposure to Time Varying Electric and Magnetic Fields (1 Hz – 100 kHz) 2010.

15 For further guidance on addressing electricity system security and reliability, proponents should see the department's publication Electricity System Security and Reliability Environmental Assessment Requirement: Guidance for proponents of State significant electricity generation projects.

Appendix A

Agricultural impact assessment requirements



Appendix A – Agricultural impact assessment requirements

1. Purpose

Applicants of large-scale solar energy projects should use this appendix to determine whether an assessment of impacts on agricultural land is required. If such an assessment is required, the appendix should be used to determine the level of assessment required.

2. Level of assessment

Applicants are required to undertake a level of assessment that is proportionate to the agricultural capability of the land which may be affected by the project.

There are three levels of assessment:

1. basic assessment – for projects proposed on land adjacent to rural zoned land
2. reduced assessment – for projects proposed on moderate capability land
3. detailed assessment – for projects proposed on important agricultural land

To determine the level of assessment required, applicants should follow the steps outlined in **Figure 5** and described below.

2.1 Step 1: Identify zoning

Rural zoned land is most commonly used for primary production practices and agricultural industries. An assessment of agricultural impacts may be required if the project site or immediately adjacent land is zoned as rural land under the applicable EPI.

An assessment of impacts on agricultural land will not be required if:

- the project site is not zoned as rural land under the applicable EPI
- the project site is not adjacent to land zoned as rural land under the applicable EPI.

2.2 Step 2: Identify available mapping

An assessment of agricultural impacts will be required where land subject of the application and/or immediately adjacent to the project site is of moderate capability or important agricultural land.

Applicants must use available mapping datasets to identify:

- the land and soil capability (LSC) class of the project site
- whether any BSAL is present on the project site
- whether immediately adjacent land is mapped as LSC class 1–3 or BSAL.

In some cases, applicants must verify the quality and capability of the site (see Step 3 below).

2.3 Step 3: Site verification

Site verification is an important component of the environmental assessment process as it provides an understanding of the quality of the land and its capacity for agricultural use.

In circumstances where the subject site is located on or adjacent to land mapped as moderate capability or important agricultural land, the applicant must verify the capability of the land by analysing the soil, climate and landform features.

Soil verification is critical to ensure that applicants, communities and consent authorities have accurate and objective information about the land and soil characteristics of the project site and understand any associated limitations and hazards of the land.

Site verification will assist applicants to:

- understand the biophysical features of the land including soil type, slope, landform position, acidity, salinity, drainage, rockiness and climate
- understand on-site and off-site limitations and hazards of the land including erosion, soil structure decline, soil acidification, salinity, waterlogging, shallow soils and rockiness
- consider appropriate land management strategies in light of biophysical features and hazards
- refine the siting and layout of the project, avoid impacts on productive agricultural land and manage any land limitations.

Applicants required to verify land should refer to the sections below for guidance. Site verification is not required for large-scale solar development located on poorer agricultural land, i.e. LSC classes 5–8.

2.3.1 Soil survey

A soil survey must be completed for all large-scale solar energy projects proposed on land mapped as moderate capability or important agricultural land.

Soil surveys provide objective, scientific and detailed information not otherwise available under mapping systems, which have been completed at a broader regional scale and are a critical component of the soil verification process.

Soil surveys should be completed at an inspection density of 1 site per 5 ha to 25 ha. This inspection density is recommended for moderately intensive uses at 'field' level and detailed project planning under the Guidelines for Surveying Soil and Land Resources (Second Edition).

In some circumstances, an inspection density of 1 site per 5 ha to 25 ha may not be appropriate and applicants can complete the soil survey at a different inspection density if they provide a clear and sufficient justification for doing so in the EIS.

Site verification and soil sampling is only required for the subject site and not for any adjoining land. In all cases, a baseline soils report, which summarises the soil survey methodology and conclusions reached, should be submitted as part of the project EIS.

The references listed in **Table 4** should be used to guide the soil survey.

Table 4: Soil survey resources

Activity	Guideline
Soil sampling and survey	McKenzie NJ, Grundy MJ, Webster R and Ringroase-Voase AJ (2008) Guidelines for Surveying Soil and Land Resources. Second Edition. CSIRO Publishing, Melbourne.
Classification of soil types	Isbell RF and National Committee on Soil and Terrain (2021) The Australian Soil Classification. Third Edition. CSIRO Publishing, Clayton South, VIC.
Soil physical measurements and interpretation	McKenzie N, Coughlan K and Cresswell H (eds) (2002) Soil physical measurement and interpretation for land evaluation. CSIRO Publishing, Collingwood.
Soil chemical measurements and interpretation	Rayment GE and Lyons DJ (2011) Soil chemical methods – Australasia. CSIRO Publishing, Collingwood.

2.3.2 Verification of LSC class

Following completion of a soil survey, the applicant must verify the agricultural capability and LSC class of the land in accordance with the Office of Environment and Heritage's Land and soil capability assessment scheme (PDF 1,390 KB).

The assessment scheme uses the biophysical features of the land and soil, including landform position, slope gradient, drainage, climate, soil type and soil characteristics, to derive detailed rating tables for a range of land and soil hazards. These hazards include water erosion, wind erosion, soil structure decline, soil acidification, salinity, waterlogging, shallow soils and mass movement. This information can help support the sustainable use and management of the land and soil resources.

Where soil verification has determined that the agricultural capability of the land is inconsistent with the mapped LSC class of the land, the applicant must identify the inconsistencies and the LSC class of the land as verified. The level of assessment to be completed (see Step 4) will be determined by the verified LSC class.

2.4. Step 4: Determine level of assessment required

An agricultural impact assessment is required where:

- the applicant has verified the land as LSC class 1–4, or
- the project site is adjacent to rural zoned land.

The level of assessment required depends on the agricultural capability of the land and location of the project as outlined in **Figure 4** and **Table 5**.

There may be times where the applicant of a large-scale solar energy project is prepared to accept that the subject site is important agricultural land without verifying the capability as described in Step 3.

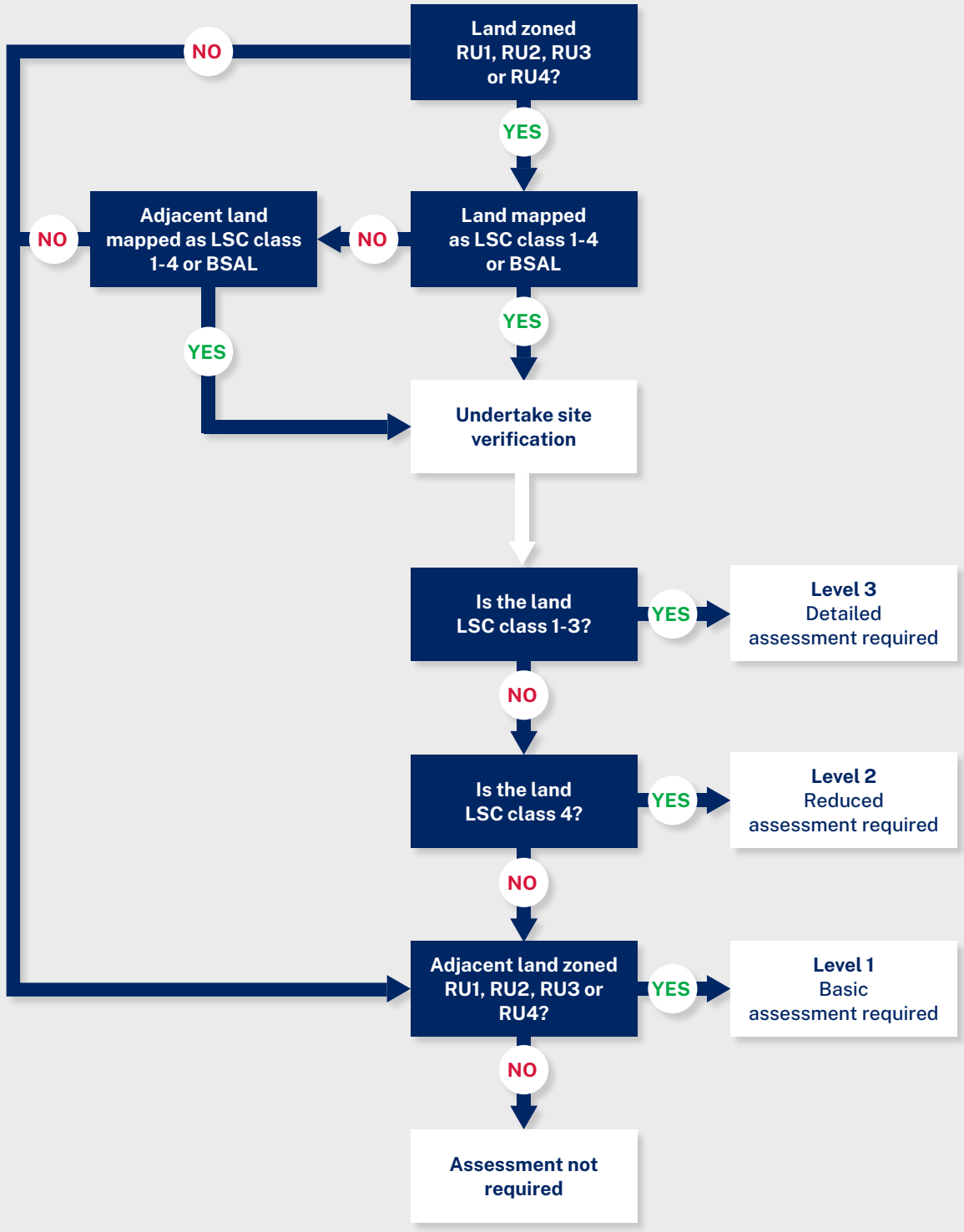
In these circumstances, the applicant must complete a level 3 detailed assessment and should be prepared to accept a condition of consent that requires the land to be returned to the mapped LSC class.

Table 5: Level of assessment required for SSD solar energy projects

Project location	Level of assessment
Located adjacent to rural zoned land	Level 1 – basic
Located on rural zoned land verified as LSC Class 4	Level 2 – reduced
Located on rural zoned land verified as LSC Class 1-3	Level 3 – detailed
Other scenarios	No assessment required

Note: *To avoid doubt, the highest quality land present on the site must determine the level of assessment required.*

Figure 4: Determining the level of assessment required for large-scale solar energy projects



3. Content of assessment

If applicants are required to complete an assessment, the EIS must be prepared in accordance with the requirements detailed below. Above all, the information must be presented in a manner that is clear and easy to understand.

3.1 Level 1 assessment – basic

Solar energy projects have the potential to impact neighbouring properties and landholders if not managed correctly. Applicants must consult with neighbouring landholders to understand potential impacts on immediately adjacent agricultural land and to inform strategies to mitigate these impacts. Project impacts may include disruption to existing agricultural operations, biosecurity- related risks, changes to water supply and/or fire hazard risks.

The purpose of a level 1 assessment is to ensure that applicants consider project impacts on immediately adjacent agricultural land and to encourage open and honest dialogue between applicants and owners of this land. Applicants are encouraged to consult with the local community and other rural stakeholders about the potential impacts on neighbouring agricultural land.

A level 1 assessment must:

- present LSC mapping and the results of any site verification completed to confirm land capability
- include consultation with neighbouring landholders to identify potential project impacts (if any) on immediately adjacent land
- describe project impacts (if any) on immediately adjacent land
- describe consultation undertaken
- consider measures to reduce impacts on neighbouring agricultural land.

3.2 Level 2 assessment – reduced

A level 2 assessment is required where solar energy projects are proposed on moderate capability land, being land verified as LSC Class 4.

LSC class 4 land is land which has moderate to high limitations for high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise and investment.

As class 4 land can be used for productive agricultural uses such as cropping with appropriate management and technology, applicants must undertake an assessment of the key issues and potential impacts of the solar energy project on this land.

Table 6 outlines the information required in a level 2 assessment. All information required for a level 1 assessment must also be included in a level 2 assessment.

3.3 Level 3 assessment – detailed

A level 3 assessment is required where solar energy projects are proposed on land verified as LSC classes 1–3 or BSAL. This land is the state's most productive land and has the least limitations for sustaining various land uses.

Siting of solar energy infrastructure on important agricultural land, including land mapped as LSC classes 1–3 or BSAL, should generally be avoided if possible. Where it is not possible to avoid this land, the applicant must prepare a comprehensive assessment that addresses the requirements of both level 1 and level 2 assessments and includes::

- a detailed assessment of whether the project would significantly impact the local or regional agricultural industry, including production and supply chains
- justification for the project considering other alternatives which would have lesser impacts on agricultural land. Applicants must demonstrate that other project sites and siting options have been considered and state the reasons why the site and layout was chosen over alternative options
- an analysis of whether site design could be amended to reduce impacts.

Table 6: Requirements for level 2 assessment

Assessment required	Content and form
Project description Describe the nature, location, intensity and duration of the project and include a map of the project area.	• Project description • Location • Duration • Areas of the site that would be disturbed or temporarily removed from agricultural use
Regional context Describe the regional context.	• Zoning of the project site • Climate and rainfall • Regional landform • Regional land use including any significant agricultural industries and/or infrastructure
Site characteristics and land use description Describe the nature and location of agricultural land with the potential to be impacted by the development. Describe the current agricultural status and productivity of the proposed development area and surrounding locality including the land capability as per Office of Environment and Heritage's (OEH) Land and soil capability assessment scheme (PDF 1,390 KB).	• Describe the land subject to the project site • Describe existing agricultural land uses (i.e. orchards, vineyards, breeding paddocks, intensive livestock areas) • Describe the history of agricultural practices on the project site • Identify soil type, fertility, land and soil capability • Provide a map showing the verified LSC class of the project site • Provide a map showing topography of the site • Describe the agricultural productivity of the site
LUCRA assessment Conduct an assessment of potential land use conflicts, including completion of an assessment in accordance with the Department of Industries' Land Use Conflict Risk Assessment Guide (PDF 351 KB).	• Land use compatibility and conflicts • Discuss compatibility of the development with the existing land uses on the site and adjacent land (e.g. aerial spraying, dust generation and biosecurity risk) during operation and after decommissioning, with reference to the zoning provisions applying to the land
Impacts on agricultural land Identify and describe the nature, duration and consequence of any potential impacts on agricultural land subject to the project site and in the wider region.	• Describe project impacts on identified agricultural lands including, but not limited to, potential weeds, pests, dust, bushfire, livestock, crop production • Consider impacts to the agricultural productivity of the site • Consider project potential to permanently remove agricultural land and/or fragment or displace existing agricultural industries • Consider cumulative impacts of multiple solar energy projects on agriculture in the region
Mitigation strategies Outline strategies that may be adopted to mitigate potential impacts on agricultural land and minimise land use conflict.	• Outline and consider strategies to mitigate project impacts on agricultural land • Consider co-location with existing agricultural practices and investigate feasibility of agrisolar where it would result in a meaningful benefit (see Clean Energy Council's Australian Guide to Agrisolar for Large-Scale Solar).

4. Mitigation measures

Mitigation strategies should be developed to minimise project impacts on agricultural land. The EIS should clearly identify potential project impacts on agricultural land and strategies to mitigate these impacts. Mitigation measures may include:

Design

- locating solar panels in consultation with landholders
- designing temporary fencing and temporary access routes to minimise impacts on existing farm operations and livestock
- ensuring that access to the site does not fragment surrounding land and is of an appropriate design standard to support agricultural use
- amending project design to avoid important agricultural land
- implementing appropriate buffer zones between the project disturbance area and adjacent agricultural land.

Construction

- establishing the ground cover of the site within 3 months of completing construction
- implementing erosion and sediment controls.

Operation

- maintaining the ground cover with appropriate perennial species and weed management
- appropriately managing waste and pollution risks
- allowing for grazing, horticulture and biodiversity regeneration activities to continue.

Applicants are encouraged to consider guidance published by the NSW Department of Primary Industries when determining suitable mitigation measures to reduce project impacts on agricultural land. For specific guidance please refer to the following documents:

- NSW Department of Primary Industries – Right to Farm Policy (PDF 8,168 KB)
- NSW Department of Primary Industries – primefact: Infrastructure proposals on rural land (PDF 147 KB)
- NSW Department of Primary Industries – Managing biosecurity risks in land use planning and development guide (PDF 762 KB)
- NSW Department of Primary Industries – Buffer Zones to Reduce Land Use Conflict with Agriculture.

Appendix B

Private agreements between landholders and applicants

Appendix B – Private agreements between landholders and applicants

Types of agreements

At various stages of a project's life cycle, a range of private agreements may be made between landholders and applicants for various purposes related to the development. These include:

- licence agreements
- option agreements
- land purchase agreements
- lease ('host') agreements
- impact agreements (or negotiated agreements) – relating to impacts of the proposed development.

Although the planning system allows for such agreements, the consent authority does not participate in any negotiations and is not privy to the specifics of any agreed compensation. Notwithstanding, the department has identified a range of matters that applicants and landholders should consider when entering into any such agreements. Parties should obtain independent legal advice about their rights and obligations before entering into any such agreement.

Licence agreement

A 'licence' agreement (also known as an 'access' agreement) allows the applicant, and associated parties, rights to access a landholder's property for the purposes of surveys and assessments, typically for a specified duration of time. This is usually negotiated at the initial prospecting stage to enable the applicant to determine the suitability of the site and feasibility of a project.

Option agreement

An option agreement provides the applicant with rights to lease some or all of a landholder's property for the purposes of construction and operation of a large-scale energy project. This form of agreement allows the applicant to access the property to assess feasibility of the project site with an option to enter into a more formal lease agreement. Applicants may choose to not enter into a licence agreement and move directly to an option agreement.

Similar to an option to lease agreement, an applicant and landholder may enter into an option to buy agreement. An option to buy agreement allows the applicant to purchase the land if or when the project proceeds to a certain point, usually construction.

Land purchase agreement

In some circumstances, an applicant may choose to offer to purchase the land subject to the proposed development This may include instances where existing agricultural operations are likely to be severely impacted by the project.

Lease agreements – 'host'

A lease or host agreement is a complex long-term agreement negotiated between a project developer and landholder that places significant obligations and responsibilities on the landholder.

A large-scale solar energy project usually consists of one or more 'host' landholders willing to have project infrastructure located on their land. This agreement is essentially a commercial lease and should set out the terms to enable the applicant or project owner to install, operate, maintain and decommission the project infrastructure.

Landholders may also enter into agreements for land access, private transmission line easements, substations, office buildings and other items associated with a project.

Impact agreements

Large-scale renewable energy projects may significantly impact some neighbours. The applicant and landowners can enter into agreements to manage these impacts and any exceedances of relevant assessment criteria (such as noise criteria). These types of agreements may be negotiated to provide for the implementation of a broader suite of measures, such as financial or other mitigation and management measures, usually to mitigate a high level of impact. For example, agreements are commonly negotiated to provide for the implementation of landscaping or screening to mitigate high visual impacts from a project.

Guidance

General advice

The department has prepared some general guidance for applicants and landholders to consider when negotiating agreements for large-scale energy projects. This guidance does not constitute legal advice and parties should obtain independent legal advice about their rights and obligations before entering into any agreement.

As a general guide, agreements should:

- be legally enforceable
- remain in force for the duration of the impacts being managed by the agreement
- provide for the transfer of obligations to any new owner of the solar energy development infrastructure if it is subsequently sold
- provide for the transfer of obligations to any new landholder if the subject property is subsequently sold
- clearly identify the scope of any impacts that are the subject of the agreement, whether identified impacts are subject to the implementation of agreed mitigation measures and who is responsible for carrying these out
- include considerations if the project is cancelled, materially delayed or the scope and scale of the project materially changes, particularly if the changes result in negative impacts on the landholder
- identify any limitations on how the landowner may use their land, including adjoining land, for the duration of the project (e.g. dust generation avoidance, grazing of stock)
- identify any compensation, costs or fees that are payable by either party in certain circumstances (e.g. rent, abatement of rent, contributions to works)
- provide for a means of resolving disputes.

Agreements should be specifically tailored to the landholder's individual circumstances and the project. Any agreement should be fair, reasonable and written in plain English. The landholder should have access to and obtain appropriately skilled legal and financial advice before entering into any agreement. The applicant should bear all reasonable costs associated with either entering into the agreement or understanding the implications of the agreement, including the landholder's costs for independent advice.

Landholders should consider whether any proposed agreement includes a confidentiality clause. Agreements should not include perceived unfair clauses or prevent a landholder from raising concerns about breaches of a consent other than those they have agreed to accept as part of the agreement. Landholders should avoid signing confidentiality agreements unless the agreement also includes clauses to manage impacts from the development.

Other landholder agreements (such as agreements for transmission line easements, easement access or road access) should also be negotiated and finalised with the landholders in a fair and reasonable manner, with appropriate consultations engaging affected landholders and neighbours in determining the final approach and routes to be taken.

Regarding the negotiation process, applicants should ensure that landholder expectations are properly managed from the outset. Applicants should be mindful of the consequences which may arise from their conduct in negotiations with landholders. They should also be mindful of the magnitude of impact on landholders associated with any changes to proposed infrastructure areas and associated neighbour compensation or host landholder offers.

Further information and guidance for landholders regarding agreements for renewable energy projects can be found at the NSW Farmer's Renewable Energy Landholder Guide and the Australian Energy Infrastructure Commissioner's Considerations for Landholders before entering into Commercial Agreements.

Advice for hosts

It is especially important for applicants to ensure that host landholders are properly informed of the implications of entering into host agreements and have a good understanding of the nature and scale of the predicted impacts of the project. This may include opportunities for the landholder to visit other operating large-scale solar energy projects and/or to meet other host landholders.

Other considerations for discussion between the applicant and the host landholder may include:

- how the project will affect any land use activities (such as agricultural practices, fire management)
- the components of the project which are the subject of the agreement such as agreed energy generation infrastructure, internal roads and other infrastructure locations (cabling, construction offices, substations, transmission lines etc)
- relevant impact predictions that may be of concern to the local community (such as visual, noise, ecological, transport, social/community, economic impacts) and identifying proposed assessment and management options
- the impacts of the project on development rights, vegetation protection and subdivision options
- the process for making changes to location and routing of project infrastructure to the landholder's property (such as access roads, cabling) and responsibilities for maintenance of such infrastructure
- the creation of any easements that may be required
- agreements for accessing any easements via a landholder's property
- provisions for ongoing monitoring (if required).

In addition to the standard legal and financial considerations, certain phases of the project may have specific impacts that should be clearly identified or negotiated with the host landholder.

For the construction phase, such considerations may include:

- the proposed internal road layout for the project, having regard to the potential impacts on farming operations
- the location of other infrastructure (cabling, construction offices, substations, transmission lines etc.), including any temporary infrastructure or buildings required during construction
- on-site procedures, such as biosecurity compliance requirements for contractors.

For the rehabilitation and decommissioning phase, there is a clear expectation that the project will be decommissioned at the end of its operating life (see Section 5.5).

However, it is important for the landholder to have a clear understanding of how the applicant or project owner will manage the decommissioning phase.

In relation to decommissioning, key matters for the landholder to discuss or negotiate as part of an agreement may include the following:

- scope of the decommissioning activities required (including what infrastructure will and will not be removed from the land)
- preparation of a decommissioning and rehabilitation plan and provision of the plan to the landholder
- decommissioning responsibilities of the parties
- detailed and verified estimates of the likely decommissioning costs and responsibility for paying those costs
- arrangements to ensure decommissioning funding is set aside and secured, such as a bank guarantee, bond or trust fund
- ability to audit funding security arrangements to ensure funding is in place and contributions meet the agreed requirement
- provisions for dealing with default by the project owner.

Appendix C

Glint and glare assessment

Appendix C – Glint and glare assessment

The glint and glare assessment should represent a 'worst case' scenario that assumes no cloud cover throughout the year. The assessment should address the general requirements outlined below and in **Table 7**. The glint and glare assessment include:

- a description of the proposed PV panels, indicating:
  - the axis of rotation and maximum tilt angle
  - the light absorption efficiency and/or refractive index values at different angles
  - whether any backtracking is proposed and the time and duration of these operations
- results of the glint and glare analysis for each assessable receiver
- identification of existing vegetation or built structures and a qualitative assessment of whether these features would eliminate or reduce the modelled impacts
- a justification for excluding any modelled glare results because they would be insignificant due to the size, position and luminance of the glare source, or high ambient luminance.
- details of strategies to either avoid or mitigate impacts including re-siting or sizing the project, altering the tracking patterns, implementing vegetation screening, or entering into agreements with landholders if all other measures have been exhausted.

Table 7: Glint and glare requirements

	Scope	Methodology	Performance objective
Residential receivers	All residential viewpoints within 3 km of the proposed solar array that have a line of sight. Representative viewpoints may be used for residential receivers that are clustered together (see additional guidance in the technical supplement).	Analysis of the daily and yearly glare impacts in minutes. All residential receivers must be assessed at a height of 1.5 m above ground level.	See impact ratings and performance objectives for residential receivers outlined in **Table 2**.
Road and rail	All roads and rail lines within 1km of the proposed solar array.	Solar glare analysis to identify whether glint and glare are geometrically possible within the forward looking eyeline of motorists and rail operators.	If glare is geometrically possible then measures should be taken to eliminate the occurrence of glare. Alternatively, the applicant must demonstrate that glare would not significantly impede the safe operation of vehicles or the interpretation of signals and signage.
Aviation	All air traffic control towers and take off/ landing approaches to any runway or landing strip within 5km of the proposed solar array.	Solar glare analysis that is worst case in all scenarios accounting for all aircraft using the airport (e.g. gliders, helicopters etc).	Any glint and glare should be avoided unless the aerodrome operator agrees that the impact would not be material (e.g. occurs at times when there are no flights or would not pose a safety risk to airport operations).

Department of Planning and Environment

NSW GOVERNMENT

Large-Scale Solar Energy Guideline

August 2022

dpie.nsw.gov.au

Fire safety guideline

Technical information

D22/107002

Large-scale external lithium-ion battery energy storage systems - Fire safety study considerations

1 Purpose

This technical information sheet outlines Fire and Rescue NSW (FRNSW) considerations relating to the assessment and determination of fire safety studies (FSS) for facilities containing large-scale lithium-ion battery energy storage systems (LiBESS).

2 Scope

This technical information sheet details agency considerations relating to:

- General requirements pertaining to the preparation of a FSS
- Assessment of potential consequences of credible incidents
- Defining of an appropriate fire safety strategy for the facility
- Electrical hazards posed to firefighters by LiBESS
- Fire brigade intervention
- Appropriateness and adequacy of installed fire safety systems and measures
- Separation of LiBESS
- Ventilation of compartments and/or containers containing LiBESS
- Management of environmental factors
- Clean-up and disposal of BESS involved in an incident, and
- Referencing of applicable codes and standards.

Large-scale LiBESS are a relatively new technology with a new risk profile that we have yet to fully understand. FRNSW continues to seek and consider the available knowledge and information on LiBESS to inform emergency services' preparedness and response to incidents involving these systems. In taking an evidence-based approach to further our understanding of risks associated with LiBESS, FRNSW has initiated the Safety of Alternative and Renewable Energy Technologies (SARET) collaborative research program. The findings of this and other research will be monitored to enable any findings to be incorporated into further revisions of this technical information sheet.

3 Application

This document applies to facilities containing large-scale LiBESS located externally and not within a building where a Fire Safety Study is required. Such systems are typically associated with supporting and augmenting grid power supply (e.g., renewable energy installations, etc.).

Version 01 – Issued 26 July 2023

4 Background

It has been the experience of FRNSW that large-scale LiBESS pose unique challenges to firefighters when responding to and managing an incident. Increasing uptake of this technology has led to a number of significant incidents at which firefighter injuries and fatalities have occurred. As a result, fire agencies internationally now recognise large-scale LiBESS as a hazardous electrical, chemical and fire risk with potential community consequence that necessitates special consideration throughout the design, installation and lifetime management of the asset.

In New South Wales, this special consideration will often be by way of a requirement imposed by a consent authority to prepare a FSS for the facility containing the large-scale LiBESS. The preparation of a FSS enables the reviewing agency to determine the appropriateness and effectiveness of proposed fire safety strategies, systems and measures in meeting the extent of potential incidents for a facility and the surrounding area.

5 Developing the fire safety study

The development of a FSS for a facility containing the large-scale LiBESS should be undertaken in accordance with the *Hazardous Industry Planning Advisory Paper No 2* (HIPAP No. 2) *Fire Safety Study Guidelines* (Department of Planning, Industry and Environment 2011). This guideline assists persons developing the FSS in undertaking a case-specific hazard-based approach to the design to ensure that the fire safety system is adequate to meet the extent of potential fires for the site and effective in minimising the potential for propagation and escalation of an incident.

It is noted that there are many different battery chemistries. The FSS should be based on the particular batteries proposed to be used on the site.

5.1 Assessment of potential consequences of credible incidents

5.1.1 A fundamental objective of a FSS is that the hazard potential of a plant and/or operation is defined by a process of hazard identification and subsequent estimation of the potential consequences of credible incidents. Underestimation of the potential consequence of a credible incident is likely to result in failure of the fire safety system and subsequent propagation and escalation of an incident.

5.1.2 A failure event involving LiBESS may eventuate from a number of internal and external mechanisms including mechanical-, thermal- and electrical abuse or failure, and may result in the expulsion of chemical components, propagation of chemical vapours and/or a thermal runaway event and fire and/or explosion.

5.1.3 FRNSW consider a credible incident to be one in which a fire propagates within a LiBESS system or unit, with active fire safety systems disabled, and involves the full BESS unit / container.

5.1.4 When undertaking consequence analysis of an incident, both the direct impacts of an incident and the potential for propagation and secondary incidents should be addressed. This includes management of chemical components or by-products released during an incident and the environmental impacts of toxic water-run off that may be used to mitigate an incident.

5.1.5 Where a hazard analysis study (i.e., preliminary hazard analysis, final hazard analysis, or a hazard and operability study) has been undertaken for the site in question, this should be used to inform the FSS.

5.1.6 Whilst the emphasis of this section is the assessment of consequences of a failure event involving LiBESS and the potential for propagation and secondary incidents, the FSS must still consider the broader potential for all credible incident scenarios at the facility.

5.2 Defining the fire safety strategy

5.2.1 Within the context of a FSS, the fire safety strategy relates to the strategy and approach that will be adopted to achieve the required level of safety and performance. An effective fire safety strategy aims to minimise the likelihood, severity, and extent of an incident.

5.2.2 Special consideration should be given to developing a fire safety strategy that is effective in minimising potential for propagation and escalation of an incident with reference to the credible incidents outlined in *Section 5.1 Assessment of potential consequences of credible incidents.* An example of an element of a fire safety strategy that may be adopted is the separation of BESS containers or racks by way of either appropriately fire-rated physical barriers or distance.

Where possible, preference should be given to the implementation of strategies that are supported by higher-order risk controls (i.e., elimination and/or engineering controls, etc.).

5.2.3 Supporting analysis and/or evidence should be provided within the FSS to justify the selection, appropriateness, and efficacy of the selected fire safety strategy. This should include all calculations and analyses and contain justification of all inputs and methods used. Where testing is relied upon, detailed test reports need to be provided which detail who undertook the tests, the test methodology and results obtained. Testing should be witnessed and verified by parties who are independent from the battery manufacturer / supplier.

5.2.4 The fire safety strategy should consider the likelihood of occupants being present within the BESS unit / container.

5.2.5 FRNSW does not support the adoption of fire safety strategies that are either partially or wholly reliant on fire brigade intervention to achieve an acceptable level of safety, given that:

- Intervention of a fire brigade at an incident is considered to constitute application of a low-order administrative type risk control and is not in line with the *so far as is reasonably practicable* principle in managing risk, given higher-order controls are available and may be implemented in a reasonably practicable manner
- Large-scale LiBESS including supporting infrastructure may constitute a chemical or electrical hazard such that intervention activities and/or firefighting operations may pose unacceptable risks to the safety of attending firefighters
- The rapid intervention of a permanent full-time fire brigade cannot be relied upon as it is subject to resource availability and proximity to the incident.
- Potential for significant variation in the weight of response, capability, equipment, and level or training of attending fire brigade resources.

5.3 Electrical hazards posed to firefighters

5.3.1 Large-scale LiBESS including supporting infrastructure are considered to constitute an electrical hazard when involved in an incident, given that:

- It may not be possible to determine the state of charge of an affected unit.
- High voltages may still be present, even at low states of charge.
- There is potential for energy to be stranded within an affected unit.
- FRNSW currently does not have the equipment or capability to be able to detect live direct current (DC) power.
- It may not be possible to isolate the input to- or output from an affected unit, particularly where isolation controls (automated or otherwise) have been adversely affected by exposure to radiant heat.
- The affected and surrounding units may experience a degradation of the ingress protection (IP) rating as a result of exposure to radiant heat.

5.3.2 A FRNSW incident commander may determine that no intervention activities or firefighting operations will be undertaken where it is considered that there is unacceptable risk posed to the safety of firefighters.

5.3.3 Signage should be provided at appropriate locations (based upon a site assessment), including but not limited to all entrances to the facility and the main control room, warning of the potential electrical and chemical hazards present. Whilst the scope of AS 5139 is limited to a battery with a maximum capacity of 200 kWh, Section 7 of the standard contains useful guidance that can be used for labels and safety signage.

5.4 Fire brigade intervention

5.4.1 Section 5A *General functions of Commissioner* of the *Fire and Rescue NSW Act 1989* imposes specific statutory functions on the Commissioner of FRNSW, specifically that:

1) It is the duty of the Commissioner to take all practicable measures for preventing and extinguishing fires and protecting and saving life and property in case of fire in any fire district. (and)
2) It is the duty of the Commissioner to take all practicable measures—
    a) for protecting and saving life and property endangered by hazardous material incidents, and
    b) for confining or ending such an incident, and
    c) for rendering the site of such an incident safe.

In the event of a fire or hazardous material incident involving large-scale LiBESS, FRNSW may be required to undertake intervention activities and firefighting operations in order to fulfil statutory obligations, as such, consideration to the safety of first responders conducting intervention activities must be considered.

5.4.2 A potential incident at a BESS facility may be deemed a “hazardous material incident” in accordance with Section 3 of the *Fire and Rescue NSW Act 1989*. Substantial Hazardous Material response resources may be required to determine an appropriate intervention and mitigation strategy in the event of an incident.

5.4.3 Intervention activities and firefighting operations at an incident involving large-scale LiBESS will be undertaken in a manner similar to that for large-scale electrical infrastructure (e.g., substations, electrical switchyards, etc.). FRNSW personnel may not enter the affected BESS compound or compartment until an electrical company representative is in attendance on site and has confirmed power is isolated. The electrical company representative may also be required to provide safety and technical advice to a FRNSW incident commander to assist in determining what intervention activities and firefighting operations can be safely undertaken.

5.4.4 As previously noted, a FRNSW incident commander may determine that no intervention activities or firefighting operations will be undertaken where it is considered that there is unacceptable risk posed to the safety of firefighters.

5.4.5 An Emergency Plan is to be developed for the site in accordance with *Hazardous Industry Planning Advisory Paper No 1* (HIPAP No. 1) *Emergency Planning*. The findings of the FSS should inform the development and content of the Emergency Plan. This should include, but not be limited to:

a. Details on how the owner / operator is alerted to abnormal operation, fault or hazard in a BESS.
b. Details on how fire services are notified of an incident. This should be described as part of the fire safety strategy. Upon detection of a fire in a BESS or on the site via an automatic detection system, notification of the fire services should be automatic.
c. Detail effective communication strategy with remote operator representative for incident duration.

d. Suitable arrangements for attendance on site by an appropriately qualified representative during any incident.

e. Details on how battery status and information is relayed to emergency services, including items such as deployment of deflagration panels, etc..

5.4.6 Detail the required level of personal protective equipment (PPE) including any breathing apparatus (BA) requirements for emergency services.

5.4.7 The following FRNSW guidelines should also be utilised as part of the fire safety strategy and documentation requirements for the site:

a. FRNSW Fire safety guideline – Hazardous chemicals manifest

b. FRNSW Fire safety guideline – Emergency services information package and tactical fire plans

The most recent versions can be found on the FRNSW website.

5.5 Implemented fire safety systems

5.5.1 The implementation of fire detection and protection measures may be required to ensure that the necessary level of safety and performance has been achieved for a site.

5.5.2 The analysis of requirements for fire detection and protection measures should be informed by the assessment of potential consequences of credible incidents for the site. This should also align with the objectives of the fire safety strategy for the site, particularly those relating to the management and mitigation of the severity of an incident, and prevention of propagation and escalation of an incident, including the potential off-site and environmental impacts.

5.5.3 Supporting analysis and evidence is required to be provided within the FSS to justify the suitability and efficacy of proposed fire detection and protection measures for the site. This evidence is required to demonstrate that the specified performance of individual measures and the collective system is adequate to satisfy the objectives of the fire safety strategy.

5.5.4 All fire detection and protection measures that are relied upon to satisfy the objectives of the fire safety strategy should be automatic in nature (i.e., not require manual operation by an operator or attending emergency service). Supporting evidence is required to be provided within the FSS to demonstrate that individual measures and the collective system have sufficient capacity to operate at the required level of performance for the full duration of an incident.

5.5.5 Adequate redundancy should be provided to all fire detection and protection measures that are relied upon to satisfy the objectives of the fire safety strategy. Emergency power supply to essential systems is one key consideration.

5.5.6 Where the fire safety strategy does not rely on direct fire attack on a LiBESS system or unit, a fire hydrant system should still be provided for the purpose of addressing other credible fire scenarios (e.g. within auxiliary buildings and infrastructure) and protection of LiBESS units from all potential fire sources. The specific requirements of the fire hydrant system, in terms of locations of hydrants, water supply, etc., should be based on the level of risk of the facility. Coverage by street hydrants is not considered adequate for such a facility.

5.5.7 Provision should be made for monitoring of the Alarm Signalling Equipment (ASE) where a fire detection system is provided as part of the fire safety system for a site and a readily available response from a permanent fire brigade is available.

5.6 BESS unit separation

5.6.1 As identified in Section 5.2 *Defining the fire safety strategy*, the separation of large-scale LiBESS containers or racks by way of either appropriately fire-rated physical barriers or distance may be adopted as a fire safety strategy for a site.

5.6.2 Where such a strategy is adopted, the FSS is required to contain supporting analyses or evidence to demonstrate that the objectives of the fire safety strategy have been satisfied, namely that the provided separation is adequate to prevent propagation and escalation of an incident. Where active and/or passive measures are provided to support the implementation of this strategy, evidence is required to be provided in the FSS that demonstrates their ability to maintain the required level of performance for the full duration of an incident.

5.6.3 Where separation is provided by way of a physical barrier that is constructed of a material with a fire resistance level as determined in accordance with AS 1530.4:2014 *Methods for fire tests on building materials, components and structures - Fire-resistance tests for elements of construction*, an assessment is required to be undertaken to demonstrate that the fire severity associated with the design fire of the worst credible incident (i.e., the design fire severity) does not exceed that associated with the 'standard time versus temperature curve' as prescribed within Section 2.11 of AS 1530.4:2014. Failure to accurately quantify the design fire severity such that it is underestimated or exceeds that associated with the standard fire curve may result in the fire resistance performance of materials relied upon for separation being exceeded and subsequent failure of the fire safety system.

5.6.4 Where separation is provided by way of distance, an assessment is required to be undertaken to demonstrate that propagation of the incident will not occur to adjacent and surrounding racks, containers, and/or associated infrastructure. The assessment is required to consider the combined effects of exposure to convective and radiant heat on a receiving body from the worst credible fire for the full duration of an incident.

5.6.5 The impacts of environmental conditions (e.g., wind effects) must also be assessed. This should include assessment of flame tilt, etc.

5.7 BESS unit ventilation and flammable and toxic gases

5.7.1 A LiBESS may produce large volumes of flammable, corrosive and toxic vapours and gases when involved in a thermal event as a result of: thermal decomposition of battery components and electrolytes, pyrolysis of combustible materials, and incomplete combustion of volatiles within smoke. Flammable vapours and gases when confined within a compartment or a container are deemed to have the potential to result in a hazardous atmosphere. Any person exposed to these vapours or gases is considered to be at risk of harm.

5.7.2 Ignition of the flammable gases produced during a thermal runaway event may result in a deflagration or explosion. This is noted to have caused or contributed to injury and death to attending emergency services at past incidents.

5.7.3 The design of the fire safety system for any facility containing large-scale LiBESS is required to demonstrate that consideration has been given to the management of flammable, corrosive and toxic vapours and gases that may be produced during a thermal runaway event.

5.7.4 Where a large-scale LiBESS is proposed to be located within a an enclosing container or compartment, a FSS must assume that there is potential for a hazardous atmosphere to be generated unless suitable evidence is provided that demonstrates otherwise. A subsequent analysis of potential consequences is required to be undertaken to inform the analysis of requirements for detection and protection such that suitable measures can be selected for implementation.

5.7.5 Where a large-scale LiBESS is proposed to be located within a an enclosing container or compartment and it is determined that there is potential for a flammable atmosphere to be generated from a thermal runaway incident, the consequence assessment is required to consider how an ignition of the atmosphere resulting in a deflagration or explosion will impact on surrounding racks or units, supporting infrastructure, and any other surrounding elements or structures.

5.7.6 Where a large-scale LiBESS is proposed to be located within an enclosing container or compartment that is occupiable by a person, signage should be provided at appropriate locations including but not limited to the entrance to the respective compartment or container, warning that in the event of an incident involving the LiBESS there is potential for a hazardous atmosphere to be present.

5.7.7 Where a large-scale LiBESS is proposed to be located within an enclosing container or compartment that is occupiable by a person, a visual warning device should be provided at the entrance to the compartment or container that is to activate upon the activation of any provided detection or protection measures, with associated signage provided stating that a fire safety measure has activated and warning that there is potential for a hazardous atmosphere to be present.

5.8 Environmental impacts

5.8.1 A LiBESS involved in a thermal runaway incident may produce by-products that are hazardous to the environment.

5.8.2 When undertaking any consequence assessment relating to a thermal runaway incident, consideration must be given to the potential for the generation of a toxic smoke plume and its subsequent impact on the surrounding environment and communities. This should include demonstrating that toxic gas emissions during such a fire will not impact neighbours, first responders or passers-by, under worst-case weather conditions specific to the site.

5.8.3 Any Emergency Plan for the site should detail the required level of personal protective equipment (PPE) including any breathing apparatus (BA) requirements for emergency services.

5.8.4 Where a fire safety strategy is adopted that relies on the application of water (or water-based agents) to suppress a fire, provision must be made for the containment of all contaminated firefighting water for the entire expected duration of the incident. Any provided containment system must ensure that contaminated firefighting water is not able to enter local waterways or groundwater.

5.8.5 Where a containment system is proposed to be connected to a reticulated stormwater system, provision must be made for the isolation of the system by way of automatically operated valves that close upon activation of an associated fire safety measure.

5.8.6 Whilst not a requirement of a FSS, it is recommended that any Emergency Plan developed for the site identify local catchment areas and drainage pathways such that appropriate measures may be implemented in the event that the capacity of the provided containment system is exceeded.

5.8.7 Appropriate consideration should also be given to *Planning for Bushfire Protection (2019)*.

5.9 Post-incident clean-up and disposal

5.9.1 Whilst not a requirement of a FSS, it is recommended that supporting management and procedures documentation for the site provide details of the following:

- Following an incident, how LiBESS will be handled and removed (including transportation) from site. It is noted that this is the responsibility of the facility owner and/or operator and that FRNSW is not responsible for aiding or facilitating such actions.
- A procedure for the removal and disposal of contaminated firefighting water.

5.10 Reference standards and codes

5.10.1 HIPAP No.2 states “The principle of a fire safety study is that the fire safety 'system' should be based on specific analysis of hazards and consequences and that the elements of the proposed or existing system should be tested against that analysis. This should always produce a better outcome than the application of generalised codes and standards alone” (DPIE 2011).

5.10.2 The provisions within applicable codes and standards may be adopted where it can be demonstrated that the requirements of HIPAP No.2 have been adequately satisfied.

6 Contact us

For further information contact the Fire Safety Branch on (02) 9742 7434 or email firesafety@fire.nsw.gov.au.