



Hampton Park Solar Energy and Storage System

Secretary's Environmental Assessment Requirements

Information Webinar

December 2025

Acknowledgement of Country

At NGH and ARES, we recognise Aboriginal and Torres Strait Islander peoples as the first people of Australia.

We acknowledge the traditional owners of this land and pay our respect to Elders past, present and emerging. We recognise that the First Nations people of Australia have traditionally managed the resources of this land in a sustainable way, and that they are the original stewards of the Australian environment.

We understand the importance of increasing our knowledge and understanding of the connection between First Nations peoples across Australia and the lands on which we live and work, including the lands where the Project and the NGH and ARES offices are located:

Bega, Yuin

Brisbane, Turrbal & Yuggera

Canberra, Ngunnawal

Gold Coast, Yugambeh

Sydney, Gadigal

Wodonga, Wiradjuri

Sunshine Coast, Kabi Kabi

Melbourne, Wurundjeri & Boonwurrung

Newcastle, Awabakal & Worimi

Wagga Wagga and Dubbo, Wiradjuri

Townsville, Bindal & Wulgurukaba

Agenda



Discussion points this evening

1. Introductions and purpose of this session
2. The Project and proposal
3. About SEARs and the process
4. Questions and answers
5. Technical assessments
6. Questions and answers
7. Engagement and the Social Impact Assessment (SIA)
8. Next steps

How to ask questions



- On a laptop or desktop: Navigate to the top of your screen and look for the two speech bubbles.
- Type in your questions

Today we are joined by:

- Sigi Psutka-Jones, Managing Director ARES
- Sarah Hillis, NSW Regional Lead- Planning NGH
- Gareth Taylor, Development Manager ARES

Project recap

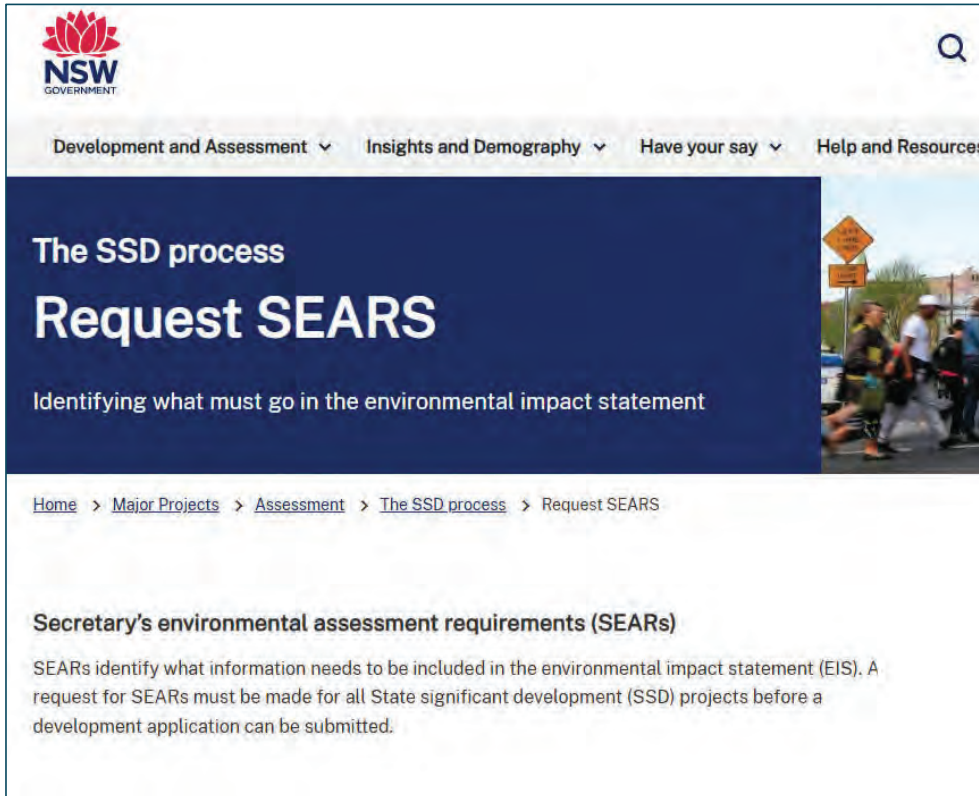
- **Solar energy and storage system:**
 - Solar capacity 180MW at the point of connection
 - Battery storage system of up to 4 hours of storage (approximately 800MWh in total) distributed throughout the Subject Land
- Located approximately 11km southeast of the Dubbo CBD off Wellington Road/Bencubbin Drive
- The Scoping Report was published on the NSW Major Projects Portal on Monday 27 October
- Secretary's Environmental Assessment Requirements (or "SEARs") received on Friday 21 November



Anticipated Project timeline

Subject to assessments and approvals





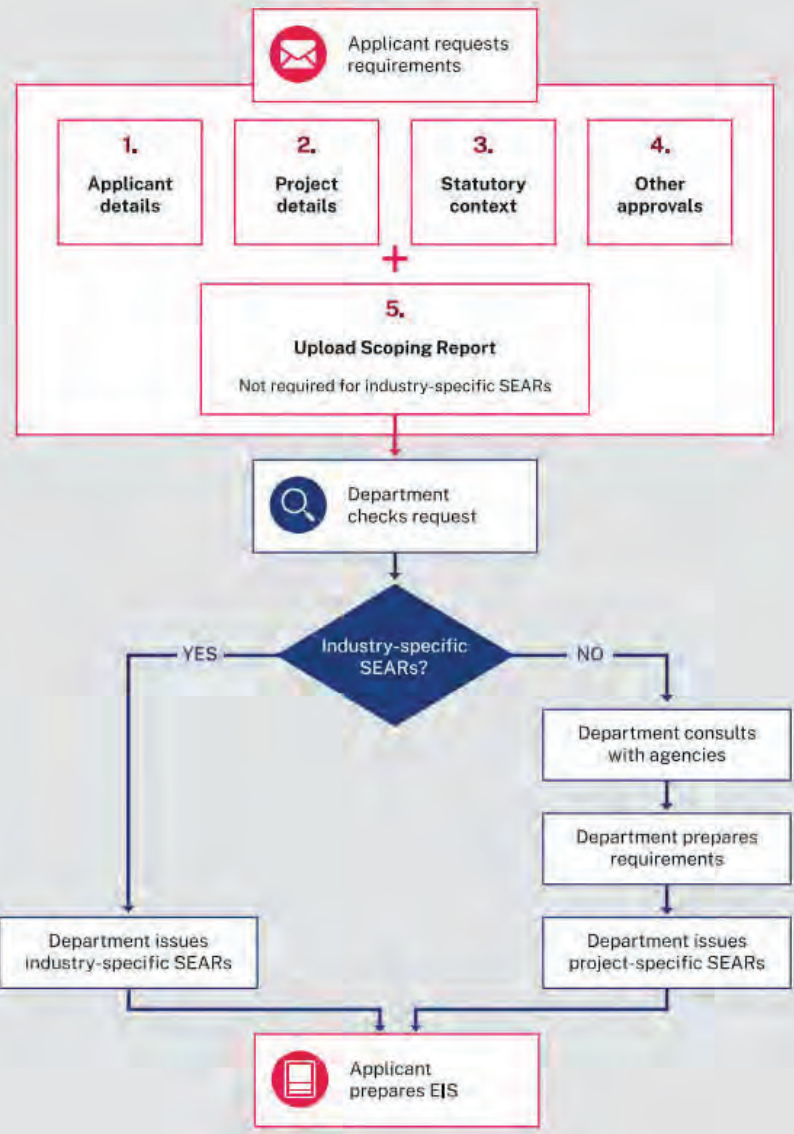
The screenshot shows the NSW Government website. The top navigation bar includes 'Development and Assessment', 'Insights and Demography', 'Have your say', and 'Help and Resources'. The main heading is 'The SSD process' followed by 'Request SEARS' in large white text on a dark blue background. Below this, it says 'Identifying what must go in the environmental impact statement'. A breadcrumb trail reads: Home > Major Projects > Assessment > The SSD process > Request SEARS. The main content area is titled 'Secretary's environmental assessment requirements (SEARs)' and contains the text: 'SEARs identify what information needs to be included in the environmental impact statement (EIS). A request for SEARs must be made for all State significant development (SSD) projects before a development application can be submitted.'

What are SEARs?

- All Development Applications for SSD must be accompanied by an Environmental Impact Statement (EIS).
- Identify the information and community engagement that must be provided in the EIS.
- Seek to ensure the level of assessment and engagement is proportionate to the scale and likely impact of a Project.
- Unless wholly permissible, does not meet criteria for designated development and is not a concept DA, SEARs must be requested.
 - A battery storage facility is designated development if the facility supplies or is capable of supplying more than 30 megawatts of electrical power.

**The blueprint for what
needs to be considered,
detailed, studied and
included in the EIS**

Setting requirements



What is the process?

1. Applicant submits Scoping Report
2. The Department of Planning, Housing and Infrastructure (the Department) will independently check the Application
3. The Department will consult with all relevant Government agencies (including Council)
4. The Scoping Report is published on the Major Projects Portal
5. SEARs are issued within 28 days after acceptance of Scoping Report
6. Agency advice on the SEARs are also published
7. Applicant commences EIS

SEARs breakdown

1. General Requirements

- a. Details of EIS requirements
- b. Estimated Development Cost and employment


2. Key topics

3. Plans and documents

4. Engagement

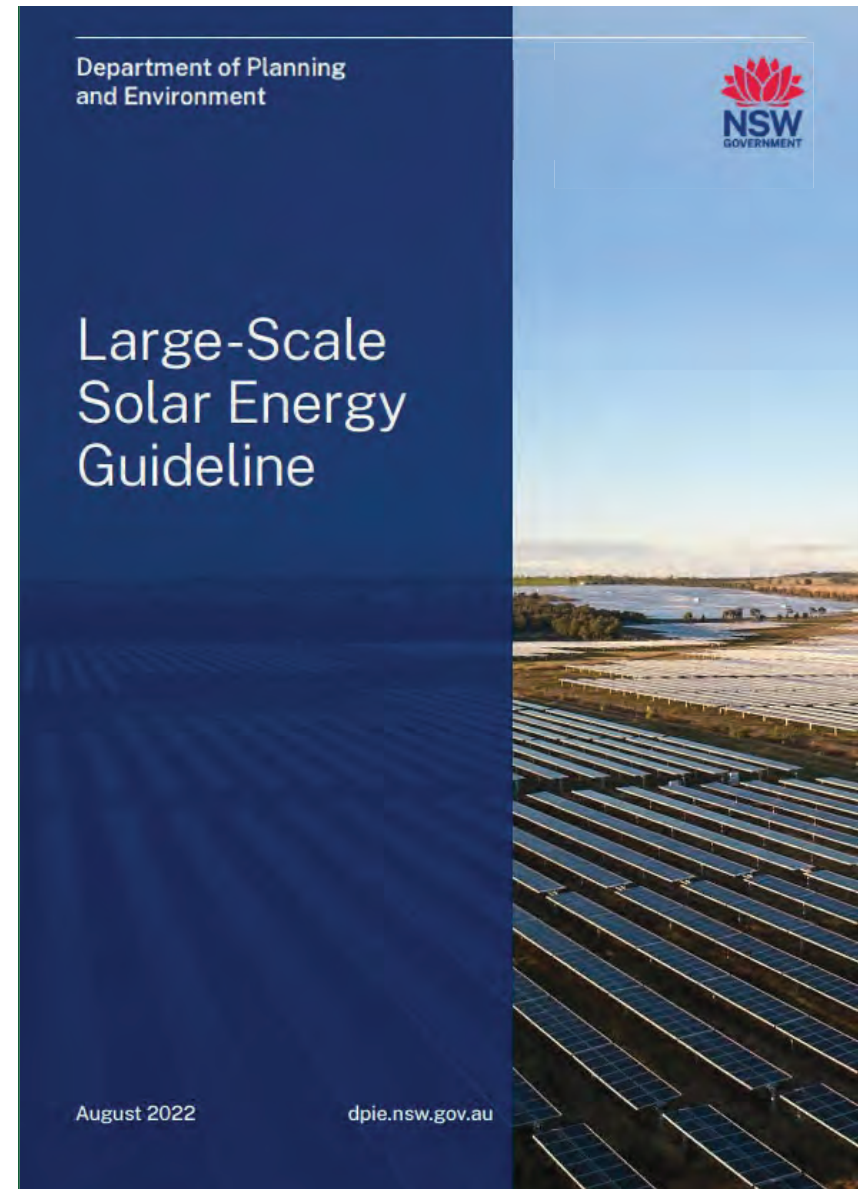
5. Expiry date

6. References

 Department of Planning, Housing and Infrastructure	
Planning Secretary's Environmental Assessment Requirements	
Section 4.12(8) of the <i>Environmental Planning and Assessment Act 1979</i>	
Part 8 of the <i>Environmental Planning and Assessment Regulation 2021</i>	
Application Number	SSD-97547209
Project	Hampton Park Solar Farm, which includes: Construction, operation and decommissioning of a Solar Farm with a capacity of approximately 180 MW, a battery energy storage system (BESS) with a capacity of approximately 180 MW / 800 MWh, and ancillary infrastructure.
Location	Wellington Road, Dubbo, NSW 2830 within the Dubbo Regional Council Local Government Area
Proponent	HAMPTON SOLAR PARK PTY LTD
Date of Issue	21 November 2025
General Requirements	<p>The Environmental Impact Statement (EIS) for the development must comply with the requirements in Part 8 of the <i>Environmental Planning and Assessment Regulation 2021</i> (the EP&A Regulation) and must have regard to the Department's:</p> <ul style="list-style-type: none"> • <i>State Significant Development Guidelines</i> (SSD Guidelines); and • <i>Renewable Energy Planning Framework</i>, including the <i>Large-Scale Solar Energy Guideline</i> (DPHI, 2022) (the Large-Scale Solar Guideline) and its supporting <i>Technical Supplement for Landscapes Character and Visual Impact Assessment</i> (the Technical Supplement) and the <i>Benefit-Sharing Guideline</i> (most recent version as updated from time to time). <p>In particular, the EIS must include:</p> <ul style="list-style-type: none"> • a stand-alone executive summary; • a full description of the development, including: <ul style="list-style-type: none"> - details of construction, operation and decommissioning, including any staging of the development; - a description of the physical elements of the development including the form, maximum height and materials (including ancillary infrastructure); - a high quality site plan at an adequate scale showing all infrastructure and facilities (including any infrastructure, and accommodation camps, that would be required for the development, but the subject of a separate approvals process); - the Project Area (as per Table 1 of the <i>SSD guidelines – preparing an</i>

1. General requirement

- Part 8 of the Environmental Planning and Assessment regulation 2021
- State Significant Development Guidelines
- State Significant Development Guidelines – preparing an Environmental Impact Statement
- Benefit Sharing Guideline
- Renewable Energy Framework
 - Large-Scale Solar Energy Guideline
 - Large-Scale Solar Energy Guideline: Technical Supplement for Landscape Character and Visual Impact Assessment
 - Cumulative Impact Assessment Guideline
 - Social Impact Assessment Guideline for State Significant Projects
 - Undertaking Engagement Guidelines for State Significant Projects.



1. General requirement

- Estimated Development Cost (EDC) in line with latest Planning Circular (PS25-004 – October 2025)
- Estimate of retained and new jobs during all phases of the Project
- Consent from all owners of the impacted land (including Council road reserves)
- Declaration from a Registered Environmental Assessment Practitioner (REAP)



Planning circular

PLANNING SYSTEM

Circular	PS 25-004
Issued	October 2025
Related	Updates PS 24-002 dated 27 February 2024

Changes to how development costs are calculated for planning purposes

This circular outlines changes to the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) to replace the methodology for 'estimated cost of development' and 'capital investment value' with a new, single methodology for 'estimated development cost' (EDC) and related changes to other regulatory provisions and environmental planning instruments (EPis). This circular supersedes PS 21-020 *Calculation of capital investment value* and PS 21-022 *Calculating the genuine estimated cost of development*.

Introduction

Estimates of the cost of proposed development are used in planning for various purposes, including for determining development approval pathways, calculating assessment fees and for applying development application (DA) requirements.

Amendments have been made to the EP&A Regulation, the *Environmental Planning and Assessment Regulation (Development Certificate and Fire Safety) 2021* (DCFS Regulation) and certain EPis to standardise references and terms related to development costs. The regulatory changes commenced on **4 March 2024**.

This circular explains the amendments and provides guidance on how development costs should be calculated.

Key changes

The Department of Planning, Housing and Infrastructure (the department) has developed a new approach to calculating and applying development costs.

Key features of the new approach include:

- a new single definition for estimated development cost (EDC) that can be used for different planning purposes
- guidance on who should provide cost estimates and how consent authorities can verify those estimates
- guidance on how to calculate development costs using EDC, including an updated model cost estimate table for small-scale development

- a standard form of quantity surveyor report for development over \$3 million, and standards and guidance provided by the Australian Institute of Quantity Surveyors (AIQS).

The changes provide a simplified and consistent approach to calculating development costs and are described in more detail below.

Regulatory changes

On 4 March 2024, the following regulatory changes commenced:

- Sections 6 and 251, and Schedule 7 of the EP&A Regulation were amended to replace the method for calculating *estimated cost of development* and *capital investment value* with a single definition **EDC**.
- Schedule 4 of the EP&A Regulation was amended to refer to **EDC** in calculating fees and to clarify where GST development costs may also be relevant to the calculation of certain fees.
- References to *capital investment value*, *cost of the development* and similar terms in the EP&A Regulation were replaced with **EDC**.
- References to various cost terms in the DCFS Regulation were replaced with **EDC**.
- References to *capital investment value* in *State Environmental Planning Policy (Planning Systems) 2021* were replaced with **EDC** to identify classes of regionally significant development (RSD), state significant development (SSD) and state significant infrastructure (SSI).
- References to *capital investment value* and similar

2. Key topics



Biodiversity



Landscape and visual



Transport



Social



Heritage



Glint and glare



Water and soils



Economic and benefit sharing



Land



Noise



Hazards



Waste

2. Key topics

<p style="text-align: center;">Biodiversity</p> <ul style="list-style-type: none"> Biodiversity Develop Assessment Report 	<p style="text-align: center;">Landscape and visual</p> <ul style="list-style-type: none"> Landscape and Visual Impact Assessment 	<p style="text-align: center;">Transport</p> <ul style="list-style-type: none"> Traffic Impact Assessment Haulage Route Assessment Bridge Assessment 	<p style="text-align: center;">Social</p> <ul style="list-style-type: none"> Social Impact Assessment Accommodation and Employment Strategy
<p style="text-align: center;">Heritage</p> <ul style="list-style-type: none"> Aboriginal Cultural Assessment Report Assessment of Historic Heritage 	<p style="text-align: center;">Glint and glare</p> <ul style="list-style-type: none"> Glint and Glare Assessment 	<p style="text-align: center;">Water and soils</p> <ul style="list-style-type: none"> Hydrology Assessment (flooding) Site Water Balance 	<p style="text-align: center;">Economic and benefit sharing</p> <ul style="list-style-type: none"> Voluntary Planning Agreement
<p style="text-align: center;">Land</p> <ul style="list-style-type: none"> Soil Impact Assessment Land and Soil Capability (LSC) Verification A preliminary Site investigation to assess any existing contamination Level 3 detailed Agricultural Impact Assessment Land Use Conflict Risk Assessment 	<p style="text-align: center;">Noise</p> <ul style="list-style-type: none"> Noise and Vibration Impact Assessment 	<p style="text-align: center;">Hazards</p> <ul style="list-style-type: none"> Preliminary Hazards Assessment Preliminary Ris Screening Bushfire Hazard Impact Assessment 	<p style="text-align: center;">Waste</p> <ul style="list-style-type: none"> Management plans

Biodiversity

An assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 (NSW) (BC Act), having regard to the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR)

Biodiversity survey

Communities:

- Identify and map distribution of Plant Community Types (PCTs) in accordance with the BioNet Vegetation Classification
- Plot-based vegetation surveys 20m x 20m plot
- Identify Threatened Ecological Communities (TECs)
- Complete BAM plots in accordance with zone area
- Plots are established around a 50m midline:
 - One 20m x 20m plot to assess composition and structure (number native plants, tree canopy cover etc.)
 - Standard 20m by 50m plot for function attributes (large trees, stem size classes, regeneration etc.)
 - Five 1m² subplots for litter cover and other ground cover.
- Assess hollow bearing trees
- Separate PCTs into vegetation condition, or “vegetation integrity” zones.

Table 3 Minimum number of plots required per zone area

Vegetation zone area (ha)	Minimum number of plots
<2	1 plot
>2–5	2 plots
>5–20	3 plots
>20–50	4 plots
>50–100	5 plots
>100–250	6 plots
>250–1000	7 plots; more plots may be needed if the condition of the vegetation is variable across the zone
>1000	8 plots; more plots may be needed if the condition of the vegetation is variable across the zone



Plots being undertaken at the Project site. Source: NGH

Credit species

- Information from the BioNet Threatened Biodiversity Data Collection (TBDC) is used to identify threatened species that require assessment for a proposal and support the assessment of habitat suitability:
 - Some information accessed from BAM-C
 - Some information from online databases such as BioNet, PMST, published peer-reviewed data.
- Ecosystem credit species:
 - Occurrence can generally be predicted by the PCT or landscape features, or that have a low probability of detection using targeted surveys.
 - A targeted survey is not required to identify or confirm the presence of ecosystem credit species, as credits are automatically accounted for.
- Species credit species:
 - Or “candidate species” are threatened species for which the PCT or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat.
 - A targeted survey or an expert report is required to confirm the presence of these species.



Brown Falcon (LC) at the site. Source: NGH

Assess habitat suitability

- **Step 1: Identify threatened species that are likely to occur on the Project**
 - Criteria for likelihood includes distribution, geographical limitations, association with a PCT, native vegetation cover, patch size
 - A threatened species is identified as requiring assessment if all the relevant criteria is met.
- **Step 2: Assess habitat constraints and vagrancy**
 - Evaluate the habitat constraints required by species, to further refine the list of threatened species for assessment
 - Threatened species is unlikely to occur if there are no habitat constraints within the zone or whole Project site, or if there is occasional records of individuals of a species that are outside their normal distribution or habitat (vagrant).
- **Step 3: Further assessment of candidate species**
 - Considered unlikely to occur on the Project if there is unsuitable microhabitat, or the habitat/microhabitat is degraded.



Potential habitat in a dead tree or "stag". Source: NGH



Farm dam on Project site. Source: NGH

Assess habitat suitability (cont.)

- **Step 4: Determine presence of candidate species**
 - Assume present (unlikely to be accepted)
 - Conduct threatened species surveys
 - Obtain expert report
 - No further assessment is required for a species if the survey or expert report confirms that it is not present, or is unlikely to be present
- **Step 5: Determine area or count, and location of suitable habitat**
 - Create species polygon
 - Fauna and flora species assessed by area, species polygon is used to measure the area of suitable habitat
 - Flora assessed by count, targeted survey or expert report is used to estimate the number of individuals
- **Step 6: Determine habitat condition**
 - Determine the habitat condition within the species polygon by using the vegetation integrity score for each vegetation zone

Threatened species survey requirements

- Perform a targeted species survey for all candidate species credit species identified as likely to occur on the subject land unless:
 - Expert report has been obtained
 - Species is assumed to be present
 - Important habitat map has been prepared.
- Survey rules!
 - Only survey during the time specified for that species
 - Comply with the Department's threatened species survey guides
 - Use best-practice methods that can be replicated for repeat surveys, if the Department has not published any relevant guides.



NGH performing targeted raptor surveys at the Project site – Spotted Harrier pictured. Source: NGH

Heritage

- *An Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010) identifying, describing, and assessing any impacts to any Aboriginal cultural heritage sites or values associated with the site (including impacts from any proposed earth works, construction works and road upgrades), including results of archaeological test excavations (where required), undertaken in accordance with the relevant standards and requirements.*
- *Evidence of adequate consultation with Aboriginal communities in determining and assessing impacts, identifying and selecting options for avoidance of Aboriginal cultural heritage and identifying appropriate mitigation measures (including the final proposed measures), having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010).*



NOTIFICATION OF REGISTRATION OF INTEREST FOR ABORIGINAL STAKEHOLDERS

Hampton Park Solar and Energy Storage System (SESS)

NGH Pty Ltd (NGH) has been engaged by Hampton Solar Park Pty Ltd on behalf of Australian Renewable Energy Service (ARES), (the "Developer") to undertake an Aboriginal Cultural Heritage Assessment (ACHA) of 77R Wellington Road, Dubbo (the Project Area) for the development of a Solar and Energy Storage System (SESS). In order to undertake the works required to complete this project an ACHA is required.

The contact details for ARES for this project are as follows:

The Solar and Energy Storage System is proposed over four lots: Lot 198 DP754331, Lot C DP103143, Lot A DP 103143 and Lot 35 DP754321 and possible associated road upgrades (the Project Area) within the Dubbo Regional Council Local Government Area, NSW. The northwestern boundary of the Project Area is approximately 11km southeast of Dubbo and the northeastern boundary is approximately 6km northwest of Wongarbron and comprises approximately 199 hectares.

The purpose of the consultation with Aboriginal people is to assist the Developer in the preparation of the ACHA. The ACHA will be conducted in accordance with the statutory requirements stipulated in the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010, Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW, and Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW. The project will be assessed by the NSW Department of Planning Housing and Industry (DPHI) as a State Significant Development (SSD) under Part 4 of the Environmental Planning and Assessment Act 1979 (NSW).

Registrations should be provided in writing to:

Those registering an interest will be contacted to discuss the project further. Those who do register are advised that their details will be provided to Heritage NSW and Dhubu-Gu LALC unless they specifically advise in writing that their details are not to be forwarded to the LALC.

Aboriginal Heritage

Consultation with Aboriginal community:

- Registered Aboriginal Parties (RAPs) for the Project are identified and consultation undertaken throughout the project
- All RAPs are invited to comment on all aspects of the methodology, reporting and proposed mitigation

Review of background information:

- Review archaeological reports or site records of the surrounding area to place the current assessment in context

Draft survey Methodology:

- RAPs review and comment over a 28-day statutory period
- Complete a site inspection with the RAP representatives in order to identify and record the location of, or potential location of any cultural material
- Assess the impact of the proposed work. This includes assessing the significance of the site/s

Prepare ACHA:

- RAPs again review and comment over a 28-day statutory period.



Archaeological surveys at a site in Deniliquin. Source: NGH

Historic Heritage

In consultation with Council:

- Assess the impact to historic heritage having regard to the Guidelines for Preparing a Statement of Heritage Impact

A baseline assessment of non-Aboriginal heritage included as in the EIS:

- Basic background Research
- GIS mapping
- Site Visit: combine the site visit with the ACHA to determine whether the project is likely to impact on any historical heritage items.
- Heritage Assessment with regard to the *NSW Heritage Manual*.



Land Use

- *A detailed justification of the suitability of the site and that the site can accommodate the proposed development having regard to its potential environmental impacts, land contamination, permissibility, strategic context and existing site constraints, having regard to the Large-Scale Solar Guideline.*
- *An assessment of the potential impacts of the development on existing land uses on the site and adjacent land.*
- *An assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning.*
- *A preliminary investigation into potential contamination across the site, in accordance with the State Environmental Planning Policy (Resilience and Hazards) 2021 (Hazards SEPP).*

Dubbo Regional Housing Strategy

HillPDA
CONSULTANTS

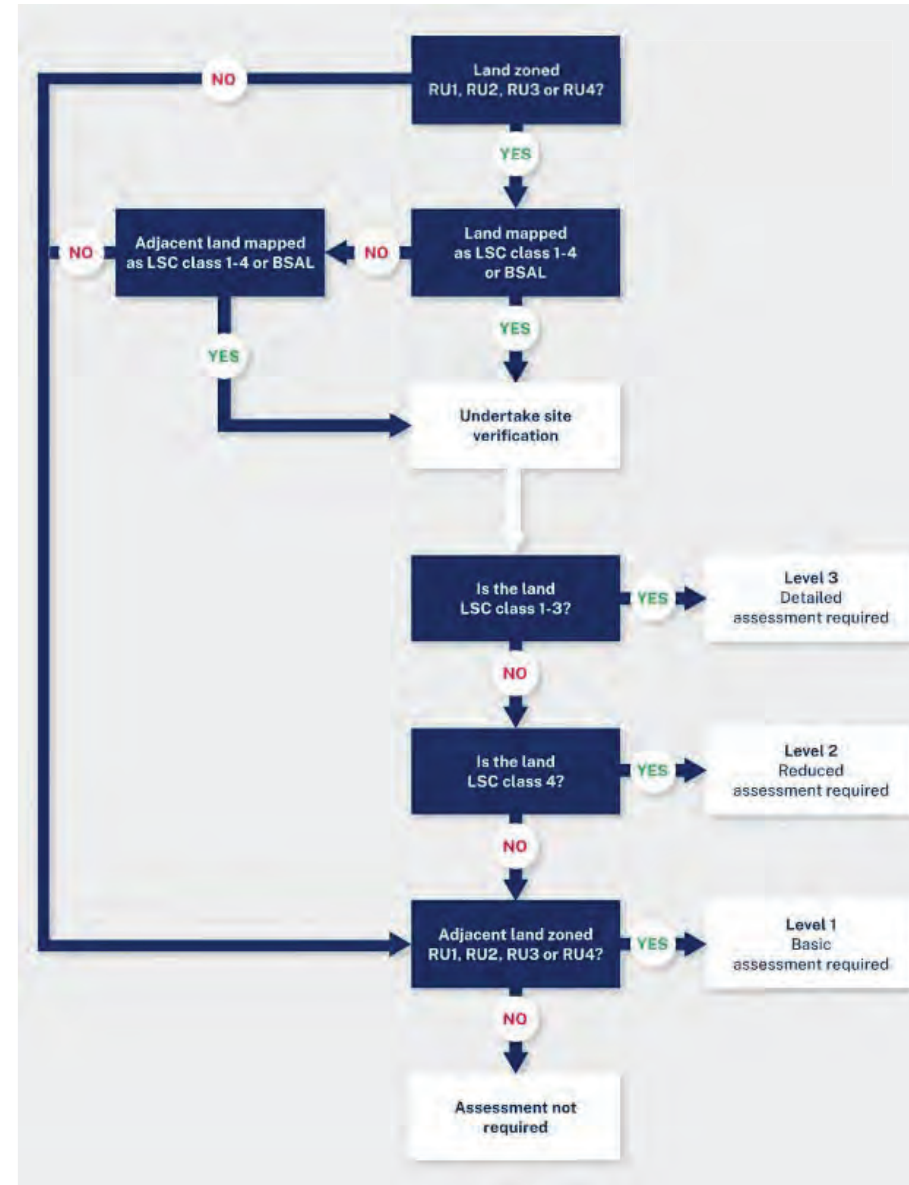


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Land Use

Agricultural Impact Assessment

- Level 3 Detailed assessment – for projects proposed on agricultural land
 - Site verification
 - Soil survey (see Soil Impact Assessment overpage)
 - Soil survey to verify the Land and Soil Capability (LSC) in line with the LSC Assessment Scheme.
- Level 3 Detailed Assessment must include:
 - Consultation with neighbouring landholders
 - Assessment of current agricultural capacity
 - Land Use Conflict Risk Assessment according to the Department of Primary Industries' Land Use Conflict Risk Assessment Guide
 - Impacts on agricultural land
 - Impact on the local or regional agricultural industry, including production and supply chains
 - Justification for the project and a consideration of alternatives
 - Analysis of whether the site design could be amended to reduce impacts
 - Mitigation strategies



Land Use

LSC Verification and Soil Impact Assessment

- Soil surveys provide important information for:
 - Restoring disturbed areas after construction
 - Restoring the site to existing current land condition and soil capability, following decommissioning
 - Consultation with community and regulators about project impacts
- Soil surveys comprise a mixture of test pitting and boreholes carried out using a small excavator and a trailer mounted auger.
- The soil survey would be carried out in general accordance with the following guidelines:
 - The Australian Soil and Land Survey Handbook (CSIRO, 2009)
 - The Guidelines for Surveying Soil and Land Resources (CSIRO, 2008)
 - The Australian Soil Classification (CSIRO, 2021)
 - Soil Physical Measurements and Interpretation for Land Evaluation (CSIRO, 2002)
 - The Land and Soil Capability Assessment Scheme: second approximation (OEH, 2012)



Soil testing at Middlebrook Solar Farm. Source: NGH

Land Use

LSC Verification and Soil Impact Assessment

- The Guidelines for Surveying Soil and Land Resources (2008) requires a moderately (detailed) intensity level of investigation for LSC Class 3 Land.
- Soil surveys should be completed at an inspection density of one site per 5 to 25 ha
 - 35 sample locations are required at Hampton Park, spread through approximately 195 hectares, (which is 1 sample location every 5.6 ha).
- Soil samples taken at every 0.5 m or where there is a visible change in horizon. Three samples from each location would be chemically analysed
- LSC verification will involve an assessment of the biophysical features of the land and soil, and inclusion of the soil survey data
- Final report will detail site hazards, such as water erosion, wind erosion, soil structure and decline, soil acidification, salinity, waterlogging, shallow soils and rock, mass movement
- Agronomic soil survey also undertaken, with composite topsoil samples (0-15 cm) collected and laboratory analysed
- Data will also serve as a baseline for rehabilitation, and recommended soil amelioration.



Soil testing at Middlebrook Solar Farm. Source: NGH

Land Use

Preliminary Site Investigation (contamination)

Preliminary Site Inspection (PSI) undertaken in accordance with:

- National Environment Protection (Assessment of Site Contamination) Measure, 1999 [ASC NEPM] (as amended May 2013)
- Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater of the National Environment Protection (Assessment of Site Contamination) Measure 1999
- Schedule B2 - Guideline on Data Collection, Sample Design and Reporting of the National Environment Protection Assessment Methodology (Assessment of Site Contamination) Measure 1999
- AS4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds. (Australian Standards, 2005)
- AS4482.2-1999. Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances. (Standards Australia, 1999)
- Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, Part 1 – Technical Development
- Contaminated Land Guidelines. Sampling Design Part 1 - Application
- Contaminated Land Guidelines. Sampling Design part 2 - Interpretation
- Managing Asbestos in or on Soil (NSW EPA, 2014)
- Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (WA
- Asbestos Guidelines) (DoH 2021).

Land Use

Preliminary Site Investigation (contamination)

Cropping activities are listed as a potentially contaminating activity in the Contaminated Land Planning Guidelines:

1. Background information review and EPA Contaminated Sites Register
2. Determine past site and surrounding land uses and agricultural processes – chemical use, wastes, discharge to land, waste disposal etc.
3. Review environmental setting – geology, soils, hydrogeology and hydrology
4. Identify potential areas of environmental concern and contaminants of potential concern based on findings of Step 1 to 3
5. Prepare Conceptual Site Model of any likely contaminants, movement pathways and receptors
6. Prepare sampling strategy and plan
7. Site inspection and sampling laboratory tested - Contaminants of Potential Concern:
 - Organochlorine Pesticides
 - Organophosphate Pesticides
 - Heavy metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc)
8. Preliminary Site Investigation report.



PSI being undertaken at South Coree BESS. Source: NGH

Landscape and visual

- *A landscape and visual impact assessment, prepared in accordance with the Large-Scale Solar Guideline and the Technical Supplement – Landscape and Visual Impact Assessment*
- *A detailed assessment of the likely visual impacts of all components of the project on surrounding residences (including approved developments, lodged development applications and dwelling entitlements), and key locations, scenic of significant vistas and road corridors in the public domain*
- *Details of measures to mitigate and/or manage potential impacts (including a draft landscaping plan for on-site perimeter planting, with evidence it has been developed in consultation with affected landowners)*
- *Detailed consideration on the Siding Spring Observatory in accordance with the Dark Sky Planning Guideline (2023).*



180° Proposed View

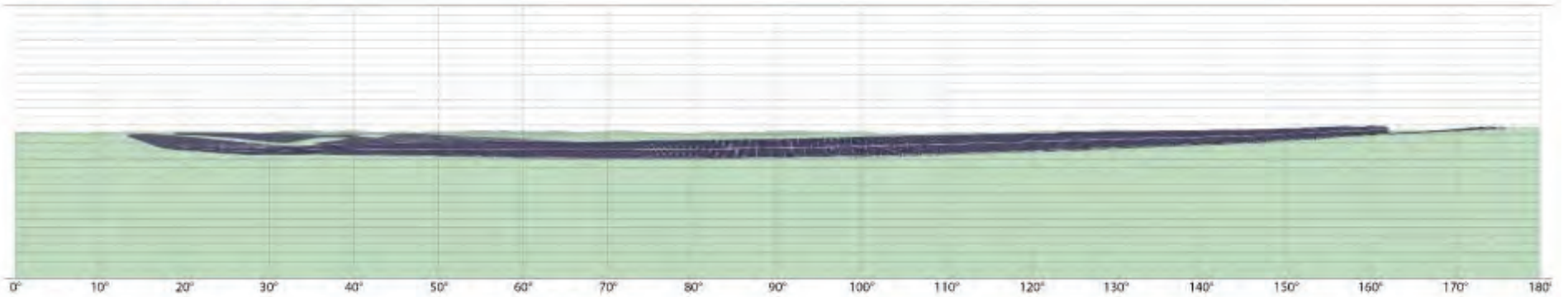
Example montage from a Solar Farm. Source: MLA

Landscape and visual – Technical Supplement steps

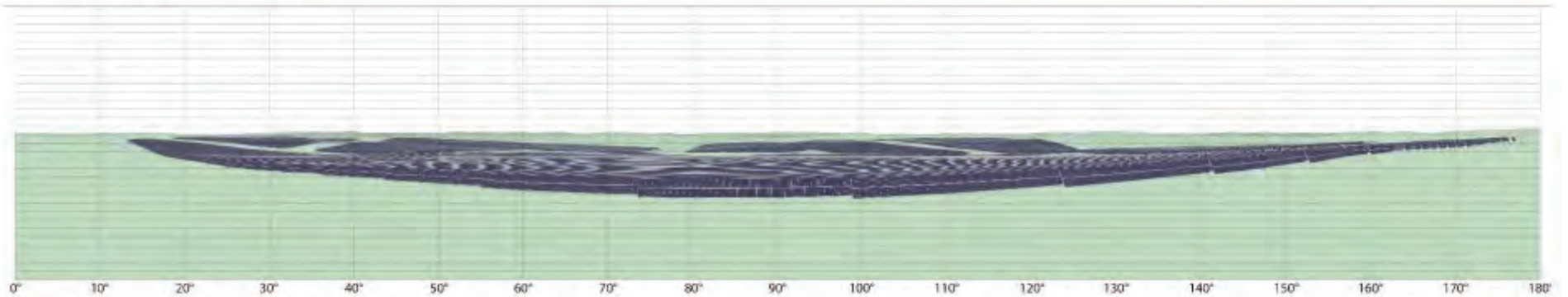
- In accordance with Technical Supplement – Landscape and Visual Impact Assessment:
 - Baseline analysis, viewshed mapping, landscape character assessment and viewpoint sensitivity completed in the Scoping phase
 - A detailed assessment will be undertaken for the Project.
- Desktop assessment
- Detailed viewpoint assessment
 - 180° Baseline Wire Frame Diagram
 - Overlay of visual magnitude grid tool
 - Determination of visual impact rating (based on visual magnitude, visual sensitivity, scenic quality completed in the Scoping phase)
 - Recommendation for mitigation measures
 - The application of the visual magnitude grid will determine the visual impact rating.
- Field work to undertake photographic assessment from sensitive receptors identified as having a moderate / high visual magnitude (28 days notice given)
- Photomontages are prepared, which overlays the Project infrastructure on the site
 - Shared with receptors at request
- Community are again consulted on their visual concerns following draft assessment
- Preparation of the Landscape and Visual Impact Assessment.

Example wireframe with visual magnitude grid tool. Source: DPHI

100m from development



1.5m height (very high magnitude)



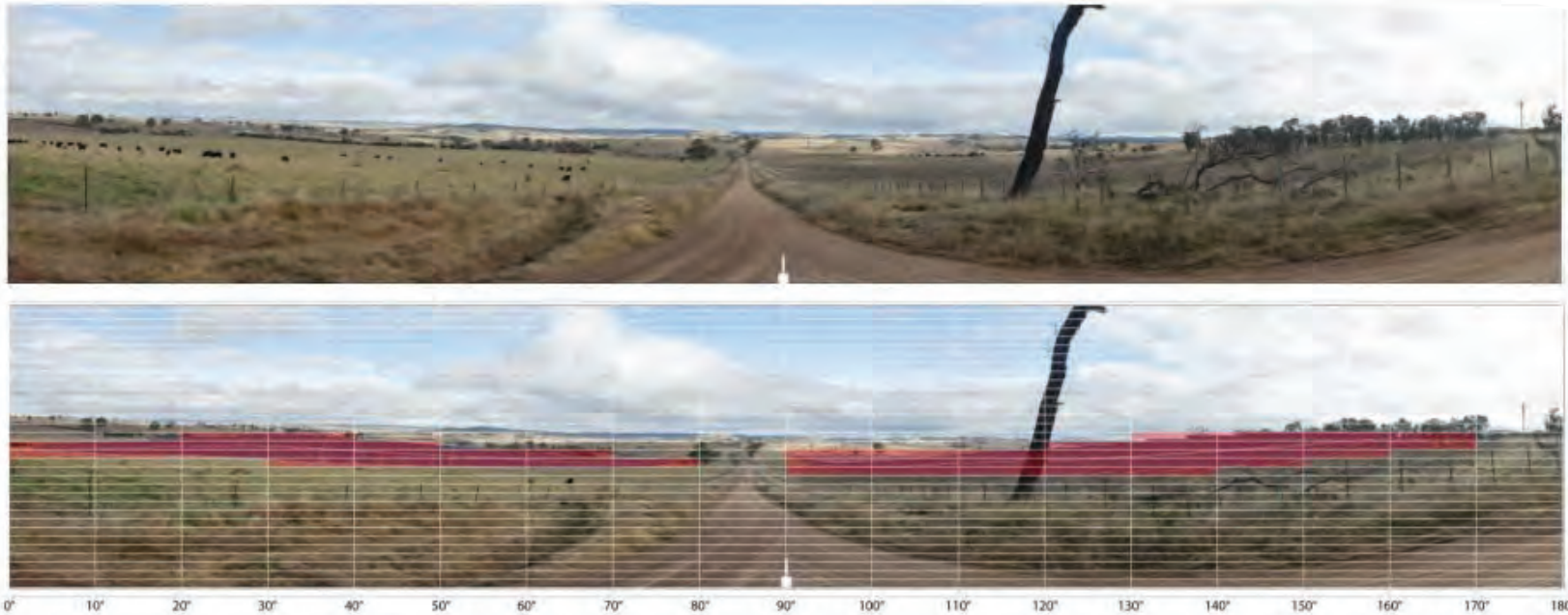
10m height (very high magnitude)

Example photomontages with rating from dwellings (source DPFI)

Distance to development	Viewpoint type	Viewpoint sensitivity	Scenic quality	Overall sensitivity	Occupied cells	Magnitude rating	Impact rating
1,400 m	Rural dwelling primary view	Moderate	Low	Moderate	3	Very Low	Low

Distance to development	Viewpoint type	Viewpoint sensitivity	Scenic quality	Overall sensitivity	Occupied cells	Magnitude rating	Impact rating
125 m	Rural dwelling primary view	Moderate	Low	Moderate	18	Moderate	Moderate

Example viewpoint analysis from public viewpoint. Source: DPHI



Scenic Quality Discussion

The surrounding area contains some remnant native vegetation but is predominantly cleared for agricultural use. Aside from the clearing for agriculture, human presence is not a dominant feature of the view. There are very distant forested ridgelines within the view, however, these are not a primary feature. No significant waterbodies are present. The scenic quality is considered low.

Distance to project	Viewpoint type	Viewpoint sensitivity	Scenic quality	Overall sensitivity	Occupied cells	Magnitude rating	Impact rating
450 m	Transport/Infrastructure	Very Low	Low	Very Low	46	Very high	Moderate



Dark Skys Planning Guideline

- The Dark Sky Region in NSW is centred on the site of a visible-light observatory at Siding Spring, located on the edge of the Warrumbungle National Park
- Addressed in the Landscape and Visual Impact Assessment via principles that promote lighting practices that maintain a dark night sky and support the operation of the observatory as well as saving energy.



Glint and glare

Provide a glint and glare assessment prepared in accordance with the Large-Scale Solar Guideline and supporting Technical Supplement

- The Guideline defines glint as a momentary flash of bright light and glare as a continuous source of excessive brightness
- Glint and glare principles
 - Solar panels should be sited to reduce the likely impacts of glint and glare
 - Solar panels and other infrastructure should be constructed of materials and/or treated to minimise glint and glare
 - 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 the impacts
- The glint and glare assessment represents a ‘worst case’ scenario that assumes no cloud cover throughout the year. It does not include:
 - Intervening elements such as vegetation or buildings
 - Weather conditions that reduce glare
 - Technical improvements to solar panels
- Analysis for each assessable receiver
- Details of strategies to either avoid or mitigate impacts
- Must include all residents within 3km with a line of site (or cluster)
- Road and rail lines within 1km of the site
- All air traffic control towers and take-off and landing approaches within 5km of the site.

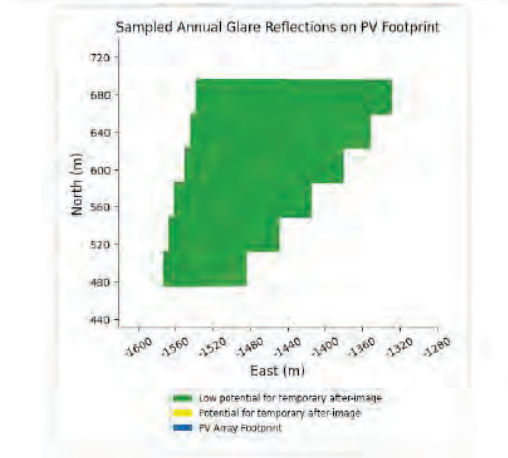
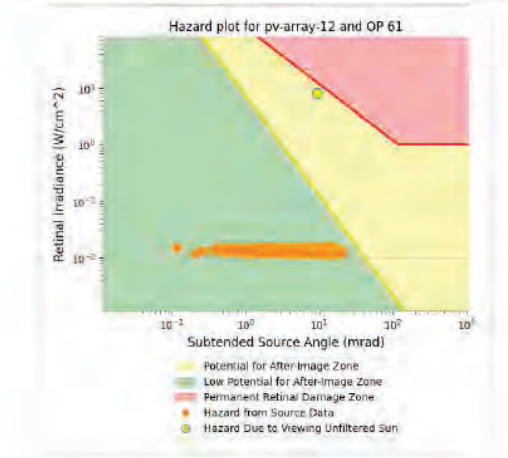
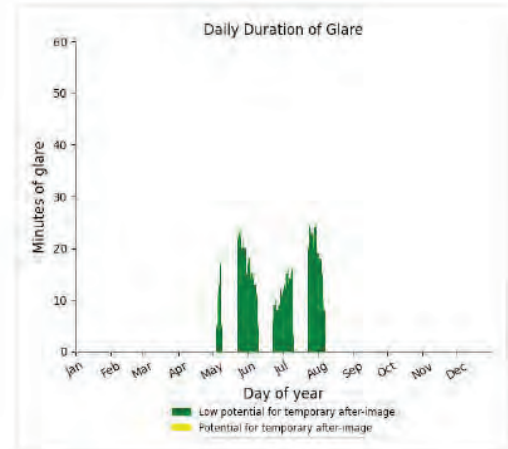
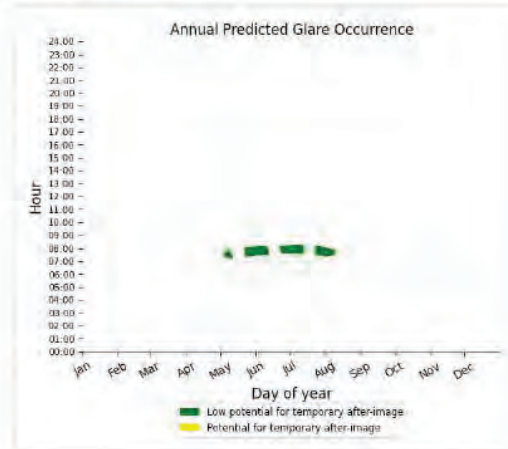
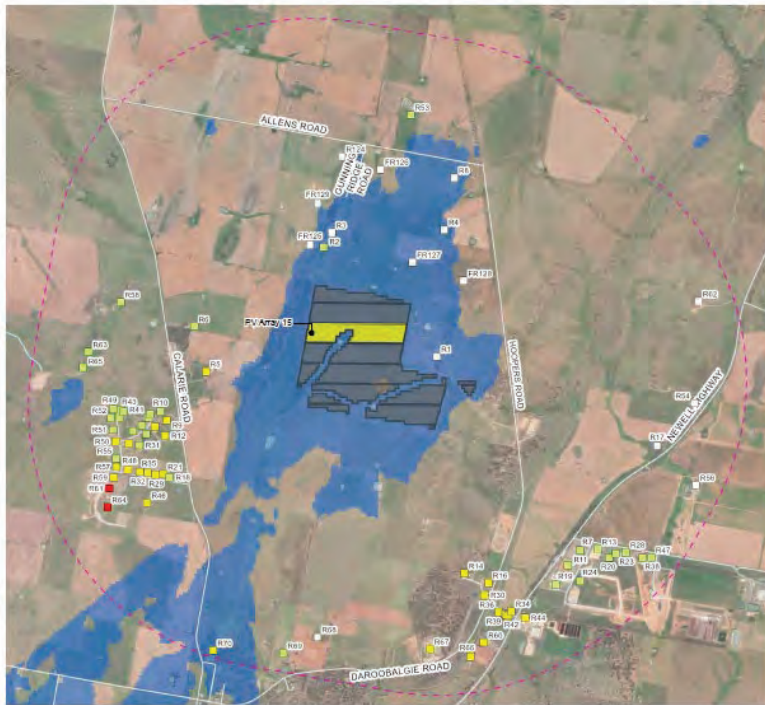
Glint and glare

- Assessment undertaken utilising the Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandia National Laboratories. The SGHAT is used to evaluate glare, based on proximity, orientation and specifications of PV modules.
- This tool is recognised by the Australian Government Civil Aviation Safety Authority (CASA).
- SGHAT is used to indicate the nature of glare that can be expected at each potential receptor. Glare broadly classified into three categories
 - Green Glare: Low potential for temporary after-image
 - **Yellow Glare: Potential for temporary after-image**
 - Red Glare: Retinal burn, not expected for PV
- Impact is calculated utilising the geographic location, elevation, position of the sun and other vector calculations. Sun position is determined at every one (1) minute interval through out the year
- Also models “backtracking”, whereby panels adjust when the sun is low to maximise solar capture.

PV array 12 and OP 61

Yellow glare: none

Green glare: 872 min.



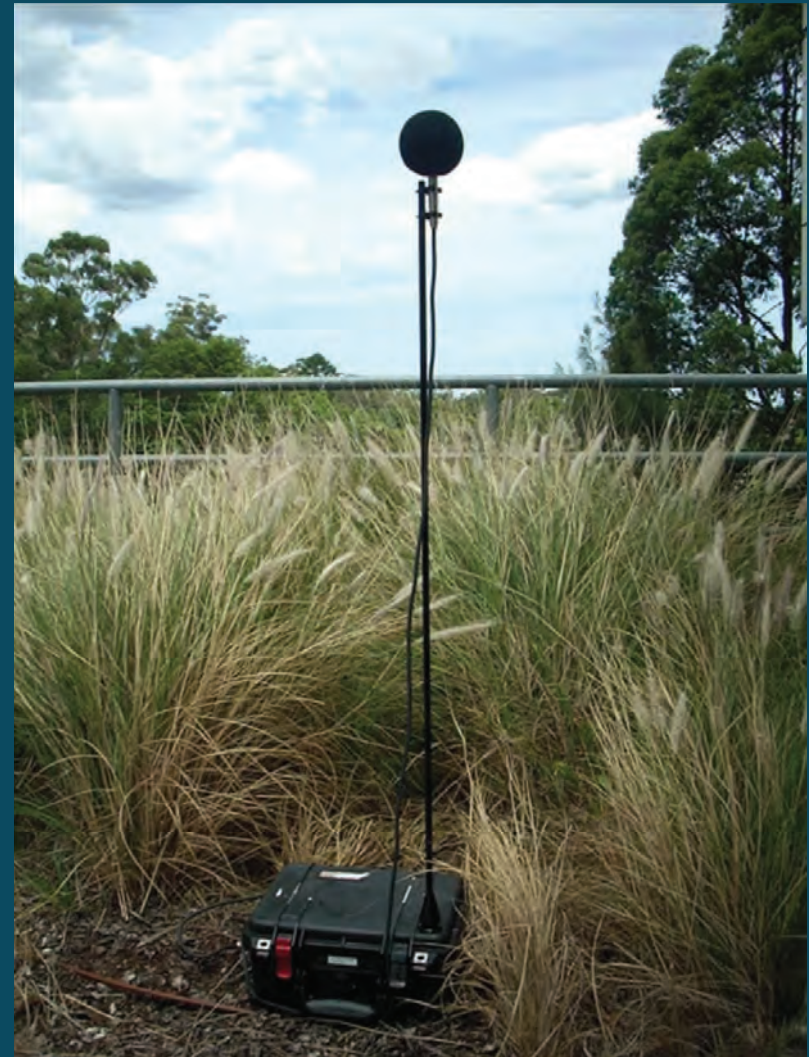
Source: Moir Landscape Architects

Noise and vibration

An assessment of the construction noise impacts (including impacts from proposed road upgrades) of the development in accordance with the Interim Construction Noise Guideline (ICNG), operational noise impacts in accordance with the NSW Noise Policy for Industry (2017) (NPfi), assess traffic noise having regard to the NSW Road Noise Policy (DECCW, 2011) (RNP) and cumulative noise impacts.

Existing noise environment

- Background noise varies over the course of any 24 hour period. Level of background and ambient noise be assessed separately for the daytime, evening and night-time periods:
 - The NPfi sets a conservative minimum assumed Rating Background Levels (RBLs) for receiver locations
 - However, **the Project will not be relying on the minimum RBLs**. But will instead complete noise sampling within the community.



Example noise logger

Noise and vibration

Construction noise

- The ICNG provides guidelines for assessing noise generated during the construction phase of developments
- Quantitative assessment is recommended for major construction projects of significant duration, and involves the measurement and prediction of noise levels, and assessment against set criteria
- Noise emissions are predicted by modelling the noise sources, receiver locations, topographical features of the intervening area, and possible noise control treatments
 - Includes plant such as driving rigs, drum rollers, loaders, dump trucks, excavators, graders, trenchers, water trucks etc.
- Calculates the contribution of each noise source at each specified receptor point and allows for the prediction of the total noise from a site
- In-principle feasible and reasonable noise management measures to reduce noise impacts to sensitive receivers.



Source: PV Magazine Australia

Noise and vibration

Operational noise

- Noise impact from the operation of the Project is assessed against the NPfl. The assessment procedure has two components:
 - Controlling intrusive noise impacts in the short-term for residences; and
 - Maintaining noise level amenity for residences and other land uses.
- The intrusiveness of a noise source may generally be considered acceptable if it does not exceed the existing noise environment by more than 5dB(A)
- Noise emissions are predicted by modelling the noise sources, receiver locations, topographical features of the intervening area, and possible noise control treatments
- Calculates the contribution of each noise source at each specified receptor point and allows for the prediction of the total noise from a site
- Models for the following standard and noise-enhancing conditions:
 - Standard meteorological conditions
 - Slight to gentle breeze
 - Moderate temperature inversion.



Source: PV Magazine Australia

Noise and vibration

Road traffic

- Noise impact from the potential increase in traffic on the surrounding road network due to construction and operational activities is assessed against the NSW RNP
- Assesses the peak vehicle movements during the construction stage of the project and normal operational traffic, as assessed in the Traffic Impact Assessment.

Vibration

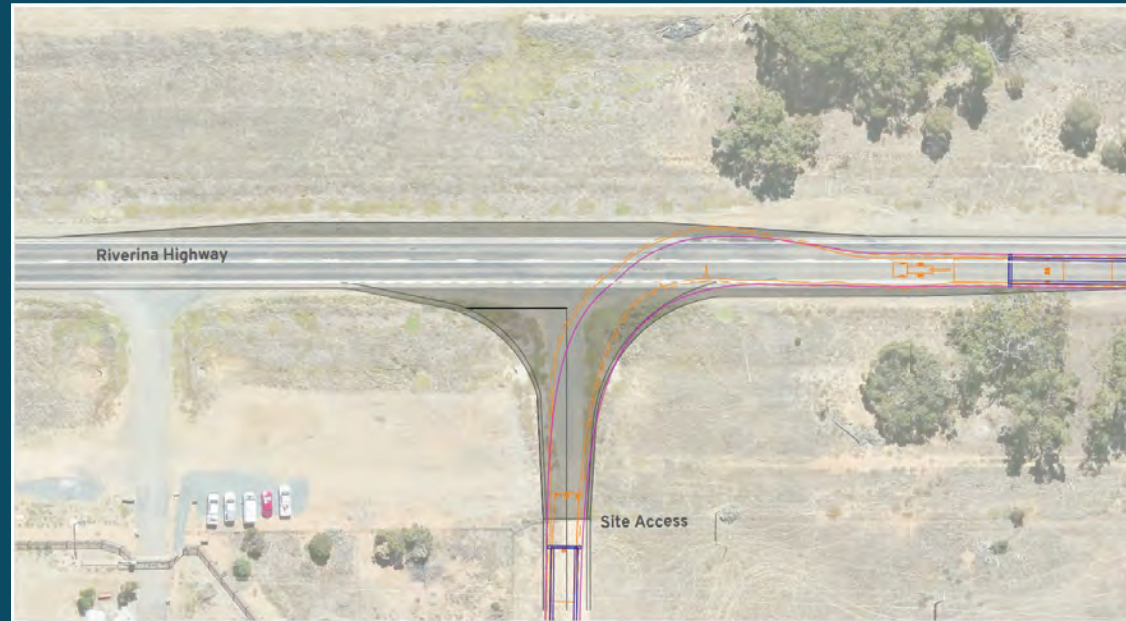
- Assessment of potential disturbance from vibration on human occupants of buildings is made in accordance with the EPA's 'Assessing Vibration; a technical guideline' (DECC, 2006)
- Vibration would only occur during operational daytime hours.



Source: PV Magazine Australia

Transport

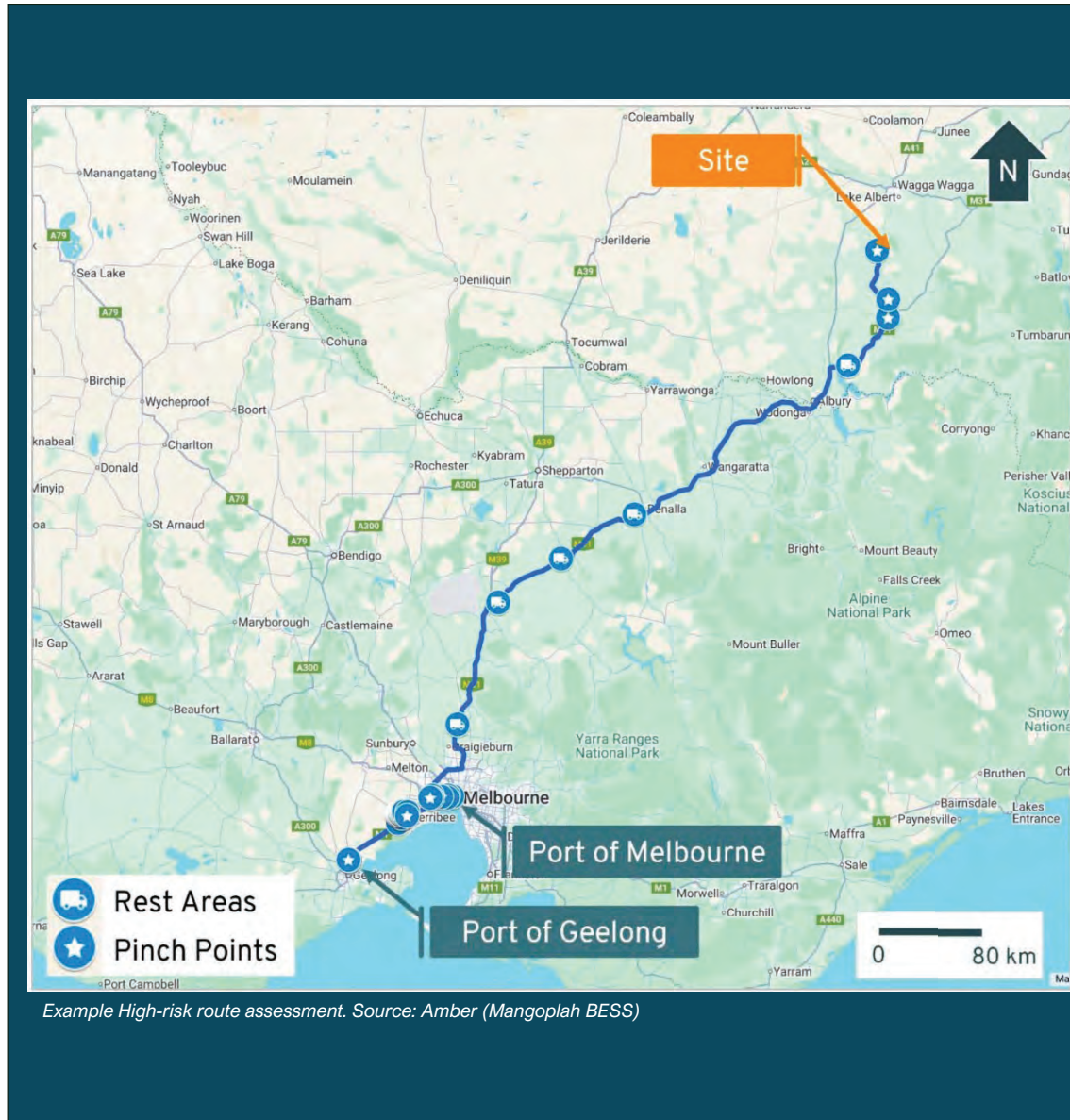
- *An assessment of the peak and average traffic generation, including light vehicles (including shuttle buses), heavy vehicles, heavy vehicles requiring escort, high risk heavy vehicles requiring escort and construction worker transportation*
- *Assessment of the likely transport impacts of the project, particularly in relation to the capacity and condition of the public roads, road safety and, intersection performance and impacts to rail infrastructure*
- *Concept Level Route Analysis required for heavy vehicles requiring escort and high-risk heavy vehicles requiring escort*
- *Cumulative traffic impact assessment of traffic from nearby developments*
- *Details of measures to mitigate and / or manage potential impacts.*



Example swept-path assessment. Source: Amber (Deniliquin BESS)

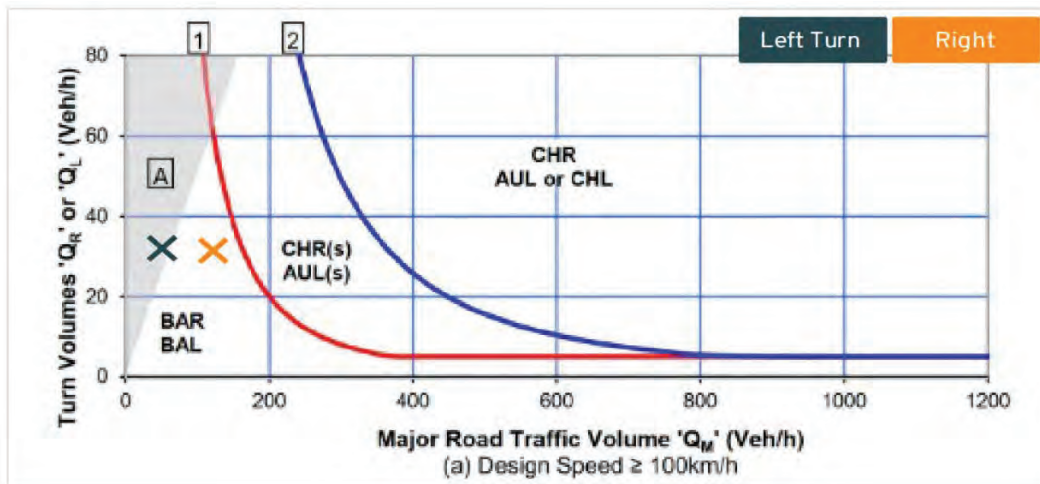
Transport

- Traffic assessment undertaken in accordance with the RTA Guide to Traffic Impact Assessment and relevant Austroads guidelines
- Determine existing condition:
 - Road network, key intersections, traffic volumes (turning movement count surveys and tube count surveys), public transport services, restricted vehicle access, crash history
- Traffic assessment:
 - Construction traffic assessment using peak construction period
 - Cumulative assessment with other Development Applications
 - Mid-block assessment – level of service
 - SIDRA intersection modelling – level of service and delay/queuing
 - Aim is to keep the level of service high, or as existing with minimal impact
- Route assessment
 - Heavy vehicles
 - High-risk heavy vehicles requiring an escort
 - Assessment of bridge and rail infrastructure
 - Strategic design of “pinch-points” or road upgrades required to support movements.

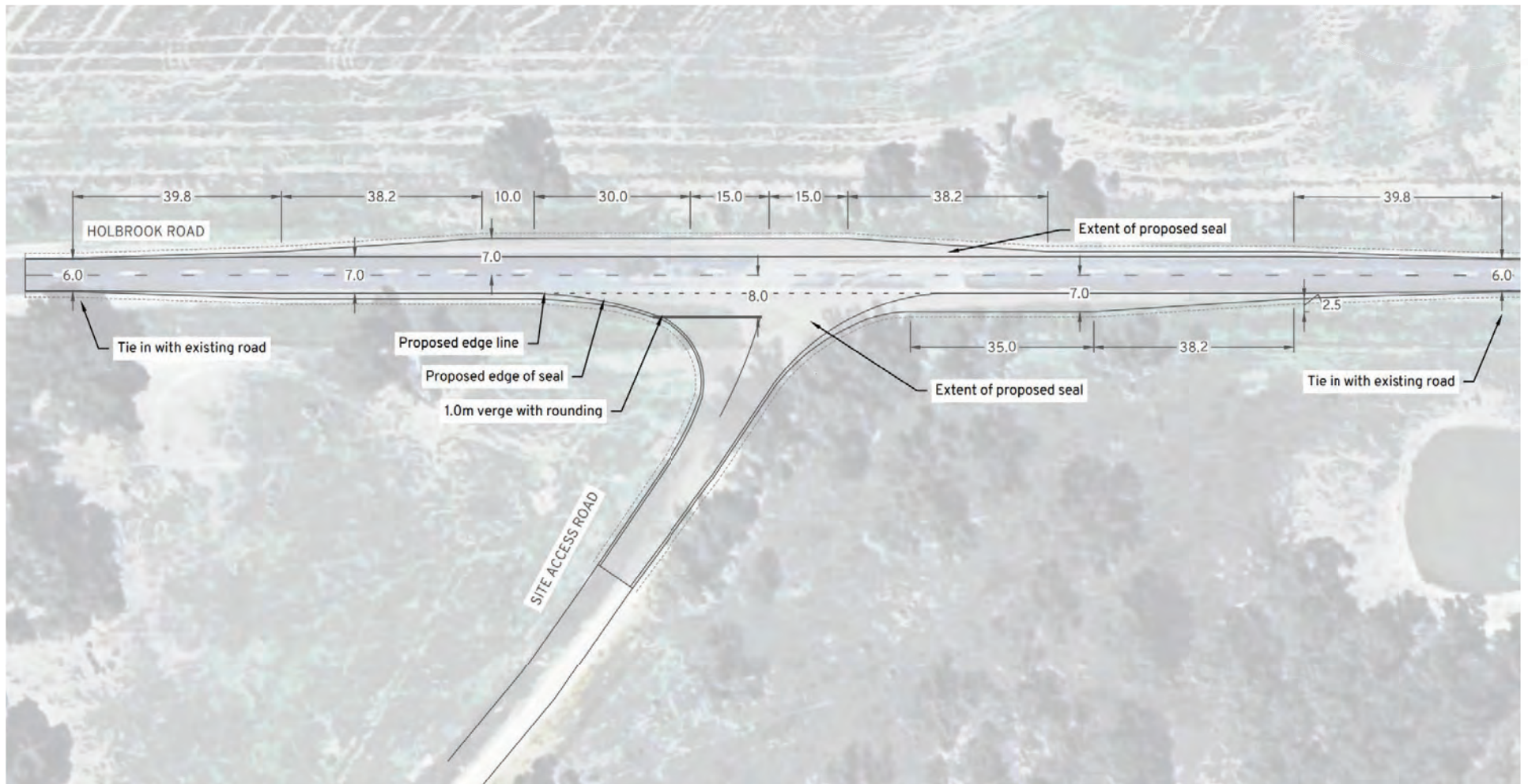


Transport

- Intersection design
 - Turn assessment based on Austroads Guide to Traffic Management
 - Concept site access design based on number of turning vehicles and traffic numbers
 - Sight distance assessment
- Recommendations for Traffic Management and other mitigation measures, to ensure safe access with minimal loss of service.



Example Turn-assessment and site distance assessment. Source: Amber (Mangoplah BESS)



Example turn-treatment strategic design. Source: Amber (Mangoplah BESS)

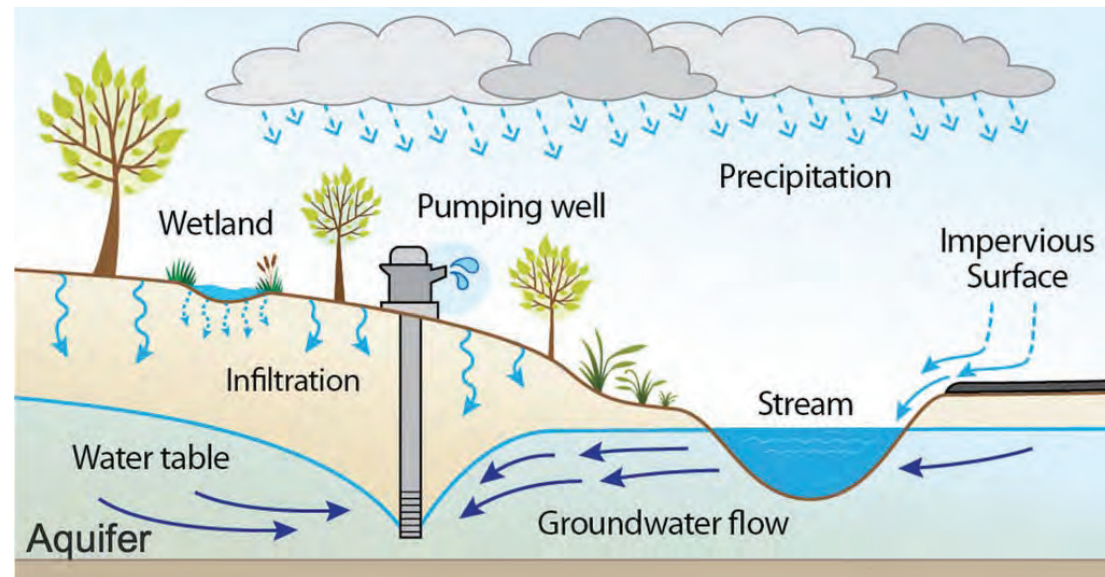
Water and soils

- *Assessment of the likely impacts of the development on surrounding watercourses, groundwater resources and surface water movements, and measures proposed to monitor, reduce and mitigate these impacts including water management*
- *Details of water requirements and supply arrangements for construction and operation*
- *Description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with *Managing Urban Stormwater: Soils & Construction* (Landcom, 2004) and *Managing Urban Stormwater: Soils and construction – Volume 2A manual* (Landcom, 2008)*
- *Where the project involves works within 40 metres of any river, lake or wetlands (collectively waterfront land), identify likely impacts to the waterfront land, and how the activities are to be designed and implemented in accordance with the *DPI Guidelines for Controlled Activities on Waterfront Land* (2018) and (if necessary) *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (DPI 2003), and *Policy & Guidelines for Fish Habitat Conservation & Management* (DPE, 2013).*

Water and soils

Site water balance for the development

- Calculated for as-constructed scenario
- Considers:
 - Water inputs: Water entering the site such as rainfall, surface water, groundwater
 - Water outputs: Water leaving the site such as evaporation, water use and discharge
 - Water storage: Management of water storage, such as detention basins, tanks on roofs
- The impervious fraction refers to the percentage of a surface area that is covered by materials that do not allow water to penetrate, such as concrete, and rooftops
- A balanced site can mitigate flood risk, improve water quality, and promote sustainable land use practices.



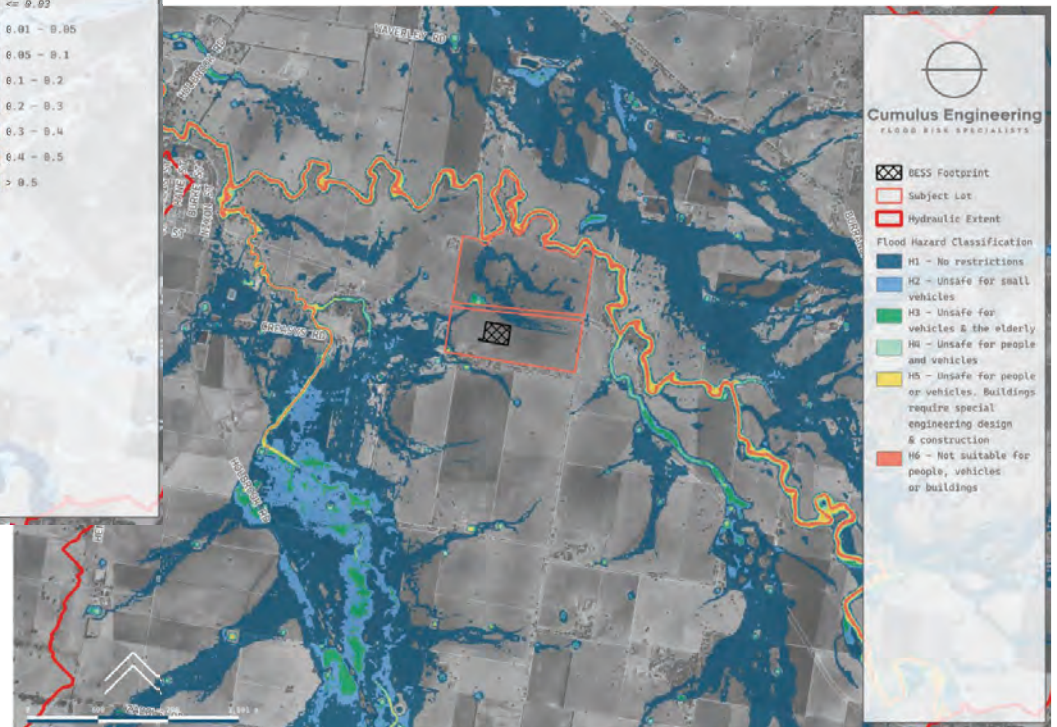
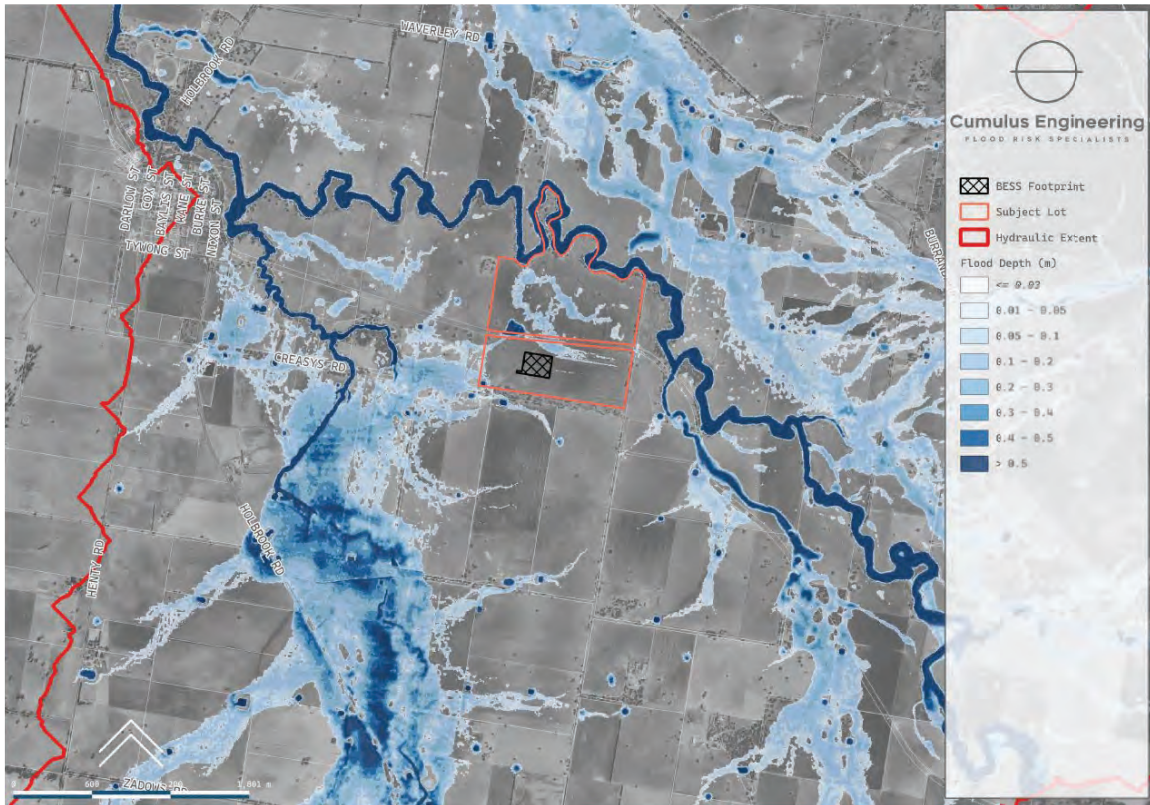
Water and soils

Assessment of the likely impacts of the development on hydrology and groundwater, including any changes to overland flows and groundwater levels on-site or off-site, and detail design solutions and operational procedures to manage impacts

Identification of any flood risk on site having regard to adopted flood studies, the potential effects of climate change and any relevant provisions of the NSW Flood Risk Management Manual.

- Model existing flood events/behaviour, floodways and flood storage areas (this may be existing Council flood studies, or may need to be modelled using specialist software)
 - Completed for a range of scenarios, including the 0.5%, 0.2%, 5% and 1% annual exceedance probabilities (AEP), and the probable maximum flood (PMF)
 - AEP is a statistical measure used to determine likelihood of a flood of a certain size occurring in a given year
 - PMF refers to the largest estimates flood that could possibly occur, and is a very rare and unlikely event
- Model developed flood events/behaviour
 - Completed for a range of scenarios including 5% and 1% AEP, and the PMF
 - Assessing the constraints flood places on the land (floodways, flood storage, & flood hazard)
- Flood evacuation and planning.

AEP	5%	2%	1%	0.5%	0.2%
Event	20 years	50 years	100 years	200 years	500 years



Example 1% AEP design conditions and flood hazard. Source: Cumulus Engineering (Mangoplah BESS)

Hazards

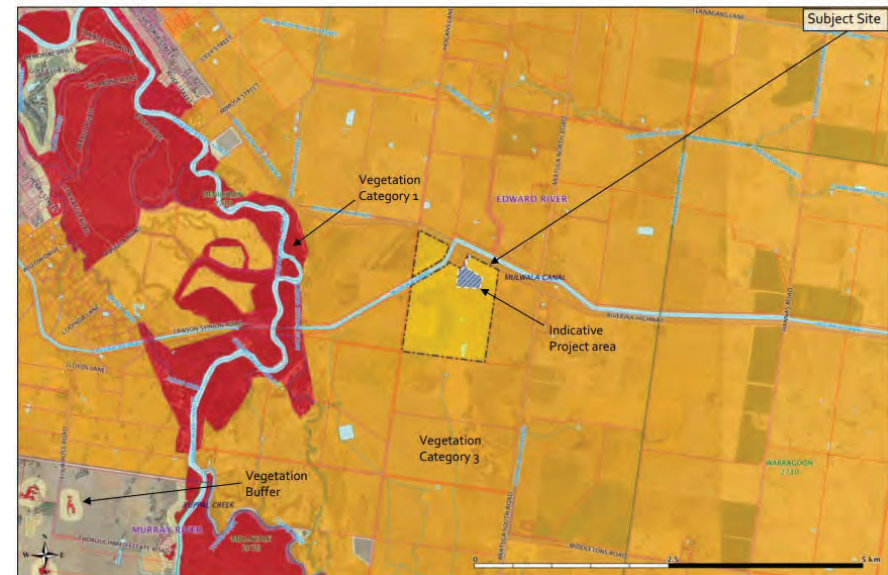
- **Health** - an assessment of potential hazards and risks including but not limited to fires, spontaneous ignition, electromagnetic fields for the proposed grid connection infrastructure against the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields
- **Bushfire** – a bushfire hazard assessment completed by a suitably qualified consultant and identify potential hazards and risks associated with bushfires / use of bushfire prone land including the risks that a solar farm and BESS would cause a bushfire and demonstrate compliance with Planning for Bush Fire Protection 2019
- **Dangerous Goods** - a preliminary risk screening completed in accordance with the State Environmental Planning Policy (Resilience and Hazards) 2021
- **Battery Energy Storage System** - a Preliminary Hazard Analysis (PHA) prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011). The PHA must consider all recent standards and codes and verify separation distances to on-site and off-site receptors to prevent fire propagation. The PHA must also consider release of toxic gases or toxic combustion byproducts from a full-scale battery fire. The PHA must demonstrate and compliance with Hazardous Industry Advisory Paper No. 4, Risk Criteria for Land Use Safety Planning (DoP, 2011). The PHA must consider the effect of bushfires on batteries or other components of the BESS.

Bushfire assessment

- The Project is located on land designated bushfire-prone, as a result would be subject to Section 4.14 of the EP&A Act and the NSW RFS document Planning for Bushfire Protection 2019 (PBP (2019))
- The aim of PBP (2019) is to protect human life and minimise impacts on property from the threat of bushfires while considering the development potential, site characteristics, and protection of the environment
- The Bushfire Assessment aims to:
 - Evaluate the potential bushfire threat to the Project Area,
 - Evaluate the potential threat of fire propagating from the site,
 - Recommend a range of protection measures that would be required to address these threats and provide the minimum bushfire protection necessary to offer life safety, improve property protection and facilitate fire service intervention during a bushfire event
- Considers vegetation formations and slope, the forest fire danger index, existing bushfire mapping and history to determine the Bushfire Attack Level (BAL)
 - This then feeds into the minimum asset protection zones (APZ) required for

a Project

- Mitigations included in the assessment include:
 - Appropriate setbacks from unmanaged vegetation and indicative APZs dimensions
 - Landscaping recommendations
 - Access and internal road design
 - Water supplies
 - Emergency Management Planning.



Bushfire categories. Source: Ember (Deniliquin BESS)

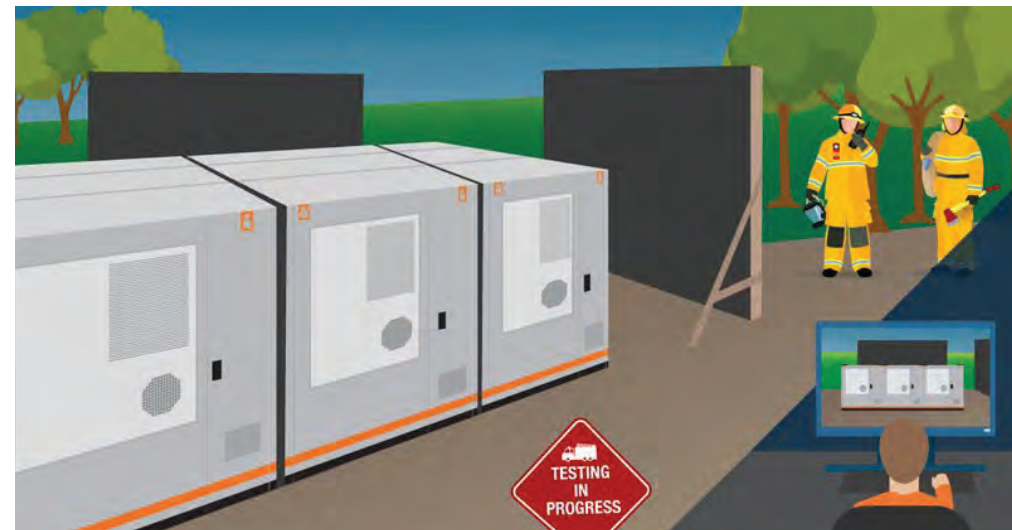
Hazards

Preliminary Hazards Assessment

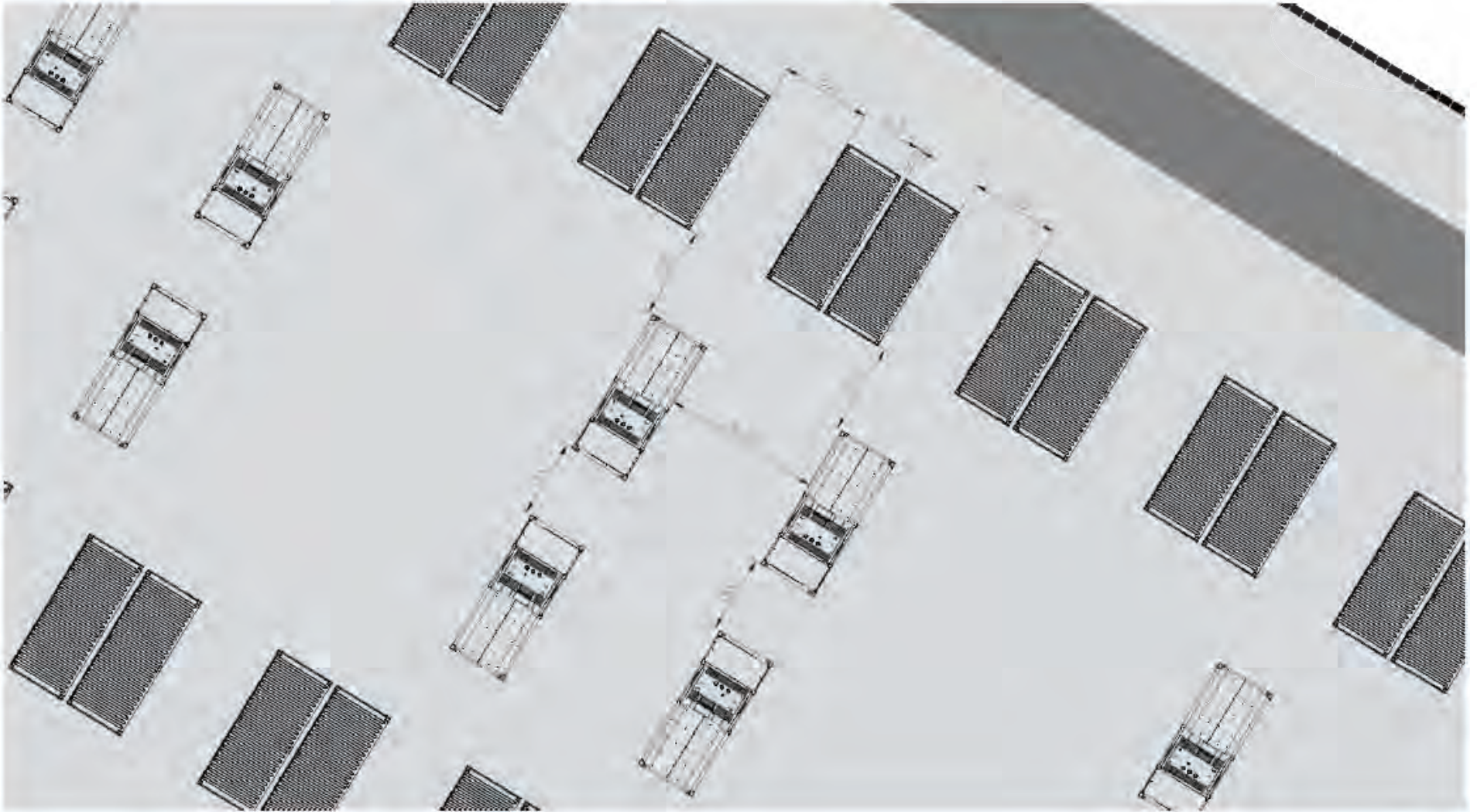
- PHA is required for BESS facilities
- Considers all recent standards and codes and verifies separation distances to on-site and off-site receptors to prevent fire propagation
- Details all BESS Safeguards, including:
 - Gas detection and suppression, fire suppression
 - Pressure relief valve
 - Pressure last panels
 - Emergency stop
 - Fault detection
 - Manual service disconnect
 - Overcurrent protection
 - Battery management systems
- BESS separation distances
 - Separation distance may be the most effective control to reduce the likelihood and consequence of fire propagation as a result of thermal runaway event
 - In line with product specifications, UL9540A test report (the national

standard Test Method for assessing fire propagation related to thermal runaway events) recommendations and BESS detailed design standards

- Generalised BESS (where the manufacturer is unknown) in line with National Fire Protection Agency (NFPA) 855 *Standard for the Installation of Stationary Energy Storage Systems*.



UL9540A Testing: Source: Wartsila

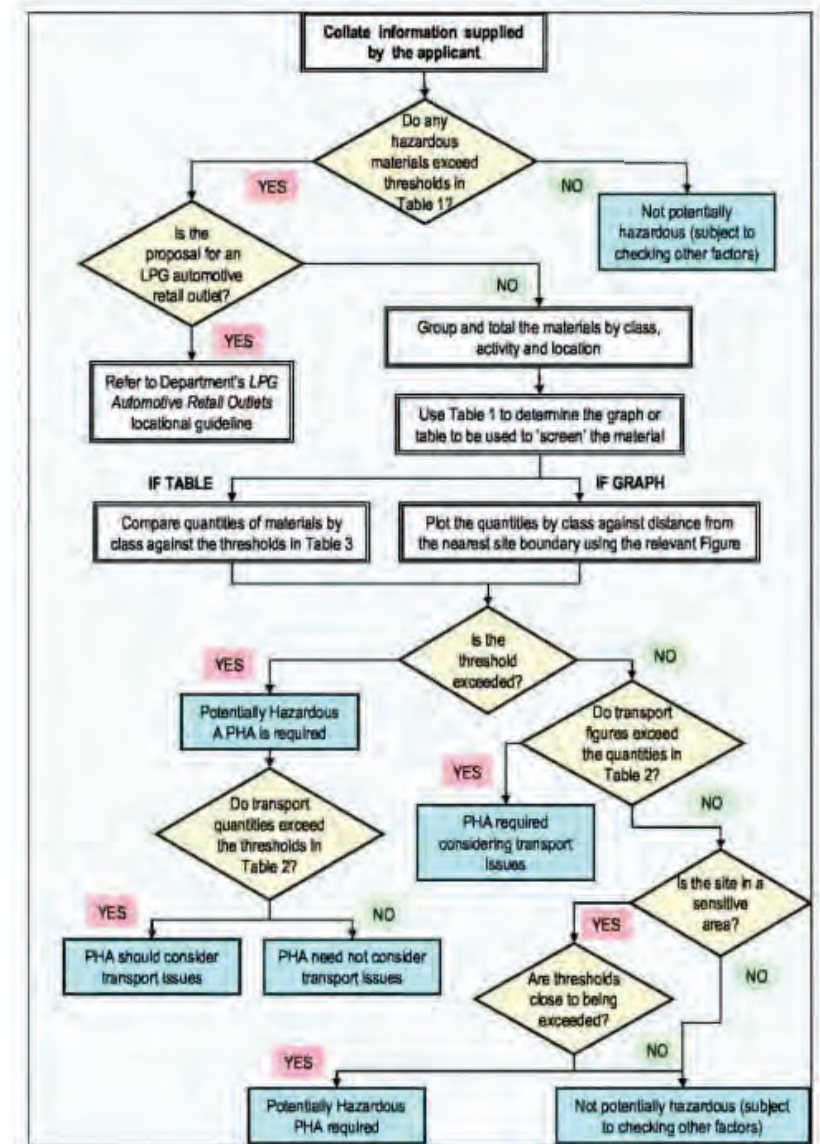


Example separation distances of a BESS. Source: Pando Consulting (Deniliquin BESS)

Hazards

Preliminary risk screening

- The objective of the preliminary risk screening is to determine whether the proposed development is considered as 'potentially hazardous industry' as defined by the State Environmental Planning Policy (Resilience and Hazards) 2021
- The process to undertake the preliminary risk screening is taken from section 7 and Appendix 4 of the *Hazardous and Offensive Development Application Guidelines – Applying SEPP 33*
- The risk screening process considers the type and quantity of hazardous materials to be stored on site as well as the expected number of transport movements.



Hazardous material information							Storage		Is the SEPP33 threshold exceeded?
Hazardous material	Use (including mode of storage i.e., bulk or packages/containers)	DG class and distance from boundary for DG classes 1, 1, 2.1 and 3	DG category	UN Number	Packing group	AS 1940	Estimated storage quantity ¹	Storage threshold	
Refrigerant	BESS refrigeration/chiller units stored in equipment and packages	2.2	Non-flammable, non-toxic gas	UN3150 (For R134a, R407C, etc.)	N/A	Excluded from AS 1940	3kg per BESS container	Class 2.2 is excluded from the risk screening. Non-flammable, non-toxic gases not considered to be potentially hazardous with respect to off-site risk.	No
Miscellaneous flammable liquids in small containers	Solvents to be used for maintenance and stored in packages	3 Stored in O&M facility about 100 m from the boundary	Flammable liquids	UN1993	PGI	Class 3 Flammable Liquids	< 20L	Applying SEPP33 Figure 8 graph if greater than 2 tonne	No
Coolant (50% ethylene glycol aqueous solution)	BESS coolant stored in equipment and packages	9 or N/A	Miscellaneous dangerous goods or not a DG (i.e., not combustible or toxic)	UN3082 (If considered hazardous under transport regulations)		Excluded from AS 1940	2000L per BESS	DG Class 9 excluded from risk screening	No
LFP battery cells	Store energy within BESS containers	9	Miscellaneous dangerous goods	UN3480 (Lithium-ion batteries) / UN3481 (Lithium-ion batteries contained in equipment)		Excluded from AS 1940	Each cell weighs ~5.5kg ≈3,200t	DG Class 9 excluded from risk screening	No
Oil products	Switchgear and transformers (mineral insulating oils). Stored in equipment and packages	Not classified as DG (i.e. flashpoint >60°C)	Oil and other petroleum products	C1 and C2 combustible liquids are not a dangerous good under UN classification	PGII or PGIII	C1 combustible liquid	200 000L (distributed in switchgear and transformers)	Combustible liquid is excluded from the risk screening	No
Herbicide (water based glyphosate)	Weed control and stored in packages	Not classified as DG		UN3082 (For liquid pesticides, if applicable)		Not specifically classified under AS 1940	< 20L	Excluded from risk screening	No
Diesel fuel	Vehicle operation stored in vehicles bunded tank	Not classified as DG	Not a DG. Categorised as C1 combustible liquid ²	UN1202		C1 combustible liquid	1000L	C1 combustible liquids do not have a general screening threshold	No

Example Preliminary Risk Screening. Source: Pando Consulting

Hazards

Preliminary Hazards Assessment

The methodology undertaken to prepare a PHA includes:

- Identification of the nature and scale of all hazards at the proposed development, and representative incident scenarios
- Analysis of the consequences of these incidents on people, property, and the biophysical environment
- Evaluation of the likelihood of such events occurring and the adequacy of safeguards
- Calculation of the resulting risk levels of the facility
- Comparison of these risk levels with established risk criteria and identification of opportunities for risk reduction

Hazard identification includes the systematic identification of possible hazards, both on-site and off-site.

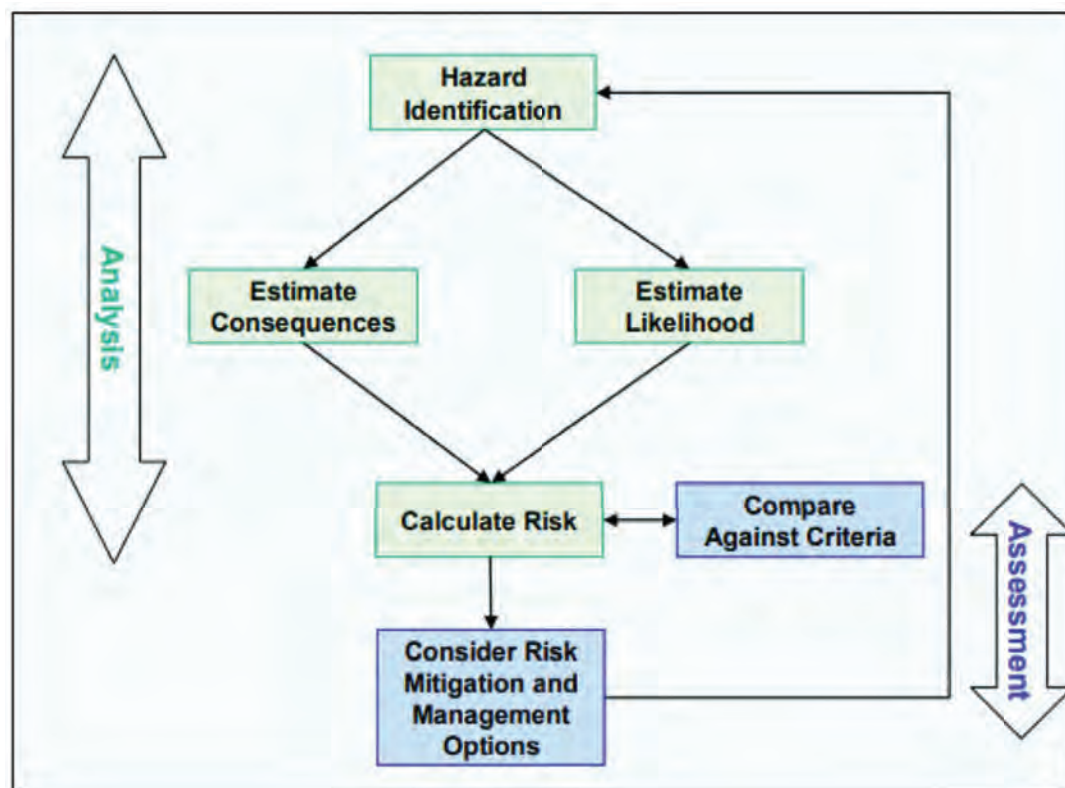


Table 5-1 Identified hazards and events

Hazard	Event
Electrical	Exposure to voltage
Arc flash	Release of energy
Electric and Magnetic Fields (EMF)	Exposure to EMF
Fire	Infrastructure fire
Chemical	Release of hazardous materials
Reaction	Battery thermal runaway
External factors	Vandalism, flooding



Column Heading	Description
Hazard	Description of the source of potential harm
Infrastructure/Area	Project infrastructure or area the hazard/event is applicable to
Event	Description of mechanism by which the hazard potential is realised
Cause	Description of the potential ways in which the event could arise
Consequence	Description of consequences of the event and potential impact to people, environment and/or asset
Controls	Any existing aspects of the design which prevent and/or mitigate against the event and resulting consequences
Likelihood Rating	Likelihood rating assigned for the event accounting for the initiating causes, resulting consequences with controls in place

Table 5-2 Likelihood category

Category	Description
1. Extremely Unlikely	Never heard of in the industry, not realistically expected to occur
2. Very Unlikely	Heard of in the industry, but not expected to occur
3. Unlikely	Could occur in the next 10 years
4. Likely	Could occur in the next year



ID	Hazard	Event	Cause	Consequence	Controls	Likelihood Rating
1	Electrical	Exposure to voltage	<ul style="list-style-type: none"> Short circuit/electrical connection failure Faulty equipment Incorrect installation Incorrect maintenance Human error during maintenance Safety device/circuit compromised Battery casing/enclosure damage 	<ul style="list-style-type: none"> Electrocution Injury and/or fatality Fire 	<ul style="list-style-type: none"> Equipment and systems will be designed and tested to comply with international standards and guidelines Engagement of reputable contractors Independent certifiers/owner's engineers Installation and maintenance will be done by trained personnel Electrical switch-in & switch-out protocol (pad lock) BMS including fault detection and shut-off function Ground fault detection Manual Service Disconnect (MSD) switch Overcurrent protection Warning signs (electrical hazards, arc flash) Emergency Response Plan External assistance for firefighting (FRNSW & RFS) Use of appropriate PPE Rescue kits (i.e., insulated hooks) 	Very Unlikely
2	Arc flash	Arc flash	<ul style="list-style-type: none"> Incorrect procedure (i.e., installation/ maintenance) Faulty equipment (e.g., corrosion on conductors) Faulty design (e.g., equipment too close to each other) Insulation damage Human error during maintenance 	<ul style="list-style-type: none"> Burns Injury and/or fatality Exposure to intense light and noise Arc blasts and resulting heat, may result in fires and pressure waves 	<ul style="list-style-type: none"> Equipment and systems will be designed and tested to comply with international standards and guidelines Engagement of reputable contractors Independent certifiers/owner's engineers Site induction/substation training (i.e., high voltage areas) Installation and maintenance will be done by trained personnel Maintenance procedure (e.g., deenergize equipment) Preventative maintenance (insulation) Emergency Response Plan External assistance for firefighting (FRNSW & RFS) Warning signs (arc flash boundary) Use of appropriate PPE for flash hazard 	Very Unlikely
3	EMF	Exposure to electric and magnetic fields	<ul style="list-style-type: none"> Operations of power generation equipment 	<ul style="list-style-type: none"> High level exposure (i.e., exceeding the reference limits) may affect function of the nervous system (i.e., direct stimulation of nerve and muscle tissue and the induction of retinal phosphenes) Personnel injury 	<ul style="list-style-type: none"> Location siting and selection (incl. separation distance) Optimising equipment layout and orientation Reducing conductor spacing Balancing phases and minimising residual current Incidental shielding (i.e., BESS building/enclosure, switchroom) Equipment and systems will be designed and tested to comply with international standards and guidelines Exposure to personnel is short duration in nature (transient) Physical warning signs (e.g., danger or restricted access) Studies found that the EMF for commercial solar power generation facilities comply with ICNIRP occupational exposure limits 	Extremely Unlikely

Hazard	Event	Consequence (Impact to People)	Likelihood	Risk
Electrical	Exposure to voltage	Major	Very unlikely	Medium
Arc flash	Arc flash	Major	Very unlikely	Medium
EMF	Exposure to EMF	Insignificant	Extremely unlikely	Low
Fire	Fire – transformers and PCSs	Major	Very unlikely	Medium
	Fire – substation	Major	Extremely unlikely	Medium
	Fire – temporary construction facilities	Major	Very unlikely	Medium
	Bushfire	Major	Very unlikely	Medium
Reaction	Thermal runaway in battery	Major	Very unlikely	Medium
Chemical	Release of electrolyte from the battery cell (liquid/vented gas) resulting in fire and/or explosion	Major	Very unlikely	Medium
	Battery coolant leak	Minor	Very unlikely	Low
	Refrigerant leak (BESS and refrigeration/chiller units)	Minor	Very unlikely	Low
	Exposure to hazardous material (herbicide/pesticide)	Minor	Very unlikely	Low
	Release of diesel from storage tank, filling point or during handling resulting in fire	Major	Very unlikely	Medium
	Release of gasoline from storage tank or filling point resulting in fire	Major	Very unlikely	Medium
	External factors	Water ingress resulting in fire (BESS, PCSs or switchrooms)	Major	Extremely unlikely

Social

Including an assessment of the social impacts or benefits of the project for the region and the State as a whole in accordance with the Social Impact Assessment Guideline (DPHI, 2025), including consideration of any increase in demand for community infrastructure services, and consideration of construction workforce accommodation

- The SIA aims to identify, predict, and evaluate the likely social impacts and benefits arising from the Project, and to propose appropriate responses to mitigate negative impacts and enhance positive outcomes
- Social impacts refer to the consequences experienced by people, whether individuals, households, groups, communities, or organisations, when a project introduces change
- The SIA applied a mixed-methods approach that integrated desktop research, community engagement, observational insights, and quantitative data analysis

Economic

An assessment of the economic impacts or benefits of the project for the region and the State as a whole and provide details of any proposed voluntary benefit sharing, having regard for the Benefit-Sharing Guideline 2024 and Private Agreement Guideline 2024.

Project scoping and social baseline

- Desktop research
- Define the social locality
- Establish the social baseline within the social locality
- Identify the likely social impacts and the level of assessment required

Community consultation and stakeholder engagement

- Stakeholder mapping to identify relevant communities and stakeholders
- Undertake semi-structured interviews with key stakeholders
- Conduct an online SIA community survey
- Other engagement activities, including Project-wide engagement

Impact assessment and management

- Review and integrate findings from stakeholder and community engagement and relevant EIS technical studies
- Evaluate the magnitude and likelihood of social impacts to determine the significance rating
- Identify relevant/appropriate mitigation, management and enhancement measures
- Assess significance of residual impacts after effective application of mitigation measures

Waste

Identify, quantify and classify the likely waste streams to be generated during construction, operation and decommissioning, and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste (in consultation with waste facilities, including Council) in accordance with the Large-Scale Solar Guideline

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



3. Plans and documents



The EIS must include all relevant plans, diagrams and relevant documentation required in accordance with the SSD Guidelines and under Part 3 of the EP&A Regulation.

In addition, the EIS must include high quality files of maps and figures of the subject site and proposal.

4. Engagement and SIA in 2026



- ARES will be engaging with the local community through its Community Engagement team
- Engagement with near neighbours will be a priority
- The Social Impact Assessment (SIA) will be undertaken separately.

It is important that the community provide feedback on the proposal, so that if the Project is approved, consideration and understanding towards some of the local concerns can be understood, addressed or mitigated.

- The Social Impact Assessment (SIA) and community engagement are related but different parts of the NSW planning process.
- An SIA is a formal technical study required by the Department to assess how a project might affect people, services, lifestyle, and the character of local communities. It uses evidence, data, and community feedback to identify potential impacts and outline mitigation measures.
- Community engagement is the ongoing process of talking with community members, listening to their views, answering questions, and considering feedback.
- **Both are used to assess impacts for the EIS.**

4. Thank you



For comments, questions or to hear more:

- feedback@areservices.com.au