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Preliminary Waste, Resource and Energy Management Plan

Wathagar Solar Farm Stage 2

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Document Control

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Abbreviations and Acronyms

Table 1 - Abbreviations and Acronyms

EPA	Environmental Protection Agency
MWh	Megawatt Hour
NSW	New South Wales
PV	Photovoltaic
WMP	Waste Management Plan

1 Project Overview

The proposed development involves the construction and operation of a solar farm with integrated battery storage to primarily support local energy loads, including the co-located cotton gin and a hydrogen and ammonia production facility.

This solar and storage proposal is an expansion or second stage of a solar farm development (Wathagar Solar Farm) which was constructed in 2023 and will leverage the existing grid connection with the network operator, Essential Energy.

The development will consist of:

- Photovoltaic (PV) panels mounted in a dual east-west static configuration using a PEG framing system;
- Inverter/transformer stations;
- Battery storage containers with up to 30 MWh of combined storage capacity;
- Associated cabling, communications, and switching infrastructure, surrounding chain link fence with double leaf gate;
- Minor earthworks for site preparation and maintenance of existing roads within the cotton gin development;
- Associated cabling, communications, switching apparatus;
- Perimeter security fencing.

In the context of waste management, greater than 95% of the waste generated by the project will be comprised of cardboard boxes and pallets used as packaging for the PV modules.

2 Purpose

The purpose of this plan is to set out the framework for managing waste and resource consumption during the construction of the Wathagar Solar Farm Stage 2. Its purpose is to ensure waste is minimised, materials are used efficiently, and energy consumption is reduced through practical, site-specific strategies that align with legislative requirements and the principles of environmental sustainability.

The principles outlined in this plan will be applied throughout the construction, operational, and decommissioning phases of the project. The majority of waste generation is expected to occur during the construction and decommissioning stages, while the operational phase will generate minimal waste. Further details on decommissioning waste management are provided in Appendix 3.

3 Objectives of this Plan

This Waste Management Plan (WMP) outlines the procedures and strategies to be implemented during construction to manage waste generation responsibly, maximise recycling and reuse, and minimise the volume of material sent to landfill. The objectives of this plan are to:

- Ensure compliance with relevant environmental regulations and commitments.
- Promote the reuse and recycling of materials where possible.
- Minimise environmental impacts from waste generation, handling, and disposal.
- Maintain accurate records of waste management activities.
- Minimise energy consumption.

4 Applicable Legislation, Standards and Guidelines

4.1 Relevant Legislation

This Waste Management Plan has been prepared to comply with the following legislation in New South Wales:

- **Protection of the Environment Operations Act 1997 (NSW)**: Primary legislation governing waste management, pollution control, and licensing requirements.
- **Protection of the Environment Operations (Waste) Regulation 2014 (NSW)**: Prescribes requirements for waste classification, tracking, handling, and levy obligations.
- **Waste Avoidance and Resource Recovery Act 2001 (NSW)**: Establishes the waste hierarchy and promotes waste reduction and resource recovery initiatives.
- **Environmental Planning and Assessment Act 1979 (NSW)**: governs land use planning and environmental assessment, including waste management obligations during development.

4.2 Applicable Standards and Guidelines

This plan has been developed with reference to the following standards and best practice guidelines:

- **NSW EPA Waste Classification Guidelines (2014)**: framework for the correct classification of waste types to determine appropriate management options.
- **NSW EPA Waste Levy Guidelines (2024)**: guidance on the application of the waste levy and associated record-keeping requirements.
- **Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities (2012)**: strategies for minimising waste generation and maximising recycling in construction and operational phases.

- **Transport for NSW Waste Management Guideline (2023)**: waste management procedures for transport and infrastructure-related projects.
- **Standards for Managing Construction Waste in NSW (2019)**: requirements for the safe and environmentally responsible handling of construction and demolition waste.
- **NSW Waste and Resource Recovery Strategy Stage 1: 2021–2027**: aims to reduce waste, increase recycling, and support the transition to a circular economy through coordinated action across government, industry, and the community.

5 Waste Management Hierarchy

Waste management on this project will be guided by the principles of the waste management hierarchy, which prioritises actions to achieve the most environmentally responsible outcomes.

This hierarchy provides a structured approach that encourages the avoidance of unnecessary waste generation, followed by reuse and recycling wherever practicable, before considering recovery and disposal as a last resort.

By applying this framework, the project aims to minimise environmental impacts, reduce resource consumption, and maximise the reuse and recycling of materials in alignment with industry best practice and relevant regulatory obligations. The Waste Management Hierarchy is illustrated in Figure 1.

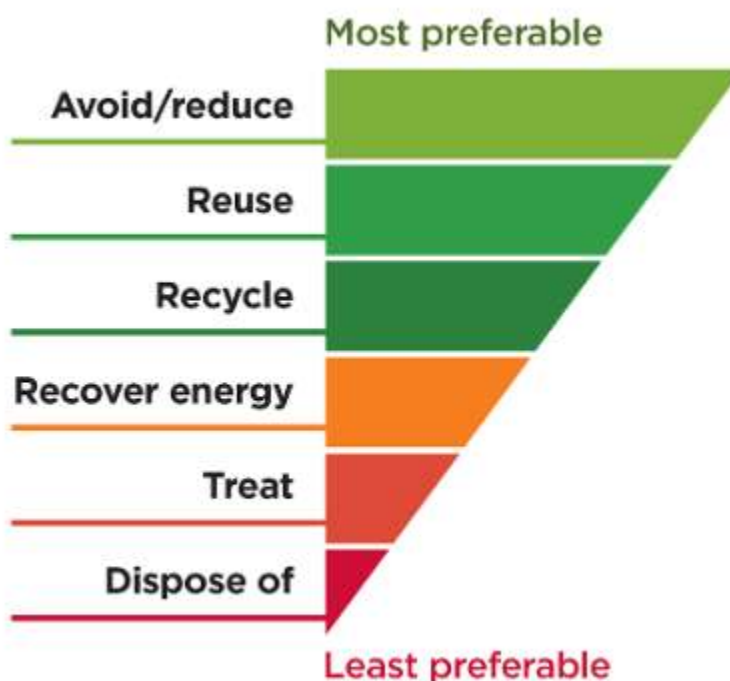


Figure 1 - Waste Management Hierarchy

5.1 Waste and Resource Management Objectives

The following targets have been set to guide the management of waste and resource use during the construction phase of the project:

- Prevent the generation of unnecessary waste wherever possible;
- Ensure that all waste is disposed of in full compliance with applicable legislative and regulatory requirements;
- Reduce the consumption of materials and resources through efficient work practices;
- Apply the waste management hierarchy, prioritising avoidance, reuse, and recycling over disposal;
- Actively identify and implement opportunities to reuse or recycle construction materials where it is practicable to do so.

6 Potential Environmental Impacts and Mitigations

Potential impacts of improper waste and resource management may arise from:

Table 2 - Potential Environmental Impacts and Mitigations

Impact	Mitigation Strategy
High volumes of waste generation during construction	Implement a site-specific Waste Management Plan (WMP); monitor waste streams; procure materials in appropriate quantities.
Overconsumption of natural resources	Source sustainable materials; use energy-efficient machinery; encourage carpooling and consolidated deliveries.
Suboptimal utilisation of materials and resources	Train personnel; reuse materials where feasible; assign accountability for resource use.
Inadequate management of construction-related waste	Install waste separation stations; brief workers; use licensed waste contractors and track disposal.
Potential for waste release causing environmental contamination	Store hazardous materials in bunded areas; implement spill response procedures; inspect storage regularly.
Attraction or proliferation of vermin and pests	Remove waste regularly; use vermin-proof bins; avoid long-term stockpiling; engage pest control as needed.
Generation of construction waste, such as excavated soil and rock	Reuse excavated material on-site for grading; balance cut and fill volumes; no soil or rock will be removed from site.
Generation of construction waste, removal of fencing	No existing fencing has to be removed; therefore, no associated waste generation.
Generation of vegetation waste from clearing	As the construction footprint is already highly disturbed by agricultural activities, very limited vegetation disturbance is expected. Minimal

Impact	Mitigation Strategy
	vegetation removal; mulch on-site where practical or send to green waste facility.
Weed infestation from seed dispersion during clearing	Limit disturbance to development footprint; implement site hygiene measures; inspect and clean machinery.
Consumption of non-renewable resources such as energy, diesel and chemicals	Use efficient plant; optimise methodologies; store and use chemicals responsibly; adopt PEG framing system; encourage carpooling.
Greenhouse gas emissions from non-renewable energy use	Select fuel-efficient equipment; reduce idling; optimise construction sequencing; prioritise low-emission options. The compact site design will also reduce the scale of construction activities and associated emissions.
Use of water during construction	Limit water use for dust suppression and essential amenities; no topsoil stockpiles; use on-site water supply.
Spills	Contain, report and dispose of spills using site-provided spill kits.

7 Waste Stream Management

The types of waste and their management are shown in Table 3.

Table 3 - Waste Stream Management

Waste Type	Estimated Quantity	Description	Waste Hierarchy
Copper cable offcuts	~100 kg	Offcuts from DC and AC cable runs	Recycle
Aluminium cable offcuts	~100 kg	Offcuts from cable terminations and installations	Recycle
Steel offcuts	40–50 kg	Offcuts from structural framing, footings, and bracing	Recycle
Cardboard boxes for PV modules	High volume (majority of waste) ~1,500 boxes with dimensions of ~2000×1170×60mm (L/W/H)	Packaging materials for panels, equipment, and components	Recycle
Wooden pallets	High volume (~1,550)	Non-putrescible, softwood timber pallets used for delivery of modules and equipment, not painted.	Recycle/Reuse

Waste Type	Estimated Quantity	Description	Waste Hierarchy
General waste	Minor volume	Miscellaneous non-recyclable waste from construction	Avoid/Reduce Dispose of off site
Batteries	Minor volume	Heavy duty rechargeable batteries are used and unlikely to fail. Car batteries are unlikely to fail.	Reuse Dispose of
Soft Plastics	Moderate volume	Used in packaging.	Recycle Dispose of off-site
Paper	Minor volume	Non putrescible, packaging and administrative waste	Reuse Recycle
Glass and aluminium	Minor volume	Non putrescible, cans and bottles	Recycle
Food waste	Minor volume	Putrescible, stored in dedicated bin/s	Recycle (Compost) Dispose of
Effluent	Minor volume	Liquid waste from portable toilets, stored in holding tank	Dispose of off-site by hire company
Excavated material		Produced by earthworks and site preparation,	Reuse on site
Liquid waste – oil, coolant, lubricant	Nil to Minor volume	Liquid waste contained in bunded storage	Dispose of off-site at licensed waste facility
Spill-kit waste	Nil to Minor volume	Liquid waste contained in bunded storage	Dispose of off-site at licensed waste facility
Tyres	Nil to Minor volume	Special waste	Reuse Recycle at licensed waste facility

> Note: More than 95% of the total waste volume is expected to consist of cardboard packaging and light wooden pallets.

9. Waste – Cumulative Impacts

With adequate notice and effective planning, the anticipated waste volumes generated during the construction and operation of the Project are not expected to place undue pressure on the capacity of local or regional waste facilities. Maintaining high standards of housekeeping and on-site waste management will be essential throughout all phases of the Project. Provided the waste hierarchy is appropriately implemented, residual waste requiring disposal to landfill or licensed facilities is expected to be minimal. Overall, the Project's waste generation is not anticipated to pose any additional risk to the broader environment.

8 Waste Management Strategies

8.1 Separation

Waste will be sorted at the point of generation into dedicated waste streams (e.g., metals, cardboard, pallets, general waste) to maximise recycling potential.

8.2 Recycling and Reuse

- Copper and aluminium offcuts will be collected and transported to licensed metal recyclers.
- Steel offcuts will similarly be collected and recycled.
- Cardboard will be compacted and transported to recycling facilities wherever possible.
- Wooden pallets will be reused onsite where safe and appropriate, or returned to suppliers for reuse, or recycled if not suitable for reuse by suppliers.

8.3 Disposal

General waste that cannot be recycled will be disposed of at a licensed waste facility.

Efforts will be made to minimise the quantity of landfill waste.

9 Recycling and Disposal Facilities

9.1 Engagement with Local Waste Services and Commitment to Local Benefit

The project has engaged with the local council's waste services team to explore recycling and disposal pathways that align with our project's sustainability objectives and support the local economy. Initial discussions have confirmed that, with appropriate advance notice, the council is willing and able to accommodate the recycling of all clean cardboard boxes and softwood pallets generated during installation. Cardboard disposal is expected to be provided free of charge, and arrangements for pallet recycling can be made via an approved facility (the local facility is understood to be in Narrabri).

Importantly, the council has indicated a strong willingness to tailor a waste management approach specifically for this project. They expressed enthusiasm for the opportunity to improve

their own recycling metrics through our partnership and confirmed their interest in processing a significant portion of the project's recyclable material. This collaboration reflects our commitment to supporting local services and ensuring that the economic and environmental benefits of the project are retained within the region.

If for any reason, the local service is not able to accommodate the volume of recycling, the project has the option of backloading trucks to convey the material to other locations for recycling.

The following recycling and disposal facilities have been identified for this project.

Table 4 - Waste Management Facilities

Facility/Service	Material	Action
RBI Scrap Metal 6 Kurrajong St Moree NSW 2400 Phone: 02 6752 5552	Copper, aluminium, steel	Recycle at local facility
Cleanaway	Soft plastics, cardboard, pallets	Deliver for Recycling
Challenge Recycling Narrabri 112 Arnold St, Narrabri NSW Phone: 02 6792 1781	Cardboard	Collected and recycled
Palleco 2/105 Freight St Lytton QLD 4178 Phone: 1800 525 018	Pallets	Deliver for recycling
Installer's base depot (Tamworth)	All recyclable materials	Transported for consolidated recycling if Moree options not viable
Gwydir Industries 441 Gosport St, Moree NSW 2400 Phone: 02 6751 1440	Cardboard	Collected and recycled
Moree Waste Management Facility 57 Evergreen Road Moree NSW 2400 Phone: 02 6757 3222	General waste disposal Green waste disposal; Scrap metal and concrete recycling; Recycling drop off; Oil waste disposal; Tyre disposal; Batteries; Gas bottles.	Deliver for recycling or disposal

Facility/Service	Material	Action
Moree Return and Earn Centre 100 Amaroo Drive, Moree NSW 2400 Moree Council Car Park 28 Auburn Street, Moree NSW 2400	Glass and Cans	Reverse Vending Machines
The Australian Recycled Plastics Co 268 Yarrie Lake Road Narrabri NSW 2390 Phone: 02 6792 1644 adminarp@namoilogistics.com.au	PETE (Plastics 1) HDPE (Plastics 2) PP (Plastics 5)	Delivered to facility and recycled

10 Roles and Responsibilities

Table 5 describes the roles and responsibilities in relation to project waste management.

Table 5 - Roles and Responsibilities

Role	Responsibilities
Project Manager	• Ensure implementation of the Waste Management Plan (WMP) • Allocate necessary resources for waste management • Review and approve waste management procedures and updates • Liaise with stakeholders on waste-related issues • Overall responsibility for the WMP on behalf of the proponent
Site Manager	• Oversee day-to-day implementation of the WMP on-site • Ensure personnel comply with waste procedures • Report waste management performance to the Project Manager • Support training and awareness initiatives for site personnel
Waste Management Coordinator	• Maintain and update the WMP as required • Coordinate waste collection, segregation, and disposal activities • Conduct regular site inspections • Monitor waste volumes and identify opportunities for reduction and recycling
Contractors	• Follow site waste management procedures • Ensure staff are aware of waste handling and segregation requirements • Report any waste-related incidents or non-conformance • Store, handle, and dispose of waste in accordance with site rules
Contractor Staff	• Comply with site waste segregation and disposal procedures • Use designated bins and storage areas correctly • Report issues or concerns to supervisors • Participate in toolbox talks and training on waste management

11 Compliance Management

11.1 Training

All personnel working on site will undergo site induction training relating to waste and resource management issues. The induction training will address elements related to waste and resource management including:

- Relevant and applicable legislation
- Requirements and responsibilities of this plan
- Implementation of the waste hierarchy
- Waste handling requirements and details of the waste streams that are intended for offsite and on site reuse
- Type and location of waste receptacles
- Other specific responsibilities for waste and reuse management.

11.2 Monitoring and Reporting

- Waste generation and disposal activities will be monitored by the site manager.
- Volumes of waste recycled, reused, or sent to landfill will be recorded in a Waste Register (refer Appendix 2).
- Opportunities for improved recycling or reduction will be identified and implemented where practical during construction.
- Any incidents of non-compliance with the Waste Management Plan will be recorded and corrective actions undertaken.

11.3 Evidence of Compliance

Table 6 sets out evidence of compliance with the Waste Management Plan.

Table 6 - Evidence of Compliance

Management Action	Evidence of Compliance
Waste management must comply with the EPA waste hierarchy - waste avoidance, waste re-use, waste recycling, and waste disposal.	Visual inspection Maintain inspection records
Prior to commencement of construction, undertake an assessment of potential wastes to be generated for the construction phase of the project that identifies waste elimination, reduction measures and opportunities for the re-use and recycle of construction waste. This should be presented in a Waste Management Plan.	Waste Management Plan
General waste shall be removed from the construction area by crews.	Waste collection area on site to be identified in WMP.
Surplus or waste materials to be stockpiled at laydown areas for regular collection.	Record of waste collection
Housekeeping shall be maintained to a high standard with adequate supply and change out of skips for large waste and covered bins or enclosed receptacles for small waste and litter.	Visual inspection Maintain inspection records
Toilets must be self-bunded portable blocks. Clearing of portable toilet facilities, including waste collection and disposal, must be undertaken by a licensed waste contractor.	Record of waste collection
Cigarette butts must not be thrown on private property. Appropriate receptacles must be provided and used for cigarette butt disposal.	Pre-start records Visual inspection Maintain inspection records

Management Action	Evidence of Compliance
Clearly labelled general and regulated waste bins must be made available for construction waste. A suitable spill kit must be located adjacent to each regulated waste storage area. An EPA licensed contractor must collect regulated waste for recycling or licensed disposal.	Visual inspection Maintain inspection records; Record of waste collection.
On site waste collection point(s) will be located away from natural drainage systems and flood plains.	Visual inspection; Maintain inspection records.
Records of all waste collection (and tracking where appropriate) must be maintained.	Record of waste collection and transportation.

Appendix 1 - Waste Storage Locations on Site



Appendix 2 - Waste Management Register

[illegible]

Appendix 3 – Waste Management During Decommissioning

Summary

At the end of its operational life, the solar farm will be decommissioned in a manner that prioritises environmental responsibility and maximises resource recovery. The waste management strategy for the decommissioning phase will follow the principles of the waste hierarchy—avoidance, reuse, recycling, and responsible disposal—to minimise the volume of waste sent to landfill.

The plant has an expected operational life of 25 to 30 years, during which advancements in recycling technologies are anticipated.

Key Asset Categories and Waste Management Approaches

Asset	Decommissioning Strategy
Solar Panels	Panels will be assessed for potential reuse, resale, or refurbishment. Non-reusable panels will be sent to licensed PV recycling facilities, in accordance with state and national e-waste guidelines.
Cabling	Copper and aluminium cabling will be recovered and sent to approved metal recyclers. PVC and other sheathing materials will be separated and recycled where facilities exist.
PEG Framing System	Steel framing components will be dismantled and transported to scrap metal recycling facilities.
Footings	Anchoring systems will be removed and the land rehabilitated.
Inverters and Transformers	Manufacturer recommendations should be followed, and units will be removed and assessed for reuse or component recovery. Metals, electronics, and insulating oils (where applicable) will be processed by licensed e-waste or hazardous waste contractors.
Switchgear	Dismantled and segregated into recyclable metals and non-recyclable components, handled in accordance with electrical equipment disposal regulations.
Battery Energy Storage System (BESS)	Manufacturer recommendations should be followed. BESS units will be disconnected and removed by qualified personnel. Batteries will be managed in line with national hazardous waste regulations, with preference for recovery by accredited battery recycling programs.

Additional Measures

Site Clean-Up and Remediation

All above- and below-ground infrastructure will be removed unless otherwise agreed with the landowner. The site will be restored to its pre-construction condition or to an agreed alternative beneficial use.

Waste Tracking and Documentation

All waste materials will be tracked, and appropriate records will be maintained to demonstrate compliance with environmental legislation, including transport and disposal at licensed facilities.

Engagement of Licensed Contractors

All decommissioning activities involving hazardous or regulated waste (e.g., batteries, oils, treated metals) will be undertaken by certified contractors with experience in renewable energy asset decommissioning.

Community and Regulatory Communication

Stakeholders, including local councils and environmental regulators, will be informed of the decommissioning schedule and waste handling procedures to ensure transparency and compliance.

Conclusion

The decommissioning and remediation of the solar farm will return the site to its pre-installation condition, ensuring no long-term environmental degradation or reduction in agricultural productivity. A key objective will be the restoration of soil to a condition suitable for agricultural use. This will be assessed at the time of remediation and may involve measures such as cultivation and the application of soil improvers, including fertilisers, compost, and microbial treatments. The absence of concrete within the PV field will simplify the soil remediation process. Community expectations and social responsibilities will be addressed by prioritising the repurposing and recycling of decommissioned components, in full compliance with applicable regulatory requirements. Where possible, the financial costs associated with decommissioning and site rehabilitation will be offset through the recovery and reuse of valuable materials.