Draft Environmental Management Plan

Contents

8 Draft Environmental Management Plan

8.1 Introduction

This chapter details the commitments and various mitigation measures that are proposed to be implemented during the detailed design, construction, operation, and decommissioning stages of the Project.

The proposed mitigation measures will be contained within detailed Environmental Management Plans (EMPs) prior to commencement of the various activities: construction, operation and decommissioning. The EMPs for construction and operation will be developed during the detailed design stage and in conjunction with the relevant contractors and statutory authorities to ensure that contractors' Construction Methods Statements (CMS) are aligned with EMPs.

A draft decommissioning EMP will also be developed, and then finalised closer to the point of decommissioning. This is intended, given the significant elapsed time between drafting and implementing this activity, to enable any revisions to best practices developed over the intervening period to be incorporated.

8.2 Design Mitigation

Planning and environmental matters have been assessed throughout the development of the Project and are detailed in the preceding Chapter 7: Impact Assessments. The assessments have been undertaken based on methodologies defined in the relevant sections and associated technical appendices, and impacts dealt with following the mitigation hierarchy approach of avoid, reduce, and then compensate or offset.

Where possible the impacts have been addressed by 'designing out' the risk at its source, thereby eliminating the identified potential impact. Where the impact has been reduced by the design changes, but elimination has not been entirely possible, the residual impacts have been considered.

Where potential impacts have already been mitigated through the Project design process or where potential impacts have been assessed as moderate or less no further mitigation measures are proposed. This is the case for the following matters:

- Visual Amenity
- Hydrology
- Noise
- Glare
- Electromagnetic Interference

For other matters, mitigation measures will be addressed and managed through detailed design (post-consent) as described in Section 8.3 or through relevant EMPs as defined in Section 8.4.

8.3 Detailed Construction Design Mitigation

DPEA is seeking development approval for a project "design envelope" with impacts appraised using nominal dimensions within a set of maximum design limits. This approach enables a preliminary (though quite detailed) design to be defined and appraised without the need to undertake other intrusive surveys required to inform the detailed design. It also permits impacts to be assessed prior to the identification and final definition of major equipment, and specific electrical and civils balance of plant contractors. It is normal practice for selected contractors to be integrated into the development of detailed mitigation measures through drafting of CMS's which will also be defined as part of the detailed construction design.

The detailed construction design will be informed by a number of environmental, planning and technical matters identified through the assessment process including, but not limited to the following criteria and considerations:

- Construction to be conducted in accordance with the environmental conditions outlined in the Development Application;
- Construction to be conducted in accordance with the applicable environmental legislation and standards;
- Detail how the environmental features of the site are to be protected during construction;
- Outline measures to monitor and control potential environmental impacts associated with the development that are implemented effectively;
- Provide government, community and other stakeholders with assurance that environmental issues associated with the works are managed appropriately;
- Allocate clear responsibilities for the environmental management at all levels; and
- Optimise construction methods.

8.4 EMP Content and Structure

This section summarises the commitments and various mitigation measures that will be implemented during the construction, operation and decommissioning stages of the Project. These measures are contained within a series of draft EMP`s which themselves form the basis for drafting detailed CMS's.

In addition to the proposed mitigation measures, the EMP`s will also identify and define monitoring programmes (as required) to record and report on the effectiveness of the mitigation and management measures.

The main difference between these plans and the detailed design process is that EMP`s will be live documents; defined as "draft" in this development application and developed throughout the course of the detailed design process. The EMP`s will be updated in conjunction with relevant contractors and statutory authorities as EMP`s will be closely related to contractor's CMS's. As the EMP`s will be subject to review and modification where necessary they will remain live documents until each corresponding phase of the Project is completed.

A series of EMP`s will therefore be implemented at each stage of the Project's life cycle: construction, operation, and decommissioning. The aims and commitments of each EMP is provided in Table 8.1 (construction), Table 8.2 (operation), and Table 8.3 (decommissioning) below.

8.4.1 Construction Environmental Management Plan (CEMP)

The CEMP will include the following specific EMP`s:

- Native Vegetation (including weed and pest control) and Fauna;
- Cultural Heritage;
- Noise;
- Pollution Prevention;
- Traffic and Transport; and
- Fire and Emergency.

8.4.2 Operational Environmental Management Plan (OEMP)

During the operational phase of the Project the EMP`s will evolve towards ongoing monitoring where necessary to ensure that the mitigation measures continue to be effective. Where improvements are required or changes in best practice come into effect, the EMP`s will be modified accordingly.

The following specific EMP`s will form the major part of the OEMP:

- Native Vegetation (including weed and pest control) and Fauna;
- Noise;
- Pollution Prevention;
- Traffic and Transport; and
- Fire and Emergency.

8.4.3 Decommissioning Environmental Management Plan (DEMP)

The DEMP will be developed in conjunction with the detailed decommissioning plan which will define relevant decommissioning method statements. This will be undertaken in consultation with relevant stakeholders and landowners to minimise any potentially adverse effects which may result from the decommissioning phase. The following decommissioning and reinstatement specific EMP`s will form the major part of the DEMP:

- Native Vegetation (including weed and pest control) and Fauna;
- Cultural Heritage;
- Noise;
- Pollution Prevention;
- Traffic and Transport; and
- Fire and Emergency.

8.4.4 Communication and Consultation Programme

A communication and consultation programme will be maintained for the remainder of the development approval process as well as through the pre-construction, construction, operation, and decommissioning phases of the Project. A community and stakeholder consultation plan will be developed and delivered for both the construction and operational phases of the Project. The consultation plans will build on the outcomes of development application process and are intended to minimise impacts of the development on the neighbouring community.

8.5 EMP Implementation

8.5.1 Training

All personnel including staff, employees and contractors will be required to undertake mandatory induction training before commencing work. This will ensure that all personnel are familiar with their responsibilities under the relevant management plans.

8.5.2 Quality, Process Control and Audit

Internal audits will be undertaken during the Project's lifetime. These audits will involve reviewing all environmental documents, records, and monitoring results to ensure compliance with the requirements of legislation, licences, permits, approvals, and the requirements of the EMP`s. If a deficiency is detected, the appropriate corrective action will be taken to rectify the situation.

8.6 Specific Measures - Construction

The environmental management procedures and monitoring requirements of the Project during its construction stage are shown in Table 8.1 below.

Table 8.1: Construction Phase Environmental Management Procedures and Monitoring Requirements

Construction Environmental Management Plan (CEMP)			Reference
Issue	Mitigation Commitment	Monitoring	
Native Vegetation (including Weed and Pest Control) and Fauna Management Plan (NVFMP)			
Permanent Loss	Detailed design required confirming the level of native vegetation clearance for the Project and that any native vegetation approvals and Significant Environmental Benefits (SEB) obligations are met.	Predict losses based on design followed by confirmation post construction.	Ecology
SEB Obligations	All native vegetation within the project area is protected by the *Native Vegetation Act 1991* (SA). Once the extent of vegetation removal is finalised, and if there is a difference from the submitted application (June 2017) an update to the clearance application will be provided to the Native Vegetation Council (NVC) with updated calculations of the required SEB offset.	Programme to be defined in consultation with NVC.	Ecology
Weed & Pest Control	• Procedures based on good working practice and stakeholder guidance will be applied to minimise the spread of weeds and pathogens from transporters and plant delivered to site. • Contractors and transport delivery firms to undergo induction programme to minimise the spread of weeds onto the site. • All plant and transport equipment to be thoroughly cleaned of weeds and pathogens before being allowed on site. • Suitable weed control measures to be implemented on disturbed areas during and after construction to control outbreaks and prevent invasion from neighbouring areas. • Implement appropriate waste management practices to minimise the attraction of pest animals.	Monitoring of weeds and pests to be carried out on a regular basis. Weed and pest control procedures to be checked on a regular basis.	Ecology
Cultural Heritage Management Plan (CHMP)			

Construction Environmental Management Plan (CEMP)			Reference
Issue	Mitigation Commitment	Monitoring	
Protection	Following detailed design undertake a pre-construction walkover survey to determine the potential for further cultural heritage sites to be disturbed.	Verify and mitigate if necessary prior to work commencing.	Cultural Heritage
Protection	All recorded and potential sites identified during walk over surveys will be protected in accordance with the requirements of the South Australian Aboriginal Heritage Act 1988 (AHA) in that sites should not be damaged, disturbed or interfered with without Ministerial approval.	Identified sites to be marked and excluded from any earth works or access by personnel or equipment.	Cultural Heritage
Compliance	Following cultural heritage survey of the final footprint a CHMP to be developed to ensure long term protection of cultural heritage within the Project Site.	General monitoring of effectiveness and review of methodology including site discovery procedure.	Cultural Heritage
Noise Management Plan (NMP)			
Compliance	A Construction Noise and Vibration Management Plan (CNVMP) will be prepared once construction plans are finalised. The CNVMP will also provide the community consultation and complaint assessment processes for the construction phase of the project. The plan will reflect the requirements as defined in accordance with the Environment Protection (Noise) Policy 2007.	General monitoring of effectiveness and compliance.	Noise
Pollution Prevention (including Soil Erosion) Management Plan (PPMP)			
Prevention	Following detailed design and definition of CMS, a PPMP including soil erosion will be developed to detail procedures to: • prevent and manage sediment runoff and erosion; • prevent and manage spills; and • manage the use of fuels and chemical onsite including concrete batching if applicable and general wash down areas.	Regular inspection especially prior to commissioning or during and post periods of heavy rainfall.	Ecology

Construction Environmental Management Plan (CEMP)			Reference
Issue	Mitigation Commitment	Monitoring	
Soil Erosion Prevention	Best practice methodologies will be implemented in the detailed design and CMS to prevent and manage soil erosion due to run off. These practices include: • minimise water crossings and proximity to water courses during detailed design. Ensure suitable crossing designs are provided; • provision of sediment traps and settlement lagoons; • minimise removal of vegetation; • minimise cleared areas especially areas of erodible soil or steep banks; • minimise potential for surface water accumulation; • stabilise earthworks including revegetation and reinstatement as soon as possible; • utilise appropriate erosion control material such as straw bales and matting; • utilise appropriate materials and techniques in settlement lagoons including geotextiles, straw and filter bags. • ensure vehicles utilise site infrastructure tracks and hard standing and avoid unexcavated areas; • locate material stockpiles such as top soil and sand well away from water courses and where appropriate protected by cross drains or bunds; • minimise the spread of dust by minimising excavated areas and “damping down” by use of water spray; and • concrete batching if applicable including wash down to be undertaken away from watercourses and protected by bunds with waste material removed and disposed of offsite.	Confirmation that appropriate best practices have been applied to “as built” features. Regular inspection especially during and following periods of high rainfall.	Ecology & Hazards and Pollution

Construction Environmental Management Plan (CEMP)			Reference
Issue	Mitigation Commitment	Monitoring	
Pollution Prevention	Fuel supply bunding to be applied to fuel storage in accordance with relevant legislation including storage, handling, refuelling and refilling.	Regular inspection to ensure that procedures are being practiced.	Hazards and Pollution
Pollution Prevention	All hydrocarbons and hazardous substances will be transported, stored, handled and disposed of in accordance with AS 1940-2004.	Regular inspection to ensure that procedures are being practiced.	Hazards and Pollution
Pollution Prevention	A spill control procedure to be incorporated into the PPMP and spill kits sited in suitable locations around the site including plant where appropriate.	Regular inspection to ensure that procedures are being practiced and kits have been issued as appropriate.	Hazards and Pollution
Traffic and Transport Management Plan (TTMP)			
Safety	The main contractor will ensure that as a minimum the following practices will be adopted: • signage will be erected on public roads around the site to warn road users of the Project; • all speed limits will be obeyed and construction workers will give way to public road users at all times; • overmass and oversize vehicles will be controlled by the DPTI permitting system including conditions which will be complied with; and • wash down and road sweeping facilities will be located at main exit locations as required to minimise mud deposition on the highways.	Regular inspection of access and exit locations to ensure that procedures are being practiced.	Traffic and Transport
Fire and Emergency Management Plan (FEMP)			
Compliance	In consultation with the Country Fire Service (CFS) a detailed FEMP will be developed by the main contractor. This is to include an emergency response plan for potential fire risk scenarios.	Regular inspection to ensure construction	Hazards and Pollution

Construction Environmental Management Plan (CEMP)			Reference
Issue	Mitigation Commitment	Monitoring	
		activity is in accordance with plan.	
Safety	The FEMP will be structured around good working practices in an area where fire risk is high, these include as a minimum: • smoking will not be permitted on site except in designated smoking areas including vehicle cabs; • fire extinguishers will be provided in all buildings, construction vehicles and plant; • the burning of any materials including waste will be prohibited with waste removed and disposed of by authorised specialists; • all welding and burning operations will be authorised by the Site Manager prior to commencing; • no "hot works" will be carried out on days of total fire ban or during fire danger season unless authorised by the CFS; • on days of catastrophic fire danger essential personnel only will be allowed on site; and • vehicles will only use constructed infrastructure avoiding "off road" driving unless in an emergency situation.	Regular inspection in conjunction with CFS to ensure construction activity is in accordance with plan.	Hazards and Pollution
Responsiveness	In the unlikely event of a fire or other emergency including explosion, severe weather and flooding the Emergency Response Plan will be enforced. Procedures in place will include: • available maps showing access points and tracks; • site personnel will radio or call into the site office to raise the alarm and confirm the location and if possible the cause of the incident; • following raising of the alarm site personnel will attempt to tackle a fire without risk to themselves or colleagues;	Undertake several simulated events in conjunction with CFS to ensure procedures are fit for purpose.	Hazards and Pollution

Construction Environmental Management Plan (CEMP)			Reference
Issue	Mitigation Commitment	Monitoring	
	• access through security gates and locked areas; • 24 hour contact details of allocated site personnel; and • training by CFS to key construction personnel.		

8.7 Specific Measures - Operation

The environmental management procedures and monitoring requirements of the Project during its operation are shown in Table 8.2 below.

Table 8.2: Operational Phase Environmental Management Procedures and Monitoring Requirements

Operational Environmental Management Plan (OEMP)			Reference
Issue	Mitigation Commitment	Monitoring	
Native Vegetation (including Weed and Pest Control) and Fauna Management Plan (NVFMP)			
Compliance	Measures to be undertaken as per CEMP.	Regular inspection to ensure operational activity is in accordance with plan.	Ecology
Weed Control	Measures to be undertaken as per CEMP.	Monitoring of weeds to be carried out on a regular basis.	Ecology
Noise (NMP)			
Prevention	Measures to be undertaken as per NMP.	Regular inspection to ensure operational activity is in accordance with plans.	Noise
Pollution Prevention Management Plan (PPMP)			
Prevention	Measures to be undertaken as per PPMP.	Regular inspection especially during and post periods of heavy rainfall.	Hazards and Pollution
Traffic and Transport Management Plan (TTMP)			
Compliance	Measures to be undertaken as per TTMP.	Operations to ensure that sub-contractors are compliant with provisions and procedures.	Traffic and Transport
Fire and Emergency Management Plan (FEMP)			
Compliance	Measures to be undertaken as per FEMP.	Regular inspection to ensure operational activity is in accordance with plan.	Hazards and Pollution

8.8 Specific Measures - Decommissioning and Reinstatement

The environmental management procedures and monitoring requirements of the Project during its decommissioning stage are shown in Table 8.3 below.

Table 8.3: Decommissioning Phase Environmental Management Procedures and Monitoring Requirements

Decommissioning Environmental Management Plan (DEMP)		
Issue	Mitigation Commitment	Monitoring
Definition	Within eighteen months of the cessation of commercial operation of the Project and following consultation with landowners and relevant stakeholders, a Decommissioning Environmental Plan will be developed. This work will be undertaken unless a prior application for a future development is approved in which case the decommissioning of the proposed Project would form a part of a revised CEMP as some existing infrastructure could form a part of a new consented development.	None.
Definition	Details of the plan are currently undefined but based on current best practice the following major activities would be undertaken: • access tracks may be left in situ subject to the requirements of landowners; • solar PV modules will be removed from site for dismantling; • all surface cabling will be removed for recycling; • underground cable will be ended below surface and left in situ; • all buildings will be removed down to the foundation or concrete pad as required by the landowner; and • all substation equipment will be removed for recycling and the building removed as per the requirements of the landowner.	As defined in DEMP at time of preparation.

Conclusion

Contents

9 Conclusion

DP Energy Australia is proposing to build and operate the Port Augusta Renewable Energy Park Stage 2 project; a renewable energy project consisting of a solar photovoltaic (PV) farm with an installed capacity of up to 500MW(AC), up to 400MW(AC) of battery energy storage via one or more energy storage facility(s), up to 3000MW.s of synchronous condenser capacity via one or more synchronous condenser facilities, and associated infrastructure, to be located approximately 12km east-southeast of the city of Port Augusta, South Australia.

The Project is intended to build on Port Augusta Renewable Energy Park (Stage 1), which was granted development approval in August 2016, in order to expand the scale of the Stage 1 solar PV development and to provide significant electricity storage and network support capability via integrated large-scale battery storage and synchronous condenser capacity.

An illustrative project programme has been provided in order to quantify traffic movements and to enable the development assessment to be undertaken. This programme proposes that the Project will be built in seven phases, with construction activities expected to overlap. The final decision on programme build out will depend on the financing solution adopted for Stage 2 and potentially the procurement of appropriate power purchase agreements (PPA).

The first phase, 100MW of solar PV, is estimated to generate approximately 245GWh (equivalent to approximately 49,000 households) of renewable energy each year contributing towards the National Renewable Energy Target of 33,000GWh by 2020 and South Australian Renewable Energy Target of 50% by 2025.

From a climate change perspective, it is anticipated that the first phase of the Project would displace approximately 120,000 tonnes of greenhouse gas emissions each year.

The Project offers direct and indirect economic benefits to the local, regional and State economy through construction and operation expenditure and employment opportunities throughout the life of the Project. Construction will flow from Stage 1, targeting a continued use of construction workforce from Stage 1 bringing continued benefit to the local community. Employment benefits associated with the first phase of Stage 2 (100MW of Solar PV) include the creation of approximately 300 local/regional full-time equivalent jobs during construction, estimated generation of upwards of 4 full-time equivalent operational jobs over the life of the Project (approximately 25 years); and, indirect economic benefits for local businesses throughout construction and operation through the sourcing of local products, materials and services (such as accommodation, food, fuel, construction supplies and materials). Additionally, Project rental payments support Project landowners through income diversification, a benefit that flows through to the wider community.

Dedicated environmental impact assessments and technical studies have been undertaken of the project as detailed in the proceeding chapters. The assessments undertaken indicate that, with the adoption of proposed mitigation measures, many potential environmental impacts associated with the construction and operation of the Project can be minimised or avoided

altogether. No significant adverse residual impacts are predicted to occur as a result of the Project.

A Development Plan Assessment undertaken by Urban and Rural Planning Solutions (URPS) (provided in Volume 4: Appendix 3.1) concluded that the Project satisfies the relevant provisions of the Development Plans and therefore warrants Development Plan Consent.

Port Augusta Renewable Energy Park Stage 2

Development Application

Volume 3: Figures

December 2017

DP Energy Australia Pty. Ltd. ABN: 16 140 516 196
4 Marshall Rd., Lake Barrine, QLD 4884, Australia
T: +61 (0)7 4095 2877 F: +61 (0)7 4095 2977
Email: australia@dpenergy.com Web: www.dpenergy.com

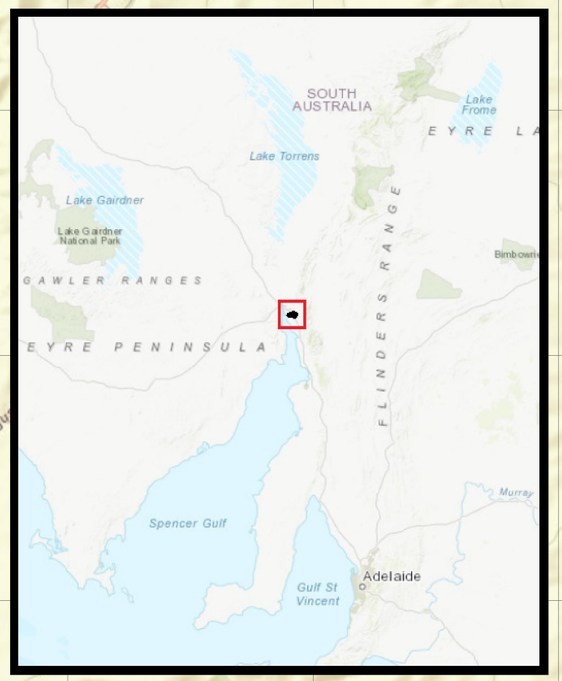
Figures

Port Augusta Renewable Energy Park

Stage 2

Figure V3.01.01

Project Location



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Torkey Crossing Rd
Strart Hwy
Wami Kata
Maybank Rd
Mundallio
Saltia
Quorn-Port Augusta
Tassie St
Carlton Pde
Caroona Rd
Port Augusta
Eyre Hwy
A1
Wakefield Hwy
Port Paterson
Stirling North
B47
Quorn Rd
Commissariat Point
Woolundunga
Winninowie
B56
Main North Rd
Blanche Harbor

0 2.5 5 10 km

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6405000
6400000
6395000
6390000
6385000
6380000

755000 760000 765000 770000 775000 780000 785000 790000

Legend

- Davenport Substation

Project Site

- East Site
- West Site

Ver	Date	Drawn by	Checked	Approved
V1	08/12/2017	AM	LM	DB

Coordinate System
UTM Zone 53 Southern Hemisphere

Size
A3

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Port Augusta Renewable Energy Park

Stage 2

Figure V3.01.02

Project Site

Legend

- Davenport Substation

Project Site

- East Site
- West Site

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V1	08/12/2017	AM	LM	DB

Coordinate System
UTM Zone 53 Southern Hemisphere

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Port Augusta Renewable Energy Park

Stage 2

Figure V3.01.03

Local Government Areas

Legend

- Project Site
- Port Augusta City Council
- District Council of Mount Remarkable
- Flinders Ranges Council

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Coordinate System
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0 0.75 1.5 3 km

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764000 765000 766000 767000 768000 769000 770000 771000 772000 773000 774000 775000 776000

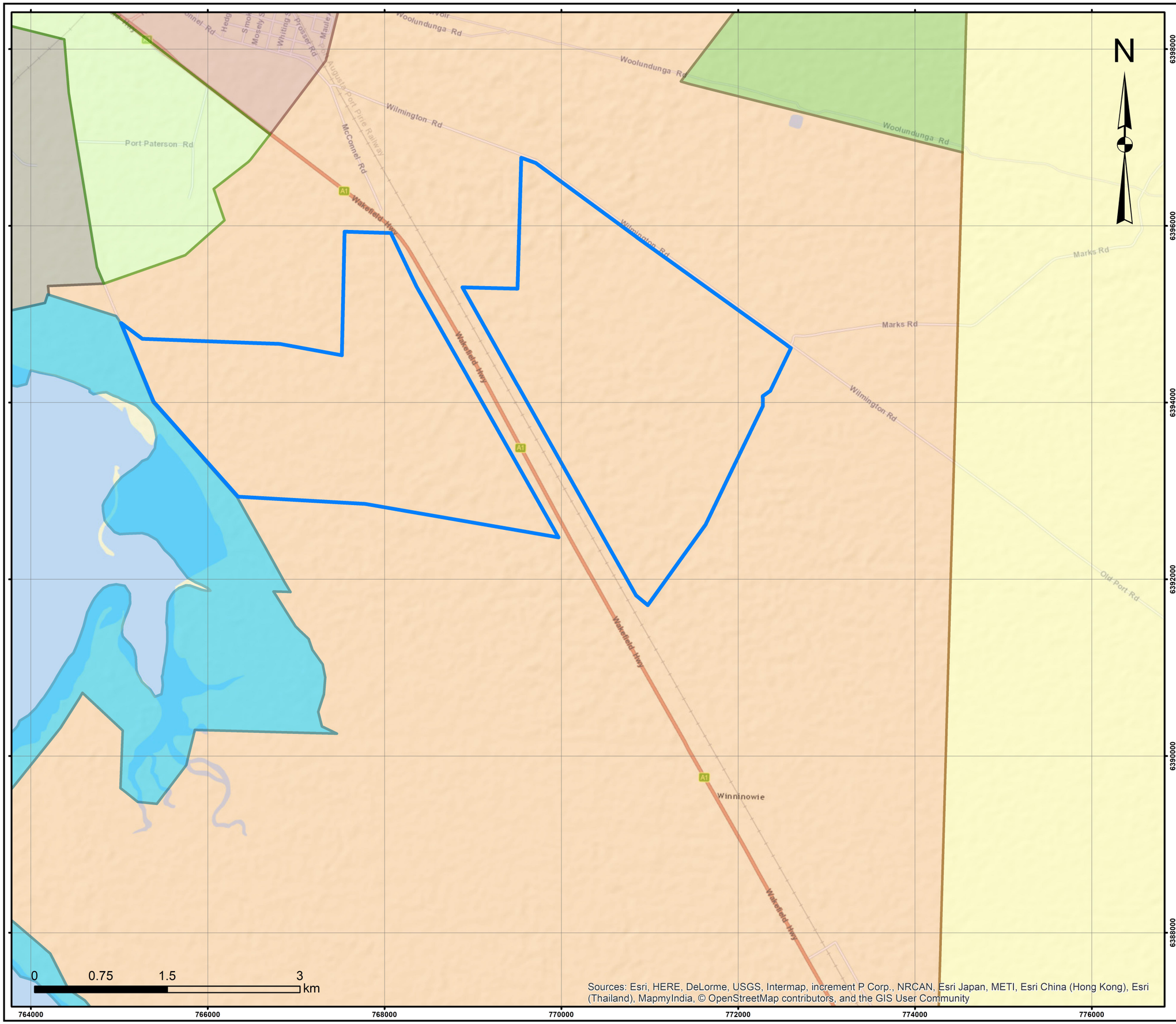
6401000 6400000 6399000 6398000 6397000 6396000 6395000 6394000 6393000 6392000 6391000

Port Augusta Renewable Energy Park

Stage 2

Figure V3.01.04

Council Zones



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Legend

- Project Site
- Primary Production (DCMR)
- Rural Landscape Protection (PACC)
- Primary Industry (PACC)
- Coastal Conservation (PACC)
- Industry (PACC)
- Residential (PACC)
- Rural Living (PACC)

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V1	08/12/2017	AM	LM	DB

Coordinate System
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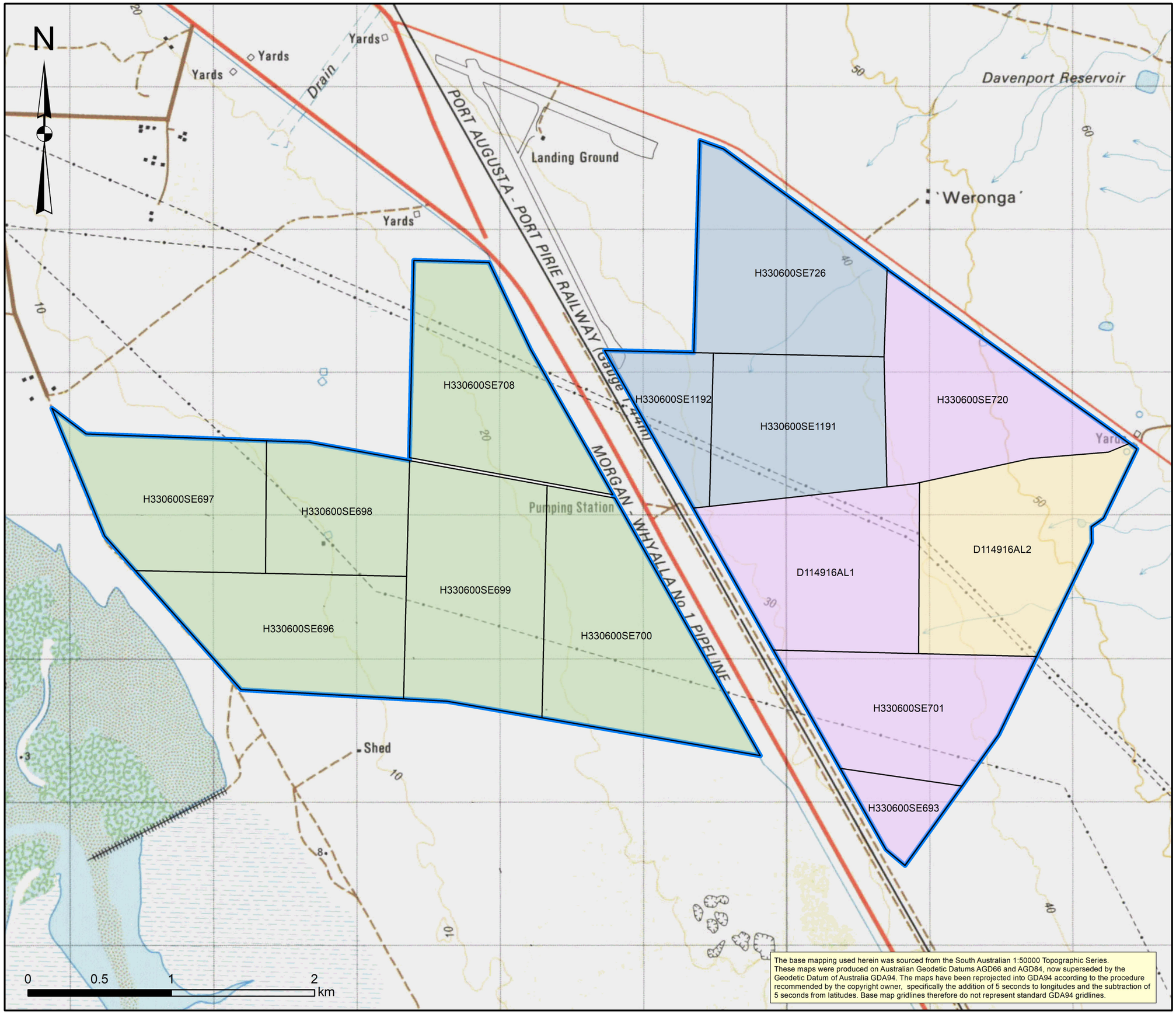
Port Augusta Renewable Energy Park

Stage 2

Figure V3.01.05

Land Titles



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Legend

- Project Site
- Land Parcels
- CT6192/72
- CT6192/71
- CT6077/672
- CT6191/916

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Coordinate System
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Port Augusta Renewable Energy Park

Stage 2

Figure V3.06.01

Unconstrained Project Layout

Legend

- East Site
- West Site
- Electrical/Construction Envelopes
- Electricity Export Envelopes
- Solar Array
- Tracks
- Construction Envelopes
- PV Interconnection Substation (not to scale)
- Site Access

Notes:

LAYOUT INDICATIVE ONLY.
SUBJECT TO DETAILED DESIGN.

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Coordinate System
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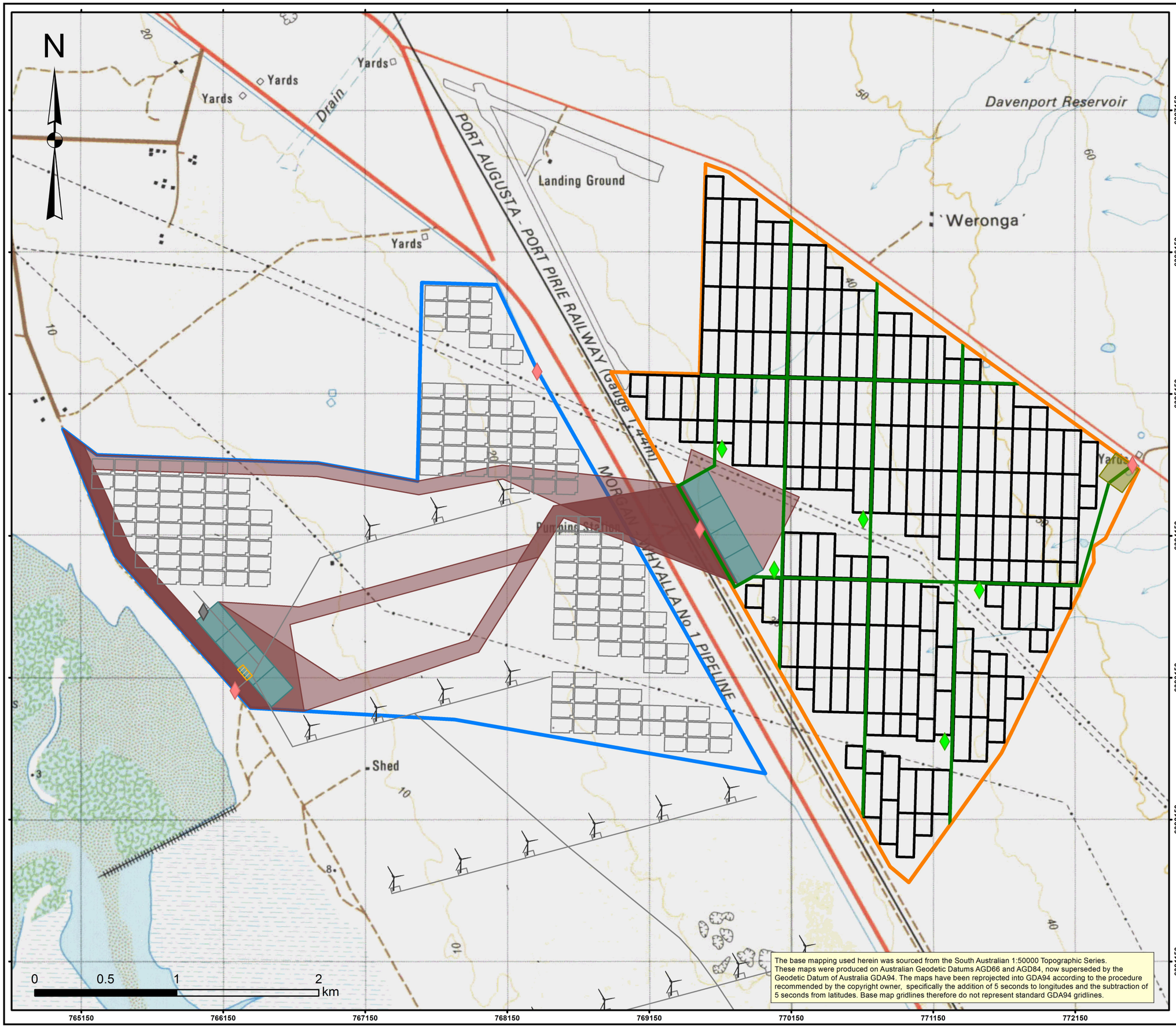
6397150 6396150 6395150 6394150 6393150 6392150 6391150

Port Augusta Renewable Energy Park

Stage 2

Figure V3.06.02

Unconstrained Project Design Layout - Including Stage 1 Infrastructure



Legend

- East Site
- West Site
- Electrical/Construction Envelopes
- Electricity Export Envelopes
- Solar Array
- Tracks
- Construction Envelopes
- PV Interconnection Substation (not to scale)
- Site Access
- Stage 1 Tracks
- Stage 1 Solar Arrays
- Stage 1 Turbines
- Stage 1 MET Masts
- Stage 1 Hardstands
- Stage 1 Substation

Notes:

LAYOUT INDICATIVE ONLY.
SUBJECT TO DETAILED DESIGN.

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