

APPLICATION ON NOTIFICATION - CROWN DEVELOPMENT

Applicant:	SA Water
Development Number:	711/V024/18
Nature of Development:	The construction of solar photovoltaic arrays and associated infrastructure including battery storage equipment at the Morgan Water Treatment Plant
Type of development:	State Agency Development or Public Infrastructure or Electricity Infrastructure
Zone / Policy Area:	Rural Zone (Pastoral Policy Area 15) of the Mid Murray Council Development Plan (Consolidated 23 August 2018)
Subject Land:	94 Go Kart Road and Goyder Highway, Morgan
Contact Officer:	Gabrielle McMahon
Phone Number:	71097056
Start Date:	12 December 2018
Close Date:	10 January 2019

During the notification period, hard copies of the application documentation can be viewed at the Department of Planning, Transport and Infrastructure, Level 5, 50 Flinders Street, Adelaide during normal business hours. Application documentation may also be viewed during normal business hours at the local Council office (if identified on the public notice).

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered, faxed or emailed to the State Commission Assessment Panel (SCAP). A representation form is provided as part of this pdf document.

Any representations received after the close date will not be considered.

Postal Address:

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Street Address:

Development Division Department of Planning, Transport and Infrastructure Level 5, 50 Flinders Street ADELAIDE

Email Address: scapadmin@sa.gov.au

Fax Number: (08) 8303 0753



Government of South Australia

Department of Planning, Transport and Infrastructure

DEVELOPMENT ACT 1993

SECTION 49 - STATE AGENCY DEVELOPMENT

NOTICE OF APPLICATION FOR CONSENT TO DEVELOPMENT

Notice is hereby given that an application has been made by SA Water for the construction of solar photovoltaic arrays and associated infrastructure including battery storage equipment at the Morgan Water Treatment Plant. Development Number: 711/V024/18.

The development site is located within the Morgan Water Treatment Plant, 94 Go Kart Road and Goyder Highway, Morgan (being Section 415 in Hundred Plan 120700. Morgan: CR: Volume 5756 Folio 709.

The subject land is situated within the Rural Zone (Pastoral Policy Area 15) of the Mid Murray Council Development Plan (Consolidated 23 August 2018).

The application may be examined during normal office hours at the office of the State Commission Assessment Panel (SCAP), Level 5, 50 Flinders Street and at the office of the Mid Murray Council (Morgan & Districts Community Hub: Fourth Street, Morgan. Application documentation may also be viewed on the SCAP website http://www.saplanningcommission.sa.gov.au/ scap/public_notices.

Any person or body who desires to do so may make representations concerning the application by notice in writing delivered to the Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide SA 5001 NOT LATER THAN THURSDAY 10 JANUARY 2019. Submissions may also be emailed to: scapreps@sa.gov.au

Each person or body making a representation should state the reason for the representation and whether that person or body wishes to be given the opportunity to appear before the SCAP to further explain the representation.

Submissions may be made available for public inspection.

Should you wish to discuss the application and the public notification procedure please contact Gabrielle McMahon on 7109 7056 or gabrielle.mcmahon@sa.gov.au

Alison Gill SECRETARY STATE COMMISSION ASSESSMENT PANEL

www.sa.gov.au

PN3480 21x2 (63mm)

Adelaide Advertiser, Waikerie River News

12 December 2018

APPROVAL REQUIRED BY 10am FRIDAY 7 DEC

DEVELOPMENT ACT, 1993 S49/S49A – CROWN DEVELOPMENT REPRESENTATION ON APPLICATION

Applicant:			SA Water
711/V027/18			711/V024/18
Nature of De	evelopme	nt:	The construction of solar photovoltaic arrays and associated
			infrastructure including battery storage equipment at the
			Morgan Water Treatment Plant
Zone / Policy	/ Area:		Rural Zone (Pastoral Policy Area 15) of the Mid Murray Council
			Development Plan (Consolidated 23 August 2018)
Subject Land			94 Go Kart Road and Goyder Highway, Morgan
Contact Office Phone Numb			Gabrielle McMahon 71097056
Close Date:	ber:		10 January 2019
Close Date.			10 January 2015
Mv name:			
My phone num			
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		Postal address	:
			Postcode
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be neard by t	ne state (Commission Assessment Pa	ner in support of your submission.
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			e of a company/other organisation affected by the proposal
		[] a private citizen	· · · · · · · · · · · · · · · · · · ·
The address of	f the prop	perty affected is	Postcod e
The specific as	spects of t	the application to which I ma	ake comment on are:
I	[]	wish to be heard in supp	
	[]		in support of my submission
		(Please tick one)	
by	[]	appearing personally	C III .
	[]		e following person :
		(Cross out whichever doe	es not apply)
Date:			Signature:
			Accessment Panel GDO Roy 1915 Adelaide SA 5001 or

scapadmin@sa.gov.au

SECTION 49 & 49A – CROWN DEVELOPMENT DEVELOPMENT APPLICATION FORM

PLEASE USE BL	OCK LETTERS		FOR OFFICE	USE			
COUNCIL:Mid Murray Council		DEVELOPMENT No:					
APPLICANT:SA Water Corporation							
ADDRESS:	_250 Victoria Squa	re, Adelaide SA 5000	DATE RECEIV			/	
CROWN AGENC	Y: _South Australian	Water Corporation			,	,	
CONTACT PERS	ON FOR FURTHER	INFORMATION	☐ Complying		Decision:		
Name: _Lauren N	Nicholson (Aurecon -	on behalf of SA Water)_	Merit				
Telephone: _08 8	8237 9762 [work]	_0478550440 [Ah]					
		[Ah]	Public Notif	ication	Finalised:	/	/
Email:lauren.r	nicholson@aurecong	roup.com					
OTE TO APPLICA							
(1) All sections of this form must be completed. The site of the development must be accurately identified and the nature of the proposal adequately described. If the expected development cost of this Section 49 or Section 49A application exceeds \$100,000 (excl. fit-out) or the development involves the division of land (with the creation of additional allotments) it will be subject to those fees as outlined in Item 1 of Schedule 6 of the <i>Development Regulations 2008</i> . Proposals over \$4 million (excl. fit-out) will be subject to public notification and advertising fees. (2) Three copies of the application should also be provided.			Planning: Land Division: Additional: Minister's Approval	Decision required			Date
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		PMENT:					
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Section No [full/part] _415 Hundred Plan: _120700		00 Vo	olume: _(CR)_	5756 F	Folio:709		
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Number of addition	onal allotments [exclu	ding road and reserve]:	ι	_ease:	YES	□ NO	
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24/10/2018

Dated:

with the Development Act 1993.



24 October 2018

Attention: Ben Williams, DPTI State Commission Assessment Panel GPO Box 1815 ADELAIDE SA 5000

Dear Ben

Development Application – Section 49 (Crown Development) for Solar PV installation at Morgan Water Treatment Plant and Pumping Station No.1

SA Water is seeking Development Approval for the installation of solar PV arrays and associated battery storage facilities along with ancillary equipment within the Morgan Water Treatment Plant and Morgan to Whyalla Pumping Station No.1 ('Morgan WTP and PS.1') land. The proposed works at Morgan WTP and PS.1 form part of the Zero Cost Energy Future project, where Solar Photovoltaic (PV) cells and Battery Energy Storage Systems (BESSs) are planned for installation across SA Water's key sites.

Please find attached copies of the completed development application form and associated supporting documentation. In line with discussions between DPTI personnel and representatives of SA Water on the 14th August 2018, a number of details surrounding the technology type/model specifications and other design and construction items are subject to confirmation by SA Water's construction partner. These details will be provided for consideration by SCAP as part of forthcoming Detailed Designs. Notwithstanding this, the attached supporting documentation has been prepared to the highest level of accuracy possible and reflects 'upper limit estimates' where appropriate.

SA Water has developed a Community and Stakeholder Engagement Strategy to identify key stakeholders and is committed to ensuring a high level of engagement in order to manage expectations, community concerns and any other issues associated with the project. Members of SA Water's Environment and Heritage Services team met with Mid Murray Council Development Services team members on 30th August 2018 to discuss the proposed development at Morgan WTP and PS.1, as well as other identified sites within this council region. Mid Murray Council staff expressed broad ranging support for the project. Continued correspondence between this council and SA Water throughout the Development Assessment process will ensure that any potential concerns can be addressed as efficiently as possible.

SA Water have engaged the services of Aurecon Australia Pty Ltd in order to facilitate the process of obtaining Development Approval for each of the planned Solar PV installations. Should you have any queries in relation to the applications or proposed works please feel free to contact Lauren Nicholson (Aurecon – on behalf of SA Water) on (08) 8237 9762 or lauren.nicholson@aurecongroup.com.

Yours Sincerely,

Lauren Nicholson (Aurecon)

Consultant, Environment and Planning



*For billing purposes, please address all tax invoices (fee requests) as follows:

South Australian Water Corporation Attn: John Hart (Senior Project Manager- Zero Cost Energy Future) 250 Victoria Square GPO Box 1751 ADELAIDE SA 5001

DEVELOPMENT REGULATIONS 2008 Form of Declaration (Schedule 5 clause 2A)



To: State Commission Assessment Panel (SCAP) South Australian Water Corporation (C/- Aurecon From: Australasia Pty Ltd) Date of Application: 24/10/2018 **Location of Proposed Development**: Morgan WTP and PS.1 House No: 94 Lot No: Street: Go Kart Road Town/Suburb: __Morgan Section No (full/part): 415 Hundred: 120700 Volume: CR5756 Folio: 709 **Nature of Proposed Development:** Installation of Solar PV arrays, Battery Storage facilities and associated equipment within the above allotment. Energy generation and storage capabilities for the direct benefit of ongoing water treatment and pumping operations by SA Water. Lauren Nicholson (of Aurecon Australasia) being a person acting on behalf of the applicant (delete the inapplicable statement) for the development described above declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of section 86 of the Electricity Act 1996. I make this declaration under clause 2A(1) of Schedule 5 of the **Development Regulations 2008.** Signed: **Date:** 24/10/2018



Note 1

This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in section 4(1) of the Development Act 1993), other than where the development is limited to –

- a) an internal alteration of a building; or
- b) an alteration to the walls of a building but not so as to alter the shape of the building.

Note 2

The requirements of section 86 of the Electricity Act 1996 do not apply in relation to:

- a) an aerial line and a fence, sign or notice that is less than 2.0 m in height and is not designed for a person to stand on; or
- b) a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3

Section 86 of the Electricity Act 1996 refers to the erection of buildings in proximity to powerlines. The regulations under this Act prescribe minimum safe clearance distances that must be complied with.

Note 4

The majority of applications will not have any powerline issues, as normal residential setbacks often cause the building to comply with the prescribed powerline clearance distances. Buildings/renovations located far away from powerlines, for example towards the back of properties, will usually also comply.

Particular care needs to be taken where high voltage powerlines exist; or where the development:

- is on a major road;
- · commercial/industrial in nature; or
- built to the property boundary.

Note 5

An information brochure: 'Building Safely Near Powerlines' has been prepared by the Technical Regulator to assist applicants and other interested persons.

This brochure is available from council and the Office of the Technical Regulator. The brochure and other relevant information can also be found at **sa.gov.au/energy/powerlinesafety**

Note 6

In cases where applicants have obtained a written approval from the Technical Regulator to build the development specified above in its current form within the prescribed clearance distances, the applicant is able to sign the form.



Template Design: GIS Management. Last updated 22 09 2003 Reference: pr_a3l_standard_v3



Development Application

Morgan WTP and PS.1 Zero Cost Energy Future Solar Photovoltaic Project

Version: 2

Date: 24/10/2018 **Status**: Final

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Document Controls

Version History

Version	Date	Author	Comments	
1.0	27/09/2018	Lauren Nicholson	Draft	
1.2	11/10/2018	Jackie Griggs	SA Water Environment, Land and Heritage comments incorporated	
1.3	16/10/2018	John Hart	SA Water Project Lead sign off	
2	24/10/2018	Lauren Nicholson	Submitted to SCAP for Assessment	

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Executive Summary

Electricity costs comprise a significant operating cost across all SA Water assets.

SA Water has recently developed an Energy Management Framework which includes a range of strategies for reducing operating energy costs. An important component of this framework is energy generation via the use of solar panels and associated energy storage, installed at key SA Water sites around South Australia.

This report contains a description of the proposed installation of solar PV cells and associated works within the boundary of the Morgan Water Treatment Plant and Morgan to Whyalla Pumping Station (PS) No.1 site; herein described as 'Morgan WTP and PS.1'. This is accompanied by a summary of the relevant planning considerations and the potential impacts and associated management and mitigation measures to support the development assessment process.

1 Introduction

1.1 Project overview

Electricity costs comprise a significant operating cost across all SA Water assets. Recent increases in the cost of electricity present a risk for SA Water with impacts on SA Water's operating budget and the associated cost of service provision to SA Water customers. Currently SA Water is a wholesale (spot) market participant and as such is exposed to spot market price risk. The electricity price risk is mitigated through SA Water's own power generation, curtailment of consumption and other hedging strategies.

SA Water has recently developed an Energy Management Framework which includes a range of strategies for reducing operational energy costs. A key component of this overarching framework is the installation of solar Photovoltaic (PV) cells and Battery Energy Storage Systems (BESSs) across a number of SA Water's sites with greatest energy needs to facilitate their operations.

The proposed installation of solar PV cells and BESSs at key SA Water operating sites, such as the Morgan WTP and PS.1 site, will immediately reduce the operating energy costs for the site and reduce exposure to increases in electricity costs. Importantly, the generating capacity of the proposed solar PV cells is to be balanced against the provision of a BESS to ensure electrical stability is maintained and to allow greater security and reliability for the continued supply of power to the site.

The works and activities contributing to the proposed installation of solar PV cells and BESSs across key SA Water sites is being completed under the project banner of Zero Cost Energy Future. SA Water have identified several sites within the Mid-Murray Council area that are being considered for the installation of solar PV cells and associated infrastructure. Components within each respective Development Application for these installations will be largely consistent across the broader project, while other details will be more site specific. Accordingly, visual distinction has been made through report formatting (blue background for selected pages) to more clearly identify the site specific information within each planning report lodged as supporting information to these applications. This has been applied in order to assist the State Commission Assessment Panel (SCAP), local Councils and other referral bodies in the assessment process for subsequent applications.

1.2 Proponent

The proponent for the project is SA Water, which is a government enterprise, wholly-owned by the Government of South Australia, and established by the proclamation of the South Australian Water Corporation Act 1994 on 1 July 1995.

SA Water has engaged the services of Aurecon Australasia Pty Ltd in order to manage the process of obtaining all required approvals for the construction and ongoing use of land for the proposed development herein described within this report.

The primary point of contact for any and all correspondence relating to this development application is listed below:

Ms Lauren Nicholson Town Planner Aurecon (on behalf of SA Water)

Ph: 08 8237 9762

Email: Lauren. Nicholson@aurecongroup.com

The primary point of contact for all applicable project finance matters, including the issuing of invoices, is listed below:

Mr. John Hart Senior Project Manager- Zero Cost Energy Future SA Water

Ph: 0436 682 042

Email: John.Hart@sawater.com.au

1.3 Approval Pathway

Section 32 of the *Development Act 1993* states that any Acts or Activities defined as development (for example; a change in the use of land, building work, or land division) can only be undertaken with a development approval. State Government activities are subject to the approval processes set out under Section 49 of the Act (Crown Development and Public Infrastructure). This project is being submitted for assessment and approval in accordance with Section 49 of the Act.

1.4 Project Timing

The proposed timing for the installation of the photovoltaic panels at the site is currently being finalised, but will follow the following high level plan;

Tender Review & award: October 2018Detailed Design: January 2019

• Solar PV Installation and Connection: May-September 2019

Site Acceptance Tests/Panels Operational: October 2019

Battery Energy Storage Systems (BESS) installation, connection & commissioning:

December 2019

2 Project Site

2.1 Site location and details

Background: Morgan to Whyalla Pumping Site No. 1

The existing SA Water site which is the subject of this development application comprises the Morgan Water Treatment Plant (WTP) which was commissioned in 1986 and services the Morgan Whyalla (MW) pipeline, with this site being the first of a number of Pump Stations (PS) positioned along the pipeline. The plant has a capacity of 200ML/day and provides drinking water to approximately 130,000 people.

Morgan WTP draws raw water directly from the River Murray to supply reticulated water to upper Spencer Gulf communities of Whyalla, Port Pirie and Port Augusta via the Morgan-Whyalla Pipeline. Water is also supplied to Clare, Burra, Jamestown, Peterborough, Wallaroo and Iron Knob.

The site spans approximately 96 hectares and include the WTP and Pump Station compound (encompassing both the Morgan WTP and the Morgan-Whyalla Pump Station No.1) south of Goyder Highway, the sludge lagoons on the northern side and native chenopod shrublands surrounding the sludge lagoons (parcel 415) and eastern side of the WTP and pump station compound.

In 2010 SA Water held negotiations with the Mid-Murray Council to acquire additional land (parcel 415) for the construction of extra sludge lagoons adjacent to the existing lagoons. The area was fenced and placed under nominal management by SA Water until land purchase and title ownership details were being finalised. This transfer has since been finalised and the land is now under the management of SA Water.

The operational areas within the WTP and pump station compound are contained entirely by two metre high chain mesh fencing. A similar fence is also in place around the sludge lagoons. The remainder of the site is bounded by standard stock fencing.

Figures 1 and 2, on the following page, provide further detail of the spatial extent of the Morgan WTP and PS.1 site, as well as the existing use of land across the site.

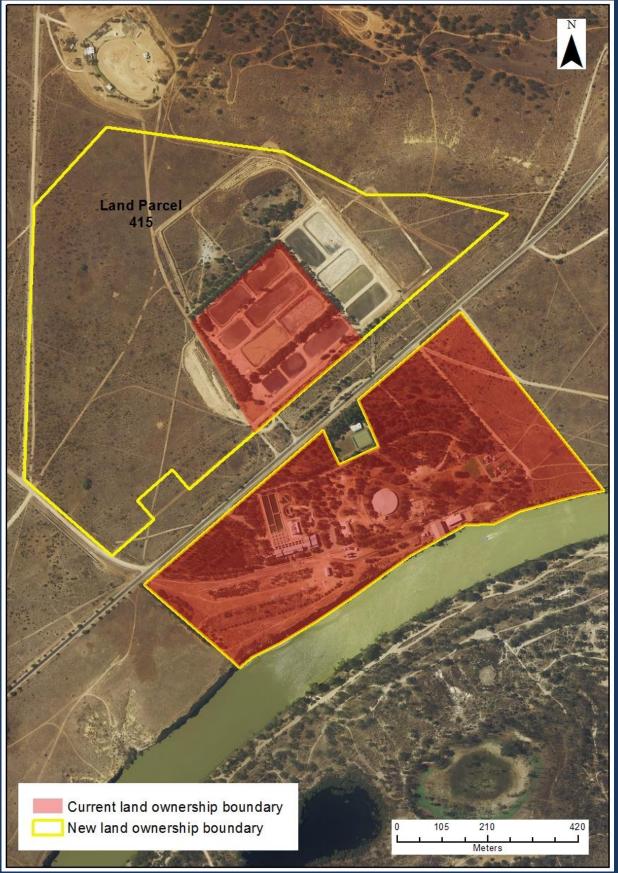


Figure 1. Morgan WTP and PS.1 – Land Cadastre (original and additional parcel extents). Base image source: Location SA Map Viewer, http://location.sa.gov.au/viewer/#



Figure 2. Morgan WTP and PS.1 – Existing use of land / site operations. Base image source: Location SA Map Viewer, http://location.sa.gov.au/viewer/#

Surrounding Land Uses

The existing Morgan WTP and PS.1 site is located approximately 2km northeast from the Morgan Township, adjacent to the northwest bend of the River Murray, and is situated within generally flat, rural character landscape. To the south of Morgan WTP and PS.1 lies the Morgan Conservation Park, situated along the eastern bank of the River Murray and at lower elevation to the subject site. Land to the north of Morgan WTP and PS.1 predominatly comprises large rural allotments supporting very little development, with the exception of the Go-Kart track to the immediate north of the subject land. Further to the east lies the Morgan Cadell Golf Club grounds, located approximately 900m to the northeast. Additionally, a further recreational land use (Lawn Bowles Club) is positioned to the south of Goyder Highway, enveloped on all other sides by the southern portion of the Morgan WTP and PS.1 site and visually separated by mature pine trees.

Residential land uses are predominantly limited to those within the Morgan Township, with scattered residences in the surrounding locality existing in association with larger rural-residential allotments. The nearest existing residences to the Morgan WTP and PS.1 site are positioned along Riverview Terrace, approximately 250m southwest from the nearest measured point along the site boundary. Views from these nearest residences are well screened by existing vegetation surrounding the respective dwellings, and by that which exists within the Morgan WTP and PS.1 land.

Figure 3, below, locates the Morgan WTP and PS.1 land within the surrounding locality and identifies surrounding land uses.



Figure 3. Morgan PS1 and surrounding land uses. Indicative boundary line shown (for illustrative purposes only). Base image source: Location SA Map Viewer, http://location.sa.gov.au/viewer/#

Subject Area

The western-most portion of the Morgan WTP and PS.1 land has been identified as the preferred positioning of the proposed development, comprising solar PV arrays and associated infrastructure. This land does not currently form part of site operations and is presently vacant of associated built form and structures. Additionally, this land does not form part of future upgrade/ expansion plans. The area of land intended to house the proposed development is identified within Figure 4, below.



Figure 4. Proposed area for development (blue shading) within Morgan WTP and PS.1 land (excerpt from Site Plans). Base image source: Location SA Map Viewer, http://location.sa.gov.au/viewer/#

The proposed development will be entirely contained within the land parcel formally described as Section 415, Hundred Plan 120700 within Certificate of Title Volume 5756, Folio 709 (see Appendix A-Certificate of Title). As briefly outlined within former sections of this report, this land parcel was originally an undeveloped reserve under ownership of the Mid-Murray Council and has since been subject of a land transfer to SA Water ownership.

Site photos taken from various points within Morgan WTP and PS.1 land and surrounds assist in understanding the existing landscape, as shown within Figures 5-7, below. An aerial image appears inset within the top left hand corner of each image to assist with the readers orientation.

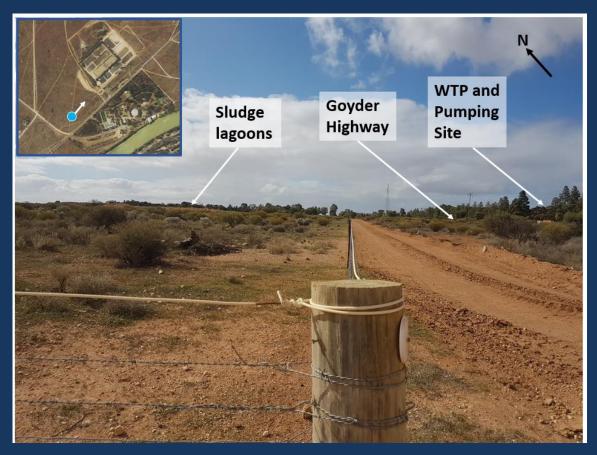


Figure 5. Morgan WTP and PS.1 site photo- facing northeast, looking towards existing sludge lagoons and showing existing vegetation buffer along Goyder Highway.

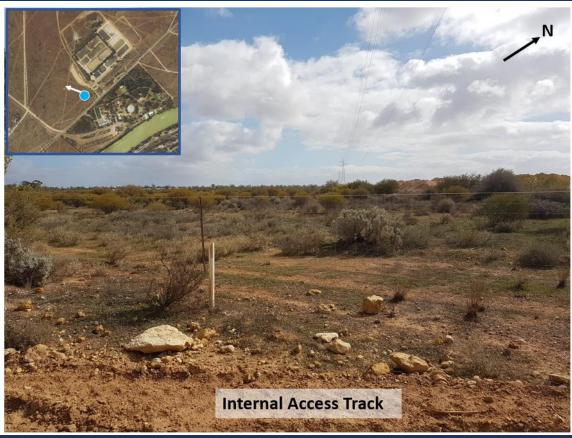


Figure 6. Morgan WTP and PS.1 site photo- facing northwest, standing at south-eastern perimeter of 'Area 1' (see site plans). Existing soil stockpile is visible beyond foreground vegetation (right hand side of image).



Figure 7. Morgan WTP and PS.1 site photo- facing northwest, standing along Ring Road at south-western corner of 'Area 1'. Nearest residence is positioned behind the taller cluster of trees, pictured to the left hand side.

Existing Vegetation

The area intended for development comprises two distinct native vegetation associations, as identified through site investigations undertaken by a native vegetation consultant and illustrated within Figure 8, below. The first of these vegetation associations (shown in pink shading) comprises open shrubland which is significantly degraded, while the second association (shown in purple shading) is described as exhibiting generally greater biodiversity value.



Figure 8. Existing native vegetation (two distinct associations) - shown alongside proposed development area (excerpt from Consultant Report and Site Plans).

The clearance of existing native vegetation for the purposes of this development will be subject to the granting of a clearance permit by the Native Vegetation Council, in accordance with the Native Vegetation Act, 1991. SA Water are currently determining the total extent of vegetation clearance required, pending finalisation of detailed designs. The proposed development will seek an appropriate design and site positioning in order to minimise the overall clearance of vegetation required, particularly those areas within Vegetation Association 2. Where the clearance of existing native vegetation is required, this will be appropriately offset in accordance with the Native Vegetation Regulations 2017. As this project forms part of a comprehensive program of works that involves multiple sites across South Australia, SA Water proposes to pursue a suite of regionally based on-ground offsets through the establishment, regeneration or maintenance of native vegetation. This will aim to generate a net environmental gain to compensate for the residual impact of the infrastructure on a region-by-region basis. This program of offsets will be developed in consultation with the Native Vegetation Unit of the Department for Environment and Water, and will aim to tailor the offset activity on a regional basis so to address the affected matter associated with local clearances and/or address a regional conservation priority if relevant.

2.2 Land Use Zoning

Morgan WTP and PS.1 is positioned across two separate zones, with Goyder Highway marking the division of these two zones. The northerly portion lies within the Rural Zone (Pastoral Policy Area 15), while the southerly portion lies within the River Murray Zone (Floodplain Policy Area 8), in accordance with the Mid Murray Council Development Plan (consolidated 23 August 2018). Much of the surrounding rural landscape outside of the Morgan Township falls within these two zones, with the exception of land to the southwest of the subject land that is zoned Conservation. The proposed development will be largely contained to the northern portion of the Morgan WTP and PS.1, within the Rural Zone.

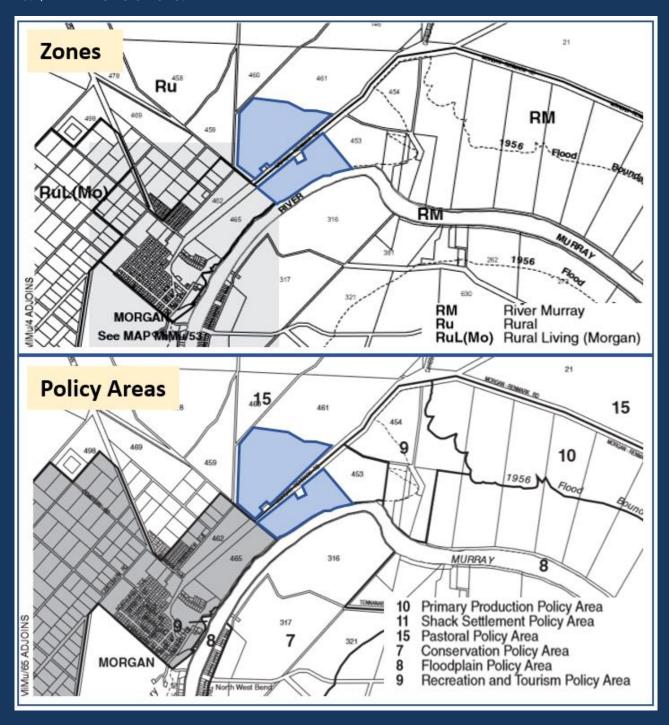


Figure 9. Zoning in relation to proposed Solar PV Site (perimeter outline shown in blue- indicative only). Base image source: Mid Murray Council Development Plan (consolidated 23 August 2018).

3 Proposed Development

3.1 Description of Proposal

The proposed development of a ground-mounted solar generation plant involves the below components;

- Approximately 40,320 indivual solar PV cells, each measuring approximately 1900mm long x 992mm wide and 50mm thick (Note: final panel size and configuration will be subject to detailed design and panel supplier selection processes);
- Associated Single Access Tracking (SAT) framework for the solar panels (indicative framework design illustrated in Figure 10);
- Approximately seven (7) Power Conversion Stations (PCSs), installed within shipping containers (or similar) for weather proofing;
- Battery Energy Storage Systems (BESS) equipment (model speficifications to be confirmed by construction partner);
- Associated groundworks and levelling, including the provision of a lay-down area for construction;
- Electrical cabling, installed via underground trenching;
- Surface upgrades to existing access tracks to ensure all-weather access;
- Upgrades to existing security fencing (where required).

The exact number of solar panels and power conversion stations will be determined upon confirmation of the technology type to be utilised at this site. This factor is subject to confirmation by the construction partner, with further information able to be provided within forthcoming detailed designs.

In total, the proposal requires approximately 25.4 hectares of land for the installation of solar PV arrays and associated infrastructure at Morgan WTP and PS.1.

Individual solar panels are installed on tracking tables, which are aligned with an axis in a North-South orientation, with a tracking range of +/- 55° in an East-West direction (pending confirmation of technology type). An indicative maximum height of 3.8 metres from ground level to the top of the solar panels (when positioned at the highest angle) is provided within the attached plans (Appendix B- Design Drawings. NB: details to be confirmed within final designs).

The positioning of the proposed solar arrays will incorporate sufficient setback from each of the property boundaries to allow for the free-movement of vehicles associated with ongoing maintenance as well as with the continued operations at Morgan WTP and PS.1. An approximate setback distance of 10 metres from all allotment perimeters has been included within the attached site plans. Appropriate setbacks of approximately 30m have also been provided from the existing High Voltage overhead powerlines.

The actual panel size and weight will be determined by the successful contractor and the panels selected by them. The installation of the required solar PV panels will be fully engineered to ensure that the panel frames can withstand all loading, including wind loading.

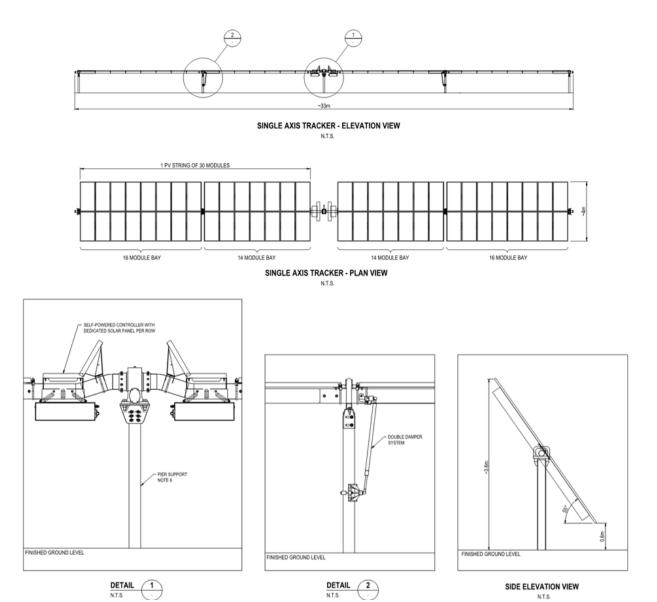


Figure 10. Typical Ground-mounted, Single Access Tracking (SAT) Solar Panel Layout (see Appendix B- Design Drawings for greater detail)



Figure 11. Typical Ground-mounted Solar Panel Layout



Figure 12. Typical Ground-mounted Solar Panel Layout

3.2 Environmental management

A preliminary Project Environmental Management Plan (PEMP) is included in Appendix D. The plan addresses the potential environment and heritage impacts associated with key construction activities and outlines the minimum controls and monitoring responsibilities to ensure compliance with the requirements of the project environmental controls.

The successful contractor will be required to review, refine and adopt this PEMP prior to the commencement of site works. SA Water's Environmental and Heritage Services team will monitor compliance with the PEMP throughout the life of the project through regular surveillance, site visits and environmental audits.

3.3 Site works and Construction

The expected site works will include:

- Earthworks including minor levelling works as preparation for panel installation.
- Trenching/ installation of new High-voltage and Low-voltage electrical cabling. This may
 consist of both aboveground (i.e within cable support systems) and underground cable
 routes.
- Site works will include installation of the framework to support the panel arrays, with a layout, height and configuration similar to that shown in Figure 10 above.
- The earth works will include drainage works to manage stormwater run-off, with some upgrades to the existing drainage network potentially required.
- Upgrades will be required of SA Water's electrical infrastructure to facilitate connecting the array to a High Voltage (HV) switchboard.
- All construction work and equipment installation at the site will take approximately 20 weeks. This includes commissioning of the solar plant, which involves connection and testing works. The BESS will be installed post procurement and will take approximately 8 weeks to be installed and tested.

An upgrade to SA Water's security systems are being investigated. Where it is identified that security fencing will be required (additional to that presently in situ), this information will be included within the final Detailed Designs.

3.4 Stakeholder engagement

SA Water has developed a community and stakeholder engagement strategy to identify key stakeholders, potential project impacts and highlight key messages for communication. SA Water will seek to secure stakeholders' understanding of the need for the project, the expected timing and the construction methodology.

SA Water is committed to ensuring a high level of stakeholder engagement in order to manage expectations, concerns and any other stakeholder issues associated with the project.

The proposed construction work for the broader project will cause temporary disturbances to surrounding residents. The Stakeholder Engagement Team will ensure that consultation is ongoing throughout design and construction to minimise any impacts.

In the case of Morgan WTP and PS.1, the level of disturbance is expected to be minimal given the appropriate separation of the subject land from the nearest residential areas.

The SA Water Stakeholder Engagement Team will monitor the progress and effectiveness of the stakeholder engagement strategy and provide regular reports to the Project Manager on issues and opportunities identified through the stakeholder engagement process.

Members of SA Waters Environmental and Heritage Services team, along with an Aurecon representative, met with Mid Murray Council staff on 30th August 2018 to discuss the proposed development at Morgan WTP and PS.1, as well as the role this site plays within SA Waters' Zero Cost Energy Future . A number of additional SA Water sites within the Mid Murray Council region were also identified as forming part of SA Waters' Zero Cost Energy Future project. Through these discussions, Mid Murray Council staff expressed in-principle support for the proposal and broader project objectives. Continued correspondence between Aurecon (on behalf of SA Water) will be maintained throughout the development process to ensure Mid Murray Council are made aware of any important milestones, and so that we can more readily address any items raised by Council staff.

4 Planning Assessment

The site of the proposed development is located within the Mid Murray Council area, accordingly the Mid Murray Council Development Plan (consolidated 23 August 2018) is the relevant Development Plan. As delineated within the Development Plan, the proposal lies wholly within the Rural Zone and Pastoral Policy Area 15.

Within the table below, the objectives and principles of development control considered to be relevant to the assessment of the proposed development are listed. These reflect items within the General Section of the Development Plan, as well as those appearing within the relevant Zone and Policy Area provisions.

Table 1. Relevant Development Plan Provisions

Council Wide				
	Objectives	Principles of Development Control		
Form of Development	1,7	1		
Movement of People and Goods	15, 16	41		
Public Utilities	17	44, 45		
Appearance of Land and Buildings	18, 19	61, 63, 67, 68, 72, 76, 77		
Interface Between Land Uses	25	85, 86, 87		
Rural Development	51, 52			
Siting and Visibility	54	162, 163, 166, 168		
Natural Resources	55, 58, 59, 60, 62, 64, 67, 68	170, 171, 200, 205		
Energy Efficiency	75	224		
Hazards	91, 92	377, 378		
Bushfire Protection	101, 102	394, 397		
Renewable Energy	103, 104, 105	401		
Noise		92		
Flooding		218		

Zone Specific			
Rural Zone	Objectives	3, 5, 6, 21, 22, 23	
	Principles of Development Control	1, 2, 18, 20	
Pastoral Policy Area 15	Principles of Development Control	1	

4.1 Form, Appearance, Siting and Visibility

The proposal will utilise design elements contributing to a coordinated appearance typical to solar PV installations. These elements include; relatively low heights maintained by the panels (approximately 3.8 metres at highest positioning), consistent orientation of and spacing between 'strings', or rows, as well as the careful positioning of associated equipment (such as battery facilities and power conversion stations) to ensure that a high visual standard of development is achieved.

The proposed development is well separated from surrounding sensitive land uses, is appropriately located within proximity to existing semi-industrial uses (water treatment plant/ pumping station) and utilises existing vegetation within the broader locality to minimise the potential for visual impact. Views towards the proposed development from areas of recreation/ scenic value are restricted by variable terrain and physical separation, such as from the lower Morgan Conservation Park or the Go-Kart track and Morgan-Cadell Golf Club grounds. An existing vegetation buffer which runs parallel to Goyder Highway, designated as a Major Local Road within Structure Plan Map MiMu/1 (Overlay 1) of the Mid Murray Council Development Plan, will assist with screening the views of passing motorists. The potential for visual impact to motorists travelling along Goyder Highway is further minimised through the off-centre orientation of the proposed solar PV 'strings' in relation to this roadway, reducing opportunities for direct views and glare.

Accordingly, the proposal is considered to be broadly consistent with the below Development Plan provisions;

Form of Development

Objective 1: Orderly development with the economic extension of services and facilities in accordance with Structure Plan for the District Map MiMu/1 (Overlay 2).

Objective 7: Development safe from natural or man-made hazards and to be compatible with land capability.

Principles of Development Control

1 Orderly Development in accordance with the Structure Plan Maps MiMu/1 (Overlay 1) and Enlargements A to M and MiMu/1 (Overlay 2).

Appearance of Land and Buildings

Objective 18: Amenity of localities not impaired by the appearance of land, buildings and structures including landscape.

Objective 19: Development of a high architectural standard that responds to and reinforces positive aspects of the local environment and built form.

General Design and Appearance

Principles of Development Control

- **61** Building form should not unreasonably restrict existing views available from neighbouring properties and public spaces.
- **63** The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare to neighbouring properties, drivers or cyclists.
- **67** Buildings, landscaping, paving and signage should have a coordinated appearance that maintains and enhances the visual attractiveness of the locality.

- 68 Development should be landscaped in a manner that:
 - (a) visually screens unattractive buildings and enhances desirable views;
 - (b) screens car parking areas from pedestrian areas;
 - (c) provides shade, and softens the effect of large areas of paved surface;
 - (d) enhances privacy;
 - (e) creates a buffer between incompatible development; and
 - (f) integrates the elements of streetscape.
- **72** Trees, other vegetation and earth mounding should be retained or provided as part of the development where the environment will be visually improved by such a provision.
- 76 Development should take place in a manner which will minimise alteration to the existing land form.
- 77 Excavation and earthworks should take place in a manner that is not extensively visible from surrounding localities.

Siting and Visibility

Objective 54: Protection of scenically attractive areas, particularly natural, rural and riverine landscapes.

Principles of Development Control

- **162** Development should be sited and designed to minimise its visual impact on:
 - (a) the natural, rural or heritage character of the area;
 - (b) areas of high visual or scenic value, particularly rural areas, the natural character of the Mount Lofty Ranges and its skyline, and riverine areas;
 - (c) views from the River Murray, public reserves, tourist routes, walking trails and scenic routes that are identified in Map MiMu/1 (Overlay 2).
- 163 Buildings should be sited in unobtrusive locations and, in particular, should:
 - (a) be grouped together; and
 - (b) where possible be located in such a way as to be screened by existing vegetation when viewed from public roads and especially the River Murray.
- **166** The nature of external surface materials of buildings should not detract from the visual character and amenity of the landscape.
- **168** Driveways and access tracks should be designed and surfaced to blend sympathetically with the landscape and to minimise interference with natural vegetation and landforms.

4.2 Transport, Access and Public Utilities

The proposed development has been appropriately sited and designed to ensure that existing infrastructure is utilised wherever possible. This includes the use of existing access arrangements and internal movement systems, as well as the existing electrical sub-station within Morgan WTP and PS.1. The proposed solar PV array positioning ensures adequate separation from existing utility easments to avoid the potential for impact upon these, as well as allowing for the continued use of this land in the treatment and pumping of water.

The existing access arrangement for Morgan WTP and PS.1, where vehicle entry into the northern land parcel is available via the existing entry gates off Goyder Highway, will be utilised throughout the construction of the solar PV arrays and associated infrastructure. Ongoing access throughout the life of the solar infrastructure will be limited to any required maintenance/ replacement or cleaning of the panels and other equipment and is expected to be of relatively low frequency.

Some minor upgrades to existing internal gateways and access tracks within the Morgan WTP and PS.1 land may be required to allow for safe access and movement through the site, particularly for

larger vehicles associated with construction. This information will be provided as part of the Detailed Designs, once confirmed by SA Waters' construction partners.

Accordingly, the proposal is considered to be broadly consistent with the below Development Plan provisions;

Movement of People and Goods

Objective 15: Provision of a system of scenic routes serving the district and their protection from inappropriate development

Objective 16: Free flow of traffic on roads by minimising interference from adjoining development.

Principles of Development Control

- 41 Driveways, access tracks and parking areas should:
 - (a) follow the natural contours of the land;
 - (b) follow the geometric pattern of plantings;
 - (c) be designed and constructed with a minimum amount of excavation and/or fill;
 - (d) be designed and constructed to minimise the potential for erosion from run-off; and
 - (e) not involve the removal of existing vegetation.

Public Utilities

Objective 17: New development serviced with adequate public infrastructure commensurate with projected demands at the cost of the proponent.

Public Utilities and Servicing

Principles of Development Control

- **44** Provision and maintenance of utility services and easements should be undertaken in such a way that any existing or potentially adverse visual or environmental effects are minimised.
- 45 Infrastructure required for development should:
 - (a) be able to be economically provided;
 - (b) be of a sufficient standard, design and capacity to accommodate the proposed development;
 - (c) not have a detrimental impact on the environment qualities and the amenity of the area;
 - (d) not necessitate the removal of native vegetation;
 - (e) not increase the level of risk to public health;
 - (f) be provided at full cost to the developer without public subsidy;
 - (g) not compromise the level of service to other existing users;
 - (h) not be at risk of damage by flood waters; and
 - (i) not materially affect places of heritage value identified in Table MiMu/6 State Heritage Places and Table MiMu/7 Local Heritage Places.

4.3 Natural Resources

As outlined previously, the proposed development will require the clearing of existing native vegetation to allow for the installation of solar PV arrays and associated infrastructure. Much of the area likely to require clearance is understood to generally comprise degraded vegatation, as identified through site investigations by a vegetation consultant engaged for the purposes of this project. The total area required to be cleared is dependant upon confrmation of key design aspects, such as the solar technology type (i.e. Single Access Tracking, Fixed Tilt or High Density arrays), to be confirmed by SA Waters construction partner.

The project will seek to minimise the clearance of native vegetation by utilising existing vehicle access tracks where possible, retaining any vegetation present in a 10m buffer around the site boundary and designing solar panel layout to maximise the amount placed in areas of poorer quality vegetation over higher quality vegetation. Where possible within the site, low species of vegetation and groundcovers will be retained, and this will also provide soil stability. As this project is part of a comprehensive program of works that involves sites all around the state of South Australia, SA Water propose to achieve a suite of regionally based on-ground offsets, through the establishment, regeneration or maintenance of native vegetation that will have a significant environmental benefit that outweighs that removed for solar panel infrastructure at each site within the region. This program of offsets will be developed in consultation with the Native Vegetation Unit of the Department for Environment and Water. A draft plan is currently being developed by SA Water, and will be informed by the types of vegetation removed and the amount of offset required in this region.

The proposed installation of solar PV arrays and associated infrastructure within the Morgan WTP and PS.1 land will require realtively limited alteration to the existing landform by way of earthworks as the site is already largely flat with little variation across the terrain. Development will seek to minimise the introduction of impermeable surfaces in order to protect natural ecological systems and preserve existing site hydrology with respect to the movement of surface waters across the land in high rainfall events.

Given these considerations, the proposal is considered to be broadly consistent with the below Development Plan provisions;

Natural Resources

- Objective 55: Retention, protection and restoration of the natural resources and environment.
- Objective 58: Natural hydrological systems and environmental flows reinstated, and maintained and enhanced.
- **Objective 59:** Development consistent with the principles of water sensitive design.
- Objective 60: Development sited and designed to:
 - (a) protect natural ecological systems;
 - (b) achieve the sustainable use of water;
 - (c) protect water quality, including receiving waters;
 - (d) reduce runoff and peak flows and prevent the risk of downstream flooding;
 - (e) minimise demand on reticulated water supplies;
 - (f) maximise the harvest and use of stormwater;
 - (g) protect stormwater from pollution sources.
- **Objective 62:** Native flora, fauna and ecosystems protected, retained, conserved and restored.
- Objective 64: Minimal disturbance and modification of the natural landform.
- **Objective 67:** Protection of the scenic qualities of natural and rural landscapes.
- **Objective 68:** Preservation of the River Murray landscape and environment.

Principles of Development Control

- **170** Development should be undertaken with minimum impact on the natural environment, including air and water quality, land, soil, biodiversity, and scenically attractive areas.
- 171 Development should ensure that South Australia's natural assets, such as biodiversity, water and soil, are protected and enhanced.
- **200** Development should retain existing areas of native vegetation and where possible contribute to revegetation using locally indigenous plant species.

205 Where native vegetation is to be removed, it should be replaced in a suitable location on the site with locally indigenous vegetation to ensure that there is not a net loss of native vegetation and biodiversity.

4.4 Interface Between Land uses

The proposed development has been sited within land currently used for water treatment and pumping within the Rural Zone to minimise the potential for interface concerns which may otherwise occur within more sensitive zones (i.e. Residential or Township Zones). The positioning of the proposed development within the Morgan WTP and PS.1 land allows for appropriate separation from surrounding sensitive land uses and utilises existing vegetation along the property perimeter to mitigate against visual impact concerns beyond the subject land. The nearest existing residence is positioned along Riverview Terrace, approximately 250m southwest from the nearest measured point along the Morgan WTP and PS.1 site boundary. Views from the nearest residence are well screened by existing vegetation surrounding the respective dwelling, as well as by that which exists within the Morgan WTP and PS.1 perimeter. A setback distance of ten (10) metres, measured from the outer property perimeter to the commencement of the solar arrays/ other infrastructure, has been incorporated within the proposed designs. This setback distance will allow for existing vegetation within the subject land to be retained for the purposes of screening the proposed development. Where it is required, and where it is consistent with local vegetation profiles, infill planting within the perimeter setback area may be undertaken to improve the level of screening provided.

The potential for adverse impacts to surrounding sensitive land uses is minimised through the relatively inoffensive nature of the development, which requires little ongoing maintenance and operational activities. The greatest potential for adverse impacts such as noise are largely limited to that associated with the construction period.

The proposal is consistent with the provisions of the Rural Zone and will not impact upon the continued operations within the water treatment plant and pumping site, nor the ability of surrounding land uses to achieve the relevant provisions of respective adjoining zones.

The proposed development is therefore considered to be broadly consistent with the below provisions;

Interface Between Land Uses

Objective 25 Development located and designed to prevent adverse impact and conflict between land uses.

Principles of Development Control

85 Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:

(a) the emission of e	effluent, odour, smok	e, fumes, dust or oth	ner airborne pollutants;
(b) noise;			
(c) vibration;			

(d) electrical interference;

(e) light spill;

(f) glare;

(g) hours of operation; or

(h) traffic impacts.

86 Development should be designed and sited to minimise negative impact on existing and potential future land uses considered appropriate in the locality.

87 Development adjacent to a Residential Zone or residential area within a Country Township, Service Centre or Settlement Zone should be designed to minimise overlooking and overshadowing of nearby residential properties.

Rural Development

Objective 51: Retention of rural areas for agricultural and pastoral purposes.

Objective 52: Maintenance of the character of rural areas.

Noise

Principles of Development Control

92 Development should be consistent with the relevant provisions in the current Environment Protection (Noise) Policy.

4.5 Hazards

The proposed development has been sited within land outside of the River Murray Protection Area / Floodplain Area, as identified within Map MiMu/1 (Overlay 3)- Development Constraints (Water Management Areas) of the Mid Murray Council Development Plan (consolidated 23 August 2018). Furthermore, the development is to be located within land outside of the 1956 Flood Boundary, as illustrated within Map MiMu/5 of the Mid Murray Council Development Plan. On this basis, it is considered that the proposed development has been appropriately positioned away from areas that are vulnerable to the risk of natural hazards such as flooding.

As noted within previous sections of this report, the installation of solar PV arrays and associated infrastructure involves relatively minor alterations to the existing land form by way of earthworks and will seek to maintain existing surface hydrology as far as possible. The proposal will seek to minimse the addition of impermeable ground surfaces to the subject land, pending confirmation by SA Waters construction partners within forthcoming detailed designs. Onsite management of stormwater, both during construction and operation, in order to prevent offsite soil erosion and transport, is recognised as an important element that will be addressed in the detailed design stage by SA Waters construction partner.

The proposed development is sited within a General Bushfire Risk area, as shown on Bushfire Protection Are Figure MiMu(BPA)/1 of the Mid Murray Council Development Plan (consolidated 23 August 2018). Accordingly, the proposed development will incorporate the use of existing and proposed access arrangements to ensure that vehicles, including emergency services vehicles, can be permitted safe and convenient access to the site and ensure free movement through the subject land. Furthermore, the proposed development does not involve the storage of hazardous materials and the solar pv arrays and associated support frames will utilise a relatively open design to minimise the opportunity for debris to become trapped within the associated strings, or rows.

The following provisions are therefore considered to be broadly achieved by the proposed development;

Hazards

Objective 91: Maintenance of the natural environment and systems by limiting development in areas susceptible to natural hazard risk.

Objective 92: Development located away from areas that are vulnerable to, and cannot be adequately and effectively protected from the risk of natural hazards.

Principles of Development Control

377 Development should be excluded from areas that are vulnerable to, and cannot be adequately and effectively protected from, the risk of hazards.

378 There should not be any significant interference with natural processes in order to reduce the exposure of development to the risk of natural hazards.

Bushfire Protection

Objective 101: Development should minimise the threat and impact of bushfires on life and property while protecting the natural and rural character.

Objective 102: Buildings and intensification of non-rural land uses directed away from areas of high bushfire risk.

Principles of Development Control

394 Building and structures should be located away from areas that pose an unacceptable bushfire risk as a result of one or more of the following:

- (a) Vegetation cover comprising trees and/ or shrubs;
- (b) Poor access;
- (c) Rugged terrain
- (d) Inability to providean adequate building protection zone; or
- (e) Inability to provide an adequate supply of water for fire-fighting purposes.

397 Buildings and structures should be designed and configured to reduce the impact of bushfire through using simple designs that reduce the potential for trapping burning debris against the building or structure, or between the ground and building floor level in the case of transportable buildings.

Flooding

Principles of Development Control

218 Development, including earthworks associated with development, should not do any of the following:

- (a) impede the flow of floodwaters through the land or other surrounding land;
- (b) increase the potential hazard risk to public safety of persons during a flood event;
- (c) aggravate the potential for erosion or siltation or lead to the destruction of vegetation during a flood;
- (d) cause any adverse effect on the floodway function;
- (e) increase the risk of flooding of other land;
- (f) obstruct a watercourse.

4.6 Energy Efficiency and Renewables

SA Water is one of the largest power users in the State. The proposed development will directly contribute towards significant advancements in the energy efficiency of Morgan WTP and PS.1, as well as the wider SA Water infrastructure network, through the onsite generation of solar power.

The chosen location, siting and design of the proposed development has sought to minimise the potential for adverse impacts through it's positioning within an appropriate zone (Rural), where the ongoing use of this land as a water treatment/pumping facility is directly supported by the proposal. The proposed siting and design (further confirmation available within forthcoming Detail Designs) will ensure that the generating capacity of the solar PV arrays is maximised by securing a north-facing site with minimal shading/ over-shadowing from existing built form and mature trees. Furthermore, positive impacts of the development are maximised through the provision of onsite energy storage capabilities via batteries (technical specifications / model type to be confirmed by construction partner).

The proposal is therefore considered to be broadly consistent with the provisions listed below;

Energy Efficiency

Objective 75: Development that provides for on-site power generation including photovoltaic cells and wind power.

Principles of Development Control

224 Public infrastructure, including lighting and telephones, should be designed to generate and use renewable energy

Renewable Energy

Objective 103: Development of renewable energy facilities that benefit the environment, the community and the state.

Objective 104: The development of renewable energy facilities, such as wind farms and ancillary development, in areas that provide opportunity to harvest natural resources for the efficient generation of electricity.

Objective 105: Location, siting, design and operation of renewable energy facilities to avoid or minimise adverse impacts on the natural environment and other land uses.

Renewable Energy Facilities

Principles of Development Control

401 Renewable energy facilities, including wind farms and ancillary development, should be:

(a) located in areas that maximize efficient generation and supply of electricity; and

(b) designed and sited so as not to impact on the safety of water or air transport and the operation of ports, airfields and designated landing strips.

4.7 Zone Specific Provisions

The Rural Zone envisages the continuation of agriculture and broader primary production activities as the predominant land use within the zone, along with developments associated with primary production purposes. The Rural Zone also envisages the establishment of windfarms and ancillary development as a desired land use within the zone, so long as they are located outside of the Barossa Valley Character Preservation district. Pastoral Policy Area 15 envisages the continuation of livestock grazing on large rural allotments with appropriate measures taken so as not to result in further land degradation nor land fragmentation.

While solar PV installations are not specifically listed as an envisaged use for the zone or policy area, the proposed development is directly supportive of the continued use of this land as a water treatment plant and pump station that serves communities along the Morgan to Whylla pipeline within the Mid Murray Council region and beyond. The proposal has been carefully sited and designed to ensure that it minimises impact upon existing and future planned operations within Morgan PS1, and has also been designed to ensure maximum energy generating capacity is achieved, thereby solidyfing it's important functionality to the plant. Once operational, the solar PV infrastructure will deliver significant and immediate benefit to the Morgan WTP and PS.1 by reducing operational costs and allowing for greater security in the provision of ongoing reliable power.

The proposal is therefore considered to be broadly consistent with the following zone specific provisions;

Rural Zone

Stormwater

Objective 3: Maintenance of natural hydrological systems and environmental flows.

Principles of Development Control

 $2\ \mbox{No}$ adverse impact on natural hydrological systems and environmental flows.

Vegetation and Landscape Character

Objective 5: Retention and maintenance of wetlands and existing native vegetation for its conservation, biodiversity, and habitat value and environmental management function.

Objective 6: Maintenance and enhancement of the landscape character.

Built Form and Design

Objective 21: Buildings and structures compatible with the environmental qualities, built form and character of the surrounding area and landscape.

Principles of Development Control

18 Buildings and structures which have:

- (a) a design scale, appearance and site to enhance the positive environmental qualities, built form and character of the locality;
- (b) a site which is unobtrusive and screened from public roads and adjoining properties by:
- (i) natural landforms;
- (ii) existing vegetation;
- (iii) planting of appropriate vegetation;
- (c) a requirement for minimal excavation or filling of land;
- (d) a requirements for minimal removal of existing vegetation; and
- (e) sites which are grouped together.
- 20 Sites should be provided with a safe and convenient means of access which:
 - (a) avoids unreasonable interference with the flow of traffic on adjoining roads;
 - (b) accommodates all types and the volume of traffic likely to be generated by the development or land use; and
 - (c) is located and designed to minimise any adverse impact on the occupants of visitors to neighbouring properties

Form of Development

Principles of Development Control

1 Development should not be undertaken unless it is consistent with the desired character and acceptable forms of development for the zone and the relevant policy area.

Infrastructure

Objective 22: Economic provision of infrastructure in an environmentally sensitive manner.

Objective 23: Development provided with an adequate level of appropriate services and infrastructure without excessive cost to the community.

Pastoral Policy Area 15

Principles of Development Control

1 Development should not be undertaken unless it is consistent with the desired character for the policy area.

5 Environmental Considerations

SA Water is committed to ensuring the Morgan WTP and PS.1 solar PV project is constructed in a sustainable manner which minimises impacts to the surrounding environment- a commitment which extends to all installations within the Zero Cost Energy Future project. A detailed environmental impact assessment has been undertaken which has identified potential impacts of the project on the existing environment and community. An overview of potential construction activities and associated environmental impacts with the upgrade works are detailed in Table 2 below.

Table 2. Construction Activities and Associated Environmental Impacts

Activity / Aspect	Potential Environmental Issues/Impact
Use of vehicles, equipment & plant	 Noise creating nuisance Property damage from vibration Emissions to air from equipment Introduction/spread of weed seeds or plant pathogens Fire (hot works or use near dry vegetation) Nuisance to neighbours – access, light spill etc.
Storage of materials, maintenance and refuelling of machinery and equipment	 Spills leading to pollution and contamination of soil, water Damage to vegetation and fauna Emissions of noxious / toxic gases
Washdown of equipment/plant	 Pollution to water (watercourses or stormwater) Introduction/spread of weed seeds or plant pathogens Damage to vegetation and fauna
Excavation and earthworks	 Damage to vegetation and fauna Disturbance or damage to Aboriginal and non-Aboriginal Heritage Discovery/management of soil or groundwater contamination Dust Erosion of exposed surfaces Pollution to water (watercourses or stormwater)
Stockpiling / spoil management	 Damage to vegetation and fauna Pollution to water bodies from poor location / erosion /runoff Water management and flooding Dust Inappropriate waste disposal/landfill Contamination Amenity of the estuarine/beach environment for water/beach users
Waste Management and Disposal	 Aesthetics – litter/ debris Inappropriate waste disposal/landfill Resource use
Import of fill material	Introduction of weeds and diseases (phytophthora)Contamination (imported)
Site / compound establishment	 Aesthetics – visually intrusive structures Inappropriate waste management, litter Access impacts and nuisance to neighbours Noise creating nuisance
Dewatering or other discharges/ water released from site	PollutionWater management and flooding

	ContaminationDamage to vegetation
Management of contaminated or hazardous materials	Pollution to soil or water

5.1 Surface waters, stormwater and hydrogeology

SA Water understands the importance of managing water quality impacts both during construction and on an on-going basis. This understanding is integrated into the Corporate Project Management Methodology as well as within PEMP documents. The proposed development has been designed to integrate with this existing infrastructure.

SA Water will ensure that the successful contractor will appropriately manage stormwater during the construction phase in accordance with the preliminary PEMP. A Soil Erosion and Drainage Management Plan will be developed by the Construction Contractor to ensure spoil is managed appropriately in accordance with the Stormwater Pollution Prevention Code of Practice for Local, State and Federal Government.

5.2 Noise and Air Quality

The project will involve a range of construction activities that will generate noise. Such noise sources include construction vehicle movements and activities (ie. light vehicles, generators, and delivery of materials and general traffic). Impacts to adjacent residents associated with noise during construction will be temporary and unlikely to be significant provided controls are in place, including:

- Construction activities should be in accordance with the EPA Construction Noise Information Sheet (EPA 425/10):
 - o 7.00 a.m. to 7.00 p.m. Monday to Saturday inclusive; and
 - o 9.00 a.m. to 5.00 p.m. on Sundays and public holidays (only where required).
- All construction traffic movement will be undertaken at speeds typically 25-40 km/h, the use of exhaust breaks will be minimised where safe to do so
- Further, all plant and equipment required to be maintained in good order to meet the stringent noise pollution requirements including appropriate mufflers, silencers and/or enclosures fitted.

Some localised dust may be generated as a result of the construction works, including within disturbed areas and access tracks. Impacts associated with dust will be short term and managed through the Contractors Environmental Management Plan.

5.3 Biodiversity

The area proposed for the siting of the solar PV arrays and associated infrastructure comprises existing native vegetation that has been highly degraded from historical stock grazing as identified through site investigations by a native vegetation consultant. Two distinct vegetation associations were identified by the consultant, as depicted previously within Figure 8. The first of these comprised degraded shrubland vegetation while the second vegetation association was identified as exhibiting a slightly higher degree of biodiversity value, due to woody shrub regeneration particularly in the western and southern parts of the area following the removal of herbivore grazing pressure. In accordance with the *Native Vegetation Act 1991*, the proposed clearance will require approval from the Native Vegetation Council, and an application has been prepared for assessment in parallel with this development application. The level of assessment applicable to the clearance is dependant upon the total area to be cleared and the developments ability to mitigate impact upon the existing vegetation wherever possible. Information to this effect will be subject to confirmation by SA Waters construction partner through forthcoming Detailed Designs.

Approval will be subject to the provision of a Significant Environmental Benefit (SEB) offset, which must result in a positive impact on the environment that is over and above the negative impact of the clearance. SA Water propose to group together the required SEB's for this and other project sites in this region to provide well managed, regionally relevant areas of native vegetation that have significant biodiversity benefits that outweigh that removed for solar panel infrastructure at each site.

5.4 Heritage

The land comprising of the Morgan Water Treatment Plant and Pump Station 1 is on the 'Country' of the First Peoples of the River Murray and Mallee. The significance of land and waters of this area is central to their lives: at birth, death, ceremonies and socially, whilst hunting, gathering camping, and travelling.

There are no Aboriginal Heritage Sites or Objects recorded on the Aboriginal Affair Register for the SA Water owned land parcels at Morgan. However, the Register is not a comprehensive record of all Aboriginal sites and objects, and other sites and objects of Aboriginal significance may exist even though the Register does not identify them. All Aboriginal sites and objects are protected under the Aboriginal Heritage Act 1988, whether they are listed in the Register or not.

SA Water commissioned an aboriginal heritage survey with the First Peoples of the River Murray and Mallee Region Native Title Claimant Group that covered a small portion of the land being considered for solar panels in 2010 as part of a proposed emergency sludge overflow area expansion, and while this survey did not identify any sites or objects, it did highlight the significance of the area to aboriginal people and its importance to them with regards to the proximity to the River Murray. SA Water has commenced a process to consult with the First Peoples of the River Murray and Mallee for an expanded site survey of the remaining area, which will take a few months to organise and undertake. Should any sites or objects be discovered by this survey, the design of the solar arrays will be modified to avoid any damage to these.

Additionally, a search of relevant post-European settlement heritage databases has revealed no State or local heritage items are located in the project area.

5.5 Waste management

The construction waste will be managed under the *Environment Protection (Waste to Resources) Policy* 2010, which aims to achieve sustainable waste management by applying the waste management hierarchy consistently with the principles of ecologically sustainable development set out in Section 10 of the *Environment Protection Act* 1993.

5.6 Traffic management

SA Water understand the importance of minimising the interruption to local traffic movements during the delivery and installation of the solar PV panels and associated components. This requirement has been integrated into the Project Management Methodology. Accordingly, SA Water propose to implement temporary traffic management controls in accordance with relevant Australian Standards and commit to appropriate refurbishment of the roadside infrastructure post the construction period where this is required. Greater detail surrounding this approach will be available through consultation with the construction partner, and can be included within Detailed Designs.

6 Conclusion

The proposed installation of solar PV arrays at key SA Water operating sites, such as the Morgan WTP and PS.1 site, will immediately reduce the operating energy costs for the site and reduce SA Water's exposure to increases in electricity costs.

The proposed development sits within an established public infrastructure land use which is well separated from Morgan Township and sensitive land uses and is considered to be broadly consistent with the relevant provisions of the local development control document; the Mid Murray Council Development Plan (consolidated 23 August 2018).

The proposal will not conflict with the ongoing Water Treatment Plant and Pump Station operations at Morgan, but will instead directly contribute to increased energy efficiency for such operations, and is also considered to have appropriately mitigated against potential impacts to adjoining land uses. The development has been designed to minimise longer term impacts, although it is recognised that short term impacts will occur during the construction period.

On this basis, the proposed development is considered to warrant planning consent with appropriate conditions that address the short term impacts.

Appendix A Certificate of Title



Product Date/Time **Customer Reference** Register Search (CR 5756/709)

18/10/2018 02:12PM

20181018007130 Order ID

Cost \$28.75

This Crown Record Register Search is a true and correct extract of the Register of Crown Records maintained by the Registrar-General. Crown Land is administered pursuant to the Crown Land Management Act 2009 by the Department of Environment, Water and Natural Resources.

Crown Record - Volume 5756 Folio 709

Parent Title(s)

Creating Dealing(s) RT 8862524

Title Issued 12/04/2000 Edition 1 **Edition Issued** 12/04/2000

Estate Type

CROWN LAND (ALIENATED)

Owner

THE CROWN

Custodian

MID MURRAY COUNCIL OF PO BOX 28 MANNUM SA 5238

Description of Land

SECTIONS 415, 458, 459, 460 AND 461 **HUNDRED OF ÉBA** IN THE AREA NAMED MORGAN

TOTAL AREA: 278.4HA (CALCULATED)

Easements

Schedule of Dealings

NIL

Schedule of Interests

LAND DEDICATED FOR COMMONAGE AND RECREATION PURPOSES PURSUANT TO THE CROWN LANDS ACT. 1929 BY GAZETTE 15/12/1983

Notations

NIL **Dealings Affecting Title**

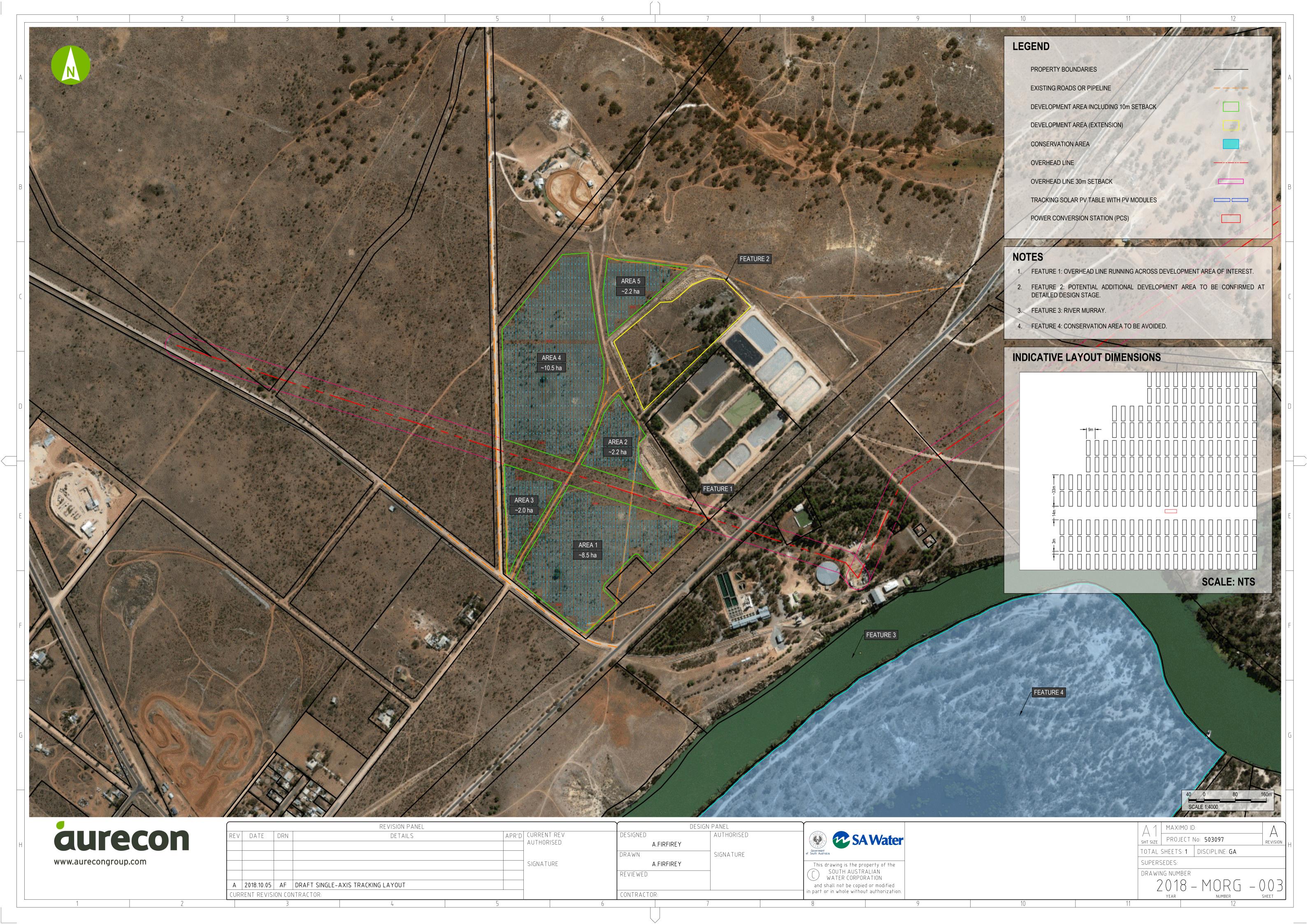
Priority Notices NIL

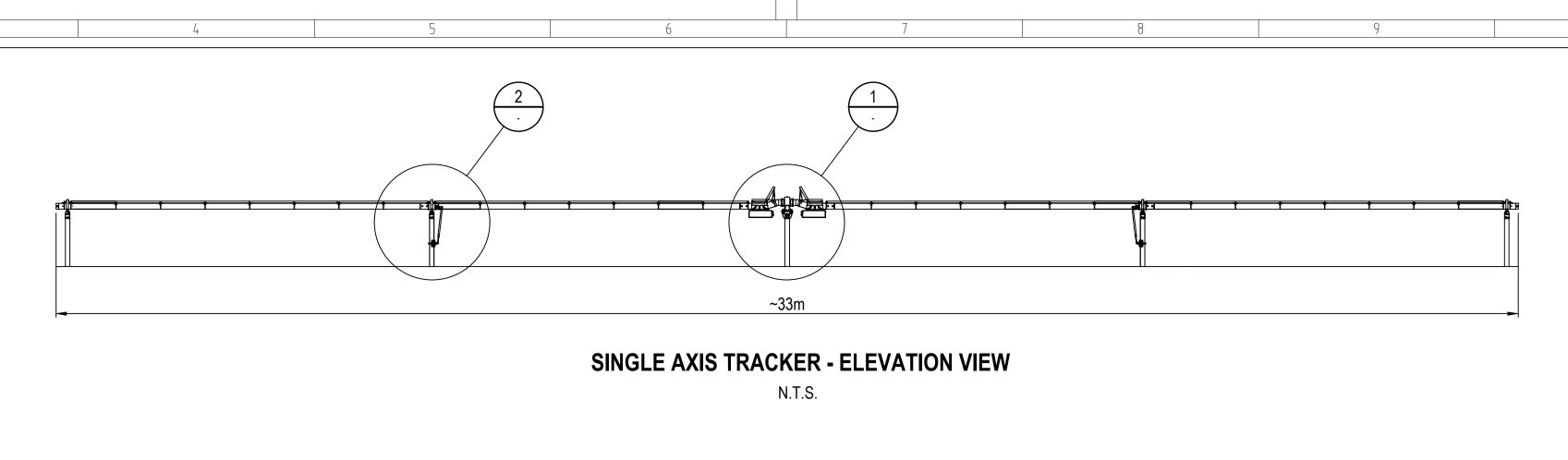
NIL **Registrar-General's Notes**

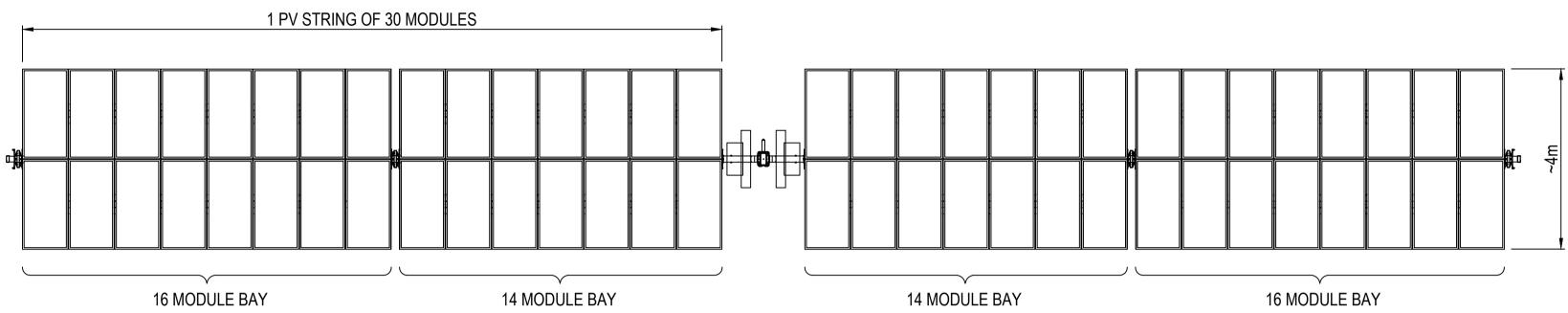
Administrative Interests NIL

Land Services Page 1 of 1

Appendix B Design Drawings

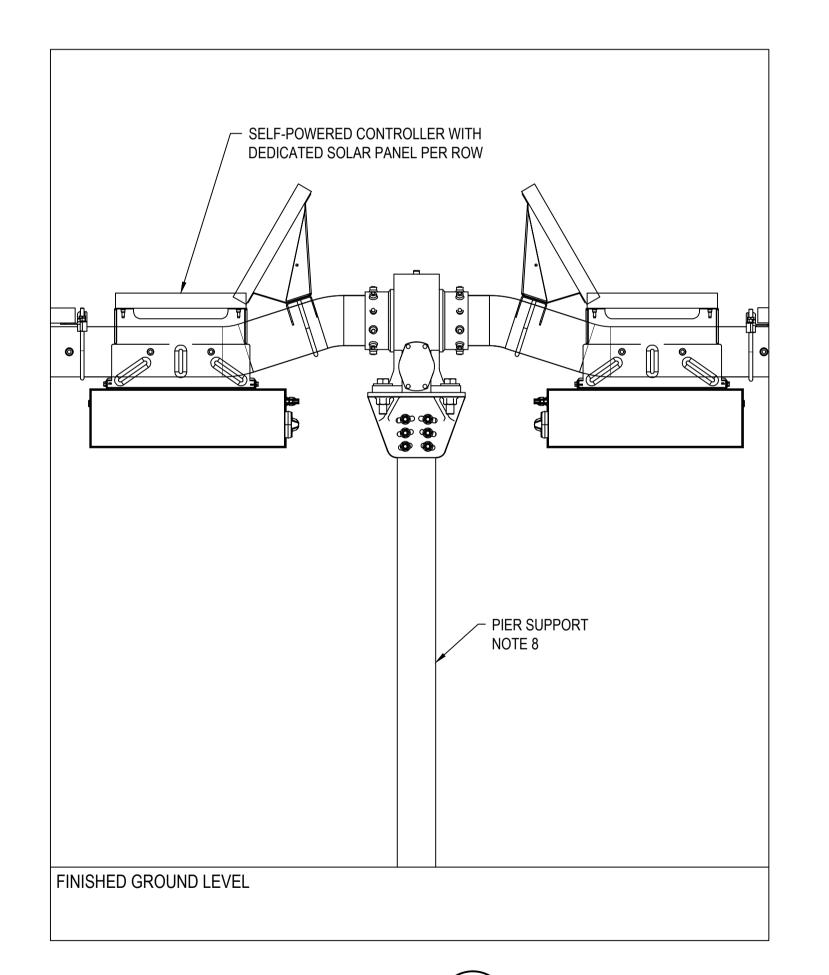


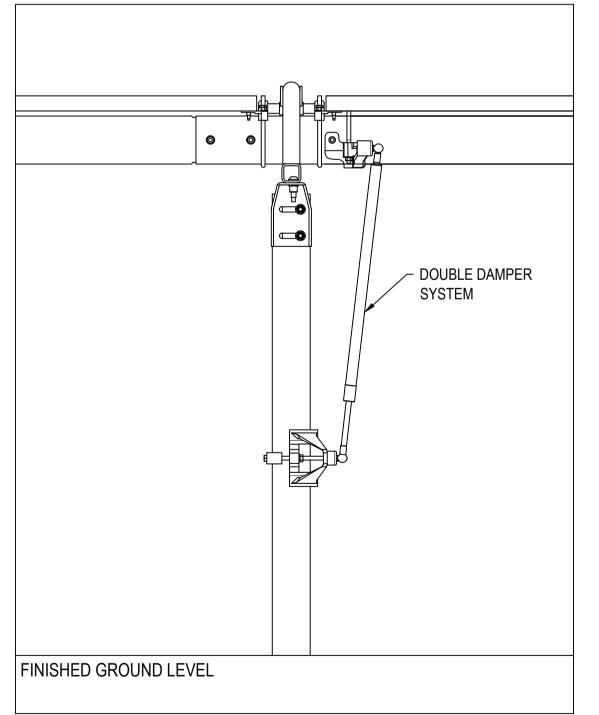


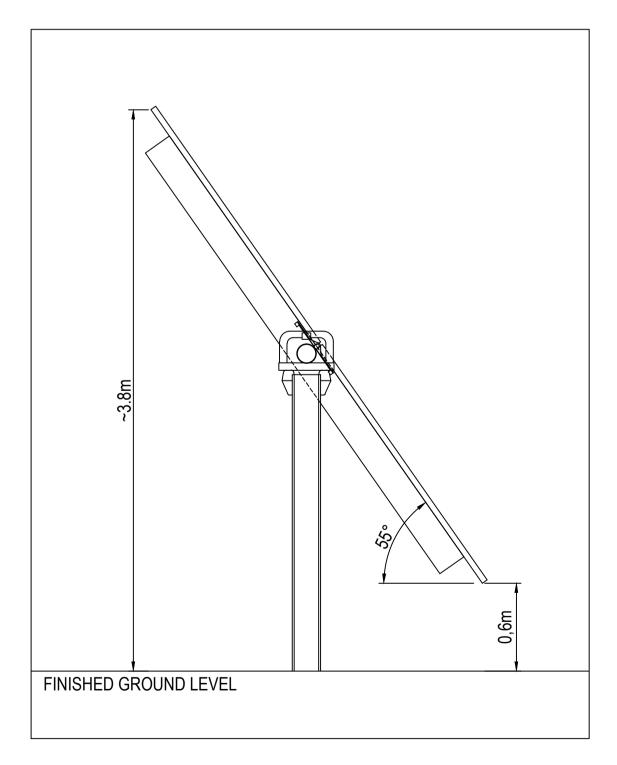


SINGLE AXIS TRACKER - PLAN VIEW

N.T.S.







SIDE ELEVATION VIEW

N.T.S.

NOTES

- 1. THIS DRAWING HAS BEEN PROVIDED FOR INFORMATION PURPOSES ONLY.
- 2. THIS DRAWING INDICATES THE PROPOSED TRACKER TECHNOLOGY FOR THE ZERO COST ENERGY FUTURE PV PLANT LOCATED AT MORGAN PS1.
- 3. THIS DRAWING HAS BEEN ADAPTED FROM VARIOUS MANUFACTURER'S CAD DRAWINGS AND DATA SHEETS.
- 4. THE DIMENSIONS AND CONFIGURATION HAVE BEEN OBTAINED AND ADAPTED FROM VARIOUS MANUFACTURER'S CAD DRAWINGS AND DATASHEETS.
- 5. THE TRACKER HAS A TRACKING RANGE OF ±55°.
- 6. THE SYSTEM IS DRIVEN BY A SLEW GEAR, 24 VDC MOTOR SELF-POWERED CONTROLLER WITH A DEDICATED SOLAR PANEL PER ROW.
- 7. EACH PV TABLE HAS 2 ROWS OF PV MODULES WITH A MAXIMUM ROW LENGTH OF 30 PV MODULES.
- 8. THE FINAL HEIGHT OF THE PIER ABOVE GROUND LEVEL WILL DEPEND ON THE SURVEYOR'S REQUIREMENTS AND TRACKER TOLERANCES.

REFERENCES

VARIOUS MANUFACTURER'S DRAWINGS AND DATASHEETS



		REVISION PANEL		<u> </u>	DESIGN PANE			
ΕV	DATE DRN	DETAILS	CURRENT REV AUTHORISED	DESIGNED		HORISED	(RB	Water
				DRAWN	SIGN	ATURE	Government of South Australia	
			SIGNATURE	Δ	A.FIRFIREY		This drawing is the pro	
				REVIEWED			SOUTH AUSTR. WATER CORPOR	
Д	2018.10.04 AF	INDICATIVE SINGLE AXIS TRACKER DETAILS					and shall not be copied	d or modified
JRI	RENT REVISION COI	NTRACTOR:		CONTRACTOR	₹:		in part or in whole withou	it authorization.
	2			7	7		0	



Appendix C: Office of the Technical Regulator (OTR) Certificate



Ref: 2017/01873.01 D18133459

15 October 2018

Paul Cooledge SA Water 250 Victoria Square Adelaide SA 5000 By email: paul.cooledge@sawater.com.au Energy and Technical Regulation

Office of the Technical Regulator

Level 8, 11 Waymouth Street Adelaide SA 5000

GPO Box 320 Adelaide SA 5001

Telephone: 08 8226 5500 Facsimile: 08 8226 5866

www.sa.gov.au/otr

Dear Michael,

RE: CERTIFICATE FOR DEVELOPMENT OF THE SA WATER ZERO COST ENERGY FUTURE PROJECT

The development of the SA Water Zero Cost Energy Future Project has been assessed by the Office of the Technical Regulator (OTR) under Section 37 of the Development Act 1993.

Regulation 70 of the *Development Regulations 2008* prescribes if the proposed development is for the purposes of the provision of electricity generating plant with a generating capacity of more than 5 MW that is to be connected to the State's power system – a certificate from the Technical Regulator is required, certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.

In making a decision on your application, our office has taken the following information into account:

- An initial meeting regarding the project between SA Water, Aurecon and the OTR on 14 August 2018;
- A follow up meeting between SA Water, Aurecon and the OTR on 20 September 2018;
- Your application emailed to the OTR on 5 October 2018.
- Further information regarding the project emailed by Aurecon to the OTR on 15 October 2018.

After assessing the information provided, I advise that approval is granted for the proposed project.

Energy and Technical Regulations



I note SA Water's request to commission the Photo Voltaic (PV) Generation prior to commissioning the Battery Energy Storage System (BESS). I approve this request on the basis that the required Fast Frequency Response, as per the OTR's Generator Development Approval Procedure Version 1.1, is made available in full no later than six months after the commissioning of the PV Generation has occurred.

Should you have any questions regarding this matter, please do not hesitate to call David Bosnakis on (08) 8429 3323.

Yours sincerely

Rob Faunt

TECHNICAL REGULATOR

CC:

John Hart – SA Water Ashley Nicholls – SA Water Paul Godden - Aurecon

Appendix D Preliminary Environmental Management Plan

Part B: Project Environment Management Plan

1 Objectives of the Environmental Management Plan

The general objectives of this Environmental Management Plan are to:

- Ensure that potential environmental or heritage risks associated with common construction activities are being considered as part of the planning and delivery of SA Water's works
- Ensure that control measures are in place to minimise potential risks and impacts
- Achieve the project objectives in relation to environment and heritage management
- Ensure the works are undertaken in accordance with our customer's expectations
- Continually improve project/site practices for the mitigation and management of impacts
- Establish clear responsibilities for environmental and heritage management as part of the works
- Ensure compliance with all statutory and regulatory requirements.

2 Legal and other requirements

A key governing legal requirement for all projects is set out in the SA *Environment Protection Act* 1993, Section 25:

A person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.

A summary of the environment and heritage approval / permits associated with the project is provided below, with the status and where relevant, conditions, for each.

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
Environment Protection and Biodiversity Conservation Act 2000 (Cth)	Approval from the Commonwealth Environment Minister is required for actions that have or are likely to have a significant impact on matters of national environmental significance (MNES). If project triggers above, referral under EPBC		EBPC self-assessment has been completed.	Self-assessment indicates that the project is not likely to have a significant impact on any MNES.
Development Act 1993	Act required. Works that constitute Development require approval. Development includes (not limited to): Change of land use Building works Prescribed earthworks Impacts to Significant/Regulated Trees		Development approval is required	Development Application will be lodged with DPTI for approval. A meeting with Mid Murray Council team members was held to discuss the project and potential concerns prior to the referral of the application to Council.
Heritage Act/Development Act	Works that impact on State heritage require development authorisation		Search of heritage databases complete	No listed heritage places occur within the project site.
Environmental Protection Act 1993 (Section 36 – Requirement for licence)	Prescribed activities of Environmental Significance require an EPA licence. (E.g. dredging/earthworks drainage/abrasive blasting, transport of contaminated soil, sewage treatment, desal, etc.)			
Environmental Protection Act 1993 (Section 10 & 25) General Environmental Duty and	Excavation of borrow pits, diversion channels and construction of temporary roads, blocking banks etc. where materials are planned for re-use off site, or materials are imported from off-site		No approval required	Need to ensure spoil management is undertaken in accordance with the EPA's Waste Derived Filled requirements.

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
Standard for the Production and Use of Waste Derived Fill (WDF)				
Native Vegetation Act 1991	Approval for clearance of native vegetation is required under the Act. Native vegetation includes trees, shrubs, groundcovers and grasses.		The Native Vegetation Act 1991 applies at this project location.	Native Vegetation Consultant has been engaged to assess the vegetation present and prepare a clearance application to the Native Vegetation Council for removal of required native vegetation.
National Parks and Wildlife Act 1972 (SA)	Scientific Permit.		No impacts to National Parks land	N/A
Aboriginal Heritage Act 1988	Authorisation from the Minister for Aboriginal Affairs is required to interfere, damage or disturb Aboriginal heritage sites, objects or remains.		No Aboriginal Heritage Sites and Objects have been identified within the Aboriginal Affair Register for the SA Water owned land parcels at Morgan.	All Aboriginal sites and objects protected under the Aboriginal Heritage Act 1988. In event of discovery, stop work follow the SA Water SOP for Discovery of Aboriginal heritage Sites
Natural Resources Management Act 2004 (Section 175— transporting declared plants)	Consultation with NRM Board is required if transporting plants declared under Part 175 of NRM Act			The Contractor will be responsible for obtaining authorisation from the Natural Resources Management Board to transport declared plants on a public road, in accordance with Section 175 and 188 of the Natural Resources Management Act 2004 (SA).
Native Title Act 1993	Notice to be issued if works Native Title. Note: ILUA notification process may be applicable in some areas.		The land in question is within the area covered by the River Murray ILUA, advice has been provided by the Crown Solicitor (2 May 2017) that this parcel is dedicated, and therefore any future acts that occur on any of this land are valid and consented to (to the extent, if any, that they	N/A

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
			affect native title). There are no notification requirements and no compensation implications.	
Local Government Act 1999 (SA)	Section 221: Alteration of road a Person must not make an alteration to a public road unless authorised to do so by the council. Section 31 permit (not required, no roads to be temporarily closed during Early Works).		N/A	
Road Traffic Act 1961 (SA)	Section 33 Council approval is required for temporary closure of a public road to facilitate an event		Approval required if temporary closure if a Council Road	N/A
Parliamentary Committees Act 1991 (SA)	16A: Certain public works referred to Public Works Committee (PWC) Subject to subsection (3), a public work is referred to the PWC by force of this section if the total amount to be applied for the construction of the work will, when all stages of construction are complete, exceed \$4M		Infrastructure construction works in excess \$4M require Public Works Committee (PWC) referral and associated Cabinet Submission	As the total expected construction cost exceeds \$4m, a referral to the Public Works Committee (PWC) will be undertaken.

3 Environmental Management System and Structure

3.1 Environmental system requirements

As a minimum, the contractor should have in place systems and methods for ensuring that the environmental requirements identified in this document are implemented. Normally this would be through the development a site specific or project specific Environmental Management Plan for the works.

3.2 Inductions and Training

All project staff, including subcontractors, must be inducted to the requirements of the project Environment Management Plan and associated procedures. The induction should ensure that any site specific environmental controls and/or requirements associated with Aboriginal Heritage are communicated to staff prior to the commencement of on-site works.

A record of inductions must be maintained.

3.3 Records and record keeping

Relevant schedules and records should be retained on site during the construction phase of the project. As a minimum this should include:

- Contractors Environmental Management Plan (CEMP)
- Prestart inspection checklists
- Induction / Training registers
- Monitoring/inspection reports and audit reports
- Non-conformance reports
- Environmental incident reports/register
- Waste tracking and disposal records
- Listed/controlled waste transport certificates and volumes
- Complaints registers.

3.4 Roles and Responsibilities

3.4.1 Superintendents Representative (SA Water Project Manager)

The nominated Superintendents Representative is responsible for:

- Ensuring that Contractors works crew are provided with and made aware of the contents and requirements of the CEMP.
- Monitoring the effectiveness of implementation of this plan.
- Being the point of conduit for communication between the Contractors and SA Waters Environment Representative.

3.4.2 Contractor's Site Supervisor/ Site Manager

The Contractor's Site Supervisor (or nominated onsite environmental representative) is responsible for:

Implementing the control measures in this document such as establishing site controls

- Inducting site personnel into the requirements of the CEMP
- Undertake regular site inspections and monitoring the effectiveness of onsite controls, instigating improvements where necessary
- Maintaining site records such as site inspections/monitoring reports, induction records, NCRs or incident reports
- Liaising with the Superintendents Representative where environmental issues or concerns are raised that require further attention
- Enforcing work practices that minimise adverse environmental impacts through due diligence
- Ensuring all employees report any environmental risks or hazards
- Implementing additional mitigation measures in the event of non-conformances or emergencies.

3.4.3 Employees, sub-contractors and Labour hire personnel

All employees (including subcontractors) have an obligation to protect the environment when carrying out their work and this includes:

- Being aware of the contents of the CEMP including general environmental statutory requirements to carry out their work with due diligence.
- Complying with instructions/directions given by the Contractor's Site Supervisor
- Report any incident that may result in environmental harm that arises in the course of or in connection to their work.

3.5 Inspections and Monitoring of Environmental Performance

Inspections of the work area should be carried out by the Contractor to ensure the environmental management controls are effective. Monitoring of the environmental controls should consider the performance indicators for each of the environmental issues provided in Section 5.

Issues arising from site inspections must be addressed as soon as possible, in some cases non-conformance reports may be raised. Issues identified should also be discussed at toolbox or site meetings together with any improvement measures that have been implemented.

Monitoring records should be retained by the Site Supervisor. A suggested typical monitoring schedule is outlined below:

Frequency	Issues
Prior to works	 Compound/worksite controls are in place, locations for materials/stockpiles and access identified
	 Location of sensitive neighbours
	 Location of stormwater entry points, drainage lines, water courses identified
	 Location of spill control measures and spill kits available
Daily	Site is neat and tidy
	Waste contained appropriately
	 Chemicals and materials stored appropriately
	 No evidence of dust nuisance
	 No evidence of water contamination/runoff form site
	 Adjacent roads clean (not covered in sediment etc.).

Frequency	Issues
Before/during rainfall	Runoff controls in place and maintained
events	 Protection of stormwater entry points
	Drainage lines clear of debris
Weekly/monthly	 Overall environmental management measures as per CEMP in place.

3.5.1 Audits and Inspections

During the construction phase of the project SA Water may undertake inspections/audits of the contractor to ensure compliance with the requirements of the project environmental controls.

3.5.2 Non -conformance and corrective actions

A process for handling non-conformances should be in place. As a minimum requirement this should include procedures for the identification and reporting of any non-conformances with the project documentation, including the CEMP.

If inspections/monitoring/auditing activities identify an environmental non-conformance the following actions should be undertaken:

- Inspect/Review the non-conformance, where necessary stop/control the activity until the environmental non-conformance is addressed
- Reporting of the non-conformance by the contractor to SA Water's project manager
- Investigate the reasons for the non-conformance
- Implement appropriate action to address the non-conformance, amend project EMP/Project plans as necessary
- Record details of the non-conformances.

4 Emergency Response and Environmental Incidents

4.1 Emergency Planning, Preparedness and Response

Emergency response and incident procedures must be in place for the project, these procedures should provide an effective response whilst minimising environmental harm or disruption (refer SAWP-ENV-0024 Environmental Emergency Response Plans).

The Emergency Response Procedure must be available and on display at the worksite/site office and all personnel must be inducted into its requirements. The procedure should include key contact details.

Also included on the contact list must be the details of: (1) a person(s) for emergencies that will be available 24 hours a day, seven days a week, and has the authority to stop or direct works (2) emergency response personnel (3) the Superintendents Representative (4) local councils and the local hospital(s) and (5) if necessary, nearby residents.

In the event of an emergency the emergency response procedure is to be enacted. Post the event a review is to be undertaken to evaluate the effectiveness of the response against the procedure and determine if any amendments are considered appropriate.

Contact	Contact details
Superintendents Representative/SA Water Project Manager	John Hart (+61) 0436 682 042
SA Water Environmental Representatives	Jackie Griggs PH: 0448 379 303
Police, Fire and Ambulance	000
Country Fire Service (CFS)	1300 362 361
Metropolitan Fire Service (MFS)	08 8204 3600
SafeWork SA	1300 365 255 / 1800 777 209 (for serious incidents/ injuries)
Environment Protection Authority (EPA)	08 8204 2004 / 1800 623 445
RSPCA	1300 477 722
National Parks and Wildlife South Australia (NPWSA) Adelaide Office	08 8204 1910

4.2 Environmental Incident Management

In the event of an incident action should be taken to stop/modify the work to effectively minimise impacts to the environment. Where an environmental incident occurs that causes or threatens to cause serious or material environmental harm (breach of legislative requirements, widespread impact etc.) then as per Section 82 of the *Environment Protection Act* the EPA should be notified.

Incidents may include: flooding events, chemical or fuel spills, discharge if contaminated water, unauthorised/unintended impacts to vegetation etc.

Any environmental incidents should be investigated and reported to SA Waters Project Manager as soon as practicable or no later than 24 hours after the incident is identified. Reports should include details of the incident and any corrective actions taken.

A record of all incidents should be maintained (refer <u>SAWP-ENV-0027 Environmental Incident Reporting</u>).

In the case of an environmental emergency the Emergency Response Procedure/Plan should be followed.

5 Environmental Management Controls

The following pages include suggested control measures to be used during the works to mitigate environmental impacts. The effectiveness of the controls should be monitored as per Section 3.5.

Environmental Impact	Water Quality Impacts / Pollution of Water				
Objective	Prevent or minimise adverse effects on surface water and groundwater quality, flows and drainage				
Performance indicators	 No material deterioration on receiving waterway quality including for pH, turbidity, dissolved oxygen, chlorine residual and visual oils and greases. Construction materials and sediment laden runoff prevented from entering waterbodies/stormwater. 				
Controls	Pre-Construction				
	Review construction area to minimise potential for surface runoff to enter the site and to identify controls for runoff leaving the site.				
	Identify water bodies/drainage lines and identify sediment /erosion control requirements e.g. silt fences around stockpiles, silt sock locations at stormwater entry pits etc.				
	Review project activities that will require protection and installation of controls.				
	Identify designated stockpile/laydown areas away from drainage lines.				
	Schedule works that will occur in watercourses /drainage lines for periods of favourable weather (e.g. dry periods) or implement construct techniques that reduce construction footprint (e.g. directional drilling).				
	Construction				
	No discharge to a watercourse (including stormwater system) without approval from the Superintendents Representative.				
	Install erosion and sediment control devices prior to works commencing (e.g. silt fences, silt socks, hay bales diversion drains, geotextile fabric) and ensure maintained (e.g. remove debris from sediment control items regularly)				
	Ensure stockpiles have erosion control devices installed, particularly on downslope of stockpiles				
	Monitor weather forecasts to identify rain events and ensure control measures in place				
	Inspect and maintain/clean sediment control items regularly				
	Clearly define access tracks and routes and use these				
	Where practicable use a street sweeper or similar to clean sediment/debris form public roads				
	Compact, backfill and resurface disturbed or unsealed areas as soon as possible				
	No onsite refuelling, service or maintenance or cleaning in areas where runoff/wastewater may enter stormwater system or waterbodies.				
	All equipment wash-down to be undertaken within an identified wash-down area, no discharge of wash-down water to stormwater or watercourse.				
	Turbid water from concrete cutting etc. not to be directed to stormwater or watercourses.				

Environmental Impact	Damage to Vegetation
Objective	Protect and minimise impacts to vegetation as part of the works
Performance indicators	 No unauthorised clearance. Protection in place (bunting, marking off) for vegetation on site where appropriate.
Controls	Pre-Construction
	 Identify vegetation in/adjacent to the works area that may be impacted and plan access routes, plant/vehicle parking, stockpiles and material storage locations away from vegetation.
	 Plan works to avoid in first instance or minimise impacts to vegetation (Significant/Regulated trees or Native Vegetation).
	Construction
	No clearing of native vegetation beyond that approved.
	Utilise existing access tracks/roads where available or ensure (where possible) access via previously disturbed cleared areas.
	 Park vehicles and store equipment or stockpiles (including soil) in areas that are designated/pre-marked as laydown areas or already cleared (e.g. tracks) to avoid smothering or damaging native vegetation.
	 Avoid impacts to roots (10m from drip line optimal) wherever possible. If roots (≥ 50mm) are discovered during the works these are to be bridged where possible. Roots discovered <50mm which are broken are to be clean cut with a saw.
	 Where working in roadside areas care shall be taken not to impact in areas where Department of Planning, Transport and Infrastructure or district council based 'Roadside Significant Markers' are present. These identify that a section of roadside reserve contains a significant feature such as rare flora, matters of cultural heritage or significant native vegetation. Contact the Superintendents Representative for details if working in these areas.

Environmental Impact	Introduction of weeds and pathogens	
Objectives	 Pest plants / pathogens not introduced into worksite or spread as result of works. No movement of declared plants in an uncontrolled manner. 	
Performance indicators	No new incursions of declared plants or plant pathogens post construction.Weed and hygiene measures in place.	
Controls	 Pre-Construction Ensure any declared plants within work area are identified. Ensure plant and machinery washed down prior to entry to work zone. Construction Ensure imported material is 'weed free' by applying a risk based approach, material is considered weed/pest free if: 	
	 Quarry material is sourced at depth and is not stockpiled/surface material. Classified as complying with SA Water Engineering Technical Standard 4- <u>'Packing Sand for Pipe Laying and Trench Fill'</u> 	

 Sourced from a licenced quarry (and/or quarry site inspected by the local NRM Board with records to confirm appropriate weed management strategy is in place that minimises the risk of weed contamination of material taken from that site).
If quarry material is considered top soil, inspection by suitably qualified person is required to ensure fill is weed/pest free.
Locate stockpiles away from weed infested areas where possible
Appropriate wash-down of machinery if sourced from weed or disease risk areas or have carried imported material.
All equipment wash-down to be undertaken within an identified wash-down area and water contained within that area (no discharge of wash-down water to stormwater or watercourse).

Environmental Impact	Fauna
Objective	Prevent or minimise disturbance to native fauna and their habitat.
Performance Indicators	Fauna within works area not adversely impacted.
Controls	Pre-Construction
	Ensure contact list for local/regional fauna rescue organisation available.
	Construction
	Any injury or death of native wildlife caused by the construction activity will be reported to the Superintendents Representative.
	If tree hollows are present and trees require pruning/ clearing, these must be checked for fauna before removal.
	If any fauna is found, the Superintendents Representative will report the details of discovered fauna to the SA Water Environment and Heritage Services Team for relocation if required.
	Where possible fauna occupation is identified, the Contractor shall bring this to the attention of the Superintendents Representative and await instruction prior to proceeding with tree removal. The Superintendents Representative will typically instruct relocation of hollows, and fauna if present.
	Where native fauna is likely to be present within works area minimise risk of entrapment (e.g. close trenches overnight/ install ramps / monitor open trenches).

Environmental Impact	Stockpile, Erosion and Stormwater Management	
Objective Minimise the potential for environmental impacts associated with poor stockpile management.		
Performance indicators	No sediment laden runoff leaving works area	
	 No dust from stockpiles leaving site and impacting sensitive land uses (residents/schools, sensitive habitats) 	
	 Management of spoil in accordance with Part A – Section 1.4.3. 	

	Pre-Construction
Controls	 Identify designated stockpile/laydown areas away from drainage lines, drip lines of trees/vegetated areas
	Identify potential soil contamination that may require management and ensure appropriate areas for stockpiling established
	Construction
	Follow requirements of the <u>SA EPA Guideline for stockpile management</u> including:
	Materials with a potential to produce leachate and contaminated runoff should be stored in a sealed and bunded area.
	 Limit stockpile height
	 Materials must be stored away from surface watercourses, flood zones and groundwater recharge areas to prevent environmental harm to water.
	Locate designates fill stockpiles away from vegetation and drainage lines.
	No stockpiling within the drip lines of trees to minimise compaction of the root zones.
	Maintain separate stockpiles for different materials
	 Install erosion control measures such as silt fences, hay bales, sedimentation sumps, sand bags, geotextile fabric, diversion drains or other appropriate measures on the down slope side of stockpiles.

Environmental Impact	Air Quality (Dust, emissions, odours)
Objective:	Ensure that particulate and gaseous emissions do not cause environmental nuisance or harm to surrounding community and environment.
Performance indicators	No community complaints during construction regarding air quality (dust, odours)
	No impact to adjacent sensitive land uses (e.g. houses, schools)
	Results from visual inspections show no visible dust leaving boundaries of construction site
Controls	Pre-Construction
	Identify site access, laydown areas and stockpile locations
	Identify sensitive receivers and dust monitoring requirements.
	Construction
	Restrict high risk activities during extreme weather events (strong winds, hot dry weather) to dry/calm conditions if required to limit dust generation.
	Water cart available to control dust if required.
	Minimising the extent of exposed and stripped surface areas within the project area
	Ensure construction facilities are designed and operated to prevent the emission of smoke, dust, cement dust and other potentially deleterious matter into the atmosphere.
	Maintenance of vehicles and equipment.
	Reduce idling time of vehicles and plant.
	Reduce vehicle speeds on dirt roads to reduce dust emissions.

Cover loads if dust is an issue.
Stockpiles to be managed to reduce dust (manage height, covering wetting as required).
Undertake inspections of dust/ emissions controls and activities and respond accordingly.

Environmental Impact	Noise and Vibration impacts				
Objective:	To ensure noise and/or vibration from construction does not cause an environmental nuisance or adversely impact amenity/ people or result in damage to property.				
Performance Indicators	 No complaints related to noise or vibration. No property damage resulting from vibration. 				
Controls	Pre-Construction Plan timing of noisy activities to avoid impacts on nearby residents. Sala at we add plant and a guing point that graphy that graphy that are additionally a guing point to a				
	 Select good plant and equipment that generates low noise and vibration. Consult with stakeholders (though SA Water) in advance of works. Ensure machinery has appropriate mufflers, silencers and/or enclosures fitted. 				
	 Investigate alternative processes/methods that will reduce noise and vibration. Construction 				
	 Construction activities should be in accordance with the EPA Construction Noise Information Sheet (EPA 425/17): 7 am and 7 pm, Monday to Saturday inclusive Work outside these times may be permitted to quoid impacts such as upregenable interruption of vehicle or podestrips traffic 				
	 Work outside these times may be permitted to avoid impacts such as unreasonable interruption of vehicle or pedestrian traffic movement. In these circumstances the Superintendents Representative should be advised. 				
	 Notify nearby residents/landowners if any project activities proposed outside of normal construction times (though SA Water). Use appropriate equipment for the task; plant shall be fitted with effective silencing equipment to reduce risk of noise nuisance. If it is necessary to operate pumps or other noisy machinery close to a residence or outside normal work hours such machinery shall be electrically powered or otherwise effectively silenced, or other noise barriers/mitigations implemented, where appropriate. 				
	Regularly maintain plant and equipment used during construction (e.g. rotating parts to be balanced). Professional stationary constant paics sources such as air compressers, generators at a to reduce paics levels.				
	 Enclose, where practical, stationary constant noise sources such as air compressors, generators etc. to reduce noise levels. Maximise the distance between vibration sources and receivers if possible. Maintain complaints register and respond to complaints received. 				

Environmental Impact	Storage and Handling of Hazardous Substances
Objective	Manage the storage of hazardous substances to avoid contamination of surrounding soils and water.
Performance Indicators	Hazardous substances stored appropriately and spill kits on site.

	No impact to soil/groundwater associated with storage use of hazardous substances.
	Pre-Construction Pre-Construction
Controls	Plan for sufficient plant and equipment to ensure minimal maintenance and refuelling required on site.
	Identify areas for storage, refuelling and spill kits.
	Establish bunded area and/or where appropriate lockable bunded container in compound for storage.
	Construction
	Spill kits readily available and personnel trained in their efficient use.
	 Minimise quantities of hazardous substances, fuels and lubricants stored on site. Store and handle chemicals/hydrocarbons as per the product MSDS. MSDS to be available at all times for hazardous substances that are used or stored.
	Storage and management requirements for hazardous substances in accordance with legislative guidelines including bunding, impervious floor and in a location not subject to flooding and within a pre-marked laydown area.
	All waste oil to be collected and disposed of at an EPA Licensed Recycling Depot.
	Ensure no discharge of hazardous substances or fuels/lubricants into water courses or storm water.
	• The decanting, mixing, applying, storing of chemicals including paint, or the refuelling of vehicles or equipment shall not be conducted within 50 m of a watercourse or drainage channel.
	In the event of a minor spill (e.g. diesel), affected soil to be excavated and disposed of at an appropriately licenced landfill.
	• In the event of a major fuel or chemical spill, immediately notify SA Water Site Representative of the spill and if known, any associated details (e.g. Type of spill, source, time of incident).

Environmental Impact	Contamination			
Objective	 Identify potential contamination issues on site. Manage such issues to protect employees, the public and the environment. 			
Performance Indicators	 No impact to soil/groundwater associated with contaminated material. No risk to employees from encountering and managing contaminated material. 			
Controls	 Construction In the case of unusual odours or visual observation being made during excavation that indicates soil/groundwater contamination work is to cease and the Superintendents Representative contacted. The discovery of contaminated soil and/or groundwater is to be immediately reported to the SA Water Site Representative so as the appropriate authorities can be notified. 			
	 Contaminated material must be handled and managed in accordance with EPA requirements (licenced waste transporter and to EPA licenced facility). Waste transfer certificates retained for contaminated material and available on request. If contaminated material discovered: <i>Isolate</i> the suspected contaminated area. 			

0	Separate any suspected soil/fill, store on impervious material (tarp/fortecon) and cover to prevent rain or wind mobilising material. Any contaminated fill requires NATA Certified Laboratory Test Results and must be disposed to an EPA licensed landfill (contact the Superintendents Representative to arrange this).
0	Groundwater contamination is required by law to be reported to the EPA.
0	No disposal of contaminated groundwater to a stormwater or watercourse.

Heritage Impact	Aboriginal Heritage Management	
Objectives	 Prevent or minimise disturbance to cultural heritage sites. Ensure all statutory requirements are complied with and controls listed below are implemented to minimise potential disturbance to unknown sites. 	
Performance indicator	Management of any Aboriginal discoveries in accordance with the SA Water SOP for the Discovery of Aboriginal Heritage (Refer to Appendix A)	
Controls	Construction	
	The SA Water SOP for the Discovery of Aboriginal Heritage must be available on site and all construction personnel inducted into this procedure.	
	o The removal of site protection measures must be undertaken or sanctioned by First Peoples representatives.	
	In the event of a potential heritage site or object being discovered during construction, works in the area must stop and the SA Water SOP should be implemented (Refer to Appendix A)	

Environment Impact	Fire Management
Objective	Ensure compliance with South Australian Country Fire Act 1989.
	To ensure that construction activities do not cause and emergency incident such as starting a fire.
Performance indicator	No emergency incidents as a result of construction activities.
Controls	Pre-Construction Pre-Construction
	Review fire danger season and schedule works to minimise risks associated with fire, where possible.
	Conduct a risk assessment on days notified as total fire ban days before undertaking any works on site.
	Have in place an emergency response plan for the works.
	Construction
	Fire extinguishers/on site firefighting equipment to be available on site and in work vehicles, major plant and equipment and ensure workers trained in their use.
	Hot work permits required for 'hot works' on total fire ban days, no works on catastrophic fire rating days unless approved by SA Water Superintendents Representative
	Maintain all machinery and vehicles in good condition to minimise risk of fires.

Fit plant with spark arrestors.
No burning off or burning of waste.

Impact	Waste Management
Objective	 To ensure all statutory requirements are complied with relating to management of waste (including Waste to Resources Policy). Maximise reuse and recycling of materials.
Performance indicator	Compliance with waste management requirements
Controls	Pre-Construction Adopt the principles of the waste management hierarchy and plan/procure materials that: Avoid the production of waste Minimise the production of waste Maximise reuse and/or recycling of waste Recovery of energy or other resources from waste Treatment of waste Disposal of waste in environmentally sound manner Confirm the relevant statutory requirements for disposal of wastes from site. Construction Carry out works to minimise waste production. Segregate wastes to maximise reuse/recycling. Provide and use sealed waste and recycling bins Dispose of waste materials, waste oils etc. at EPA licence facilities Waste to be removed from site using appropriately licenced waste transporters. No burning of waste. For spoil management refer to the Stockpile management section.

Impact	Visual Amenity
Objective	Prevent or minimise negative impacts from construction activities on the visual amenity of the local area.
Performance indicator	No community complaints regarding visual amenity during the construction period or post project associated with site condition (e.g. demobilisation).
Controls	Pre-Construction
	Assessment of potential visual impacts and opportunities to mitigate or improve visual amenity (e.g. landscaping/screening).

The establishment of site facilities or undertaking other activities which are likely to adversely affect the visual amenity of the surrounding area are not permitted.
Construction
Implement waste and dust management controls (as above).
Stockpiles, equipment and large plant to be located in areas of the project least likely to affect visual amenity (away from houses etc.).
Ensure good housekeeping and waste management on site.

Impact	Traffic Management
Objective	To minimise the impact to the public associated with the construction of this project.
Performance indicator	Minimise complaints from the public regarding traffic management.
Controls	Pre-Construction
	Assess impacts on traffic flow, direction and timing as part of project.
	Assess traffic management requirements to ensure safety to site workers and community.
	Develop traffic management plan for works , plans to be approved by DPTI (for DPTI roads) or by relevant Council where appropriate and should include:
	Traffic management measures proposed during (including any sub-contractors).
	Any temporary access to properties affected by the works.
	Proposals for detours/deviations, placement of barriers etc.
	Construction
	Traffic management controls implemented as per traffic management plan.

Appendix A Aboriginal Heritage Discovery Procedure

Have you found a site, object or skeletal remains that may be Aboriginal Heritage?

• See example pictures on next page.

STOP

Do not disturb/remove/touch or displace the site, object or skeletal remains.

• It is an offence to disturb or interfere with Aboriginal heritage or skeletal remains.

PROTECT

Restrict access. Site supervisor to take note of:

- Location in relation to site works (pref. GPS).
- Any immediate threats to heritage e.g. construction activities, vandalism, water level.
 - Name and contact details of the person who made the discovery.

NOTIFY

Site Supervisor to immediately notify:

- SA Water representative: Jackie Griggs 08 74241128 or 0448 379 303
- Local Police or 131 444. If suspected human remains have been discovered.

MANAGE

The SA Water EHS Team will appropriately manage the incident with appropriate guidance from:

- Local Police (where skeletal remains have been discovered).
 - Aboriginal Affairs and Reconciliation.
 - The local Aboriginal community.

RESUME

The SA Water Project Manager will notify the contractor when works can resume.

• This decision will be made in partnership between the PM and EHS team.

Example Pictures







