

21 February 2018

Laura Kerber Planning and Development Department of Planning, Transport and Infrastructure GPO Box 1815 Adelaide 5000 AUSTRALIA

Dear Ms Kerber,

Subject: Tailem Bend Solar Project Stage 2 – Amendment to Development Application

Equis Energy (Australia) Pty Ltd (Equis Energy) submitted a Development Application for the Tailem Bend Solar Project Stage 2 (TB2SP) on the 21st of December 2017, under section 49 of the *Development Act 1993 (SA)*.

The TB2SP Development Application and subsequent project construction is based on the potential for movements within the market, including purchase power and the availability of changing technology. Within recent weeks additional technology has become available within the market. Given this, we propose to alter the current Development Application to allow for the consideration of these new opportunities and of the updated technology. This letter describes the proposed changes to the project and details the resultant technical alterations to the Development Application and Appendices.

Overview of Amendment – Technology and Capacity

The technology of single-axis tracking is to remain as originally proposed. However, the number of modules per tracking structure may increase from 1 row to 2 rows in portrait (see Figure 1). The final determination of the technology will be dependent on availability, market power and realistic commercial testing during final detailed design. This additional allowance will further provide an increase in overall height from 3m to 4.5m from ground level. An updated tracker design is provided as Appendix A.

The variation to the technology of the proposed TB2SP may also provide an additional $10MW_{AC}$ increase to the generation capacity of the solar project; increasing the potential of the site from up to $90MW_{AC}$ to up to $100MW_{AC}$ capacity. This increase of $10MW_{AC}$ will arise if the project is developed with the 2 rows in portrait technology. This will provide Equis Energy with the ability to deliver increased support to the SA power market should the technology improve further prior to construction. The Department of Premier and Cabinet (DPC) has amended the Crown Sponsorship letter to reflect this change, attached as Appendix B.





Figure 1 Schematic showing proposed solar module technology

Effect of Requested Variance on Development Application and Appendices

The increase in overall height of the modules will change the visual amenity of the landscape. However, this is limited to certain times of the day; early morning and late afternoon, as the modules track the sun from east to west. To assess the visual change for sensitive receivers associated with the increase in panel height, the Landscape and Visual Impact Assessment completed for TB2SP has been updated to account for the increase in height of the panels.

The proposed change in technology is not expected to alter other environmental aspects presented in the Development Application. In particular, the potential variation in technology is not anticipated to change the area coverage of solar panels or general layout of the proposed development. Therefore, there will be no additional impact on native vegetation on the subject site.

Appendix C presents a detailed comparison of resultant changes to the Development Application and Appendices based on the Table of Contents of the Development Application. The revised Landscape Character and Visual Amenity Report is attached as Appendix D.

Relevance & Benefit

The proposed variation in technology delivers several benefits to the project and the overall electricity supply to South Australians, including:

- 1. The new tracker technology has recently become available to allow 2 rows of modules per single-axis tracker structure. This provides additional area for further panels because the rows are shorter, and improves the use of the available developable area of the site;
- 2. Improved use of the developable area of the site increases the capacity of the project which also increase the electricity generated from the site. The installed capacity of the project would increase by 1-2% with the change in module structure;



- 3. The capital cost of construction would be reduced by exchanging the modules from 1 row to 2 rows in portrait. The double-row tracker requires fewer foundations which reduces the overall construction costs of the project, creating a more competitive price of power generated by the project; and
- 4. The overall safety of the site is improved as the double-row tracker leads to larger spacing between the rows of modules. This provides improved access for construction and maintenance activities.

Summary and closure

It is with these considerations in mind, we seek to amend the Development Application submitted on the 21^{st} December 2017 to allow for the variation in module structures from 1-row in portrait to 2-rows in portrait and potential change to increase the generation capacity to up to $100MW_{AC}$. We request an update to the Development Application to allow for the consideration of these technical variations so that further investigation of this updated technology can occur should it be considered commercially viable. This slight change to the allowances and characteristics of the development and subsequent application will allow for a safer and more efficient project.

Should you have any queries regarding the proposed changes to the Tailem Bend Solar Project Stage 2 Development Application, please do not hesitate to contact me via the detail below or Duncan Mortimer on; duncan.mortimer@equisenergy.com or 0417 997 099. Yours sincerely,

Hanga

Anil Nangia Managing Director Equis Energy (Australia) Email: anil.nangia@equisenergy.com Mobile: 0417 612 926

Attachments:Appendix AUpdated Solar Module DesignAppendix BUpdated Section 49 EndorsementAppendix CDetailed description of resultant changes to the Development Application and
AppendicesAppendix DUpdated Landscape Character and Visual Impact Report



Appendix A. Updated Solar Module Design and Indicative Project Layout





PROJECT: TAILEM BE	ND 2 PROJECT			
COORDINATES	35.2678° S 139.4822° E			
SITE AREA	209 ha			
FENCE AREA	195.08 ha			
PV AREA	142.28 ha			
BASIS FOR PLAN	GOOGLE EARTH			
MODULE				
MODULE	Trina Tallmax Plus TSM-DD14A(II)-350			
MODULE POWER	350 Wp			
MODULE DIMENSIONS	1956 x 992 mm			
NUMBER OF MODULES	285,120			
STRING LENGTH	30 (9504 strings)			
ARRAY LAYOUT				
MOUNTING SYSTEM	2V90 / 2V60			
MODULE ORIENTATION	Tilt ±60			
ROW TO ROW CLEARANCE	5.08 m			
PITCH	9.00 m			
POWER PER ARRAY	63 / 42 kWp			
NUMBER OF ARRAYS	1468 / 174 (~1584)			
TOTAL DC POWER	99.79 MWp			
INVERTER	·			
INVERTER	Schneider 1500V 2000kVA			
STATION	19 × PVBox (4000kVA)			
AC POWER @ 25 °C	38 × 2000kW = 76 MVA			
DC / AC RATIO	131%			

005	25/01/2018	APPROVAL	PRX	TUK	JMV	MODULE AREA UPDATED AND DC POWER INCREASED TO 96.77MWp		
004						Module Confirguration with Flexibility	IST	
003						MODULE AREA UPDATED AND DC POWER INCREASED TO 98.87MWp	Z	
002	29/08/2017	APPROVAL	PRX	TUK	JMV	MODULE AREA UPDATED AND DC POWER INCREASED TO 96.77MWp	ISIC	
001	25/08/2017	APPROVAL	PRX	TUK	JMV	MODULE AREA UPDATED	EV	
000	02/03/2017	APPROVAL	PRX	TUK	JMV	FIRST ISSUE		
Nr.REV	DATE	ISSUED FOR	DRAWN	REVIEWED	APPROVED	COMMENTS		
	Level 16, 200 Mary Street, Brisbar			, 200 Mary S	e 25/01/2018 scale: 1:250)		
EQUIS Queensland QLD 4000 Australia			and QLD 400 a	00	STATUS: Preliminary	5		
PROJECT: PROJECT: DO8 AUS TAB2 TAILEM BEND 2			TAILEN	PROJECT LOCATION: 35.27° S 139.48° E				
DRAWING TITLE:								
DIAWING TITLE:	Module Layout					0100 1		







Appendix B. Updated Section 49 Endorsement



B135341



GPO Box 2343 Adelaide SA 5001 DX 56201 Tel 08 8226 3500 Fax 08 8226 3535 www.dpc.sa.gov.au

January 2018

Mr Duncan Mortimer General Manager Development and Community Equis Energy (Australia) Pty Ltd

Email: duncan.mortimer@equisenergy.com

Dear Mr Mortimer

CROWN SPONSORSHIP VARIATION FOR THE STAGE 2 TAILEM BEND SOLAR PROJECT

Thank you for your letter of 19 January 2018 seeking a variation to the existing Crown sponsorship of Equis' planned Stage 2 Tailem Bend Solar Project (Project).

The Stage 2 Project was provided with Crown sponsorship on 7 November 2017, noting it has the potential to benefit South Australia and can be considered public infrastructure. The original Crown sponsorship covered the construction of up to 90 MW of solar PV generation.

Since Crown sponsorship for the Stage 2 Project was granted, I am aware that Equis has undertaken further internal work on the proposal and that you are now seeking to integrate an additional 10MW of solar PV capacity. This will bring the total solar capacity of the Stage 2 Project up to 100MW.

I have considered your request for a variation to the existing Crown sponsorship of the Stage 2 project to accommodate this increased capacity. I note that it will lead to further benefits to South Australia and is unlikely to result in any adverse consequences. I therefore approve your request for a variation to the current Crown sponsorship of your Stage 2 Project.

It is the responsibility of Equis to prepare all documentation as required by section 49 of the Act. All costs in the preparation of the development application, lodgement and any other subsequent action in relation to this application are the responsibility of Equis.

The Department of the Premier and Cabinet makes no representations or gives no warranties in relation to the outcome of the development application or time that it takes to secure a planning outcome. It is Equis' responsibility to obtain all other statutory

approvals, licences, connection agreements and permits from relevant authorities, manage community expectations and to fund the project. The State Government makes no commitment to purchase any product or service related to the project.

This approved variation to your existing Crown sponsorship of the Stage 2 Project does not impact its current date of expiry. Accordingly, a development application under this Crown sponsorship variation must continue to be lodged with the State Planning Commission on or prior to 3 November 2018. If this is not achieved by that time, my support under Section 49(2)(c) of the *Development Act 1993* for Equis' Stage 2 Project will lapse.

If you have any questions regarding the preparation of the material to support this section 49 variation application, please contact Mr Mark Jackson on (08) 8429 5082 or via email <u>mark.jackson@sa.gov.au</u>.

Yours sincerely

Dr Don Russell CHIEF EXECUTIVE



Appendix C. Summary of Resultant Changes to the Development Application and Appendices

The below table provides a comparison of resultant changes to the Development Plan and Appendices based on the Table of Contents of the Development Application, originally lodged on the 21st of December 2017. Sections of the Development Application and Appendices which have been significantly altered by the proposed change in technology and capacity have been updated in full as referenced within this table.

Development Application Section Reference	Summary Resultant Change to Development Application
Executive Summary	This section of the Development Application references $90MW_{AC}$ capacity, which has changed to allow for up to $100MW_{AC}$ capacity.
Key Environmental Considerations	No change.
1. Introduction	This section of the Development Application references $90MW_{AC}$ capacity, which has changed to allow for up to $100MW_{AC}$ capacity.
2. The Applicant – Equis Energy (Australia)	No change.
3. Statutory Requirements	No change.
3.1 Approval Process	No change.
3.1.1 Public Notification	No change.
3.1.2 Statutory Referrals	No change.
3.2 Additional Approvals	No change.
3.3 Strategic Alignment	This section of the Development Application references $90MW_{AC}$ capacity, which has changed to allow for up to $100MW_{AC}$ capacity.
3.3.1 Alignment with National Policy Objectives	No change.
3.3.2 Alignment with State Policy Objectives	No change.
4. Subject Site and Project Locality	No change.
5. Description of the Development	This section of the Development Application references $90MW_{AC}$ capacity, which has changed to allow for up to $100MW_{AC}$ capacity.
	The spacing between the solar panels has changed from approximately 4.5 metres between installation centres to a maximum (worst case) of 9 metres spacing between installation centres.
5.1 Proposed Layout and Key Components	No Change.
5.1.1 Summary Components	No Change.
5.1.2 Solar Technology	No Change.
5.1.2.1 Single-axis Tracking Solar Panels	The maximum height of the modules has changed from 3 to up





Develo	oment Application Section Reference	Summary Resultant Change to Development Application
		to a maximum height of 4.5 metres above ground level. The spacing between the solar panels has changed from approximately 4.5 metres between installation centres to a maximum (worst case) of 9.5 metres spacing between installation centres.
		The indicative design details shown in Figure 5-2 and Figure 5-3 have changed. The updated design details are presented in Appendix A of this letter.
5.1.2.2	Module Footings	No Change.
5.1.3	Inverter Stations	No Change.
5.1.4	Connections	No Change.
5.1.5	Administration/Controls and Laydown Compound Area	No Change.
5.1.5.1	Administration and Controls Building	No Change.
5.1.5.2	Car Parking	No Change.
5.1.5.3	Amenities	No Change.
5.1.5.4	Battery Storage	No Change.
5.1.6	Fencing and Security	No Change.
5.1.7	Lighting	No Change.
5.1.8	Drainage Works, including Stormwater Management	No Change.
5.1.9	Site Access and Internal Access Roads	No Change.
5.1.10	Lightning Protection	No Change.
5.1.11	Landscaping	No Change.
5.1.12	Final Project Layout	This section of the Development Application references $90MW_{AC}$ capacity, which has changed to allow for up to $100MW_{AC}$ capacity.
5.2 Co	nstruction Phase	No Change.
5.2.1	Construction Programme	No Change.
5.2.2	Construction Workforce	No Change.
5.2.3	Temporary Construction Facilities	No Change.
5.2.4	Utilities	No Change.
5.2.5	Vehicle Movements	No Change.
5.2.6	Waste Management	No Change.
5.3 Op	erational Phase	No Change.
5.3.1	Operating Workforce	No Change.
5.3.2	Utilities	No Change.





Development Application Section Reference	Summary Resultant Change to Development Application
5.3.3 Stormwater Management	No Change.
6. Environmental Assessment	No Change.
6.1 Visual Amenity	The Landscape Character and Visual Impact Assessment Report has been updated, but the methodology used has not changed.
6.1.1 Existing Environment	No change
6.1.2 Sensitive Receptors	The potential sensitive receptors were reviewed as part of the update to the Landscape Character and Visual Impact Assessment Report and were found to be unchanged.
	However, further consultation meetings have occurred with landholders on 20 and 21 February 2018. Discussions with landholders regarding potential screening at selected locations is ongoing.
6.1.3 Impact Assessment	The increase in overall height of the modules will result in minor changes to the level of visual impact experienced at sensitive receptors. The revised visual amenity impact assessment summary is presented as C.1 below.
6.2 Traffic	No change.
6.2.1 Existing Environment	No change.
6.2.2 Sensitive Receptors	No change.
6.2.3 Impact Assessment	No change.
6.3 Aviation	No change.
6.4 Cultural and Historic Heritage	No change.
6.4.1 Existing Environment	No change.
6.4.2 Sensitive Receptors	No change.
6.4.3 Impact Assessment	No change.
6.5 Flora and Fauna	No change.
6.5.1 Existing Environment	No change.
6.5.2 Impact Assessment	No change.
6.6 Air Quality	No change.
6.6.1 Construction Air Quality	No change.
6.6.2 Operation Air Quality	No change.
6.7 Noise	No change.
6.8 Site Contamination	No change.
7. Development Plan Assessment	No change.
7.1 Renewable Energy Facilities	No change.
7.2 Visual	No change.
7.3 Traffic and Transport	No change.





Development Application Section Reference	Summary Resultant Change to Development Application
7.4 Heritage	No change.
7.5 Flora and Fauna	No change.
7.6 Air Quality	No change.
7.7 Noise	No change.
7.8 Bushfire	No change.
7.9 Site Contamination	No change.
7.10 Water and Flooding	No change.
7.11 Landslip	No change.
7.12 Acid Sulfate Soils	No change.
7.13 Chemical Storage and Handling	No change.
7.14 Orderly and Economic Development	No change.
7.15 Urban Employment Zone	No change.
8. Environmental Management	No change.
8.1 Construction	No change.
8.2 Operation	No change.
8.3 Repowering / Decommissioning	No change.
8.3.1 Repowering	No change.
8.3.2 Decommissioning	No change.
9. Conclusions	No change.
10. References	No change.
Appendix A Section 49 Endorsement	An updated Section 49 Endorsement letter which reflects the increase in maximum capacity to allow for up to $100MW_{AC}$ is attached as Appendix B to this letter.
Appendix B Letter of Support	No change.
Appendix C Certificates of Title	No change.
Appendix D Proposed Development Indicative Layout and Preliminary Design Drawings	The updated indicative layout and preliminary design drawings are provided as Appendix A of this letter. There has been no change to the overall proposed disturbance footprint.
Appendix E Indicative Infrastructure and Design Details	No change.
E.1 Indicative PV Module data sheets	No change.
E.2 Indicative Single-Axis Tracker Data Sheets	An updated single-axis tracking data sheet is presented as C.2 below for information.
E.3 Indicative Inverter data sheets	No change.
E.4 Indicative Battery data sheets	No change.
Appendix F Landscape and Visual Impact	A revised Landscape Character and Visual Impact





Development Application Section Reference	Summary Resultant Change to Development Application
Assessment	assessment report is attached as Appendix D to this letter.
Appendix G Preliminary Traffic Management Plan	No change.
Appendix H Vegetation Assessment	No change.
Appendix I Relevant Development Plan Policy	No change.

C.1 Revised Section 6.1.3 – Visual Amenity: Impact Assessment

During the construction phase, the change to visual amenity within the study area will occur as a result of earthworks, construction of project and ancillary infrastructure as well as an overall increase in the number of people and vehicles within the subject area. The changing visual environment and activity during construction will be temporary, therefore was not considered in detail in the visual assessment.

The solar project will be low in profile, comprising of panels which when fully tilted at 60° does not exceed a maximum height of 4.5 metres. In theory the solar project should be visible in the fore and mid-ground when viewed from locations to the immediate west and south of the site. However, it is apparent that subtle changes in undulation across the site and wider contextual landscape coupled with the presence of existing vegetation scattered throughout the area is likely to screen part or the entire solar project from many locations within these immediate areas.

For viewers more than three kilometres away from the subject site, the reduction in apparent size of the development as a result of distance will mean that it is likely to be insignificant in height and concealed within the view. In particular, the sense of place and place attachment values of Tailem Bend and Murray Bridge will not be detrimentally affected by the project.

Within a locality of low scenic quality, the impact likely to be experienced at the sensitive receptors will range between:

- Slight beneficial impact from the elevated sensitive receptor on the Dukes Highway (SR01). When considered in conjunction with the TBSP, the impact improved to moderate beneficial impact;
- No change, no change to slightly adverse or slightly adverse impact at five residential receptors for TB2SP. When considered in conjunction with TBSP, the impact at two residential receptors (SR03 and SR07) remained the same (no change to slightly adverse) and the impact at three residential receptors (SR02, SR04 and SR05) increased, with the most notable cumulative effects experienced at SR02 and SR05 (slight to moderately adverse impact); and
- Moderate adverse impact at one residential receptor (SR06). When considered in conjunction with TBSP, the impact increased to moderate to substantial adverse impact.

Visual mitigation via vegetative screening was recommended for two sensitive receptors (SR02 and SR06), although discussions with landowners at these locations have revealed that the owners did not consider visual mitigation necessary at the time of LCVIA reporting. Although the predicted visual impact for SR02 and SR05 is considered similar for the property as a whole, mitigation is not recommended for SR05 as the substantive view of the panels is not from the dwelling (but from the back of the shed). This can be compared with SR02 where the main view of the solar panels is from the front of the dwelling. The recommended mitigations are as follows:

SR02: The visual impact of PV panels and on-site infrastructure can be mitigated through the introduction
of screen planting along the western boundary of TB2SP or on the line of sight within the property
boundary of SR02. The use of native trees and shrub species with low maintenance requirements would
likely ensure that, if desired, a visual buffer could be quickly established; and





SR06: Boundary screening along and outside the western boundary of TB2SP or on the line of sight within the SR06 property boundary will assist in mitigating the visual impact of the PV panels and security fencing. The use of native trees and shrub species with low maintenance requirements is recommended to establish a quick growing visual buffer. Planting evergreen native shrubs which attain a height of at least 2 m along the first 40 m of the western boundary of TBSP from Substation Road or approximately 12 - 15 m of screening on the line of sight within the SR06 property boundary will achieve the recommended mitigation outcomes for TB2SP (and deliver visual mitigation benefits for the approved TBSP).

Based on these measures, all likely visual impacts on sensitive receptors can be appropriately mitigated if considered required by the landholders.

C.2 Updated Indicative Single-Axis Tracker Data Sheet

An updated technical datasheet for the proposed single-axis tracking technology is attached overleaf.







The latest generation of the horizontal single-axis tracker







TECHNICAL DATASHEET

MAIN FEATURES	
Tracking System	Horizontal Single-Axis with independent rows
Tracking Range	120° +
Drive System	Enclosed Slewing Drive, DC Motor
Power Supply	Self-Powered PV Series
	Optional: AC/DC Universal Input
Tracking Algorithm	Astronomical with TeamTrack Backtracking
Communication	
Wireless	Hybrid Radio + RS-485 Cable
Optional: Wire	RS-485 Full Wired
Wind Resistance	Per Local Codes
Land Use Features	
Independent Rows	YES
Slope North-South	17%
Slope East-West	Unlimited
Ground Coverage Rat	o Configurable. Typical range: 28-50%
Foundation	Driven Pile Ground Screw Concrete
Temperature Range	
Standard	- 4°F to +131°F -20°C to +55°C
Extended	-40°F to +131°F -40°C to +55°C
Availability	>99%
Modules	Standard: 72 cells Optional: 60 Cells; Crystalline, nin Film (Solar Frontier, First Solar and others); Bifacial

MODULE CONFIGURATIONS

1000V	Length	Height	Width	1500V	Length	Height	Width
2x38	38.1 m			2x42	42.1 m (138' 12")		
		3.95 m	3.92 m	2x43.5	44.1 m	3.95 m	3.92 m
	10.1	(12' 12'')	(12' 12'')		(144' 8")	(12' 12")	(12' 10")
2x40	40.1 m (131' 7")			2x45	45.1 m (147' 12")		

SERVICES

Tracker Advisory Services	Tracker Turnkey Contracting
Technical Support	Commissioning
Pull Out Test	Maintenance

MAINTENANCE ADVANTAGES

Self-lubricating Bearings Face to Face Cleaning Mode 2x Wider Aisles

WARRANTY

Structure	10 years (extendable)
Motor	5 years (extendable)
Electronics	5 years (extendable)



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DNV GL Technology Review available Bankability report WIND TUNNEL TESTED



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