

COUNCIL ASSESSMENT PANEL SPECIAL MEETING

21 October 2020

AGENDA – 9.1

Applicant: Tetris Energy Pty Ltd	Landowner: Jerilderie Pty Limited
Agent: Frank Boland	Originating Officer: Melanie Scott
Development Application:	20/530/473
Application Description: Solar farm (4.98MW), comprising ground mounted solar arrays (maximum height 2.9m), battery storage containers (4MW), inverters, temporary site office, storage building & associated car parking, fencing (maximum height 2.3m) & signage (non-complying)	
Subject Land: Lot:16 Sec: P6597 DP:13143 CT:5460/130	General Location: Intersection of Warren Road and Torrens Valley Road Birdwood Attachment – Locality Plan
Development Plan Consolidated : 8 August 2019 Map AdHi/3	Zone/Policy Area: Watershed (Primary Production) Zone
Form of Development: Non-complying	Site Area: 55.1 ha
Public Notice Category: Category 3 Non Complying Notice published in The Advertiser on 24 July 2020	Representations Received: 80 Representations to be Heard: 24

1. EXECUTIVE SUMMARY

The purpose of this application is to seek Development Plan Consent for the installation of an electricity generation plant, in the form of a ground mounted solar photovoltaic array and associated infrastructure. The proposal is wholly contained within Lot 16 Part Section 6597 Torrens Valley Road Birdwood.

The subject land is located within the Watershed (Primary Production) Zone and the proposal is a non-complying form of development. Seventy eight representations in opposition and two representation in support of the proposal were received during the Category 3 public notification period.

It is acknowledged that solar facilities are not specifically listed as an envisaged use within the subject zone, however the establishment of renewable energy facilities is generally supported by Development Plan policies when established in appropriate areas to maximise efficient generation and supply of electricity. The subject photovoltaic array is located on existing cleared land, with an east to west orientation to take advantage of solar access. The applicant confirmed their research for this site meets ideal solar access levels which encourage a maximum generating capacity of 4.95 megawatts. In recognition of the community feedback the applicant has confirmed during the assessment of the application that they will use a single axis tracking system which minimises the height of the proposed solar units to a maximum of 2.9metres. Extensive land scaping to a maximum height of 3 metres is proposed along the southern, western and eastern boundaries of the subject land, inside the property boundary in the portion occupied by the solar farm and the applicant has agreed to paint all buildings on the site Colorbond Woodland Grey, further limiting the visual impact of the proposal.

As per the CAP delegations, the CAP is the relevant authority for Category 3 non-complying development where representors wish to be heard in support of their representations.

The main issues relating to the proposal as raised by the representors are visual amenity, impacts on the character of the locality, light reflection, bush fire management, loss of land for primary production use and the impact on the rural character of area.

Following an assessment against the relevant zone and Council Wide provisions within the Development Plan, staff are recommending that CAP **GRANT** Development Plan Consent.

Note, concurrence from SCAP is no longer required for consents to non-complying development effective 15 May 2020 as a result of the COVID-19 Emergency Response (Further Measures) Amendment Bill 2020 and the subsequent amendment to Section 35 of the Development Act 1993 which removed the need for concurrence to be obtained.

2. DESCRIPTION OF THE PROPOSAL

The proposal is for the following:

- 4.98MW solar facility using single axis tracking (maximum height 2.9m) photovoltaic technology covering approximately 13 hectares of the subject land
- 1800 tracker stands (piers) supporting 13000 solar panels
- Battery storage – up to 5 units approximately 6m x 15m x 3m high
- 2 x 2500 SMA inverters - the dimensions are 6m x 2.5m x 3m high, similar to a 20ft shipping container. Please note that inverters are sometimes referred to as PCUs (Power Conditioning Unit in the report and attachments).
- Temporary site office and maintenance storage area 6m x 2.5m x 2.7m high on 0.6m pier footings
- Landscaping proposed along the western, southern and eastern perimeter
- 2.3m high security mesh fence and
- Location signage at the entrance gate that includes project details, site contact, emergency details and safety considerations.

The proposed plans are included as **Attachment – Proposal Plans** with other information included as **Attachment – Application Information** and **Attachment – Applicant's Professional Reports**.

3. BACKGROUND AND HISTORY

The subject land is one parcel known as lot 16 part section 6597 Torrens Valley Road Birdwood and has no development history. The land forms part of a large rural land holding with multiple parcels which extends more than 3 kilometres north on Warren Road to Martin Hill Road.

There were amended plans prior to public notification to make allowance for the proposal location adjacent a scenic route.

4. REFERRAL RESPONSES

EPA

Based on the information submitted with the application, the EPA is satisfied the proposed solar farm demonstrates a negligible risk to water quality due to the following:

- No chemical storage is proposed within the solar farm facility. Therefore, the risk of potential water quality impacts from a Class 1 listed pollutant (as defined in the *Environment Protection (Water Quality) Policy 2015*) is considered low.

- The proposed solar farm is set back from the River Torrens by approximately 130 metres.
- Minor access roads are proposed within the site, all of which would be permeable surfaces constructed using an all-weather compressed gravel.
- Dense intact native vegetation would not be removed at the site. As such, erosion impacts from construction works would be of a less impact.
- Stormwater from all associated infrastructure would be managed by shallow swales with diversion drains located along the south western corner of the site and would divert stormwater from the upstream catchment of the site. The EPA have recommended two standard notes (refer notes 3 & 4).

LOCAL HERITAGE (informal)

The Lutheran Church is located at some distance from the Warren Road frontage, with vegetation scattered between the Church and the road, and the building is elevated higher than the site for the solar array. The arrays have a set back from the Warren Road of 10 metres and the existing screening (deciduous) is proposed to be supplemented with a native vegetation screen (evergreen), which will provide a visual barrier between the arrays and the Local Heritage Place site at 2017 Warren Road. Council's Local Heritage advice is that for all these reasons there will be no physical impact on the built fabric of the Church.

The above responses are included as ***Attachment – Referral Responses***.

CFS and NVC referrals were not triggered by the proposal in accordance with Development Regulations 2008.

5. CONSULTATION

The application was categorised as a Category 3 form of development in accordance with Section 38(2) (c) of the Development Act 1993 requiring formal public notification and a public notice. Eighty (80) representations were received plus one submission was received out of time. Overall seventy seven (78) representations are opposing the proposal, and two (2) are in support of the proposal. The majority of representors were from adjacent and nearby properties.

The following representors indicated that they wish to be heard:

Name of Representor	Representor's Property Address	Nominated Speaker
Jim Rathjen	PO Box 9, Birdwood	Personally
John Keep	PO Box 182, Birdwood	Kieron Barnes Planning Studio
Paul Laister	PO Box 140, Birdwood	Personally
Bianca Laister	PO Box 140, Birdwood	Personally
Kathryn Hodgson	8 Church Street, Birdwood	Bianca Laister
Geoff Hodgson	8 Church Street, Birdwood	Bianca Laister
Arnold Neyman	Eastern Entrance to Birdwood – corner of Warren Road & Torrens Valley Road	Bianca Laister

Wendy Mallett	6 Blumel Road, Birdwood	Bianca Laister
Margaret Applebee	4 Church Street, Birdwood	Bianca Laister
Malcolm Applebee	4 Church Street, Birdwood	Bianca Laister
Adam & Diane Levy	254 Winton Road, Forreston	Personally
G L & E F Pienaar	56 Shannon Street, Birdwood	Personally
Matthew & Haze Sackey	31 Winton Road, Birdwood	Personally
Jess Micklethwait	910 Torrens Valley Road, Birdwood	Personally
Adrian & Ann Beacham	1783 Warren Road, Birdwood	Personally
Karen Russell	13 Lange Crescent, Birdwood	Personally
Garry North	1977 Warren Road, Birdwood	Personally
Pastor David Kuss	Birdwood Lutheran Church 2017 Warren Road, Birdwood	Personally
Caralyn Marsland	PO Box 93, Birdwood	Personally
Anthony Le Ray	1030 Torrens Valley Road, Birdwood	Personally
Eboni Ashby	1030 Torrens Valley Road, Birdwood	Personally
David Lewis	1 Theel Avenue, Birdwood	Personally
Liesa Lombard	30 Shannon Street, Birdwood	Personally
Matthew Lombard	29 Shannon Street, Birdwood	Personally
Christine Shanahan	811C Torrens Valley Road, Birdwood	Personally
Kristine Hefford (Keogh)	5 Church Street, Birdwood	Personally

The applicant or their representatives – Frank Boland and Mr Robin Ling on behalf of Tetris Energy and Frank Brennan (Planning Consultant) will be in attendance.

The issues contained in the representations can be briefly summarised as follows:

- Impacts on visual amenity
- Appropriateness of the proposed development within the locality
- Loss of primary production land
- Impact on adjacent Local Heritage Place
- Impacts of glare/light reflection
- Industrial nature of the proposed development

These issues are discussed in detail in the following sections of the report.

A copy of the submissions is included as **Attachment – Representations** and the response is provided in **Attachment – Applicant’s Response to Representations**. A copy of the plans which were provided for notification is included as **Attachment – Publically Notified Plans**

6. PLANNING & TECHNICAL CONSIDERATIONS

This application has been evaluated in accordance with the following matters:

i. The Site's Physical Characteristics

The subject land is approximately 51 hectares in area and is bisected by the Torrens River meandering roughly from the north eastern corner to the south western corner. The portion of the land on the southern side of the river is gently undulating. The land on the northern side of the river is steeply sloped. The river banks are lined with eucalypts and there are eucalypts dotted around the subject land. The land is bounded to the south by Torrens Valley Road and to the east by Warren Road. In addition to the Torrens River, there are two minor watercourses on the land, all forming part of the Torrens River catchment. The Torrens River is flood mapped on the north eastern portion of the land at or close to the boundary. There are two bores located on the land and some fencing. The land has historically been used for grazing and contains no buildings.

ii. The Surrounding Area

Torrens Valley Road is a designated tourist route in the Development Plan [refer Figure AdHi (EC)/1] and a DIT road. All adjoining land is located within the same zone, being the Watershed Primary Production zone. Land holdings to the north, south and west are generally larger holdings with some smaller rural lifestyle allotments interspersed. The smaller lifestyle allotments are clustered on Winton Road to the west of the subject land and in the south western corner across Torrens Valley Road. The land to the east and south east of Warren Road contains smaller holdings in the same zone, one of which is the Local Heritage listed Lutheran Church and Manse. The western-most boundary of the township of Birdwood is some 180 metres to the east of the subject land. The proposed access is approximately 90 metres from the intersection of Winton and Torrens Valley Road. The solar farm begins approximately 13 metres from the Warren Road property boundary and is generally approximately 100 metres from Torrens Valley Road. Importantly the site was chosen for its proximity to the existing overhead transmission line running from the solar farm's proposed Sub-Station to the existing SAPN Angas Creek – Tungkillo 33kV electricity distribution line.

iii. Development Plan Policy considerations

a) *Policy Area/Zone Provisions*

The subject land lies within the Watershed (Primary Production) Zone. The Zone provisions seek the following:

- *The maintenance and enhancement of the natural resources of the south Mount Lofty Ranges*
- *The enhancement of the Mount Lofty Ranges Watershed as a source of high quality water*
- *The long-term sustainability of rural production in the south Mount Lofty Ranges*
- *The preservation and restoration of remnant native vegetation in the south Mount Lofty Ranges*
- *The enhancement of the amenity and landscape of the south Mount Lofty Ranges for the enjoyment of residents and visitors*

The following are considered to be the relevant Zone provisions:

Objectives: 1, 2, 3, 4 & 5

PDCs: 1, 2, 4, 5, 8, 9, 10, 11, 14, 15, 16, 17, 28, 29, 31, 32, 35, 36, 37, 38, 39, 42, 43, 44

PDC 1 requires buildings to be located in unobtrusive locations and defines seven parameters to assist in determining what is unobtrusive. In the case of the subject proposal its location is considered below ridge lines and in a valley given the land is on the low side of the two major surrounding roads. There is a possibility the proposal will be glimpsed in the skyline momentarily on the approach from the south west, however it is considered that the proposed landscaping will minimise the impact of this visual intrusion in the landscape.

In addition, the proposal is set back over 100 metres from the Torrens Valley Road boundary and 10 metres from Warren Road. With respect to the Warren Road setback it is noted that the site is on the low side of the road. Minimal earthworks are proposed in the location of the solar arrays, other than for footing and swale works. The solar arrays have a maximum vertical profile of 2.9 metres. Furthermore, PDC 1 requires development to be screened by existing native vegetation when viewed from public roads. The proposal does not propose to alter any existing vegetation and proposes to increase plantings for screening purposes from all adjoining roads and has been designed to minimise interference with watercourses on the subject land. For all these reasons the proposal is considered on balance to accord with PDC 1.

PDC 2 requires buildings to be unobtrusive and not detract from the desired natural character of the zone. The PDC has parameters which detail how this can be achieved including keeping buildings low in profile. The solar arrays on a single axis rotation will have a maximum height of 2.9 metres which is considered low in profile, particularly when compared to residential development the solar arrays are less than a standard single storey wall height.

The solar arrays consist of 13,000 panels on 1,800 piers and run with the contours of the land, with landscaping proposed along the western, southern and eastern perimeter. Grazing is proposed to be integrated with stock able to graze at times beneath the solar arrays to ensure the primary production use of the land is retained and the fire risk is mitigated. On balance the proposal is considered to accord with PDC 2.

PDC 4 requires buildings and structures to be a minimum of 25 metres from watercourses and not to be located on land subject to flood mapping. With regard to flood mapped land the PDC references chain mesh fences as undesirable. The proposal has been designed to meet the setback distance to watercourses described in this PDC. There is a portion of the subject land which is flood mapped, located some 400 metres to the north of the proposal. As such the flood mapping portion of this PDC has limited influence with regard to the merits of the proposal. This issue is explored in more detail in the hazards section of this report.

PDC 8 requires outbuildings be limited and grouped together. The proposal includes a solar array spread over approximately 13 hectares (23.63%) of the 55 hectare property with a 1.3km perimeter fence and a number of support buildings clustered together in the south western corner adjacent to the solar array. The location for these buildings is approximately 170 metres from Winton Road and 100 metres from Torrens Valley Road. The buildings proposed include a temporary office and toilet during construction, a spare parts shipping container PCUs, solar inverters and battery storage. Due to terrain and existing vegetation the proposal has little and very limited visibility to residences on Winton Road. On balance the proposal is considered in accordance with this PDC.

There is only one access point proposed from Winton Road to the south western corner of the site which is proposed to follow the gentle contours of the land on this portion of the site. This access will be used during construction which is expected to take of 3 – 4 months. There will be a peak in months 2 and 3 of construction which may see 15 to 20 people on site. Once operational the site may generate up to four trips per week by a light vehicle and a small truck every 6 months. The proposal is therefore considered to be in accordance with PDC 9.

The applicant proposes a screen of native vegetation on the western, southern and eastern property boundaries, inside the boundary line and has used Council recommended plantings to varying density to 3 - 4 metres high. The proposal is therefore considered to be in accordance with PDCs 10 & 11.

Representors have argued the proposal will detract from the natural and rural landscape character of the region. The applicant has mitigated the potential impact on the visual amenity of the proposal by amending the proposed solar array to provide a 100 metre setback from Torrens Valley Road. No further development is proposed in the vicinity of the junctions of Torrens Valley Road and Warren and Winton Roads. In addition to the vegetation on the roadside verge of Torrens Valley and Warren Roads, the applicant proposes creating an additional native vegetation screen along both Torrens Valley Road, Warren Road and Winton Road on the subject land. Finally the proposal seeks to protect the rural vista by retaining the existing sheep grazing operation around and amongst the solar array and retaining all existing native vegetation. On balance the proposal is considered to be in accordance with PDCs 14, 15, 16 & 17.

Conservation

The proposal has been modified to protect all native vegetation on the land including stand-alone eucalypts scattered on the land in accordance with PDCs 28 & 29. The proposal will not adversely impact on native vegetation in accordance with PDC 31 and 32. There is no known swampland in the vicinity of the proposal in accordance with PDC 35. There will be a portaloo on site during construction however there is no intention to install a permanent staff ablutions facility on the site long term. The proposed solar array is not expected to impact on water quality (as confirmed by the EPA), as there will be no on-site waste system, the photovoltaic cells are closed units with limited opportunity for leakage and will not significantly the flow of surface water on the site in accordance with PDC 36.

Appearance

PDC 37 requires trees, other vegetation and earth mounding to be retained or provided as part of the development where the environment may be visually improved by the provision of the same. Earth mounding was not considered necessary for this site and, as discussed elsewhere in this report, extensive landscaping has been proposed to enhance the existing vegetation. On balance the proposal is considered to be in accordance with PDC 37. Further as previously discussed, there are no other buildings on the subject land and the support buildings for the solar array have been clustered together as required by PDCs 38 & 39. The applicant has agreed to paint all buildings (temporary site office, battery storage and inverters) Colorbond Woodland Grey.

Rural

PDC 42 requires rural areas be retained for primary production purposes and the applicant proposes to graze sheep under and around the solar array. There are some rural studies interstate currently into the effect of solar arrays on primary production, and with regard to sheep grazing preliminary findings show sheep make use of the shade and shelter provided. On balance the proposal is considered to be in accordance with PDCs 43 and 44 as the proposal is a use that will be compatible with the continuance of grazing on the land.

b) Council Wide provisions

The Council Wide provisions of relevance to this proposal seek (in summary):

- Orderly and economic development

The following are considered to be the relevant Council Wide provisions:

Animal Keeping and Rural Development

Objectives: 1 & 5

PDCs: 1, 4 & 23

The proposal includes the intention to continue grazing sheep on the subject land and has been designed around any native vegetation on the land. There are trials underway at the moment to record the impact of solar arrays on animals grazing in and around them and early reports suggest the animals do well and the solar field benefits from the weed management undertaken by the sheep¹. As the land will still be used for grazing, the proposal does not change the primary use of the subject land in accordance with PDC 1.

During construction there is some potential for dust and noise nuisance which the proponent has undertaken to manage in accordance with EPA guidelines. The solar cells are closed cells and stormwater will fall to the ground and natural overland paths will be followed for the management of run off. The use of sheep to graze the land under the proposed solar arrays will minimise the potential bushfire hazard in the immediate vicinity of the arrays.

¹ https://www.abc.net.au/news/rural/2020-08-25/parkes-solar-panel-sheep-trial-early-positive-results/12581756?utm_medium=social&utm_content=sf237133651&utm_campaign=abc_rural&utm_source=m.facebook.com&sf237133651=1

The proponent has proposed landscaping on the eastern, southern and part of the western boundary of the subject land using native evergreen trees and bushes and has proposed bushfire buffers for these plantings and has amended the plantings to include plants recommended by Council staff as being more fire resistant. The proposal includes appropriate buffers given the deciduous nature of existing roadside vegetation on the southern and eastern road side verges. The proposal has given consideration to all elements of PDC 4 and proposes acceptable outcomes in accordance with this PDC.

PDC 23 is also considered relevant despite describing 'Environmental Covers' adjacent to scenic routes. The reason being is this serves as a valid reference and comparison to the potential impact of the proposed solar farm on the rural landscape. Environmental covers with a maximum height of 5 metres as close as 5 metres to a road often only require a Building Rules Consent but go through no rigorous planning assessment. By comparison, it is considered that the solar arrays with a maximum height of 2.9 metres is likely to have a less imposing presence and impact on the visual amenity of the land on approach to Birdwood.

Design and Appearance

Objectives: 1

PDCs: 7, 9, 11, 12

The proposal is on one of the lowest portions of land in the locality and is therefore unlikely to cause a loss of sunlight to existing development in the locality. Representors have argued that the proposal will present an unreasonable loss of views and alter the character of the area. Arguably the property whose view will be most impacted is 1030 Torrens Valley Road which holds an elevated position approximately 260 metres to the south east of the proposed solar array. Given the array is proposed to be 100 metres north of Torrens Valley Road, and the road frontage outside the house at 1030 Torrens Valley Road is lined with large eucalypts on both sides, it is considered that there will be a minimum visual intrusion for this property as the view is broken up by the existing trees.

With regards to altering the character of the area, the applicant has moved the solar array 100 metres from Torrens Valley Road and offered landscaping prior to public notification of the application. As such it is considered that the proposed array will have a negligible impact on the character of the area when approaching Birdwood from the west. When driving along Warren Road in a northerly or southerly direction there are limited views of the subject land, and consequently the proposed solar arrays, for the following reasons:

1. The existing roadside vegetation which is deciduous will be supported by additional ever green vegetation on the subject land; and
2. The subject land is generally lower than Warren Road which aids the vegetation in screening the proposed solar array from the public realm.

It is worth noting the Local Heritage listed Lutheran Church in Church Street is higher than both Warren Road and the proposed solar farm by some 30 metres, as such this site is afforded some elevated views over the solar array, however the views of the church when approaching Birdwood from the west will remain unobstructed. On balance the proposal is considered to be in accordance with PDC 7.

The only earthworks proposed for the solar array are for an access track to the facilities area and in the area proposed for the facility buildings. There may be some diversion swales suggested as part of a stormwater management plan required by recommended condition 11. The access track is proposed to work with the contours of the land and the proposal suggests minimal earthworks. The proposal is therefore considered to be in accordance with PDC 9.

PDC 11 requires no building should be erected within 100 metres of Scenic Routes which would impair, disfigure, interfere with or, be in any way detrimental to the aesthetic appearance or natural beauty of the scenic routes, the landscape visible from any part of the scenic routes and the landscape visible from any vantage point adjacent to the scenic routes. The proposed solar arrays have been sited 100 metres from the edge of the bitumen on the Torrens Valley Scenic Route. The arrays have a maximum height of 2.9 metres achieved at certain times during the day and a landscape buffer is proposed to a maximum height of 2 - 3metres. No panels are proposed in the vicinity of the intersection of Warren and Torrens Valley Road. The site is generally lower than the surrounding roads. Therefore it is considered that the proposal will have a limited impact on the scenic beauty of the Torrens Valley Scenic Route and therefore the proposal is considered to be in accordance with PDC 11.

PDC 12 requires consideration be given to the impact of any development on the amenity, aesthetic appearance and scenic beauty of the River Torrens and suggests a setback of 60 metres from the top of the bank. The River Torrens is entirely within private land for this proposal and the existing vegetation along the banks of the river is not proposed to be altered. The proposal has been amended to ensure the solar array and associated fencing is not within 60 metres of the top of bank of the River Torrens. The proposal is therefore considered to be in accordance with PDC 12.

Energy Efficiency

Objectives: 2

PDC: 3

Whilst it is acknowledged that solar facilities are not specifically listed as an envisaged use within the subject zone, the establishment of renewable energy facilities is generally supported when established in appropriate areas that maximise efficient generation and supply of electricity. The subject photovoltaic array is located on existing agricultural land, with an east to west orientation to take advantage of solar access. This, along with the single axis tracking system, encourages maximum generating capacity of 4.98 megawatts. The proponent has undertaken extensive site testing and advises the site meets required solar radiation levels and most importantly is adjacent to an appropriate point to connect to the SAPN (South Australian Power Networks) infrastructure. The solar farm will connect directly to the national electricity grid via an overhead transmission line running from the solar farm's proposed Sub-Station to the existing SAPN Angas Creek – Tungkillo 33kV electricity distribution line. The connection into the 33kV SAPN distribution line will be via a pole mounted load switch. There is no potential for overshadowing and the single axis tracking array will ensure the proposal maximises exposure to winter sun. The proposal is therefore considered to be in accordance with PDC 3.

Hazards

Objectives: 1, 5, 6,

PDCs: 1, 2, 3, 4, 5, 8

The subject land is in a medium bushfire risk area, the lowest level of hazard in the Adelaide Hills Council. The solar array does not propose any alteration to existing land form or vegetation so is not considered to alter the bushfire hazard in accordance with PDCs 1 & 2. Further the applicant is proposing to maintain a 10 metre fire break on the subject land adjacent to the proposed landscape screen.

There is a portion of subject land at its north eastern extreme which is flood prone and the solar array is not intended to be placed in this location. The arrays themselves are unlikely to elevate any flood risk given they are elevated and the majority of them are on a contour above the level the portion of flood mapping indicates the flood level rises to. There is however a 2.3metre high chainmesh security fence proposed around the solar arrays. Whilst this style of fencing can pose a flood hazard, the fence is approximately 500 metres downstream of the flood mapped portion of the site and more than 300 metres distance and, 35 metres down slope, from the nearest building (Lutheran Church). Requiring the fence to be no closer to the banks of the Torrens River than 60 metres will limit the flood hazard proposed on the site in accordance with PDCs 3, 4 & 5.

Heritage Places

Objectives: 1, 3, 4

PDCs:

The Lutheran Church is located at some distance from the Warren Road frontage, with vegetation scattered between the Church and the road, and the building is elevated higher than the site for the solar array. The array has a set back from the Warren Road of 10 metres and the existing screening (deciduous) is proposed to be supplemented with a native vegetation screen (evergreen), which will provide a visual barrier between the array and the Local Heritage Place site at 2017 Warren Road. Council's Local Heritage advice is that for all these reasons there will be no physical impact on the built fabric of the Church.

Infrastructure

Objectives: 1, 2, 3

PDCs: 1, 9, 10

The site has been chosen for access to the SAPN network amongst other things. Distance from connection to the energy generating facility is one of the major determinants of the success of a project as power is lost in transmission. Given proximity to the connector the proposal is considered to be in accordance with PDC 1.

PDC 9 requires electricity infrastructure to be designed and located to minimise visual and environmental impacts. As discussed elsewhere in this report a setback 100 metres from Torrens Valley Road and 10 metres from Warren Road is proposed along with improved evergreen boundary buffers on the subject land and the proposal is in accordance with this PDC. Further no clearance of native vegetation is proposed to enable the solar farm installation in accordance with PDC 10.

Interface Between Land Uses

Objectives: 1

PDCs: 1, 2

PDC 1 lists elements of development which can have a detrimental effect on the amenity of a locality. There will be some short term (three months) impacts during construction in relation to noise, dust and traffic. The applicant has indicated their intention to operate the site in accordance with EPA guidelines during construction. Representors have raised concerns that the solar panels will cause glare. The applicant has responded to advise that solar panels are designed to absorb the solar irradiation and there will be negligible glare from the panels. Photovoltaic modules have low levels of reflectivity between 0.03 and 0.20 depending on the specific materials, anti-reflective coatings, and angle of incidence. Being a single axis tracking solar Photovoltaic system, they will track the sun throughout the day and always be directly facing the sun, therefore further minimising angle of incidence and any glare. On balance the proposal is considered in accordance with PDC 1.

The proposal has been well set back from the Torrens Valley Scenic Route (100 metres) and is 10 metres from Warren Road. Additional vegetative screening of the subject land is proposed around the boundaries and combined with the low lying nature of the subject land the proposal is considered to minimise negative impacts on existing and potential future land uses in accordance with PDC 2.

Landscaping, Fences and Walls

Objectives: 1, 2

PDCs: 2

The proponent has used AHC Council's "Guide Native Habitat: Landscaping and Gardening Guide" to select species for the proposed boundary landscaping and as required by this PDC the landscaping is to address the street frontage and will be set back from power lines. Further the applicant has committed to watering and managing the plants in their first three years to ensure survival and ongoing maintenance of the trees. The applicant has also amended the planting list to include some fire resistant species as commended by State Flora and CFS guidelines.

Natural Resources

Objectives: 1, 6, 8, 10, 13, 14

PDCs: 1, 3, 5, 6, 38

The EPA referral response notes the risk of potential water quality impacts is considered low and the proposal demonstrates a negligible risk to water quality. The EPA further notes the greatest risk to the site is during construction and references some of their own construction guides which the applicant has accepted (refer Notes 3 and 4 in the recommendation). As such the proposal is considered in accordance with PDCs 1 and 3. With regard to PDC 5 which seeks minimum effect on natural features, land adjoining water courses and designated scenic routes, as previously discussed the proposal is set well back from the scenic route, does not propose to alter the land form and is setback from the river and thus is considered in accordance with this PDC.

The proposal does not alter any existing native vegetation on the land with the solar arrays being proposed around a few standalone eucalypts scattered across the site. As previously discussed native vegetation is proposed in the buffer plantings and the proposal is considered in accordance with PDC 37.

Orderly and Sustainable Development

Objectives: 1, 2, 3, 4, 10,

PDCs: 1, 2, 3, 5

As previously discussed the screening and low lying nature of the land combined with the low profile of the solar arrays contribute to minimising the visual impacts of the proposal so in accordance with PDC 1 the proposal should not prejudice the development of the zone for its intended use. Indeed the subject land will still be used for grazing (primary production) in accordance with PDC 2.

The applicant has contended the project will boost the local economy during construction and also by the provision of lower cost pollution free electricity as envisaged by PDC 3. As elsewhere in this report the solar array is located to maximise connection potential to existing infrastructure in accordance with PDC 5.

Renewable Energy Facilities

Objectives: 1, 2, 3

PDCs: 1, 3, 4

Whilst the PDCs in this section of Council's Development Plan refer to wind farms and solar arrays are not ancillary to a wind farm, it is generally accepted that solar generation is envisaged under the term renewable energy facilities. There is an argument 'Renewable Energy facility' is a broad term and by definition would capture solar. In which case this proposal has minimised visual impact, does not pose glare or shadowing and is considered to be in accordance with PDCs 3 & 4. Further the applicant has confirmed their site testing ensures the proposed array is in an area which will maximise energy generation as envisaged by PDC 1.

Siting and Visibility

Objectives: 1

PDCs: 1, 2, 3, 9, 10

As discussed elsewhere in this report the solar array has been sited to minimise its visual impact on the natural rural character of the area by being 100 metres from the Torrens Valley Scenic Route and screened from the east, south and west with increased landscaping buffers on the subject land in accordance with PDCs 1, 2 & 10. Further the proposed solar array is not on a ridge line and is on the low side of the adjoining roads to the south and east. On balance the proposal is considered to be in accordance with PDC 3.

The proposed access track from Winton Road is proposed in crushed gravel and limited to one point on the subject land for the support buildings associated with the development. Council engineering staff have no objection to the proposed access which is considered to be in accordance with PDC 9.

7. SUMMARY & CONCLUSION

The proposal is the first large solar array in the Adelaide Hills Council Area and has aroused a great deal of community interest. Whilst solar farms are not particularly mentioned in the way Wind Farms are in the Development Plan, it is considered that Renewable Energy Facilities include solar farms and therefore solar power generation can be considered to be envisaged in the zone. There have been a number of versions of the solar array layout in response to the planning and representor concerns raised. Amongst these concerns the main one has been the set back from the Torrens Valley Scenic Route. Given the setback to the main roads, the improved landscaping and the proposed continued use of the land for grazing purposes, the proposal is considered on balance to meet the aspirations and relevant provisions of the Development Plan.

The proposal has been well set back from the Torrens Valley Scenic Route (100 metres) and is 10 metres from Warren Road. Additional screening of the subject land is proposed around the boundaries and, combined with the low lying nature of the subject land, the proposal is considered to minimise negative impacts on existing and potential future land uses.

The proposal is sufficiently consistent with the relevant provisions of the Development Plan, despite its non-complying nature, and it is considered that the proposal is not seriously at variance with the Development Plan. In the view of staff, the proposal has sufficient merit to warrant planning consent. Staff therefore recommend that CAP **GRANT** Development Plan Consent, subject to conditions.

8. RECOMMENDATION

That the Council Assessment Panel considers that the proposal is not seriously at variance with the relevant provisions of the Adelaide Hills Council Development Plan, and GRANTS Development Plan Consent to Development Application 20/530/473 by Tetris Energy Pty Ltd for Solar farm (4.98MW), comprising ground mounted solar arrays (maximum height 2.9m), battery storage containers (4MW), inverters, temporary site office, storage building & associated car parking, fencing (maximum height 2.3m) & signage (non-complying) at Lot 16 Torrens Valley Road Birdwood subject to the following conditions:

(1) Development In Accordance With The Plans

The development herein approved shall be undertaken in accordance with the following plans, details and written submissions accompanying the application, unless varied by a separate condition:

- **Planning Issue Arkgroup Drawings A-090720 01 of 02 & 02 of 02 date stamped by Council 15 September 2020**
- **Tracker & PCU Elevation Drawing PS118584-CIV-0002 revision A dated 27 March 2020 prepared by WSP and date stamped by Council Amended 14 September 2020**
- **Birdwood Solar Farm Amended Landscaping Plan prepared by Tetris Energy dated 14 September 2020 and date stamped by Council Amended 14 September 2020**
- **PV Solar Overall Layout Plan revision 3 dated 28 September 2020 and date stamped by Council 29 September 2020**

REASON: To ensure the proposed development is undertaken in accordance with the approved plans.

(2) External Finishes

The external finishes to the buildings (temporary site office, battery storage and inverters) herein approved shall be as follows:

WALLS: Colorbond Woodland Grey or similar

ROOF: Colorbond Woodland Grey or similar

REASON: The external materials of buildings should have surfaces which are of a low light-reflective nature and blend with the natural rural landscape and minimise visual intrusion.

(3) Construction Environmental Management Plan (CEMP)

A Construction Environmental Management Plan (CEMP) shall be submitted for approval by Council prior to the commencement of site works. The CEMP shall include specific management measures or plans for the following aspects:

- Air quality and dust
- Traffic and access
- Waste management

REASON: To minimise environmental impacts.

(4) Operational Environmental Management Plan (OEMP)

An Operational Environmental Management Plan (OEMP) shall be submitted for approval by Council prior to the commencement of commercial operations. The OEMP shall include specific management measures or plans for the following environmental aspects:

- Noise and vibration
- Fire risk
- Public safety
- Emergency response planning
- Complaints management

REASON: To minimise environmental impacts.

(5) Rehabilitation of Construction Area

Exposed and/or cleared ground surfaces (as a result of construction activities) shall be reinstated and/or reseeded with appropriate ground cover as soon as practicable following substantial completion.

REASON: To limit wind and water borne erosion.

(6) The operation of plant or equipment (approved herein) shall be designed and operated to comply with the *Environment Protection (Noise) Policy 2007*.

REASON: To ensure that no demonstrable nuisance or loss of amenity is caused to any person beyond the site.

(7) The portable toilet shall be removed from the site upon completion of the construction phase and prior to the commencement of the operational use of the development.

REASON: To ensure all waste water is s managed appropriately on site.

(8) Landscaping and Tree Planting

Landscaping and tree planting proposed must be planted in the first spring after construction on the site commences and regularly watered in the first year to allow landscaping to become established and henceforth maintained appropriately, with any dead or dying plants to be removed and replaced, to the satisfaction of Council.

REASON: To preserve the amenity of the locality.

(9) Prior to Building Rules Consent - Access

Prior to Building Rules Consent being obtained, the engineering detail for the proposed new access to Winton Road, including access dimensions, gradients and interface with Winton Road and stormwater management shall be submitted to and, approved by Council. The Design shall demonstrate consideration of existing stormwater flows past the access point, and include management of these flows, as well as any flows generated by the new access itself.

REASON: To ensure safe and convenient all-weather access.

(10) Prior to Building Rules Consent – Provision of Stormwater Management Plan

Prior to Building Rules Consent being obtained, a detailed stormwater management plan for the site shall be submitted to, and approved by Council. The works required by this Stormwater Management Plan shall be constructed, completed and operational within 1 month of the installation of the solar array, to the satisfaction of Council.

REASON: To ensure that stormwater does not adversely affect any adjoining property, the River Torrens or a public road.

(11) Land Rehabilitation/Decommissioning

Within nine months of cessation of the solar farm use, the renewable energy infrastructure approved herein (including all arrays, associated equipment and structures, cabling, fencing, footings etc) shall be decommissioned and removed, with the land rehabilitated to its pre-development condition.

REASON: To ensure that the cost of land rehabilitation is borne by the applicant and preserve the viability of the land for primary production purposes.

NOTES

(1) Development Plan Consent

This Development Plan Consent is valid for a period of twelve (12) months commencing from the date of the decision (or if an appeal has been commenced, the date on which the appeal is determined, whichever is later). Building Rules Consent must be applied for prior to the expiry of the Development Plan Consent, or a fresh development application will be required. The twelve (12) month period may be further extended by written request to, and approval by, Council. Application for an extension is subject to payment of the relevant fee.

(2) **Erosion Control During Construction**

Management of the property during construction shall be undertaken in such a manner as to prevent denudation, erosion or pollution of the environment.

(3) **EPA Environmental Duty**

The applicant is reminded of his/her general environmental duty, as required by Section 25 of the Environment Protection Act 1993, to take all reasonable and practical measures to ensure that the activities on the whole site, including during construction, do not pollute the environment in a way which causes, or may cause, environmental harm.

The applicant is reminded of its general environmental duty, as required by section 25 of the *Environment Protection Act 1993*, to take all reasonable and practicable measures to ensure that the activities on the whole site, including during construction, do not pollute the environment in a way which causes or may cause environmental harm. This includes taking all reasonable and practicable measures to minimise the potential for pollution from sediment and waste generated on-site during construction. Further guidance can be sought from the EPA's *Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry* and the *EPA Handbook for Pollution Avoidance on Commercial and Residential Building Sites* (http://www.epa.sa.gov.au/files/47790_bccop1.pdf).

- (4) EPA information sheets, guidelines documents, codes of practice, technical bulletins etc. can be accessed on the following web site: <http://www.epa.sa.gov.au>

(5) **Department of Environment and Water (DEW) - Native Vegetation Council**

The applicant is advised that any proposal to clear, remove limbs or trim native vegetation on the land, unless the proposed clearance is subject to an exemption under the Regulations of the Native Vegetation Act 1991, requires the approval of the Native Vegetation Council. The clearance of native vegetation includes the flooding of land, or any other act or activity that causes the killing or destruction of native vegetation, the severing of branches or any other substantial damage to native vegetation. For further information visit:

www.environment.sa.gov.au/Conservation/Native_Vegetation/Managing_native_vegetation

Any queries regarding the clearance of native vegetation should be directed to the Native Vegetation Council Secretariat on 8303 9777. This must be sought prior to Full Development Approval being granted by Council.

9. **ATTACHMENTS**

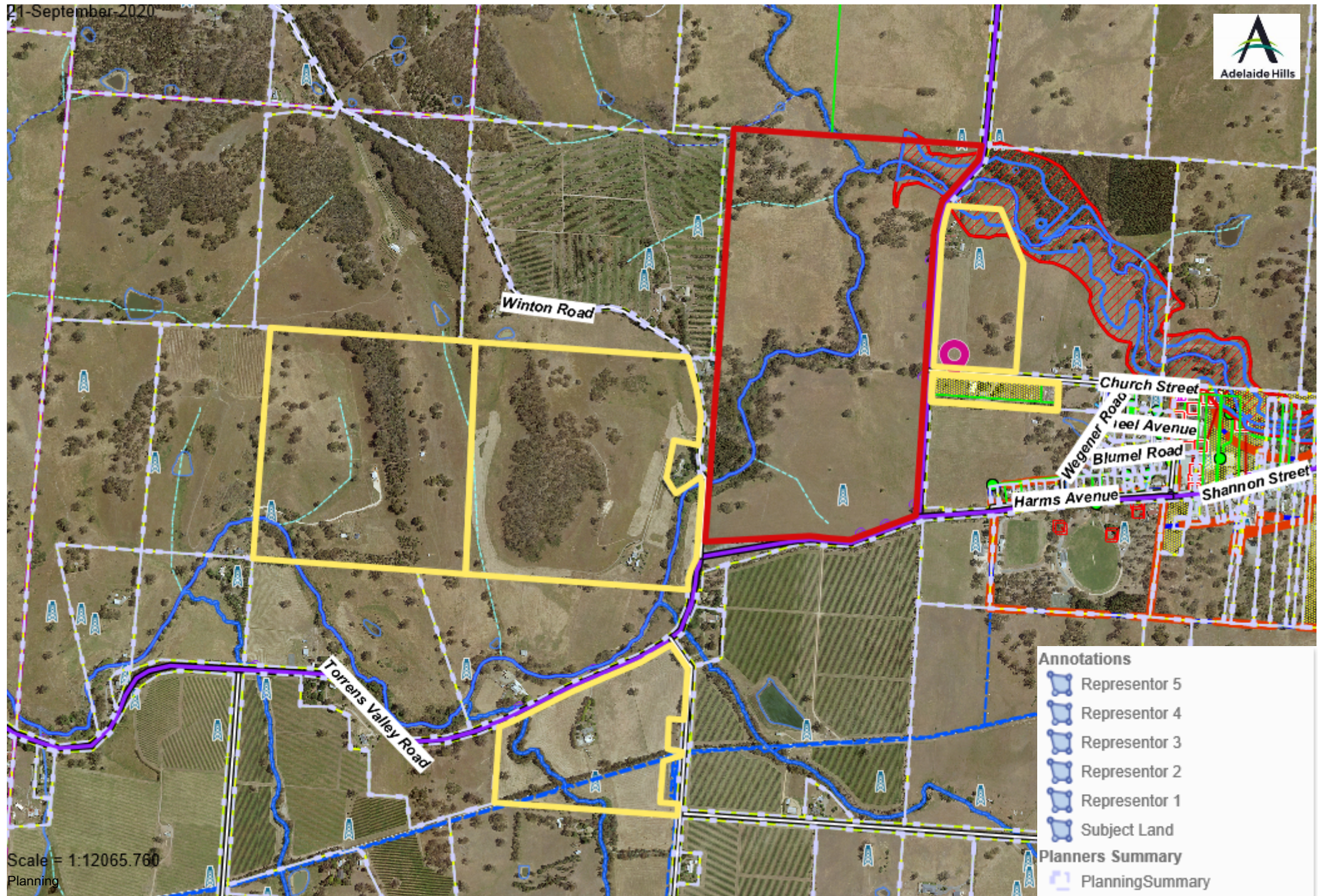
Locality Plan
Proposal Plans
Application Information
Applicant's Professional Reports
Referral Responses
Representations
Applicant's response to representations
Publically Notified Plans

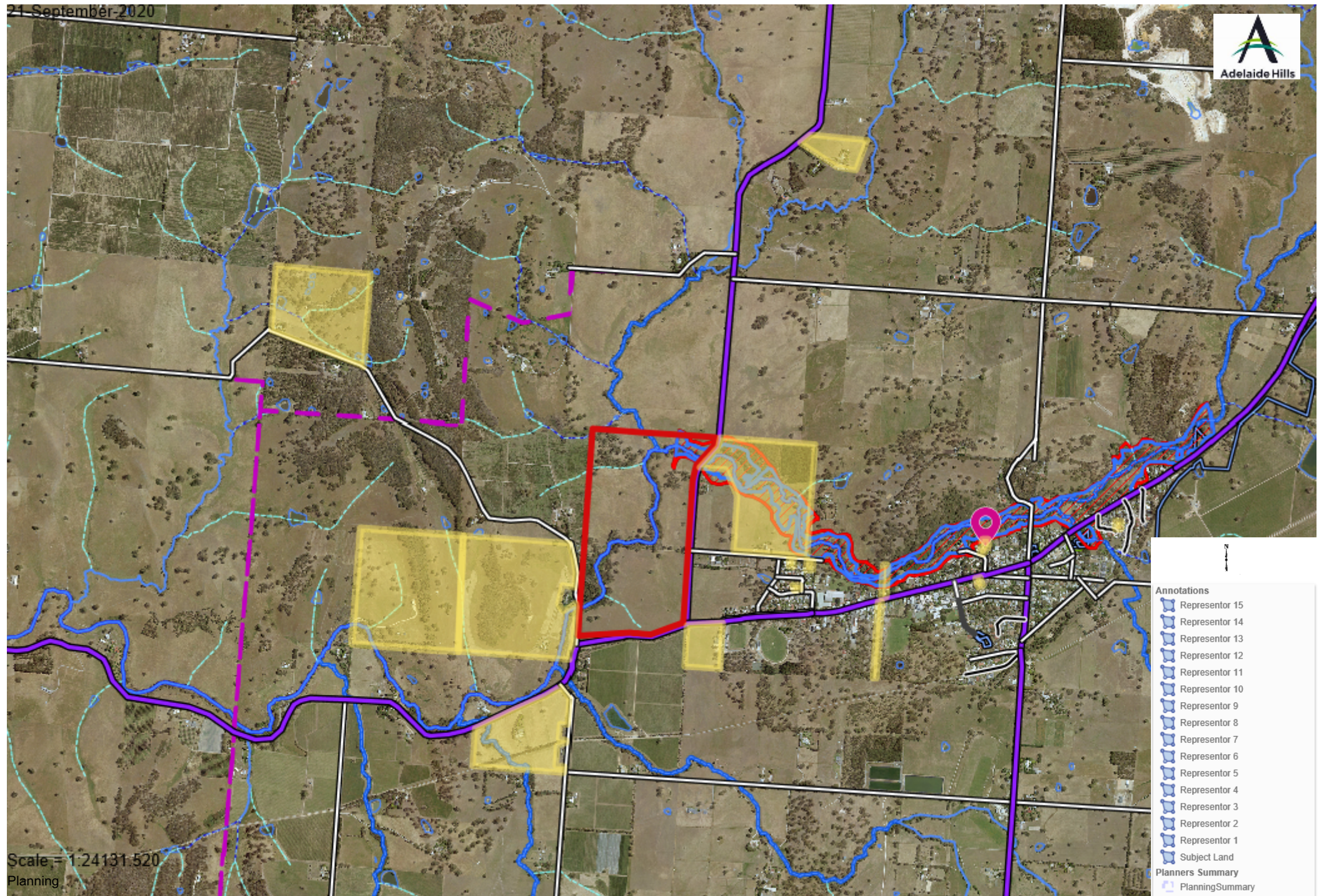
Respectfully submitted

Concurrence

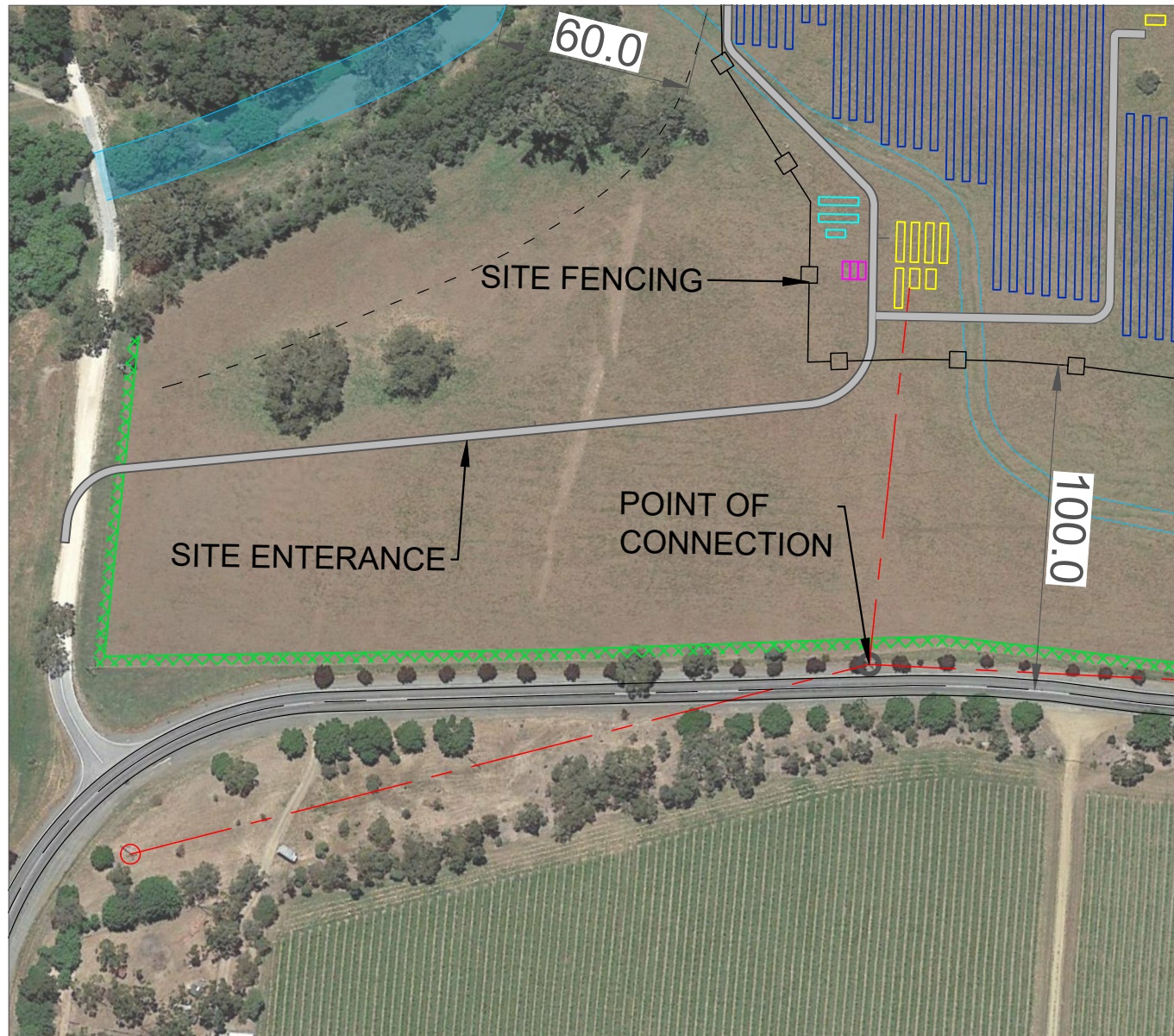
Melanie Scott
Acting Team Leader Planning

Deryn Atkinson
Assessment Manager

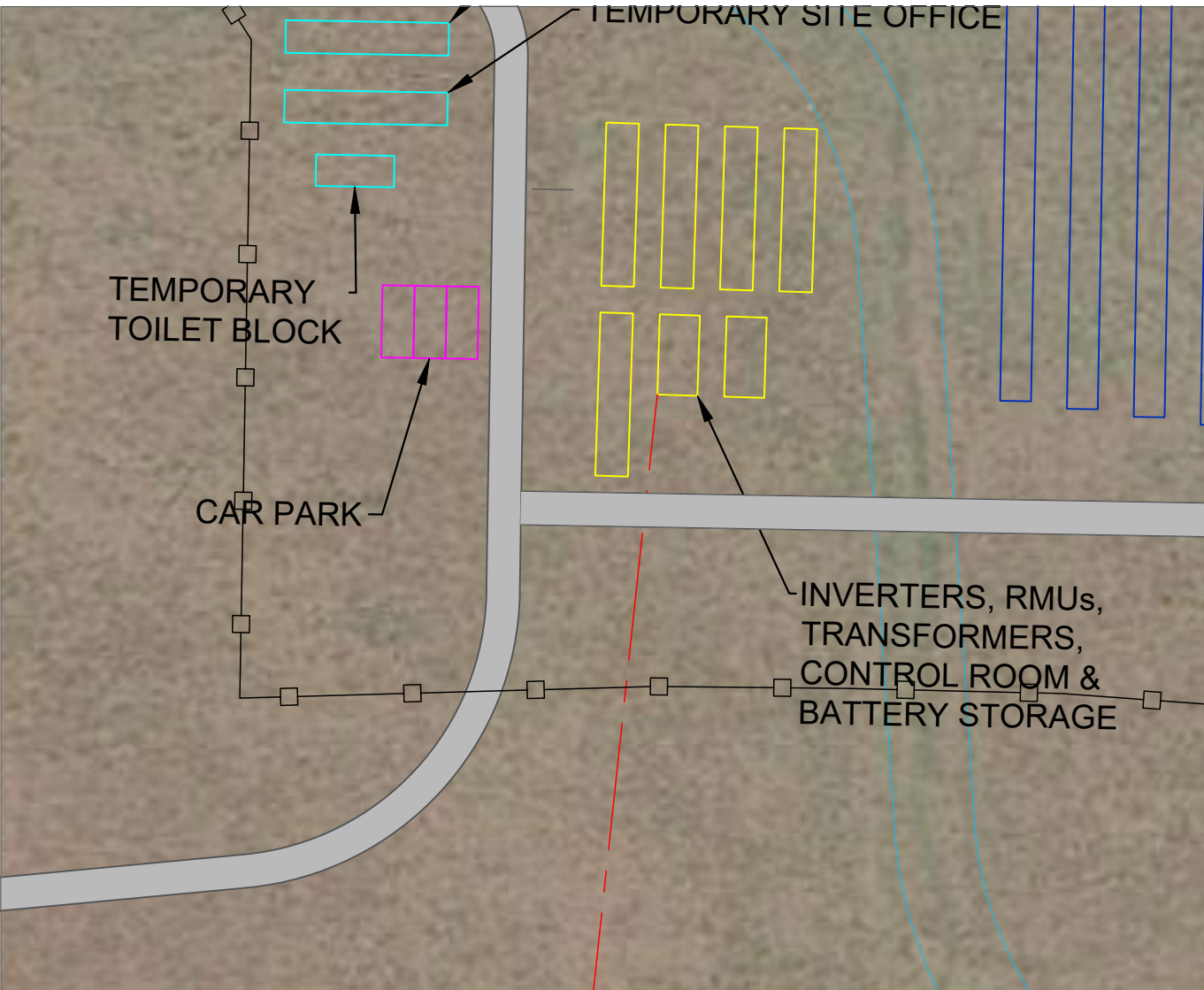




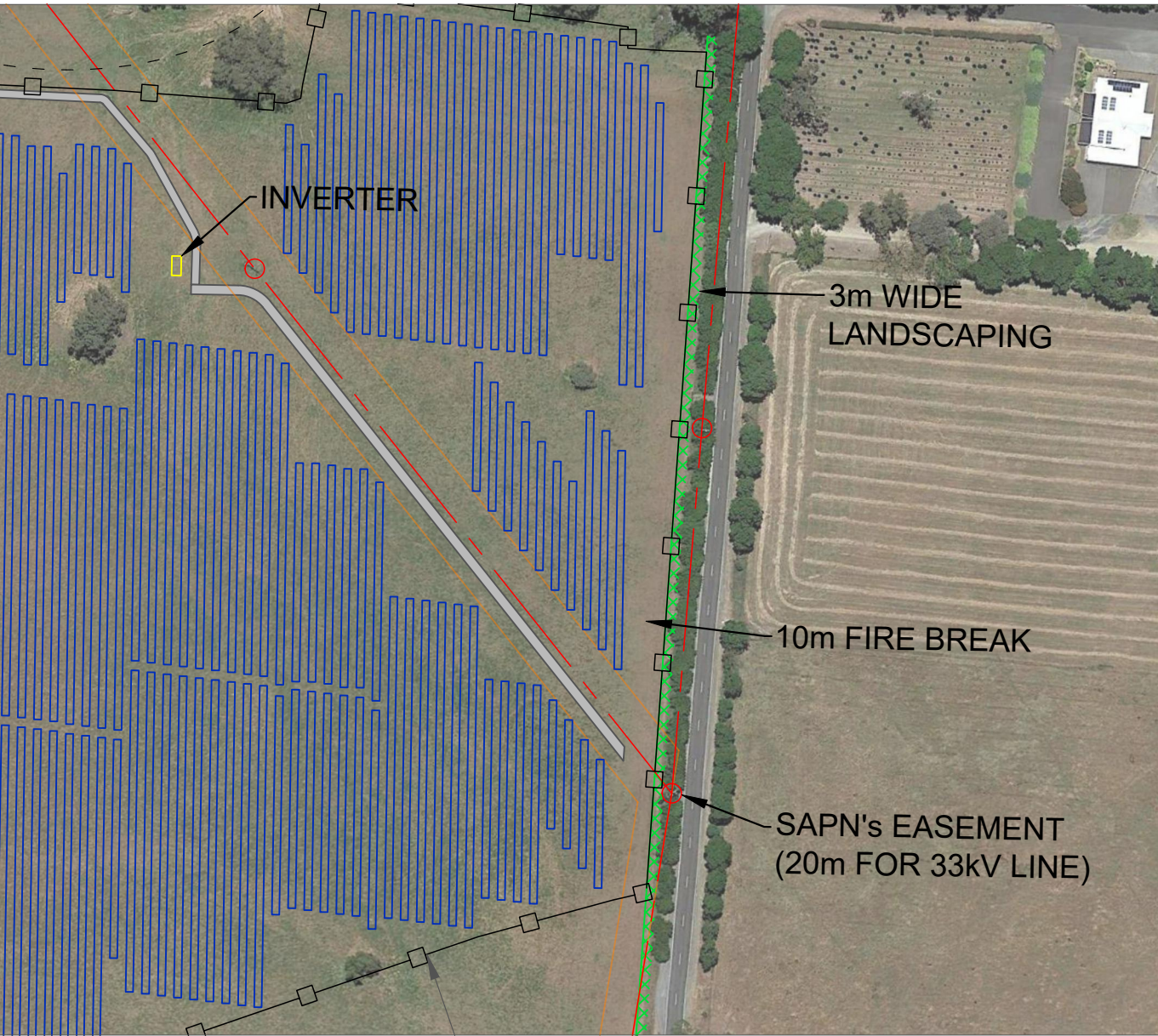
2020-08-26-01 Update V6.dwg



CONNECTION POINT
SCALE 1:2000



SITE AMENITIES
SCALE 1:500



EASTERN BOUNDARY
SCALE 1:2000



SITE LAYOUT
SCALE 1:2000

AMENDED 29 September 2020

General Notes

Drawing Legend

Cadastral Boundary	
Boundary Fence	
60m Setback	
Power Line	
Easement	
Power Pole	
Access Road	
3-String Trackers	
Inverters	
SVG & Battery Storage	
Point of Connection	
3m-wide Landscaping	
Site Amenities	
Car Parks	
Drainage	

Project Specifications

AC Capacity at Point of Connection	4.95	MW ac
Installed AC Capacity	4.98	MW ac
DC Capacity at STC	6.49	MW dc
DC:AC Ratio	1.3	
Tracker Configuration	1P	
Total PCU with 1 Inverter	1	
Total Inverters	2	
Site Area	10.5	Ha
Site Perimeter	1,346	m

No.	Revision	Designer	Date
03	Updated	C.C	2020.09.28
02	Updated	C.C	2020.09.27
01	Preliminary	M.A	2020.08.20

Document Name

PV Solar Overall Layout

Company Name

Project Name and Address

Birdwood Solar Farm
31 Winton Road
Birdwood SA 5234

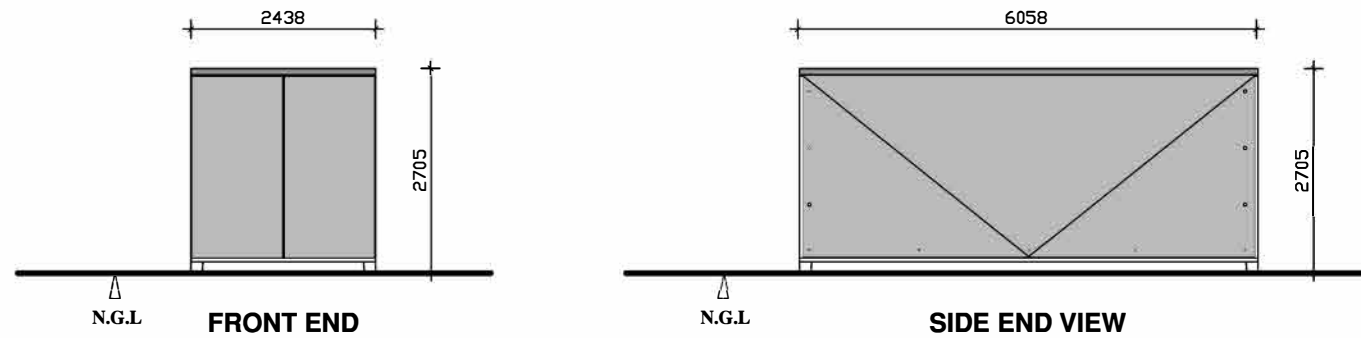
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Date	28.09.2020		
Scale	As Noted		



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Planning Issue

02



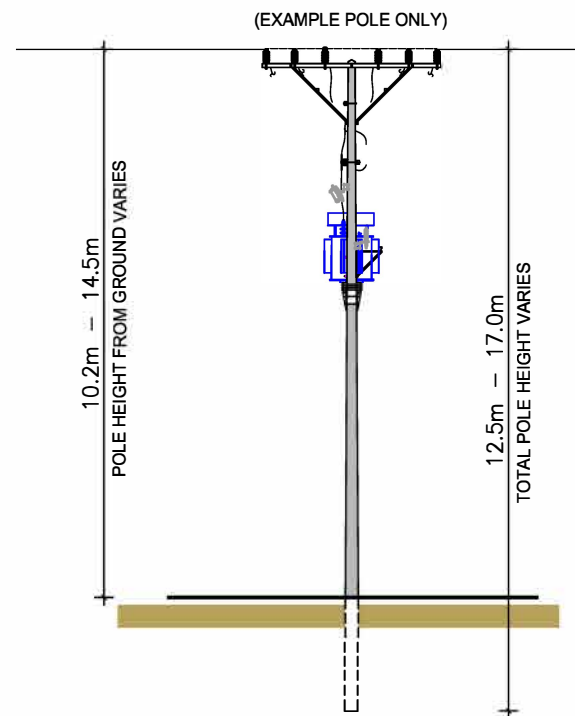
Typical Inverter 1:100



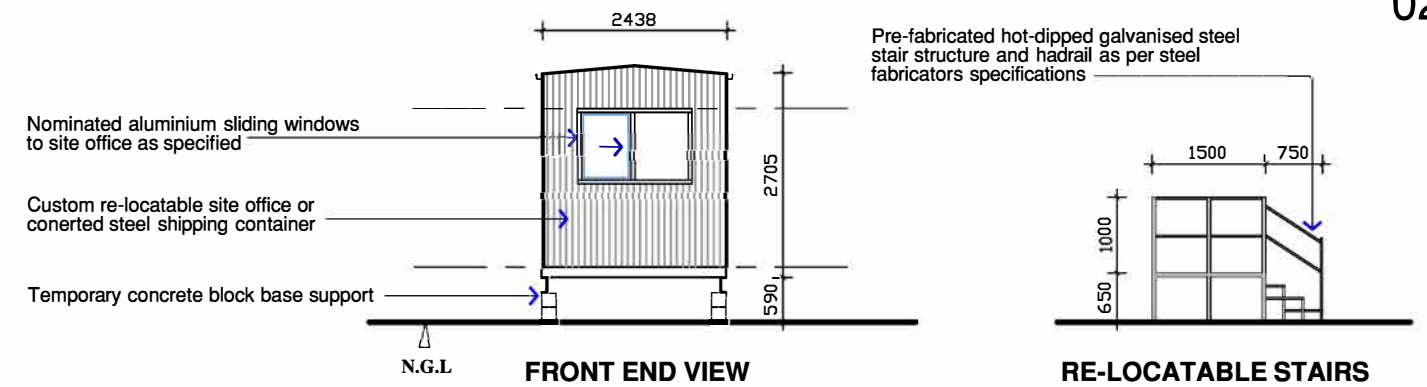
Inverter



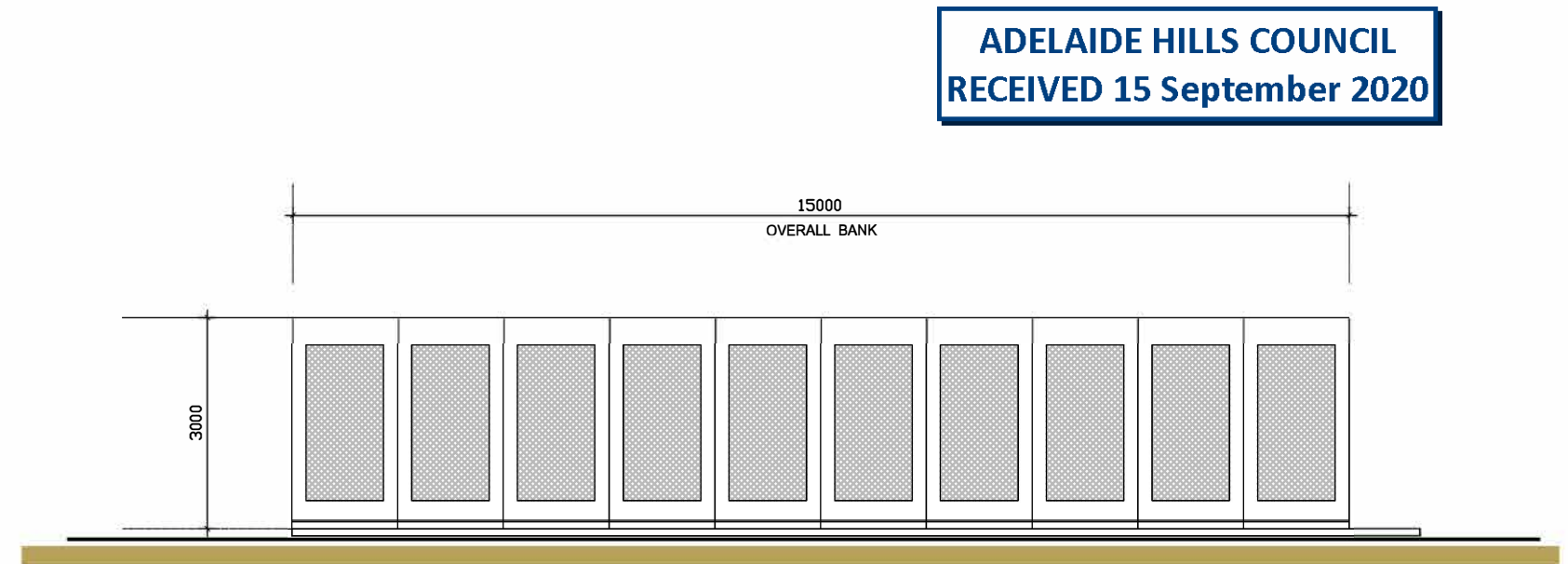
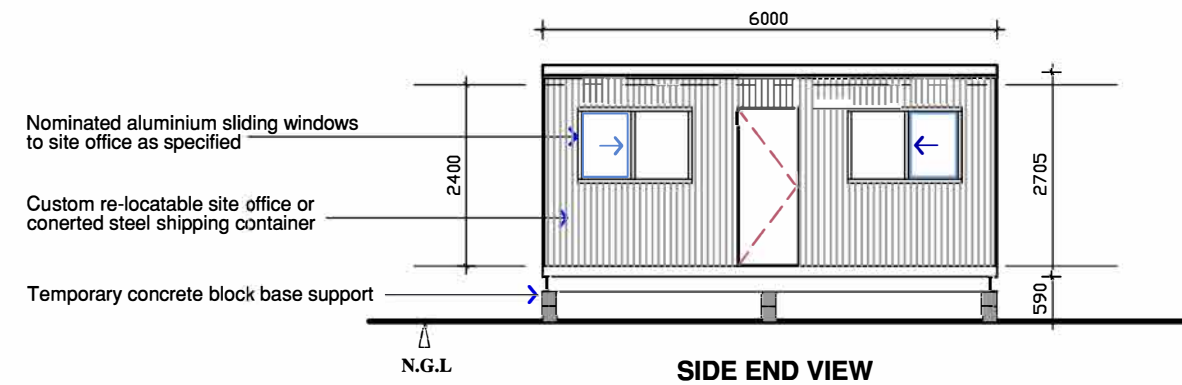
Typical Battery storage unit



TYPICAL ARC POLE ELEVATION
(NOT - TO - SCALE)



Typical Site Office 1:100



Typical Battery Storage Bank 1:100

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Client:
Tetris Energy Pty Ltd

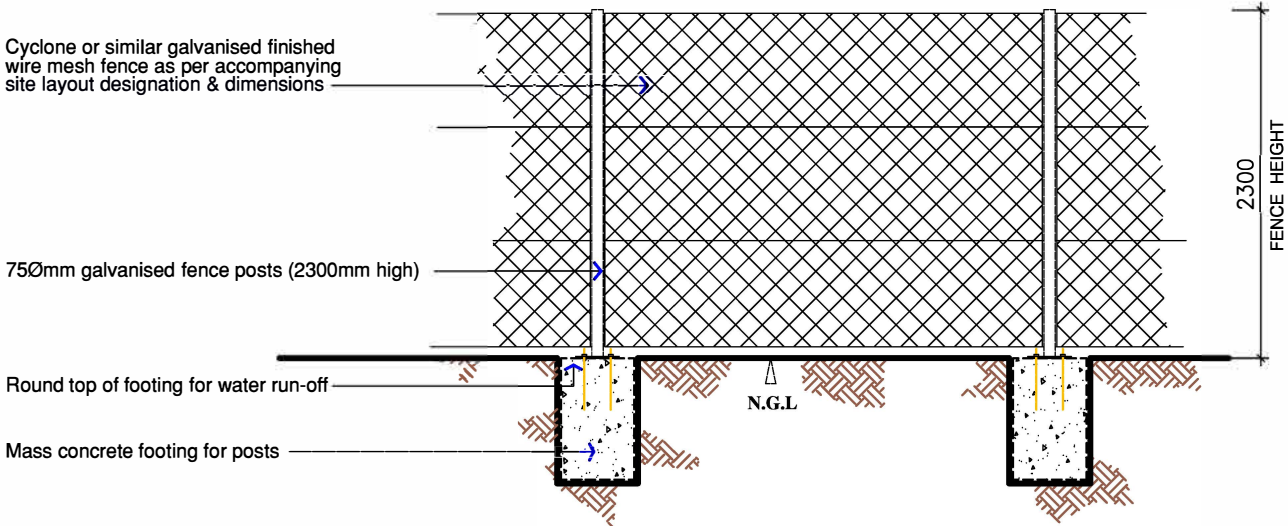
Project:
Proposed Solar Array Project

Project Address:
Birdwood SA

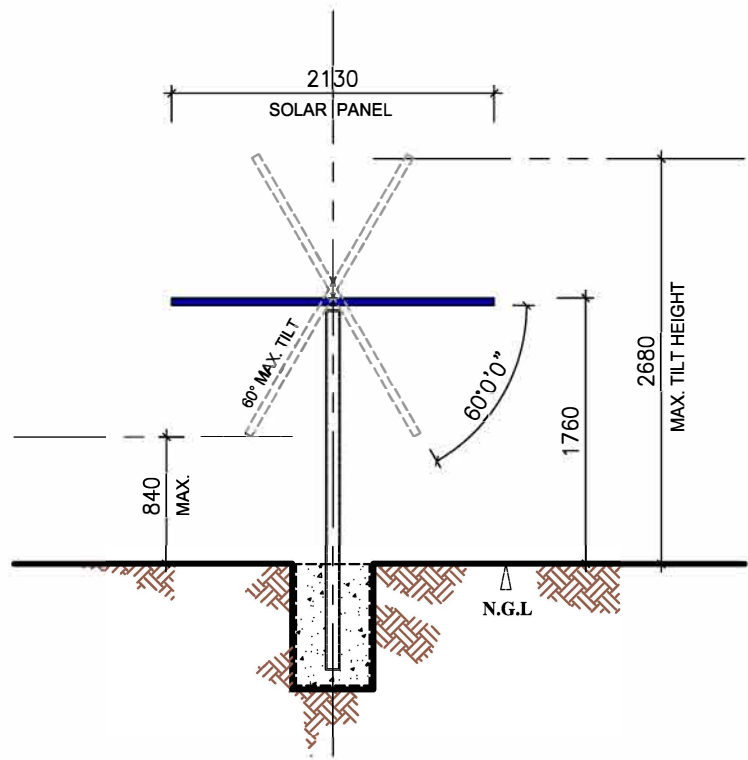
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dennis@arkgroupdesign.com.au



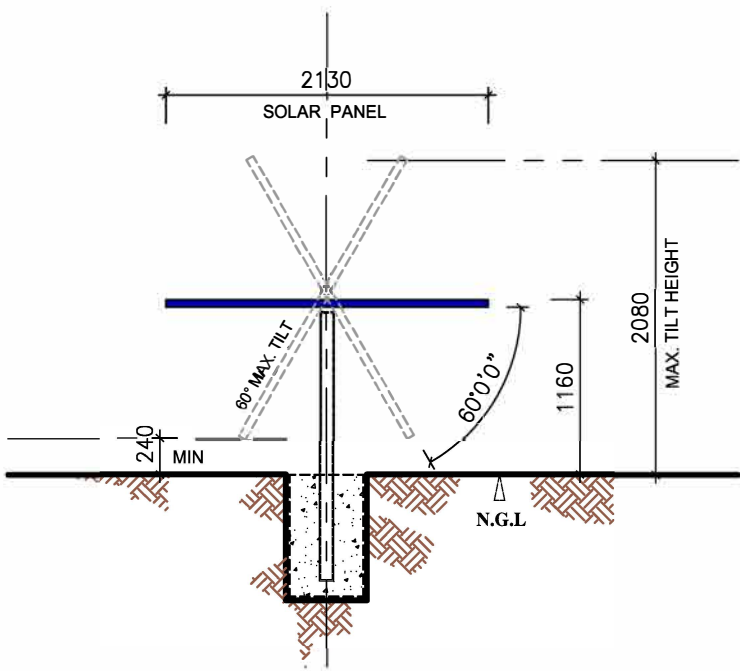
Revision:			
Scale			
A3	1:50 1:100	Date	15/09/2020
Drawing Issue:	02 of 02		A - 090720



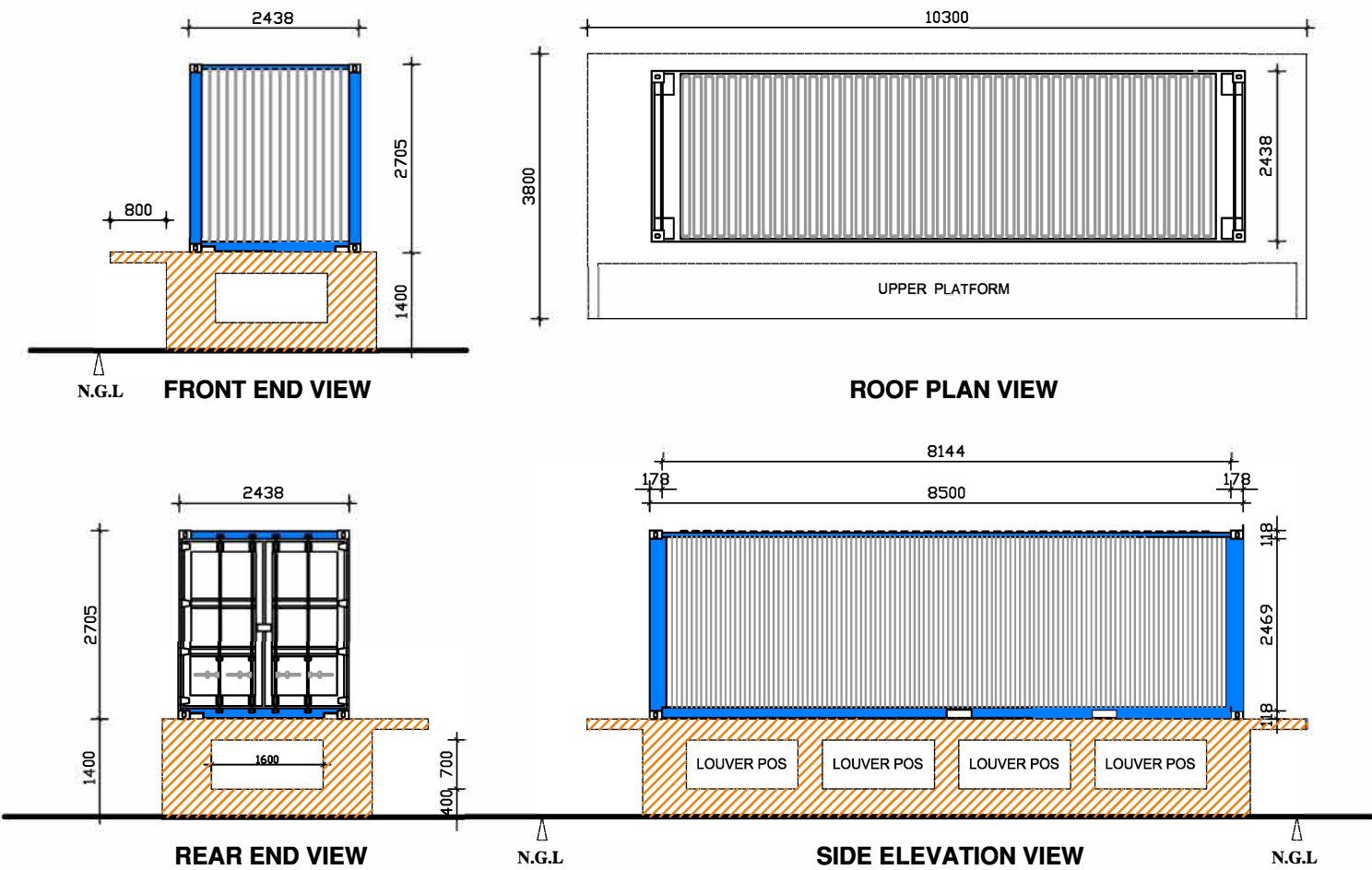
Proposed security fence section 1:50



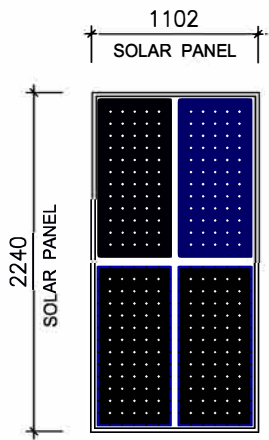
Typical tracker elevation 1:50



Typical tracker elevation 1:50



SVG container 1:100



TYPICAL PV MODULE 1:50
LOW REFLECTIVITY CONSTRUCTION

ADELAIDE HILLS COUNCIL
RECEIVED 15 September 2020

Client:
Tetris Energy Pty Ltd

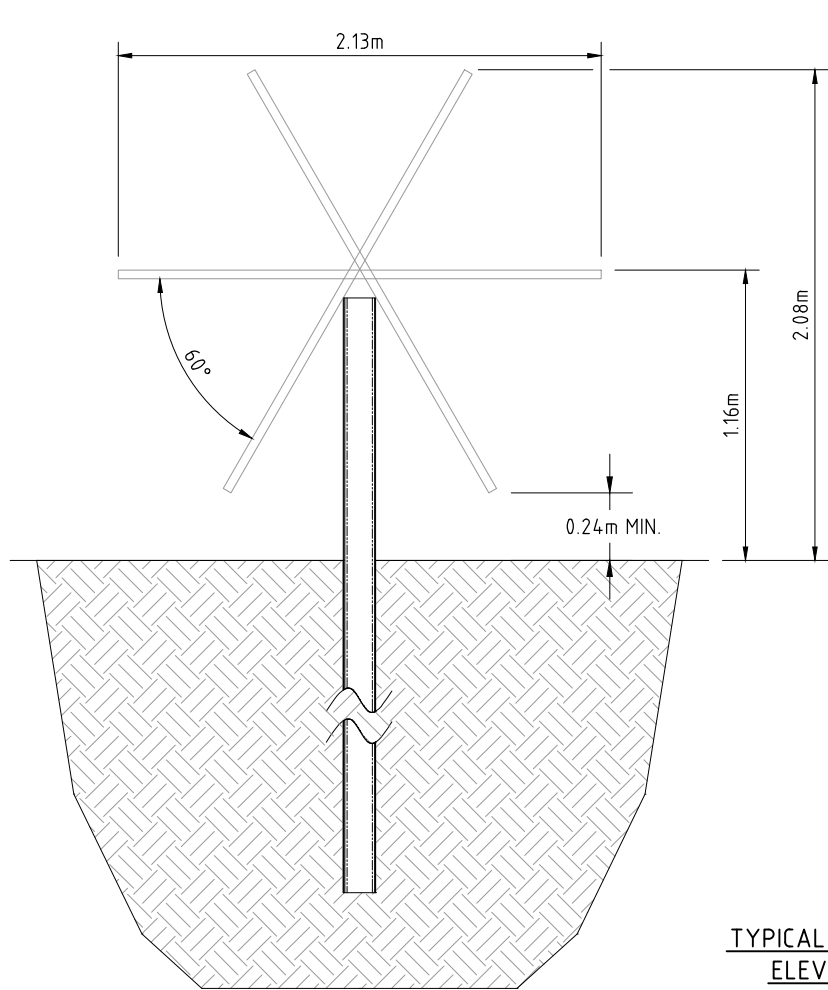
Project:
Proposed Solar Array Project

Project Address:
Birdwood, SA

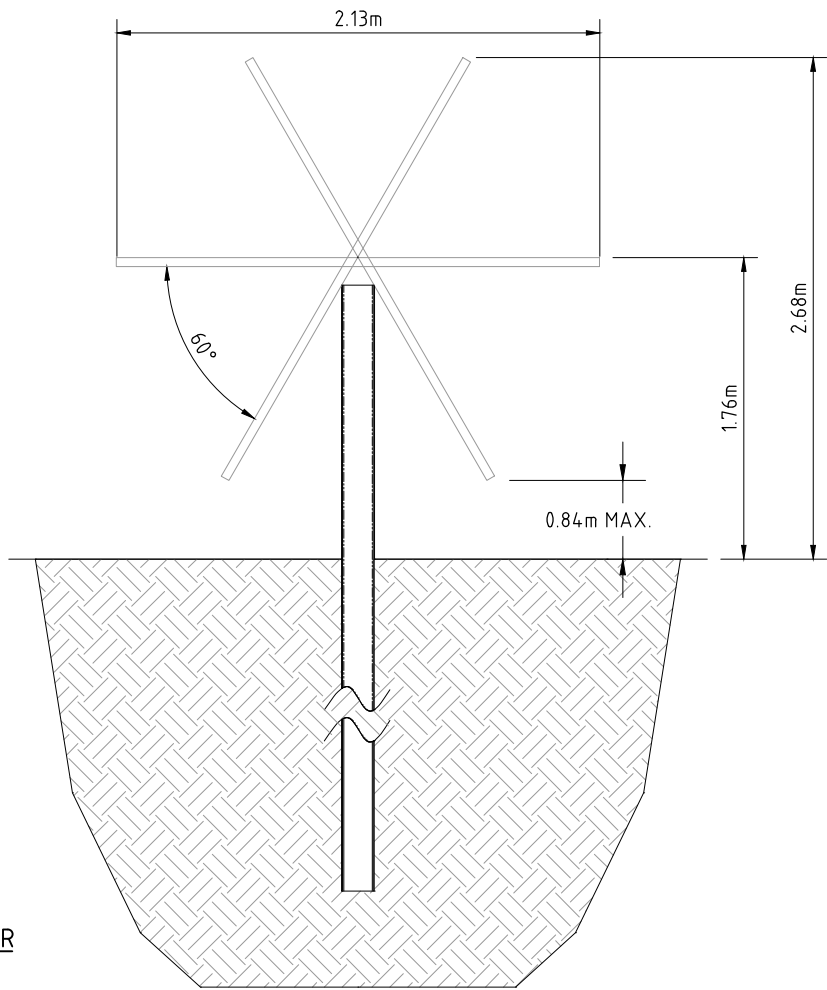
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dennis@arkgroupdesign.com.au



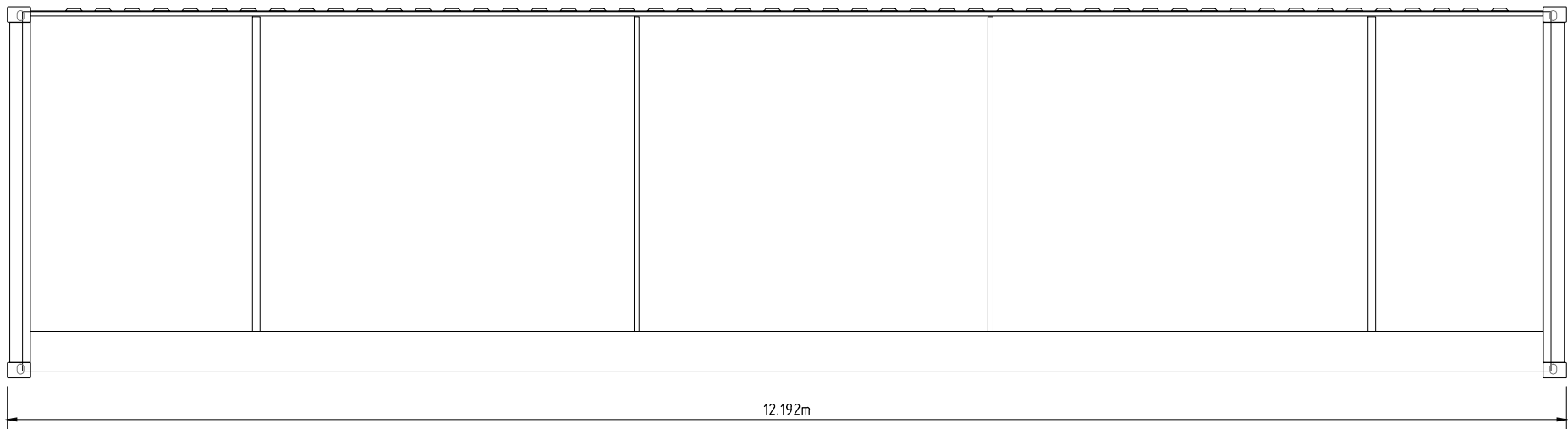
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Scale		
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Drawing Issue:	01 of 02	A - 090720



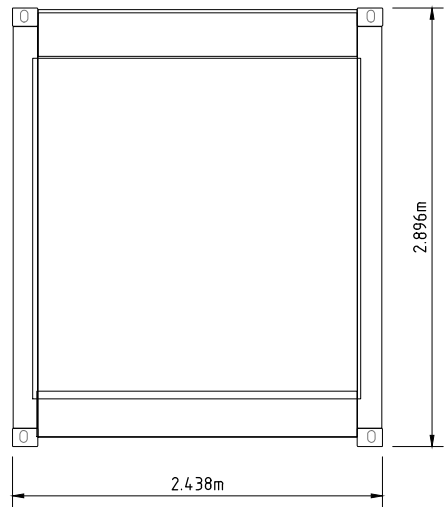
TYPICAL TRACKER
ELEVATION
N.T.S



AMENDED 14 September 2020



PCU SIDE
ELEVATION
SCALE:1:50



PCU END
ELEVATION
SCALE:1:50

A		27.03.20	TC	CONCEPT ISSUE	SB	SB	REFERENCE COORDINATION DRAWINGS		SCALES		A3 ORIGINAL		wsp		CLIENT:		PROJECT:		DRAWING STATUS:	
REV		DATE	BY	DESCRIPTION	CHK	APPD	DESCRIPTION	DRAWING NO.	REV	CHK	DO NOT SCALE THIS DRAWING		Level 3, 51-55 Bolton Street, Newcastle PO Box 1162, NSW 2300, Australia Tel: +61 2 4929 8300 Fax: +61 2 4929 8382 wsp.com		TETRIS CAPITAL		BIRDWOOD SOLAR FARM		PRELIMINARY ISSUE NOT FOR CONSTRUCTION	
							Full Size 1:50 A3 SCALE (m)		APPROVED		SIGNED:		TETRIS CAPITAL		PROJECT:		DESIGNED:		CHECKED:	
							SURVEY DATUM		DATE:		RREQ:		TETRIS CAPITAL		TITLE:		PROJECT No:		DRAWN:	
							HORIZONTAL DATUM:		© WSP Australia Pty Ltd.				TETRIS CAPITAL		TRACKER AND PCU ELEVATIONS		PS118584		T.CHIARENTIN	
							VERTICAL DATUM:						TETRIS CAPITAL				DATE:		27.03.20	
													TETRIS CAPITAL				DRAWING No:		REV:	
													TETRIS CAPITAL				PS118584 - CIV - 0002		A	

Birdwood Solar Farm

Landscaping Plan - updated

14 September 2020

Ref: 20/530/473

AMENDED 14 September 2020



Fig.1. Current view along Torrens Valley Way. The vegetation buffer will be planted along here to enhance the coverage and comply with SAPN clearance requirements.



Fig.2. Representative vegetation along Warrens Road. Additional screening will be added on the property side of these deciduous trees for the full length of Warren road.

AMENDED 14 September 2020

Planting

The planting will occur within the first 6 months of the solar farm construction being completed. The target planting date will be Winter to align with the rains and springtime growth – this is will be August/September 2021 based on a notice to proceed in late 2020.

Selection

The species will be combination of those selected from the AHC Council's Guide Native Habitat: Landscaping and Gardening Guide. They will be planted in a similar spacing to page 5 and page 6. This is to ensure diversity and coverage at different heights. Soil testing will be undertaken to help inform the final combination and layout plant species. Where possible, fire resilient plant species will be planted.

Source: <https://www.ahc.sa.gov.au/environment/native-habitat-gardening>

Design

The design of the vegetation buffer is outlined on page 5 and 6. This will be further refined once the final species have been selected. The plants will be located within a 3m buffer of the boundary and around 1.5m apart.

Maintenance

The plant selection has been based on suitability with the local climate. Once established, they should be self-sufficient. During the first year the plants will be hand watered as part of the project's operation and maintenance program. The performance of the vegetation screening will be monitored and updated as required. The water will be carted in by either the landowner or the solar farm maintenance crew.

AMENDED 14 September 2020

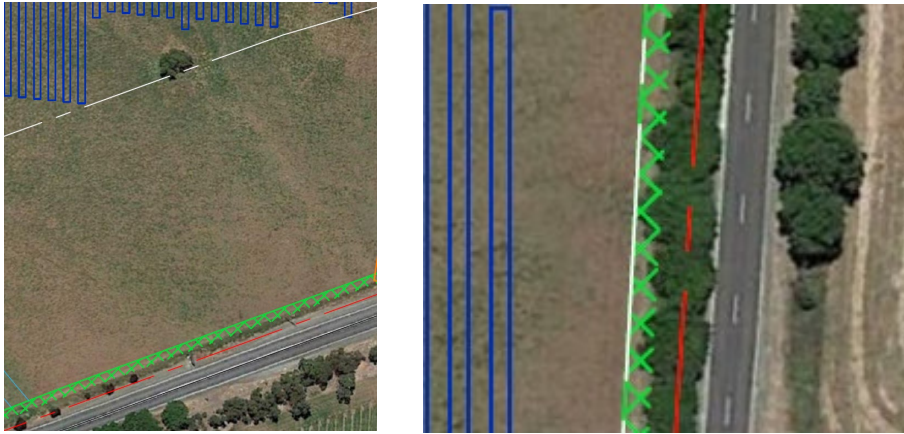


Fig.3. Inset showing location of vegetation buffer along Torrens Valley Way Warren Road. The width of the vegetation buffer will be 3m.

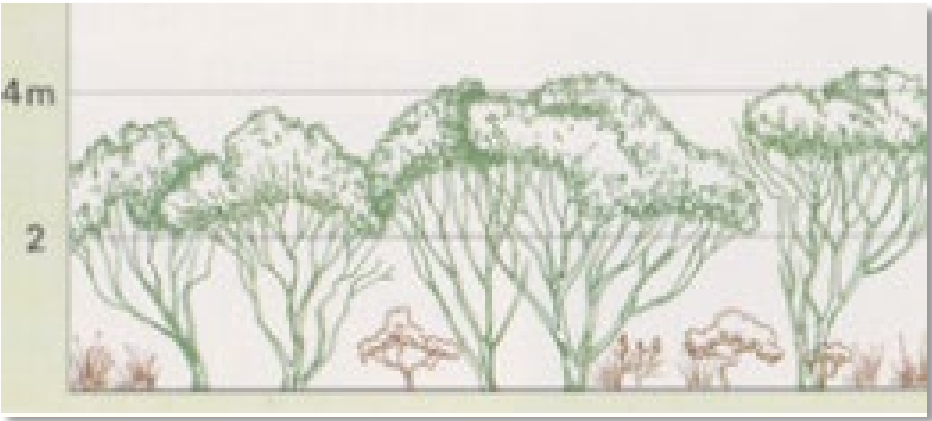
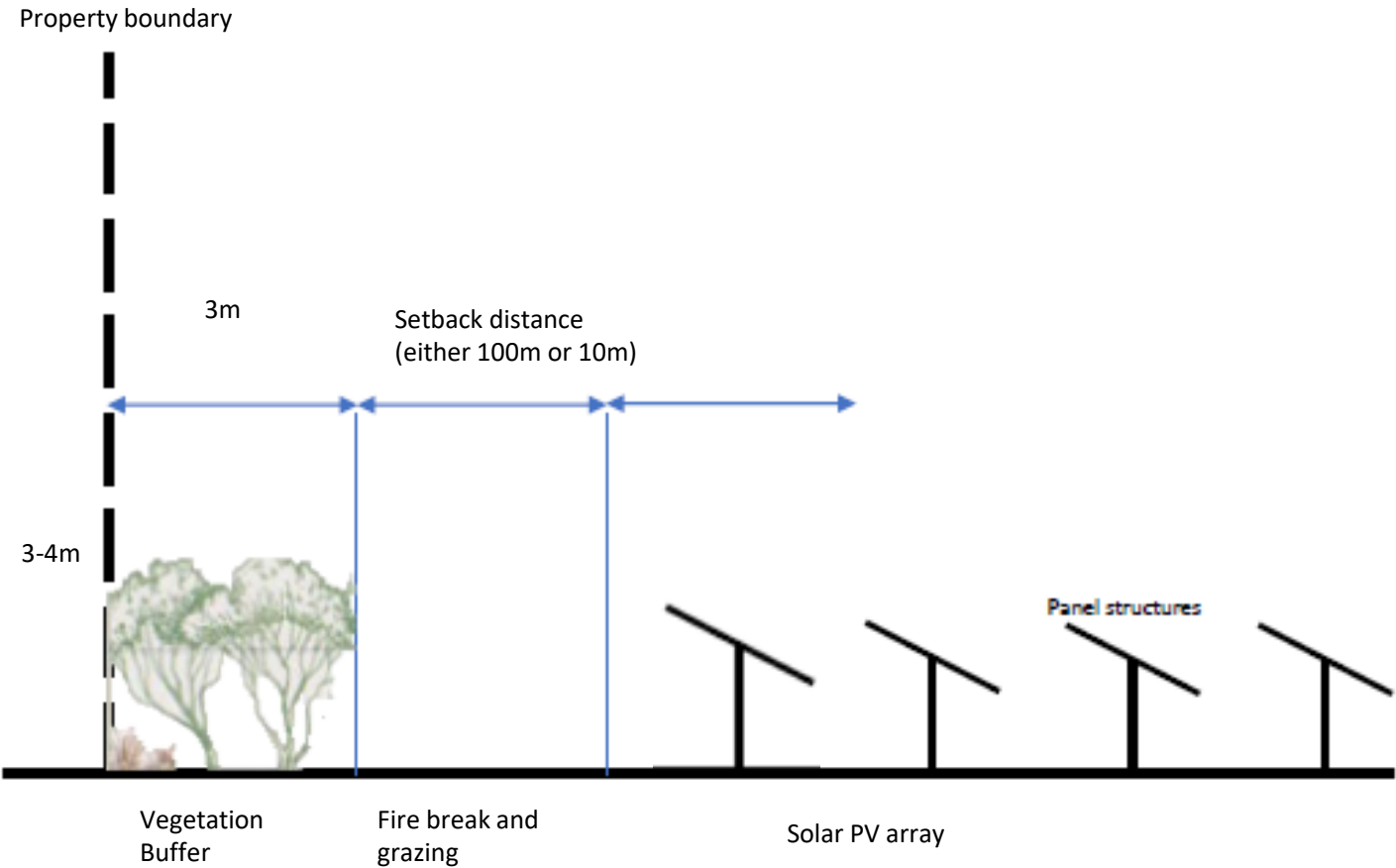


Fig.4. Sectional diagram of proposed plant heights – with an average height will be around 3-4m. The vegetation buffer will include mixed trees and different native shrubs indigenous to the Adelaide Hills region. These have been selected from Council’s Guide Native Habitat: Landscaping and Gardening Guide. The planting within the row will be a mixture of trees, tall shrubs and medium-low shrubs – selected from the species in appendix 1 of this plan.

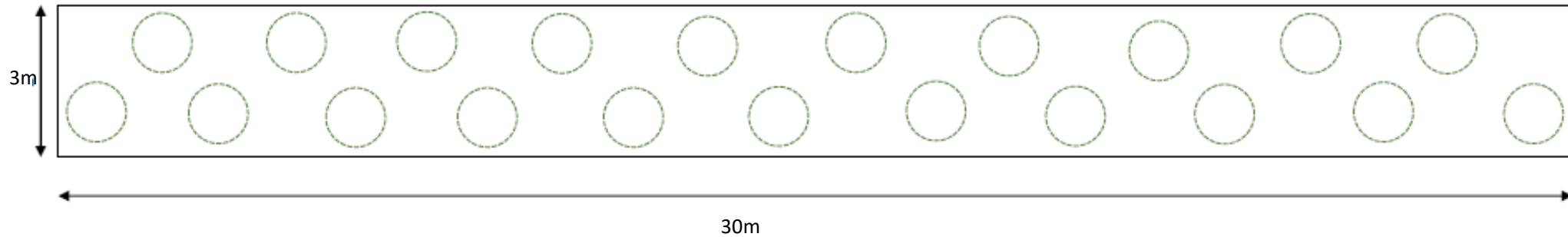


AMENDED 14 September 2020

Objective

To create a native vegetation screen along the Torrens Valley Way, Winton Road and sections of Warren Road that are not already screened.

Medium to large shrubs



Planting notes

- Planting corridor will be 3 metre wide. Target will be to have two rows of medium to large shrubs/trees. Alternating across the corridor to allow sufficient space to grow and room for the smaller shrubs.
- Spacing between plants will be around 1.5 metres. Some of the smaller shrubs will be closer.
- The vegetation screen will be planted as either tube stock or seedlings.
- The vegetation screen will be monitored regularly during the first 3 years to ensure the plants properly establish. Any sections of the vegetation screen that fail to established will be reviewed and replaced.

AMENDED 14 September 2020

	Species		Height
Trees	Drooping Sheoak	<i>Allocasuarina verticillata</i>	5-8m
	Cup Gum	<i>Eucalyptus cosmophylla</i>	3-8m
Shrubs	Wreath Wattle	<i>Acacia acinacea</i>	1-2m
	Beaked Hakea	<i>Hakea rostrata</i>	1-4m
	Sticky Hop-bush	<i>Dodonaea viscosa</i> ssp. <i>spathulata</i>	1.5-4m
	Common Oak-bush	<i>Allocasuarina muelleriana</i>	1-3m

Note: See following detailed species profiles from the AHC Guide Native Habitat: Landscaping and Gardening Guide.

Source: AHC Guide Native Habitat: Landscaping and Gardening Guide

AMENDED 14 September 2020

Melanie Scott

From: Frank Boland <frank.boland@tetriseenergy.com>
Sent: Tuesday, 15 September 2020 8:25 PM
To: Melanie Scott
Subject: RE: More questions
Attachments: Inverter image.JPG; Birdwood Solar - elevation plans.pdf; Birdwood Solar - elevation plans 2.pdf

Hi Melanie

Not a problem. To make it clearer, we have prepare elevation drawings for each component of the solar farm.

Inverter: This is now confirmed following receipt of the SAPN Offer to Connect. There will be 2 x 2500 SMA inverters. The dimensions are 6058 mm / 2896 mm / 2438 mm (W / H / D) – basically the same as a 20ft shipping container, and there are two of them. Image and elevation plans are attached for the model we are using. Please note that inverters are sometimes referred to PCUs (Power conditioning Unit).

Battery Storage: Elevation plans attached and example image. It will be up to 5 units. Ideally that footprint can be used for the assessment. The batteries will require a new offer to connect from SAPN. Therefore, unlike the other components, we don't have an exact specification confirmed at this stage.

Temporary site office: We have included an example in the elevation drawings. This is only for construction period.

Storage shed: Correct, a normal shipping container for the use of spare parts and maintenance equipment.

SVG: Elevation plans attached. This is a piece of equipment required by SAPN to help provide reactive power to the network. This is specified in the offer to connect, dimensions in attached plans reflect the SAPN approved model.

I think this covers the items you were unsure about but let me know if I missed anything.

Regards. Frank

Frank Boland
M: +61 423 778 125



BIRDWOOD SOLAR & STORAGE PROJECT

Development Application to Adelaide Hills Council

29 May 2020

Tetris Energy Pty Ltd

ADELAIDE HILLS COUNCIL
RECEIVED: 29/05/2020

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OVERVIEW OF PROJECT

Tetris Energy Pty Ltd ('Tetris Energy') has identified an opportunity to develop an integrated solar PV and storage project on the land in the vicinity of the Angas Creek to Birdwood 33kV distribution line.

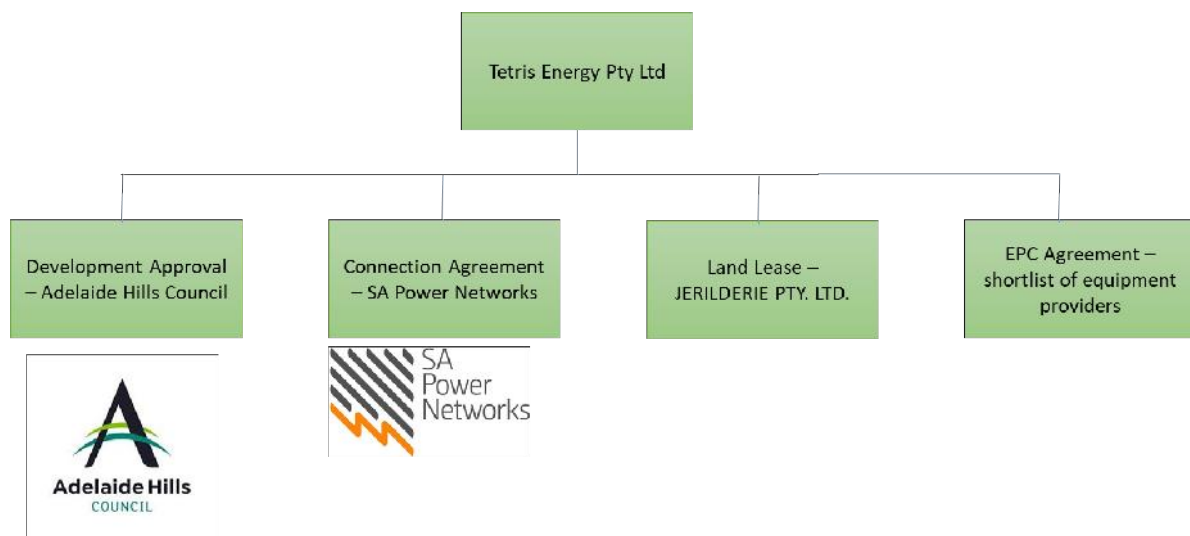
It is proposed to develop up to 4.98MW_{AC} solar PV generating facility which will generate an estimated 12,500 MWh of clean, renewable energy which will provide sufficient power to supply the Birdwood region. Combining that with up to 4MWh of optional Battery Storage will smooth the output and the network stability.

This is an exciting opportunity to showcase how cutting-edge distributed energy systems can provide low cost electricity, improve network reliability and security, and create the opportunity for lower electricity prices.

This development application is seeking approval for the 4.98 MWAC solar farm and associated infrastructure. Following the introductory discussion with Adelaide Hills Council ("Council") on 20 May 2020, we are pleased to submit this Development Application for a solar PV generation facility ("the Project") to be located on the north west side of the intersection at Warren Road and Adelaide-Mannum Road, Birdwood.

This development application has been prepared by Tetris Energy Pty Ltd with the specialist planning input from Frank Brennan Consulting Services and Page Street Services.

STAKEHOLDER SUMMARY



Tetris Energy Pty Ltd – The broader team has delivered a number of innovative infrastructure, agriculture and energy projects. They will be responsible for navigating and funding it through all stages of the development including; design, planning, resource assessment, equipment procurement, and project financing. It will be also supported by other specialist consultants and engineers.

Retail – Once the detailed design is completed, the team will have a greater degree of confidence in the volume and price of the power that can be marketed. Tetris is in discussion with retailers that can offer a unique wholesale offering to customers.

Approvals –Adelaide Hills Council will be the responsible planning authority for the project. The planning applications have been prepared and submitted by both Tetris Energy with the support of specialist planning consultant Frank Brennan Consulting Services.

Connection Agreement – Tetris Energy has submitted a Connection Application with SA Power Networks (SAPN) for a connection in the 33kV feeder (SD38100). The feasibility has been completed by SAPN and a direct connection application lodged.

Land Lease – Jerilderie Pty Ltd are the landowners for Certificate of Title Volume 5460 Folio 130. This land is currently using predominantly for grazing.

EPC – Tetris Energy has been in discussions with several contractors for the project. Prior to construction, Tetris Energy will finalise a comprehensive procurement process for the solar and storage equipment. This is to ensure the project has the lowest cost of energy and the most suitable equipment for the site.



Fig.1. Example Solar PV Array – screw mounted

PRELIMINARY SITE DESIGN

Site selection

The project site selection included the following key assessment criteria:

- Located in close proximity to a viable connection point at the Angas Creek to Tungkillo 33kV line;
- Flat land with favourable slope;
- Avoiding low lying land/land prone to flooding/inundation/riparian corridors;
- Able to achieve independent access to the site with good transport;
- Separated from existing residential/public areas;
- Favorable orientation to the north to maximise solar output; and
- Avoiding shading from near objects, for example, hills, trees and power poles.



Fig.2. Angas Creek-Tungkillo 33kV line

Plans

Designs have been undertaken to determine the suitability of the site. The site has been modelled as a 4.98MWAC facility using single axis tracking solar PV technology and optional battery storage. A 4.98MWAC project was chosen as in an indicative size as it fits well with

the current loading on the Angas Creek-Tungkillo 33kV distribution line and generator licencing requirements.

The Lease Area has more than sufficient land for 4.98MW_{ac} of solar PV, battery storage and associated connection infrastructure. During the design optimisation phase the configuration will be optimised based on resource, planning constraints, ground conditions and land use preference. The design may also include a component of battery storage or voltage support equipment to optimise the reliability and security of the network.

A summary of the key Project specifications are detailed in the table below:

Table 3- Project Specifications

Site	Description
Technology	Single axis tracking Solar PV
Mounting	Piling / Screw
Size	4.98MW _{AC} (up to 1.4 DC/AC ratio)
Approximate Capacity Factor	28%
Expected Annual Generation	12,500 MWh

Tetris Energy has submitted a direct application into the SAPN 33kV distribution feeder (SD38100). Following receipt of the final engineering report, the capacity and grid connection infrastructure may be adjusted to meet the SAPN requirements. The plans included as part of this application have been prepared with this in mind and include the flexibility.

As part of the final detailed study and design, the Project would be optimised which may result in some changes to the system capacity and preferred mounting technology. Estimated solar energy production data utilised solar irradiation data from the Australian Bureau of Meteorology. The baseline plant design includes single axis tracking as this should provide the most cost-effective proposal for the Project. Whilst a fixed axis design is less expensive to build and maintain, the tracking technology ensures a greater amount of electricity generation in the morning and evenings. This is particularly important for late summer afternoons when electricity prices are often higher; as a single axis tracking system will generate more power during this period of the day. The relatively high solar irradiation at the site results in more than enough increased generation from a single axis PV system to compensate for its somewhat higher costs.

Every solar PV system will very slowly lose efficiency over time due to gradual degradation of the PV modules. By utilising panels from reputable manufacturers, the risk of unexpectedly high degradation rates is very low and performance guarantees are available. The Proponent would procure PV modules from a supplier with a long term (25-year) design life and performance warranty.

SITE LAYOUT



Fig 3.1. Indicative layout of the solar farm array and infrastructure



Fig 4. Subject lot and cadastral information

EXISTING LAND USE AND SITE CONDITIONS

Geography

The property at Certificate of Title Volume 5460 Folio 130 is currently used for grazing and occasional cropping. The site is location in the Adelaide Hills and is predominantly flat.

The project site is adjacent to the head waters of the River Torrens however is not exposed to flooding or inundation.



Fig.5. Site photo showing the main paddock and power line in the distance.

Geology

The soils can be defined as a Podzol formation with sandy loam. (Source: RL advisory)

A geotechnical assessment will be carried out on the site to confirm the ground conditions prior to construction.

Ecology

Most of the property has been cleared for cropping and grazing with some vegetation along nearby road reserves and river boundary.

There are a several native red-gum eucalyptus trees located on the property – these will all be avoided from the solar farm area.

The nearest registered section of native vegetation is on the neighbouring property to the west of the site.

EPBC Act Protected Matters search was undertaken in May 2020. Based on the report, the project is not expected to impact any of the listed flora or fauna. Using the tools [provided](#) we confirmed that there are not any Peppermint Box Grassy Woodland communities present or effected by the solar farm development.



Fig.7. Photo showing the proposed site area with eucalyptus in the distance along the river boundary.

Cultural Heritage

The Aboriginal inhabitants and traditional owners of the region now called 'Birdwood' are part the area had been occupied by the Peramangk and Kaurna Aboriginal people. In the Kaurna language Karrawirra means Red Gum Forest, and the River Torrens is identified as Karrawirra Pari which means Red Gum Forest River. This river runs adjacent to the proposed site.

Based on desktop survey, there are no recorded indigenous sites of cultural significance within the project area (refer Appendix 4 for Aboriginal Cultural Heritage Database and Register - search report). The potential for undiscovered Aboriginal heritage sites to occur within the proposed development footprint is considered low due to the land being previously disturbed through cropping activities, and a lack of environmental features that would suggest Aboriginal cultural sensitivity.

Although the project is unlikely to impact Aboriginal or European heritage, an unexpected finds protocol would be implemented during construction in the event that heritage items are discovered.

European history dates in the region dates back to around 1840's settled by German/Prussian refugees fleeing religious persecution in Silesia – at this time it was known as Blumberg. During World War I it was renamed Birdwood after Sir William Birdwood who had commanded the Anzacs at Gallipoli.

Visual Amenity

The property is a typical of commercial farming properties in the area. It is situated on northern side of Adelaide-Mannum Rd with a vista of cleared paddocks and some red gums. The property is largely screened by existing vegetation – see images below.

The majority of residential dwellings in the area are on the western side of the site and the town of Birdwood is about 500m to the east. The inclusion of the solar PV array is not expected to adversely impact on the visual amenity of the area.



Fig.10 Existing vegetation screening along Adelaide-Mannum Road and Warren Road.

Subject to landowner and community preferences, the existing vegetation can be enhanced to increase the vegetation screen. This would be to minimize any visual impact to the neighboring properties and to screen the array from passing traffic and dust. The proposed vegetation screening structure is shown below. The location of the inverter and substation has been selected to be in close proximity to the existing 33kV line. This will mean that the visual amenity impact is kept consistent with existing land uses.

The visual amenity impact of the solar farm on neighbouring dwellings is expected to be low. Due to the terrain, distance to houses, fences and existing vegetation – it is unlikely that many dwellings will have much visibility of the array.

Below are some example views of solar farms during both operating and construction.



Fig.8. Example solar farm under construction



Fig.9. Example view of operating solar farm (Mannum)

Operational considerations

Dust – during construction the creation of the access tracks and piling may create some dust. The construction management plan that will be written by the selected contractor will need to have an active management plan to minimize dust impacts during construction. Once the solar farm is established and operational, it is expected that the amount of dust produced will be less than the current grazing and cropping activities. Dust also impacts the performance of the panels; therefore, maintenance staff will be minimizing this.

Fire – The applicant has committed to writing a bush fire management plan. This will involve consultation between the site owner, contractor and local country fire service. A fire break has been included around the perimeter of the project in the 10m setback. A static water supply tank will also be installed for fire suppression.

Glare – The solar pv array is designed to absorb as much solar irradiance as possible and convert to electricity. As a result, the glare from the panels will be negligible. With the vegetation landscaping buffer it will further reduce any potential visual or glare impacts

Lightning – All of the equipment on the site has been designed to ground any lightning that directly hits the equipment. The SAPN existing 33kV network will be the highest equipment above ground, which is also designed to minimize any impacts from lightning.

Noise – the site has been selected due to the proximity away from houses. The nearest non-associated house is over 100m from the solar array. During construction phase there will be some noise associated with access track compression, drilling, and piling. These works will be contained to the construction hours and outlined in detail in the EMP. Once operational, the sources for noise from the project are negligible. The inverter, transformer, battery, and SVC will all have small cooling fans. Based on operational performance of Mannum solar, it is not expected that these will be audible beyond the project area. This equipment is located in the central part of the array and away from the receivers. The trackers are mechanical and move every ~15 minutes, this is a very subtle adjustment and not audible from a distance.

Tetris Energy further confirms that the proposed solar farm during both the construction and operation phases will at all times comply with the noise parameters contained in the Environment Protection (Noise) Policy 2007.

Complaints management – prior to construction, all neighbours will be consulted with and advised of the works plan. A designated email address and phone number will be provided for

people to lodge any complaints. The site owner and contractor will co-ordinate a practical response to any complaints.

PLANNING CONTEXT

A specialist planning report has been prepared by Frank Brennan Consulting Services – please see **appendix one**.

TECHNOLOGY OVERVIEW

The Project's design will be similar to other approved solar projects within South Australia and will be sited to ensure minimal environmental impacts, in keeping with the sustainable nature of the Project. The process to select this proposed location for the PV facility has been ongoing with landowners and engineers, and has been carefully undertaken to ensure the highest design standards and location for the Project, as well as minimal impact to be imposed on the surrounding community.

Accordingly, the Project has been designed so as to minimise the impact on the landscape and surrounding environs as much as possible, with respect to a range of factors such as: the existing environment; agricultural land and activities occurring on-site and off-site; proximity to existing electricity infrastructure; storm water; and visual impact considerations. The Project comprises of a number of interlinked and integral components for the operation of the equipment and generation of electricity from solar radiation.

The proposed solar and storage project will comprise five principal parts being the photovoltaic (PV) array and tracking system, the inverters, the connecting infrastructure (33 kV underground transmission line, transformer, reactive power support (ie. static var generator), switchboard and SAPN interface) into the power distribution network, site access roads, cabling, fencing, optional battery storage system and associated minor ancillary infrastructure. Tetris Energy is seeking development consent for all the above-mentioned infrastructure.

PV Modules and Arrays

Each PV module is made up of a number of PV cells sealed in an environmentally friendly protective laminate which converts sunlight into electricity and are seen as the building blocks of PV systems. The panels may also be bi-facial with cells on either side of the module. A number of modules (one or more - pending on the design) make up a panel which are prewired field installed units. A number of these panels are joined together to form an array, which is a complete power generating unit.

The arrays are connected to a single axis tracking system. Typically, these arrays are arranged in rows normally in a north/south direction with access tracks between the rows for maintenance purposes and to avoid shading issues.



Fig.12. Example of a Single Axis Solar PV Array (Source: Tetris, Mannum solar farm)

Tracking System

A single axis tracking system is proposed (will be confirmed during detailed design) which rotates the arrays from east to west each day to ensure optimal exposure to the sun. The tracking system will be designed and constructed in accordance with the Australian Standards and will have a maximum height of close to 4.65 metres (although the actual height will be closer to 3m). An elevation drawing is included in appendix.

Inverters

The energy generated by the PV modules will be converted from direct current (DC) to alternating current (AC) energy by the inverters and increased to medium voltage via integrated transformers. The inverters and transformers will be housed either in standard shipping containers, in small buildings, or in an outdoor “skid” configuration. The exact type and number of inverters that will be required for the Project will not be known until the detailed design phase, which will determine the electricity generating capacity of the facility. Due to the size of the lot and their location throughout the Project Area between the PV modules ensure any visual impacts are likely to be low. Colour will be similar to Fig.13.



Fig.13. Example of a proposed inverter and transformer on a skid

Grid Connection

It is expected that the Project will connect directly into the 33kV SAPN distribution line (SD38100) via a pole mounted load switch. Similar to the pole shown in figure 14. In order to facilitate this connection, there will be a small switchyard within the Project Area which is likely to be constructed adjacent to the existing distribution line. This arrangement will include the 33kV underground cable, step up transformers, switchboard, metering cubicle, communications, and other minor electrical works required by SAPN to connect the solar farm. The size and design of this will depend on the ultimate generating capacity and grid connection arrangements.

Based on the initial feasibility by SAPN a small static VAR compensator (SVC) to assist with regulating voltage, power factor, harmonics and stabilizing the system. This will be beneficial to the broader network in the area and will be housed in the same substation compound.

The connection works may also require some infrastructure (such as fibre optic cable) running back into the existing substation. This work will be undertaken by SAPN. A connection agreement will be executed with SA Power Networks following the engineering report.



Fig 14. Example connection point SVC (ref: Sinopak & Siemens)

Battery Storage

The Project will make provision for battery storage throughout the site however it is unlikely to be installed as part of the initial array. While the specific design and type of storage will be finalised prior to construction (due to the rapid changes in technology), these are typically skid mounted, in small containers, or steel clad buildings. This allows for the storage of power during peak generating times (optimal sunlight conditions) for use later when generating capacity is low or at night. This improves the efficiency and reliability of the facility. They can also be used to provide network support for the local grid.

The technology being considered here is similar to that of being installed by Tesla at Hornsdale wind farm in South Australia at the moment. Dimensions will be approx. 3m high, 15m long, and 6m wide. Most likely colour is mat white.



Fig.15. Example Battery Storage System

Site office and maintenance

The Project may require a site office during the construction and operational phases. This is to house all of the construction plans and administrative matters. There may also be a small shed or container for warehousing the maintenance tools and spare parts. Given the rural location it will be important to have these spares in close proximity to minimise outages.



Fig.16. Example construction and operational site office – approx. 6m by 2.5m

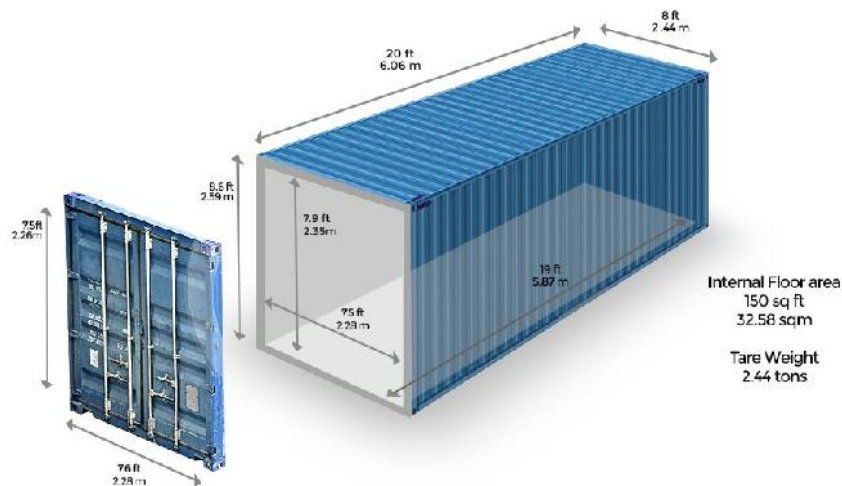


Fig.17. Example shipping container for spare parts storage

Utilities

There is currently water or sewerage infrastructure adjacent to the project area however the project is not intending to seek a connection to these initially. Rainwater or carted water may be collected and stored via water tanks and used on-site for maintenance purposes. Portable toilets will be used and maintained onsite.

A static water supply tank will also be installed for fire suppression.

Road Access and Parking

Access to the facility will be provided via a new access point on Winton Road in the west of the array. A lay-down area and temporary construction facilities will be proposed for the Western side of the array or directly near the site entrance.

Internal access tracks will be constructed throughout the Project Area to provide access to the PV modules and switchyards for maintenance purposes. Below is an image showing Winton Road where the access point will be located for the construction and operation of the project.

The proposed access is the safest compared to the alternatives on Adelaide-Mannum Road or Warren Road. The access surface will be an all-weather compressed gravel surface. This will be similar to the access track at Mannum solar farm which is shown in figure 19.c. No other upgrades are expected. Maintenance of the track will be form part of the operation and maintenance contract.



Fig.18. Site Access will be from Winton Road



Fig.19.a. View along Winton Road from proposed access point looking south



Fig.19.b. View along Winton Road from proposed access point looking north



Fig.19.c. Example road base material that will be used for the solar farm access and tracks (source: Mannum Solar farm)

Site parking will be approximately 50m from the site entrance.

Fencing

The facility will be fenced for security purposes. The fencing plan can be seen in the full site plan.



Fig.20. Typical solar farm perimeter fence (Approx. 2.3m high) source: Mannum Solar Farm

Signage

The facility will include signage at the entrance gate that includes project details, site contact, emergency details and safety considerations. It will be similar to the below signage.



Fig.20.1. Typical solar farm signage (source: Mannum Solar Farm)

Expected Traffic Volumes

Construction Phase Overview

Project construction is expected to commence in Q4-2020 and take approximately 3-4 months. Peak construction is expected to occur within second and third months. During the peak construction period approximately 15-20 staff will work on-site.

It is important to note that after construction of the project is completed, the access will not be regularly utilised. It is understood that the gate will be maintained to restrict vehicular access and control traffic.

Operations Phase Overview

The proposed solar farm will operate seven (7) days per week, 365 days per year and require general site inspection around once per week and full maintenance every six months.

Operations phase may generate up to four trips per week in a light vehicle and a small truck every six months. Example vehicle in figure 21.

Traffic Generation

An overview of expected vehicle types, their use and the average number expected to access the site each day during the peak construction period is provided in Table 1.

Table 1: Construction Vehicles & Traffic Generation Overview

Vehicle Type	Use / Materials to be Delivered	Daily Trips (In and Out)
19m Articulated Vehicle/B Double	Machinery and general construction materials / components	4
Large Rigid Vehicle	Machinery and general construction materials / components	
Medium Rigid Vehicle	Food, water, refuse etc.	3
Concrete Truck	Concrete	1
Light Vehicle	Staff transport	10
Total	-	18

In summary, construction traffic volumes are expected to peak at 18 trips per day. Once the machinery and equipment has been delivered to site, it is expected to be closer to 10 light vehicles that will transport staff to site each day



Fig.21. Typical operation and maintenance vehicle servicing the inverter

Site Works

Management Plans and Building Rules Consent

Prior to Building Rules Consent be granted, Birdwood Solar Farm will provide:

- Certified fence & gate drawing package
- Certified tracker structure drawing package
- Inverters and connection infrastructure (if required)

Prior to construction, Birdwood Solar Farm will provide the following plans:

- Construction Environmental Management Plan
- Bushfire fire prevention and Management Plan

Traffic considerations are detailed in this development application and the Construction Environmental Management Plan will further detail other items such as air quality and waste management during the construction phase.

Construction Phase Overview

The Birdwood Solar Farm will be broken up into key phases:

- Site mobilisation and the preparation of civil/mechanical works;
- Electrical installation of the array including DC, AC and medium voltage (MV) infrastructure;
- Grid interconnection activities;
- Installation commissioning, usually involving cold, warm and hot commissioning stages;
- Demobilisation and site restoration; and
- Landscaping.

Construction hours will be from 7am to 6pm, Monday to Saturday. Once operational the plant will be monitored remotely 24/7 365 days a year. Generation will only occur during sunlight hours but the battery and network support equipment may run at other times of the day.

Construction Activities

The Birdwood Solar Farm will undergo the following construction activities:

- Early works including identification of any existing services;
- Permits being granted prior to construction beginning;
- Site preparation prior to erection of site fences;
- Site earthworks including grading, drainage, trenching, piling and road construction;
- Material deliveries, including tracker components, solar modules, electrical cables, concrete deliveries, electrical switchgear and site buildings, including permanent infrastructure;
- Installation of the tracking piers and array module mounting structures;
- Module assembly and wiring of string cabling to DC combiner boxes;
- Electrical distribution wiring, buried and in conduits;
- Installation of electrical infrastructure foundations;
- Installation of electrical infrastructure to the foundations;
- Fit-off of all electricals to allow commissioning activities;
- DNSP to erect new assets for interconnection;
- Construction of interconnection assets owned by Tetris;
- Grid connection and commissioning activities;
- Site remediation and demobilisation, including landscaping.

Construction Footprints

There are several activities to be undertaken at Birdwood which will require some form of earthworks and they include:

- Entry to site access to be levelled and road base (crusher dust/gravel) to be applied along the Winton Road side of the project;
- Some potential light clearing of exotic vegetation to enable cabling to the existing services (telecommunications and water pipes etc),
- The preparation and construction of temporary and permanent access roads and laydown areas along with the compound;
- Foundation works for the electrical infrastructure;
- Trenches for electrical distribution and earth grading rings for the MV equipment.

Restoration

There will be site remedial works to be performed at the end of the construction phase, prior to the demobilisation phase. These will include:

- Any plantings required for screening purposes;

- Returning all areas disturbed by construction to former or better environmental health, where practicable.

Decommissioning

The project has a design life of 30-35 years. At the end of this period, the project will either be retrofitted with a newer system or decommissioned. A new system may require new planning approvals and lease amendment.

Under the registered lease agreement with the landowner, the tenant (Proponent) has the legal obligation to decommission the project and rehabilitate the land back to cropping pasture.

It is estimated that the scrap value of the components exceeds the cost of decommissioning and rehabilitating. To ensure the project has enough funds at the end of the project, the proponent will put aside 10% of the total decommissioning cost every year for the last 10 years of the project. The contribution amount is based on an independent assessment.

Contribution to the local economy

The development of the Birdwood Solar and Storage project will contribute to the local community through multiple channels. Below are some of the ways in which the project will benefit the region:

- Employment and upskilling opportunities during construction and operation
- Leading project with combined technologies. Birdwood can pioneer these types of projects and gain valuable market exposure.
- Energy reliability and security for west coast region
- Option to aggregate loads to negotiate lower power costs through project offtake discussions
- Possibility to replicate on a smaller scale for diesel reliant agriculture loads
- Potential tourism benefit

Appendix One – Planning Report



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27 May 2020

PLANNING REPORT

for

TETRIS ENERGY PTY LTD

for a

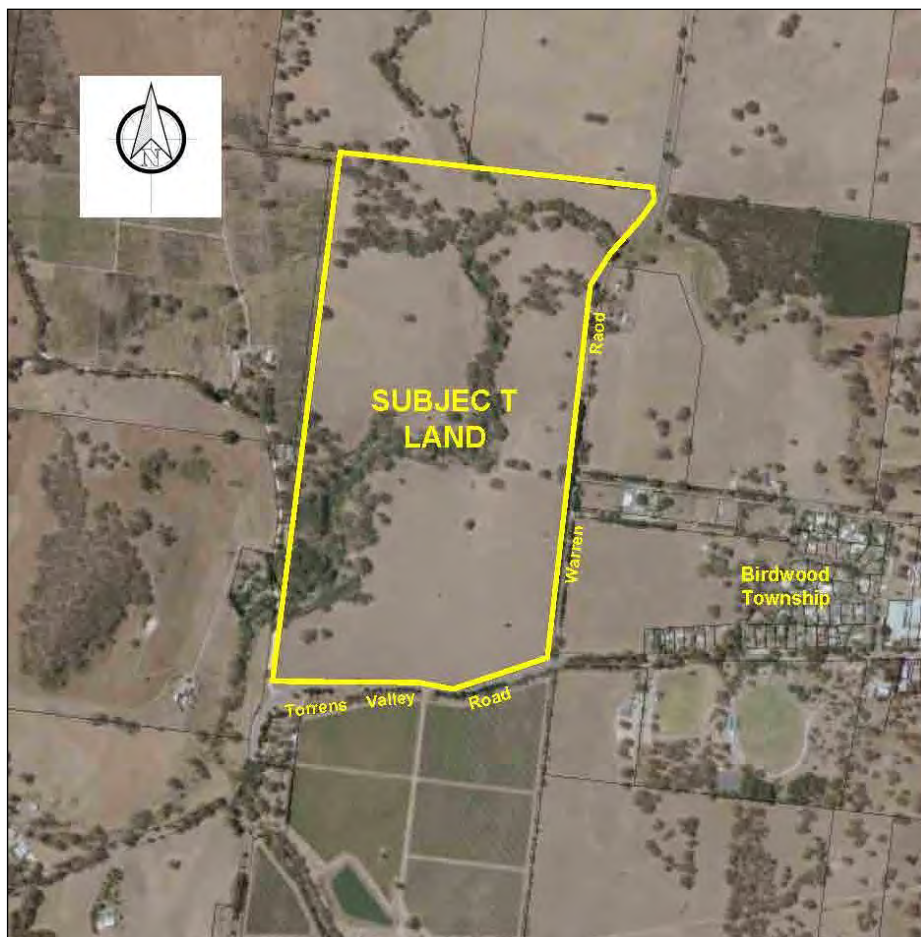
4.98 MW_{AC} SOLAR FARM

at

ALLOTMENT 16 in DP 13143

WARREN ROAD

BIRDWOOD SA 5234



ADELAIDE HILLS COUNCIL

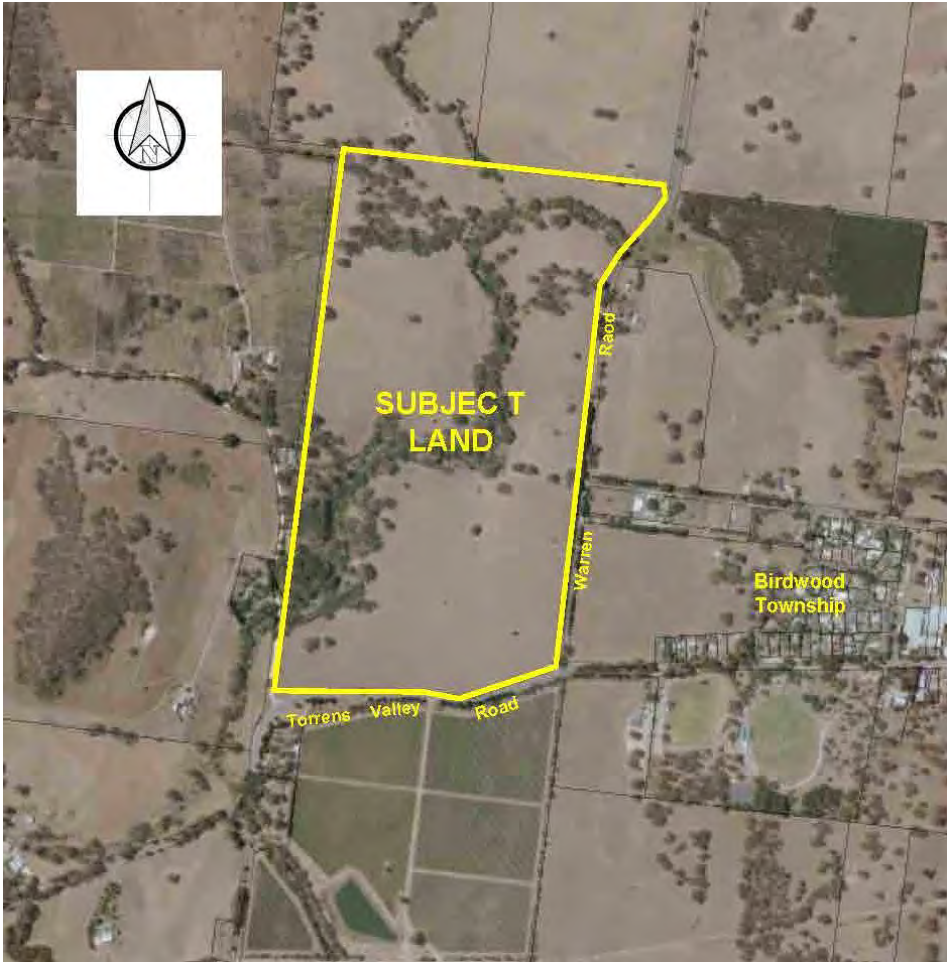
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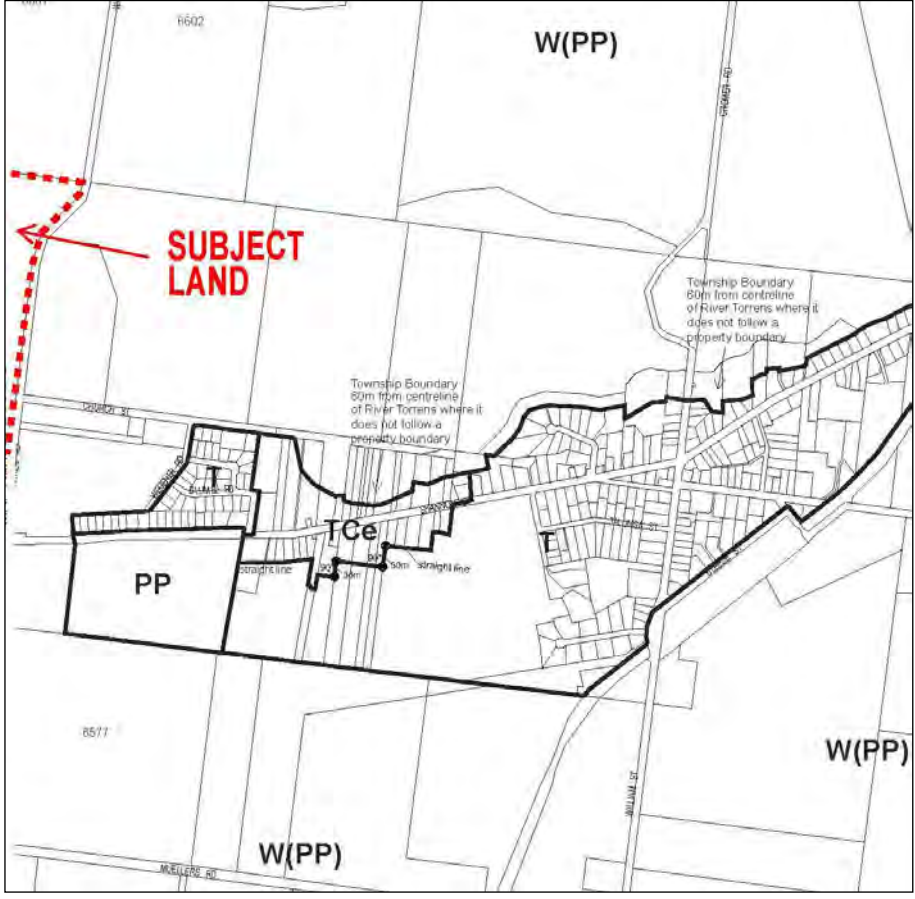
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1. Subject Land Details

The following are the key details of the subject land –

Property Description	<p>The subject land is described as allotment 16, hundred of Talunga, Warren Road, Birdwood and has a total area of 55.14 hectares.</p> <p>The subject land is a long irregularly shaped rectangular allotment having road frontages of 983.71 metres to Warren Road, 550.03 metres to Torrens Valley Road and 1,055.86 metres to Winton Road.</p> <p>The subject land is shown in the aerial photo below.</p>  <p>The subject land is arable land that is used for cropping and livestock grazing enterprises.</p>
Certificate of Title	<p>Volume 5460 Folio 130</p> <p>A copy of the Certificate of Title is attached in Appendix 1.</p>
Registered Owner	<p>Jerilderie Pty. Ltd. (ACN: 007 670 000)</p> <p>C/- Giles & Giles 68 Greenhill Road Wayville SA 5034</p>
Easements & Notations	<p>The subject land is not subject to any easements or notations on the Certificate of Title.</p>
Local Government	<p>Adelaide Hills Council</p>



Development Plan	Development Plan (Adelaide Hills Council) as consolidated on 8 August 2019.
Zoning	<p>The subject land is located within the Watershed (Primary Production) Zone and is not located in a Policy Area – refer to Zone Map AdHi/6.</p> <p>The extracts from Zone Map AdHi/6 below shows the zoning which applies to the subject land and locality surrounding the subject land.</p>  <p style="text-align: center;">Zone Map AdHi/6</p>



2. Development Description

The proposed development involves the establishment of a solar farm with a total capacity of 4.98 MW_{AC} using single axis tracking solar PV technology generating an estimated 12,500 MWh of clean, renewable energy which will provide sufficient power to supply the Birdwood region.

An optional Battery Storage facility providing up to 4MWh of renewable energy that will smooth the energy output and provide local network stability.

The solar farm comprises the following components –

<p>Solar Farm Area</p>	<p>The portion of the Subject Land to be occupied by the solar farm development will be ~13.10 hectares as shown in blue on the aerial plan below, noting the solar farm array will be setback 10 metres from the road boundaries to Winton Road, Torrens Valley Road and Warren Road.</p> 
<p>Solar Panel Array</p>	<p>The solar panels in the solar farm will consist of single axis solar PV arrays piled into the ground or mounted on a concrete ballast as shown in the photo below.</p>  <p>The solar arrays are laid out in a north-south direction and are to be connected to a single axis tracking system which rotates the arrays from east to west each day to ensure optimal exposure to the sun.</p> <p>The tracking system is designed and constructed in accordance with Australian Standards and will have a height ranging from 1.5 metres – 4.6 metres. An example is shown in the photo above.</p>

<p>Inverters, Switch Yard & Compound</p>	<p>A number of inverters (converting energy generation from Direct Current (DC) to Alternating Current (AC) energy) and transformers are to be installed throughout the solar array.</p> <p>The inverters will be housed either in standard shipping containers, in small buildings, or in an outdoor “skid” configuration. For example, a skid mounted inverter / transformer typically measures 6.50 metres (W) x 2.50 metres (D) x 3.50 metres (H) as shown in the photo below.</p>  <p>A small switch station (sub-station) being a fenced compound is proposed to be constructed within the solar farm footprint area.</p> <p>The location of the switch station will be determined to optimise the connection point at the SA Power Networks (SAPN) Angas Creek - Tungkillo 33kV electricity transmission line. The small switch yard is where the voltage will be increased to 33 kV thereby allowing for connection of the solar farm to the national electricity grid.</p>
<p>Grid Connection & Battery Energy Storage (BES)</p>	<p>The solar farm will connect directly to the national electricity grid via an overhead transmission line running from the solar farm’s proposed Sub-Station to the existing SAPN Angas Creek – Tungkillo 33kV electricity distribution line. The connection into the 33kV SAPN distribution line will be) via a pole mounted load switch.</p> <p>The solar farm also has the option of installing a Battery Energy Storage System, comprising a modular sheds (containers) and a fenced compound is to be located adjacent to the electricity grid connection point to the SAPN Angas Creek – Tungkillo 33kV electricity transmission line.</p> <p>An example of the battery storage system is shown in the photo below.</p> 

The SAPN Angas Creek – Tungkillo 33kV electricity transmission line is located immediately adjoining the Subject Land on its southern (Torrens Valley Road) and eastern (Warren Road) boundaries as shown in the photograph below.



The existing Angas Creek – Tungkillo 33kV electricity transmission line adjacent the subject land.

Site Access

It is proposed that access to the solar farm site will be gained from a new access driveway from Winton Road (a local road) providing all-weather access to / from the site.



The new access driveway provides good sight distances for all traffic travelling in both directions as can be seen in the photos below.



Looking easterly from Winton Road at the proposed location of the new access driveway to the solar farm site.



Looking southerly along Winton Road from the location of the new access driveway noting the good sight distance back to Torrens Valley Road.

	 <p>Looking northerly along Winton Road from the location of the new access driveway noting the good sight distance.</p>
Security Fencing	<p>A 2300 mm high chain mesh security fence is to be erected around the perimeter of the solar farm site. An example is shown in the photo below.</p> 

The proposed layout of the Solar Farm is shown in the plan below.



3. Locality of the Subject Land

The Subject Land is located in the Watershed (Primary Production) Zone of the Development Plan (Adelaide Hills Council) – refer to Zone Map AdHi/6.

The following aerial plan shows the form of development existing in the immediate vicinity of the Subject Land.



The pattern and form of development existing in the immediate vicinity of the subject land (as shown on the aerial plan above) is described as follows –

- To the south of the subject land there is an established primary production landuses – being viticulture / vineyards.
- To the east of the subject land the landuse is cropping / livestock grazing, while to the north-east along Church Street there is a Church complex.
- The Birdwood Township is immediately to the east of the solar farm site with the nearest residential allotment 180 metres away along Torrens Valley Road.
- To the north of the subject land the primary landuse is livestock grazing.
- To the west of the subject land the landuses comprise primary production activities – being livestock grazing, cropping and horticulture (fruit orchards).

In summary the area in the vicinity of the Subject Land is characterised by a mixed of primary production landuses comprising cropping, livestock grazing, viticulture (vineyards), horticulture (fruit orchards) and residential landuses.

The current condition of the subject land is shown in the photos below.



The looking south-ewasterly across the subject land from
Warren Road towards Torrens Valley Road.



The looking westerly across the subject land from Warren Road.

4. Planning Considerations

The following is an assessment of the proposed solar farm development against the relevant key Objectives and Principles of Development Control of the Development Plan for the Adelaide Hills Council area (Consolidated – 8 August 2019).

The policies for the Council area are expressed generally in relation to all development throughout the Council area, then in more detail for the various zones. All sections and all relevant provisions within each section of the Development Plan must be considered in relation to a Development Application.

In the event of any inconsistency between the Council-wide provisions and the Zone provisions, then the more detailed zone provisions would generally prevail.

4.1 Watershed (Primary Production) Zone

The most directly applicable provisions of the Development Plan in the Watershed (Primary Production) Zone related to the proposed solar farm development are as follows –

Objectives

- 1 *The maintenance and enhancement of the natural resources of the south Mount Lofty Ranges.*
- 2 *The enhancement of the Mount Lofty Ranges Watershed as a source of high quality water.*
- 3 *The long-term sustainability of rural production in the south Mount Lofty Ranges.*
- 4 *The preservation and restoration of remnant native vegetation in the south Mount Lofty Ranges.*
- 5 *The enhancement of the amenity and landscape of the south Mount Lofty Ranges for the enjoyment of residents and visitors.*
- 6 *The development of a sustainable tourism industry with accommodation, attractions and facilities which relate to and interpret the natural and cultural resources of the south Mount Lofty Ranges and increase the opportunities for visitors to stay overnight.*

Principles of Development Control

Form and Character

- 1 *Buildings, should be located in unobtrusive locations and, in particular, should:*
 - (a) *be located well below the ridge line;*
 - (b) *be located within valleys or behind spurs;*
 - (c) *be located not to be visible against the skyline when viewed from public roads and especially from the Mount Lofty Ranges Scenic Road;*
 - (d) *be set well back from public roads, particularly when the allotment is on the high side of the road;*
 - (e) *be sited on an excavated rather than a filled site to reduce the vertical profile of the building;*
 - (f) *where possible be screened by existing native vegetation when viewed from public roads and especially from the Mount Lofty Ranges Scenic Road; and*
 - (g) *maximize the retention of existing native vegetation and the protection and retention of watercourses in their natural state.*
- 2 *Buildings should be unobtrusive and not detract from the desired natural character of the Zone and, in particular:*
 - (a) *the profile of buildings should be low, and the roof lines should complement the natural form of the land;*
 - (b) *the mass of buildings should be minimized by variations in wall and roof lines and by floor plans which complement the contours of the land; and*

- (c) large eaves, verandahs and pergolas should be incorporated into designs to create shadowed areas which reduce the bulky appearance of buildings.*
- 4 *Buildings and structures should not be located within 25 metres of a watercourse and buildings and structures including chain mesh and solid fences should not be located on land subject to flooding as shown on Figures AdHiFPA/1 to 19 or within other areas subject to flooding or inundation by a 1 in 100 year average return interval flood event.*
- 9 *Driveways and access tracks should follow the contours of the land to reduce their visual impact and erosion from water run-off and be surfaced with dark materials. The excavation/filling of land should be kept to a minimum to preserve the natural form of the land and the native vegetation.*
- 10 *Native trees, shrubs and ground covers should be established to screen development, including scree slopes created as a result of the excavation and/or filling of land, in such a way that the bushfire hazard is not increased. Screening mounds may also be appropriate.*
- 11 *Buildings should not impair the character of rural areas by reason of their scale or siting. If necessary, buildings should be screened by trees or shrubs.*
- 14 *Development should not detract from the natural and rural landscape character of the region.*
- 15 *The rural character, comprising natural features and man-made activities, should be preserved by careful siting, design and landscaping of new building development and/or intensive land uses.*
- 16 *Development should ensure that primary production activity is not prejudiced.*
- 17 *Land which is particularly suitable for primary production should be used or remain available for such purposes.*

4.2 Council Wide Provisions

The most directly applicable Council Wide provisions of the Council's Development Plan related to the proposed solar farm development are as follows –

Design and Appearance

Objectives

- 1 *Development of a high design standard and appearance that responds to and reinforces positive aspects of the local environment and built form.*

Principles of Development Control

- 1 *Buildings should reflect the desired character of the locality while incorporating contemporary designs that have regard to the following:*
 - (a) *building height, mass and proportion*
 - (b) *external materials, patterns, colours and decorative elements*
 - (c) *roof form and pitch*
 - (d) *façade articulation and detailing*
 - (e) *verandahs, eaves, parapets and window screens.*
- 2 *Where a building is sited on or close to a side or rear boundary, the boundary wall should minimise:*
 - (a) *the visual impact of the building as viewed from adjoining properties*
 - (b) *overshadowing of adjoining properties and allow adequate sunlight access to neighbouring buildings especially those on which solar panels have been installed.*
- 3 *The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare to neighbouring properties, drivers or cyclists.*
- 6 *Transportable buildings and buildings which are elevated on stumps, posts, piers, columns or the like, should have their suspended footings enclosed around the perimeter of the building, and the use of verandahs, pergolas and other suitable architectural detailing to give the appearance of a permanent structure.*

- 9 Development should take place in a manner which will minimize alteration to the existing land form.

Building Setbacks from Road Boundaries

- 19 The setback of buildings from public roads should:
 - (a) be similar to, or compatible with, setbacks of buildings on adjoining land and other buildings in the locality
 - (b) contribute positively to the streetscape character of the locality
 - (c) not result in or contribute to a detrimental impact upon the function, appearance or character of the locality.
- 20 Buildings in rural areas should be sited a minimum distance of:
 - (a) 100 metres from the South Eastern Freeway
 - (b) 50 metres from primary arterial road other than the South Eastern Freeway
 - (c) 50 metres from a secondary arterial road.

Hazards

Objectives

- 1 Maintenance of the natural environment and systems by limiting development in areas susceptible to natural hazard risk.
- 2 Development located away from areas that are vulnerable to and cannot be adequately and effectively protected from the risk of natural hazards.
- 4 Development located and designed to minimise the risks to safety and property from flooding.
- 5 Development located to minimise the threat and impact of bushfires on life and property.
- 6 Expansion of existing non-rural uses directed away from areas of high bushfire risk.

Principles of Development Control

- 1 Development should be excluded from areas that are vulnerable to, and cannot be adequately and effectively protected from, the risk of hazards.
- 2 There should not be any significant interference with natural processes in order to reduce the exposure of development to the risk of natural hazards.

Flooding

- 4 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.

Bushfire

- 6 The following bushfire protection principles of development control apply to development of land identified as General, Medium and High bushfire risk areas as shown on the Bushfire Protection Area Figures AdHiBPA/1 to 14.
- 7 Development in a Bushfire Protection Area should be in accordance with those provisions of the Minister's Code: Undertaking development in Bushfire Protection Areas that are designated as mandatory for Development Plan Consent purposes.
- 8 Buildings 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 provide an adequate building protection zone
 - (e) inability to provide an adequate supply of water for fire fighting purposes.

Interface Between Land Uses

Objectives

- 1 Development located and designed to minimise adverse impact and conflict between land uses.
- 2 Protect community health and amenity from adverse impacts of development.
- 3 Protect desired land uses from the encroachment of incompatible development.

Principles of Development Control

- 1 Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:
 - (a) the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants
 - (b) noise
 - (c) vibration
 - (d) electrical interference
 - (e) light spill
 - (f) glare
 - (g) hours of operation
 - (h) traffic impacts
 - (i) stormwater or the drainage of runoff from the land.
- 2 Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.
- 5 Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses desired for the zone should be designed to minimise negative impacts.

Rural Interface

- 13 The potential for adverse impacts resulting from rural development should be minimised by:
 - (a) not locating horticulture or intensive animal keeping on land adjacent to townships
 - (b) maintaining an adequate separation between horticulture or intensive animal keeping and townships, other sensitive uses and, where desirable, other forms of primary production.
- 14 Traffic movement, spray drift, dust, noise, odour and the use of frost fans and gas guns associated with primary production should not lead to unreasonable impact on adjacent land uses.
- 15 Existing primary production and mineral extraction should not be prejudiced by the inappropriate encroachment of sensitive uses such as urban development.
- 16 Development that is adjacent to land used for primary production (within either the zone or adjacent zones) should include appropriate setbacks and vegetative plantings designed to minimise the potential impacts of chemical spray drift and other impacts associated with primary production.

Natural Resources

Objectives

- 1 Retention, protection and restoration of the natural resources and environment.
- 4 Natural hydrological systems and environmental flows reinstated and maintained and enhanced.
- 6 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.

Principles of Development Control

- 1 Development should be undertaken with minimum impact on the natural environment, including air and water quality, land, soil, biodiversity, and scenically attractive areas.

Biodiversity and Native Vegetation

- 37 Development should retain existing areas of native vegetation and where possible contribute to revegetation using locally indigenous plant species.
- 38 Development should be designed and sited to minimise the loss and disturbance of native flora and fauna.
- 39 Native vegetation should be conserved, and its conservation value and function not compromised by development if the native vegetation does any of the following:
 - (a) provides an important habitat for wildlife or shade and shelter for livestock
 - (b) has a high plant species diversity or includes rare, vulnerable or endangered plant species or plant associations and communities
 - (c) provides an important seed bank for locally indigenous vegetation
 - (d) has high amenity value and/or significantly contributes to the landscape quality of an area, including the screening of buildings and unsightly views
 - (e) has high value as a remnant of vegetation associations characteristic of a district or region prior to extensive clearance for agriculture
 - (f) is growing in or is characteristically associated with a wetland environment.

Soil Conservation

- 47 Development should not have an adverse impact on the natural, physical, chemical or biological quality and characteristics of soil resources.
- 48 Development should be designed and sited to prevent erosion.
- 49 Development should take place in a manner that will minimise alteration to the existing landform.
- 50 Development should minimise the loss of soil from a site through soil erosion or siltation during the construction phase of any development and following the commencement of an activity.

Orderly and Sustainable Development

Objectives

- 2 Development occurring in an orderly sequence and in a compact form to enable the efficient provision of public services and facilities.
- 3 Development that does not jeopardise the continuance of adjoining authorised land uses.

Principles of Development Control

- 1 Development should not prejudice the development of a zone for its intended purpose.
- 2 Land outside of townships and settlements should primarily be used for primary production and conservation purposes.
- 3 The economic base of the region should be expanded in a sustainable manner.

Renewable Energy Facilities

Objectives

- 1 Development of renewable energy facilities that benefit the environment, the community and the state.
- 2 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.
- 3 Location, siting, design and operation of renewable energy facilities to avoid or minimise adverse impacts on the natural environment and other land uses.

Principles of Development Control

- 1 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.
- 2 Renewable energy facilities, including wind farms and ancillary developments, should be located in areas that maximise efficient generation and supply of electricity.

Siting and Visibility

Objectives

- 1 Protection of scenically attractive areas, particularly natural, rural and coastal landscapes.

Principles of Development Control

- 1 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 and coastal areas
 - (c) views from the coast, near-shore waters, public reserves, tourist routes and walking trails.
- 6 Buildings and structures should be designed to minimise their visual impact in the landscape, in particular:
 - (a) the profile of buildings should be low, and the rooflines should complement the natural form of the land
 - (b) the mass of buildings should be minimised by variations in wall and roof lines and by floor plans which complement the contours of the land
 - (c) large eaves, verandas and pergolas should be incorporated into designs so as to create shadowed areas that reduce the bulky appearance of buildings.

Transportation and Access

Objectives

- 2 Development that:
 - (a) provides safe and efficient movement for all motorised and non-motorised transport modes
 - (b) ensures access for vehicles including emergency services, public infrastructure maintenance and commercial vehicles
 - (c) provides off street parking
 - (d) is appropriately located so that it supports and makes best use of existing transport facilities and networks.

Principles of Development Control

Access

- 25 Development should have direct access from an all weather public road.
- 26 Development should be provided with safe and convenient access which:
 - (a) avoids unreasonable interference with the flow of traffic on adjoining roads
 - (b) provides appropriate separation distances from existing roads or level crossings
 - (c) accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision
 - (d) is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.

4.3 Planning Assessment

The primary objectives for the Watershed (Primary Production) Zone seek to maintain and enhance natural resources and water quality, preserve native vegetation, and secure the long-term sustainability of rural production.

The proposed solar farm development (renewable energy facility) is considered to be a form of development compatible with the achievement of these Zone objectives being a low profile and unobtrusive form of renewable energy development.

The location of the solar farm immediately adjoining the existing SA Power Networks (SAPN) Angas Creek – Tungkillo 33kV electricity transmission line on Torrens Valley Road and Warren Road will enable the solar farm to readily connect to the national electricity grid while minimising the amount of infrastructure (ie: overhead transmission lines) required to enable connection of the solar farm to the electricity grid.

With the portion of the subject land being utilised for the proposed solar farm being 13.10 hectares in area, the development of a solar farm on the property will not result in a significant loss of primary production capacity or output.

The proposed solar farm array will be setback 10 metres from Torrens Valley Road (a secondary arterial road) Warren Road and Winton Road (local roads) to ensure the solar farm does not unduly impact on the rural outlook along this section of Torrens Valley Road.

Access to the solar farm site is to be gained from Winton Road, a local open surface road under the care control and management of the Adelaide Hills Council and will provide all-weather access to the solar farm.

Once constructed the proposed solar farm will not generate any significant traffic volumes that would cause unreasonable interference with the flow of traffic on this road or adjacent local road network.

During the construction phase of the solar farm there is expected to be 18 two-way (in / out) traffic movements from the site on a daily basis. Again, this volume of traffic is not expected to have any adverse impacts on the local road network.

The operation of the proposed solar farm is passive and will not have an adverse impact or create a conflict with the existing landuses in this locality particularly the rural living properties to the east of the site.

It is proposed that visual screening plantings will be undertaken along the boundaries of the solar farm site to minimise the visual intrusion of the solar farm from the adjoining roads and properties. A 2300 mm high chain mesh security fence is to be erected around the perimeter of the solar farm site and its visual impact will be softened by the proposed landscaping.

The location, siting, design and operation of proposed solar farm (being a renewable energy facility) has been undertaken to –

- avoid and/or minimise adverse impacts on the natural environment – no native vegetation is impacted, and the development will not give rise to soil erosion on the site.
- avoid and/or minimise adverse impacts on the visual amenity in this locality or cause any nuisance, including glare, to adjoining properties and roads.
- ensure the facility does not pose or create a bushfire hazard.
- provide for the continuation of existing landuses in the vicinity including primary production landuses.
- maximise efficient generation and supply of electricity from the solar farm to the existing SAPN Angas Creek – Tungkillo 33kV electricity transmission line where it is proposed to connect to the national electricity grid.

The location and topography of the subject land (and solar farm) provides an ideal opportunity to harvest the natural sunlight for the production of a renewable electricity supply.

The proposed solar farm is considered to be a passive renewable energy facility that will not have any detrimental impacts on the adjoining properties and the continuation of the landuses currently on them or allowed to be undertaken in the future.

5. Conclusion

It is submitted that the proposed solar farm development incorporating a solar panel array, inverters / transformers, electricity (switch yard) sub-station and (optional) battery storage facility on the subject land is consistent with the respective Objectives and Principles of Development Control in the Council-wide and Watershed (Primary Production) Zone provisions of the Development Plan (Adelaide Hills Council – consolidated on 8 August 2019).

When assessed against the provisions of the Development Plan, the proposed solar farm development is not considered to be at serious variance with the Council's Development Plan and demonstrates sufficient merit to warrant the granting of Development Plan Consent.



F.N. (Frank) Brennan PSM MPIA
Principal Consultant

FRANK BRENNAN CONSULTING SERVICES

Appendix 1 – Certificate of Title

Appendix Two – Site Layout Plan

Birdwood Solar Farm – Indicative Site Layout



Map Legend

33kV overhead and connection pole

Indicative Inverter Location

Control house/box

Solar PV Array and access track envelop

Indicative substation/switchboard/transformer Location

Native Vegetation Landscaping

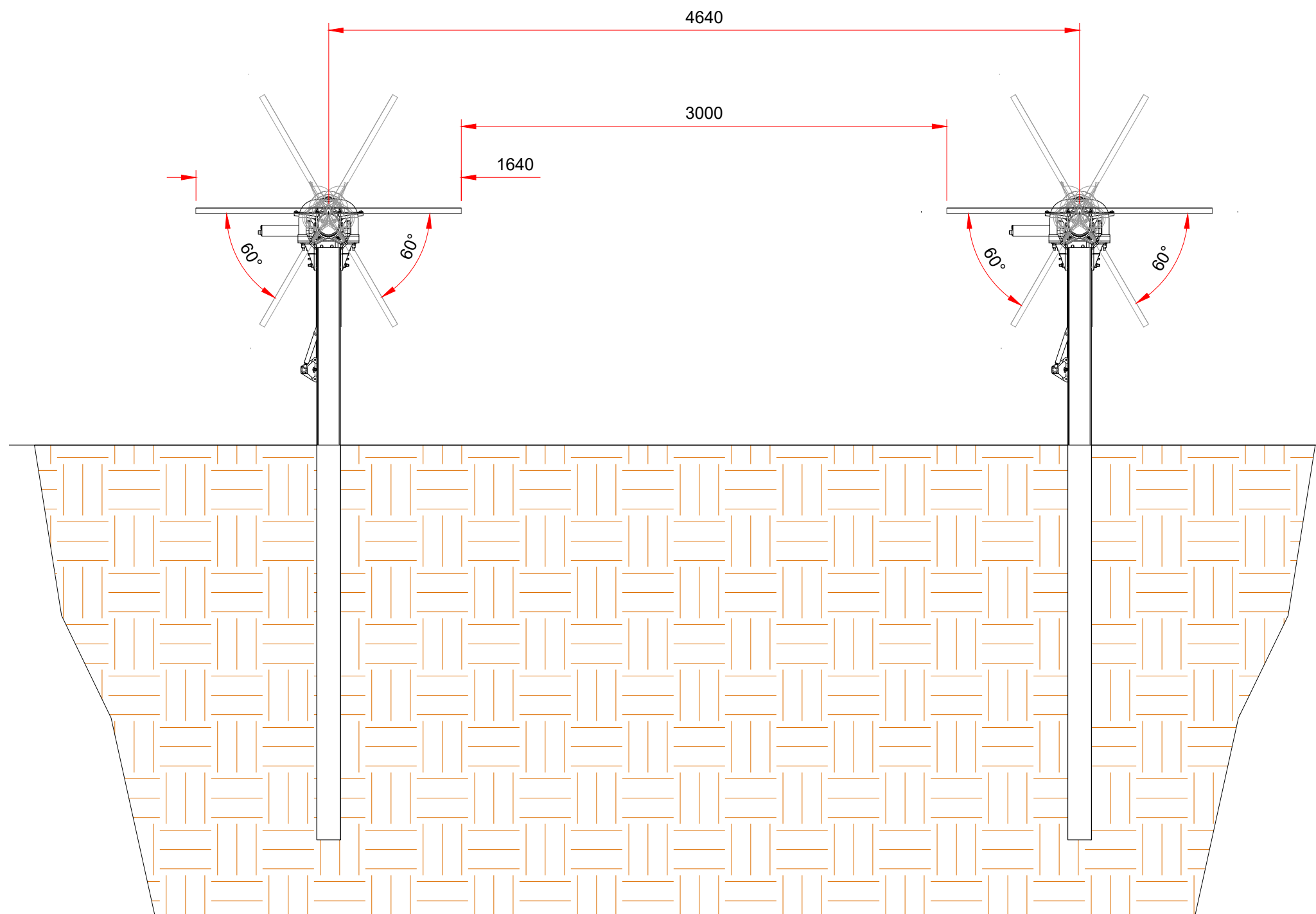
Entrance and Access Track

100m

N

100m

Appendix Three – Site Elevation Plans

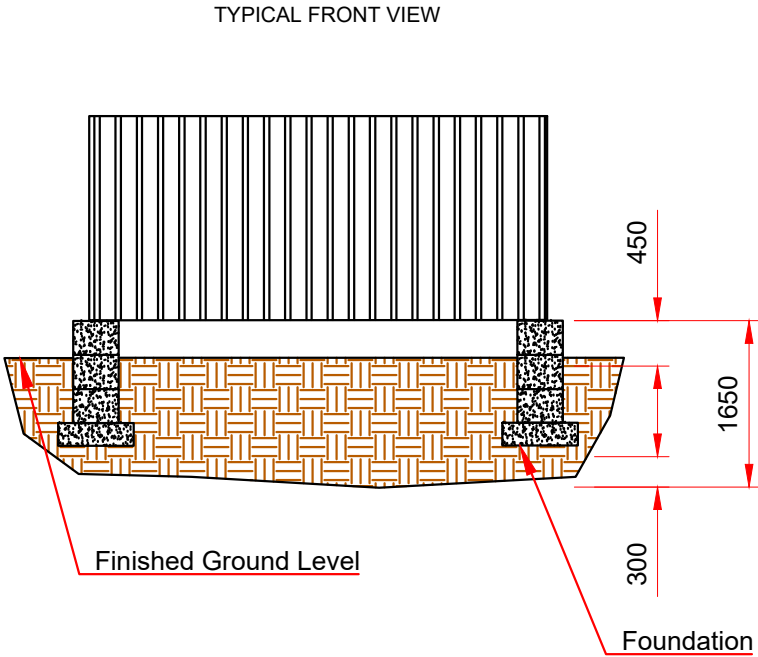


Client: Tetris Energy Pty Ltd

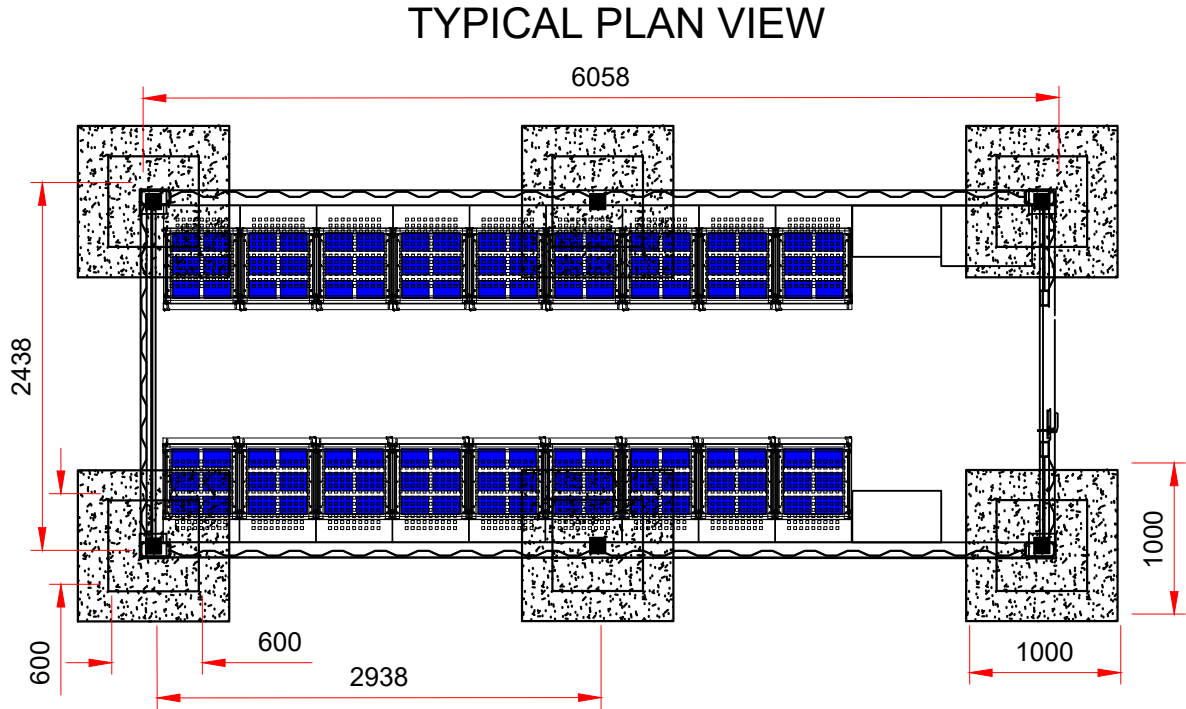
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Scale:	1:30@A3	Date:	13/12/17
Drawing No:	FB1001-B-01	Rev:	--

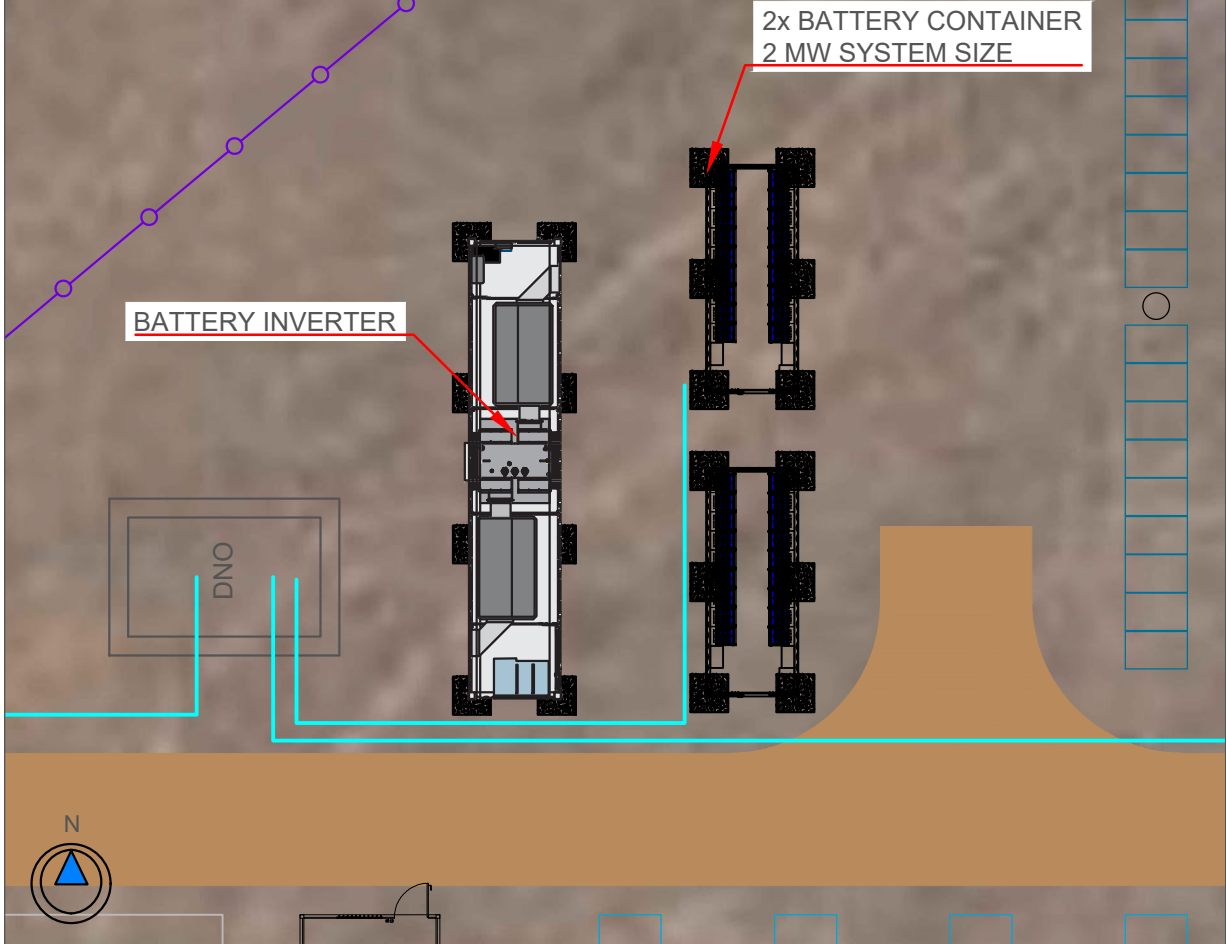
PLAN VIEW
M 1:100@A3



PLAN VIEW
M 1:50@A3

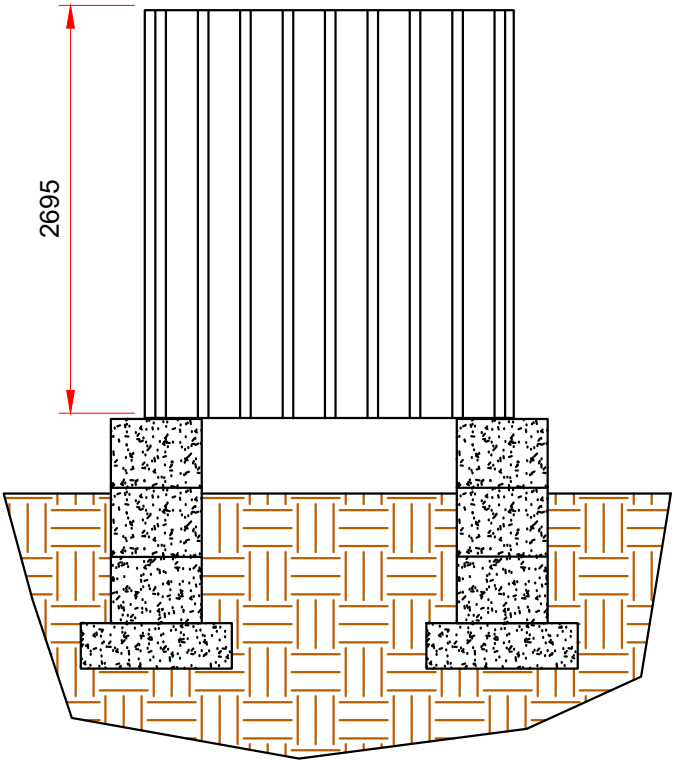


PROPOSED BATTERIES CONTAINER LOCATION
M 1:200@A3



PLAN VIEW
M 1:50@A3

TYPICAL SIDE VIEW



Notes:

Client:	Tetris Energy Pty Ltd		
Location:	Birdwood		
Title:	Batteries Container Side Elevation		
Drawn:	DETRA	Checked:	FB
Scale:	As Shown@A3	Date:	13/12/17
Drawing No:	FB1001-C-01	Rev:	--

bolandfj@hotmail.com
0423 778 125

Do not scale from this drawing. Site verify all dimensions prior to construction. Report all discrepancies to the drawing originator immediately. This drawing is to be read in conjunction with all relevant documents and drawings.

Appendix Five – DAPR Search results

Frank Boland
Tetris Energy Pty Ltd
Level 3, 10 Bond St
Sydney 2000 New South Wales

Dear Frank

Thank you for the search request dated 21 May 2020. The search was based on the title details - Title Type: CT, Volume: 5460, Folio: 130. The address for this parcel is: WARREN RD BIRDWOOD SA 5234. Your reference is 1321.

I advise that the central archive, which includes the Register of Aboriginal Sites and Objects (the Register), administered by Aboriginal Affairs and Reconciliation (AAR), has no entries for Aboriginal sites within 5m of this location.

The applicant is advised that sites or objects may exist in the proposed development area, even though the Register does not identify them. All Aboriginal sites and objects are protected under the *Aboriginal Heritage Act 1988* (the Act), whether they are listed in the central archive or not. Land within 200 metres of a watercourse (for example the River Murray and its overflow areas) in particular, may contain Aboriginal sites and objects.

Pursuant to the Act, it is an offence to damage, disturb or interfere with any Aboriginal site, object or remains (registered or not) without the authority of the Premier. If the planned activity is likely to damage, disturb or interfere with a site, object or remains, authorisation of the activity must be first obtained from the Premier under Section 23 of the Act. Section 20 of the Act requires that any Aboriginal sites, objects or remains, discovered on the land, need to be reported to the Premier. Penalties apply for failure to comply with the Act. It should be noted that this Aboriginal heritage advice has not addressed any relevant obligations pursuant to the *Native Title Act 1993*.

Please be aware in this area there are Aboriginal groups/organisations/traditional owners that may have an interest. These may include:

Peramangk Heritage Association
Chairperson: Michael Coglin
Address: PO Box 36 Athelstone SA 5076
Telephone:
Email:
Contact Officer: Ivan-Tiwu Copley
Telephone: 0428251279
Email: miafc@bigpond.com

If you require further information, please contact the Aboriginal Heritage Team on telephone (08) 8226 8900 or send to our generic email address dpc-aar.heritagesites1@sa.gov.au

Yours sincerely,



Perry Langeberg
SENIOR INFORMATION OFFICER (HERITAGE)
ABORIGINAL AFFAIRS & RECONCILIATION

29 May 2020

ADELAIDE HILLS COUNCIL
RECEIVED: 29/05/2020



Date: 07 July 2020

To: Adelaide Hills Council
Att: Marie Molinaro – Statutory Planner
PO Box 44
Woodside SA 5244
mail@ahc.sa.gov.au

Re: Birdwood Solar Farm (20/530/473) – Response to RFI

Dear Marie

Tetris Energy has responded to the items that have been requested in the letter dated 30 June 2020.

These are attached to this letter and can be summarised as:

- a) Updated Statement of Effect to replace the previous Planning Report.
- b) Revised layout plans (covering points a to f)
- c) Native vegetation – this has been plotted and confirmation that no native vegetation is being removed.
- d) Winton Road cross-over details
- e) Landscaping plan
- f) Dimensional plans. These are itemised in the development application and Statement of Effect.

Tetris Energy can also confirm that the additional fees have been paid – see receipt below.

DevApps
Payment Receipt

Transaction Approved. Thank you for your payment.

Time / Date

Tue Jul 07 16:53:38 AEST 2020

Development Application

PP20/530

Card Type

Visa

Credit Card Number

406587...494

Card Expiry Date

08/21

Sub Total

\$1943.84 AUD

Payment Amount

\$1943.84 AUD

Print

Close

We look forward to progressing the project through the remaining assessment process.

Yours Sincerely



Frank Boland
Director

ADELAIDE HILLS COUNCIL
RECEIVED 8 July 2020



FRANK BRENNAN
CONSULTING SERVICES

a | po box 335 . millicent . south australia . 5280

e | frank@fbcs.com.au

m | 0418 838 152

abn | 91 376 720 132

7 July 2020

STATEMENT OF EFFECT

for

TETRIS ENERGY PTY LTD

for a

4.98 MW_{AC} SOLAR FARM

at

ALLOTMENT 16 in DP 13143

WARREN ROAD

BIRDWOOD SA 5234

ADELAIDE HILLS COUNCIL

RECEIVED 8 July 2020

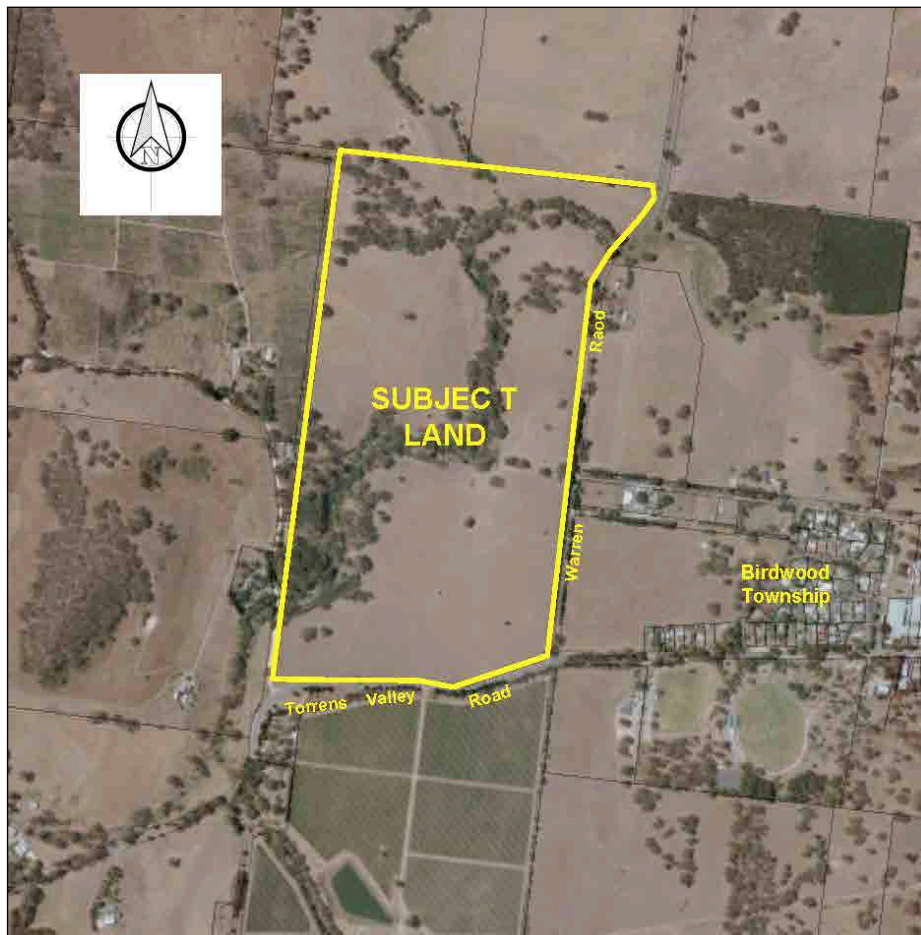
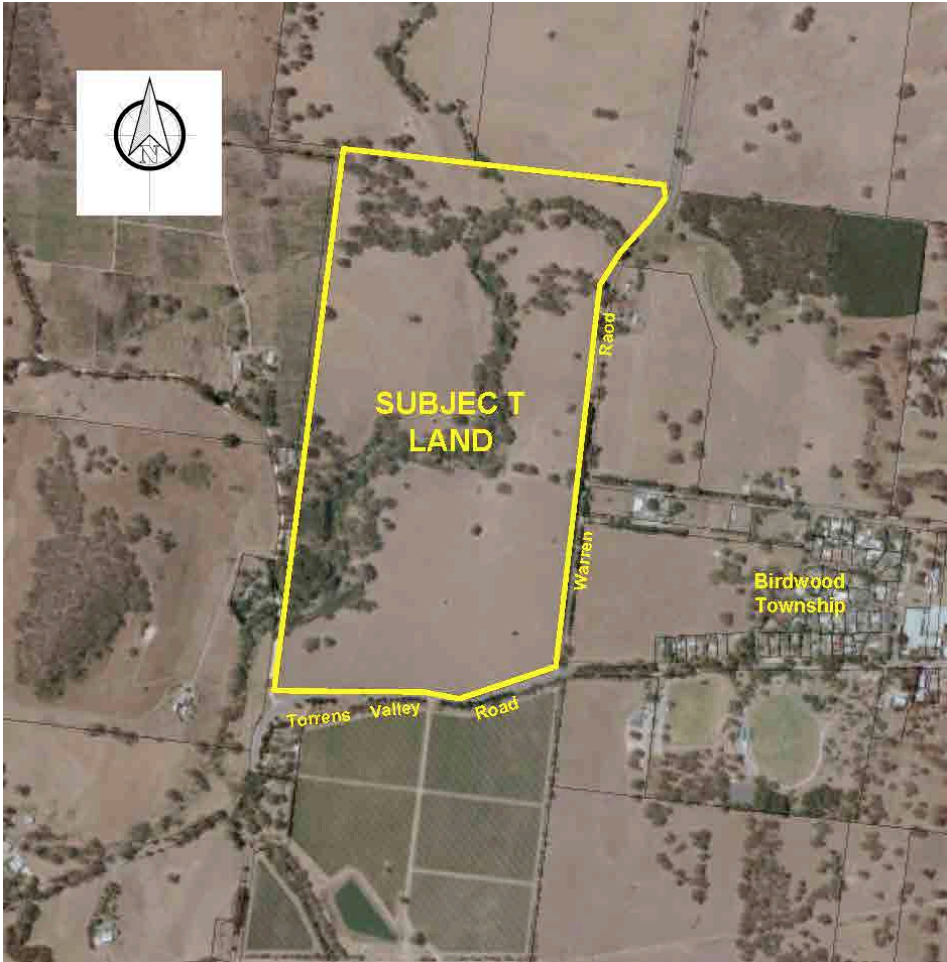


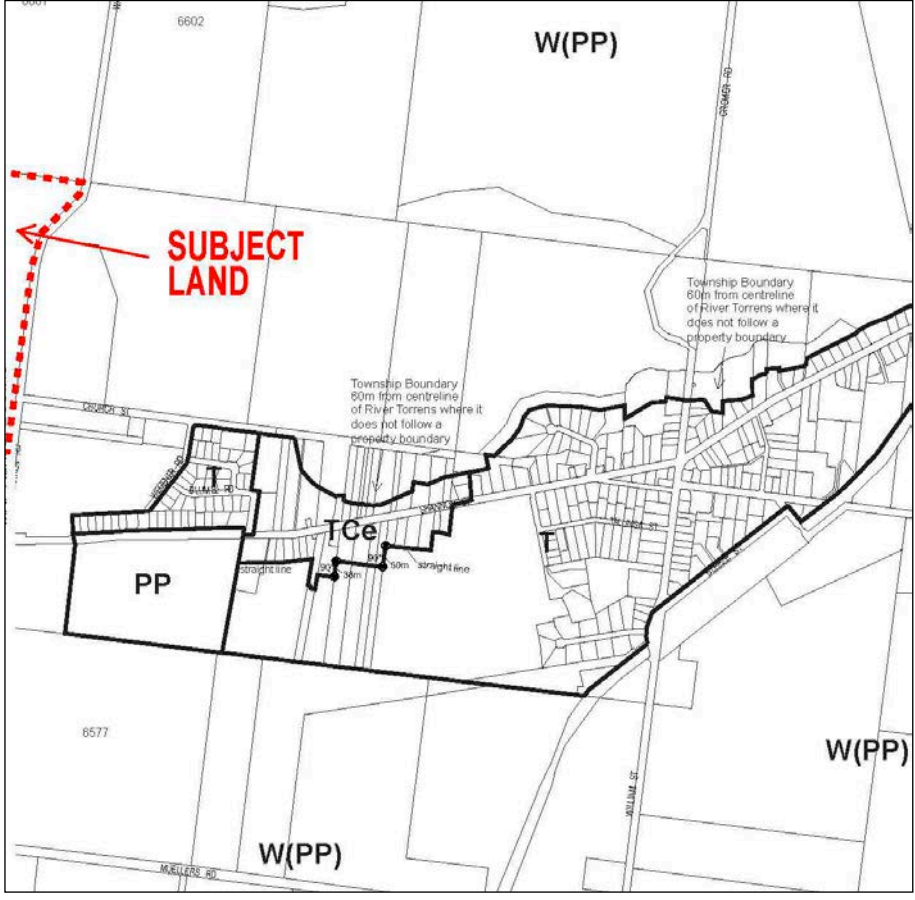
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1. Subject Land Details

The following are the key details of the subject land –

Property Description	<p>The subject land is described as allotment 16, hundred of Talunga, Warren Road, Birdwood and has a total area of 55.14 hectares.</p> <p>The subject land is a long irregularly shaped rectangular allotment having road frontages of 983.71 metres to Warren Road, 550.03 metres to Torrens Valley Road and 1,055.86 metres to Winton Road.</p> <p>The subject land is shown in the aerial photo below.</p>  <p>The subject land is arable land that is used for cropping and livestock grazing enterprises.</p>
Certificate of Title	<p>Volume 5460 Folio 130</p> <p>A copy of the Certificate of Title is attached in Appendix 1.</p>
Registered Owner	<p>Jerilderie Pty. Ltd. (ACN: 007 670 000)</p> <p>C/- Giles & Giles 68 Greenhill Road Wayville SA 5034</p>
Easements & Notations	<p>The subject land is not subject to any easements or notations on the Certificate of Title.</p>
Local Government	<p>Adelaide Hills Council</p>


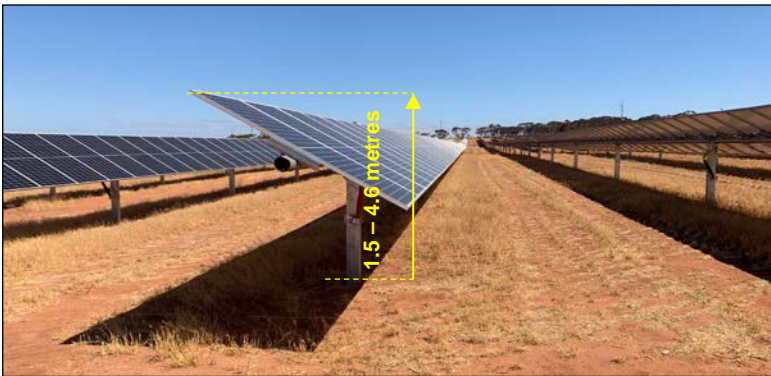
Development Plan	Development Plan (Adelaide Hills Council) as consolidated on 8 August 2019.
Zoning	<p>The subject land is located within the Watershed (Primary Production) Zone and is not located in a Policy Area – refer to Zone Map AdHi/6.</p> <p>The extracts from Zone Map AdHi/6 below shows the zoning which applies to the subject land and locality surrounding the subject land.</p>  <p style="text-align: center;">Zone Map AdHi/6</p>

2. Development Description

The proposed development involves the establishment of a solar farm with a total capacity of 4.98 MW_{AC} using single axis tracking solar PV technology generating an estimated 12,500 MWh of clean, renewable energy which will provide sufficient power to supply the Birdwood region.

An optional Battery Storage facility providing up to 4MWh of renewable energy that will smooth the energy output and provide local network stability.

The solar farm comprises the following components –

<p>Solar Farm Area</p>	<p>The portion of the Subject Land to be leased (~15.80 hectares) is shown in blue on the aerial plan below, noting the solar farm array will be setback 100 metres from the Torrens Valley Road boundary and 10 metres from Warren Road and 150 metres from Winton Road.</p> 
<p>Solar Panel Array</p>	<p>The solar panels in the solar farm will consist of single axis solar PV arrays piled into the ground or mounted on a concrete ballast as shown in the photo below.</p>  <p>The solar arrays are laid out in a north-south direction and are to be connected to a single axis tracking system which rotates the arrays from east to west each day to ensure optimal exposure to the sun.</p> <p>The tracking system is designed and constructed in accordance with Australian Standards and will have a height ranging from 1.5 metres – 4.6 metres. An example is shown in the photo above.</p>
<p>Inverters, Switch Yard & Compound</p>	<p>A number of inverters (converting energy generation from Direct Current (DC) to Alternating Current (AC) energy) and transformers are to be installed throughout the solar array.</p>

The inverters will be housed either in standard shipping containers, in small buildings, or in an outdoor “skid” configuration. For example, a skid mounted inverter / transformer typically measures 6.50 metres (W) x 2.50 metres (D) x 3.50 metres (H) as shown in the photo below.



A small switch station (sub-station) being a fenced compound is proposed to be constructed within the solar farm footprint area.

The location of the switch station will be determined to optimise the connection point at the SA Power Networks (SAPN) Angas Creek - Tungkillo 33kV electricity transmission line. The small switch yard is where the voltage will be increased to 33 kV thereby allowing for connection of the solar farm to the national electricity grid.

**Grid
Connection &
Battery
Energy
Storage
System
(BES)**




The solar farm will connect directly to the national electricity grid via an overhead transmission line running from the solar farm’s proposed Sub-Station to the existing SAPN Angas Creek – Tungkillo 33kV electricity distribution line. The connection into the 33kV SAPN distribution line will be) via a pole mounted load switch.

The solar farm also has the option of installing a Battery Energy Storage System, comprising a modular sheds (containers) and a fenced compound is to be located adjacent to the electricity grid connection point to the SAPN Angas Creek – Tungkillo 33kV electricity transmission line.

An example of the battery storage system is shown in the photo below.



The SAPN Angas Creek – Tungkillo 33kV electricity transmission line is located immediately adjoining the Subject Land on its southern (Torrens Valley Road) and eastern (Warren Road) boundaries as shown in the photograph below.

	 <p>The existing Angas Creek – Tungkillo 33kV electricity transmission line adjacent the subject land.</p>
<p>Static VAR Compensator (SVC)</p>	<p>It is proposed that a small static VAR compensator (SVC) will be installed to assist with regulating voltage, power factor, harmonics and stabilizing the system. This will be beneficial to the broader network in the area and will be housed in the same substation compound.</p>  <p>Example connection point SVC</p>
<p>Site Access</p>	<p>It is proposed that access to the solar farm site will be gained from a new access driveway from Winton Road (a local road) providing all-weather access to / from the site.</p> <p>The new access driveway provides good sight distances for all traffic travelling in both directions as can be seen in the photos below.</p>  <p>Looking easterly from Winton Road at the proposed location of the new access driveway to the solar farm site.</p>



Looking southerly along Winton Road from the location of the new access driveway noting the good sight distance back to Torrens Valley Road.



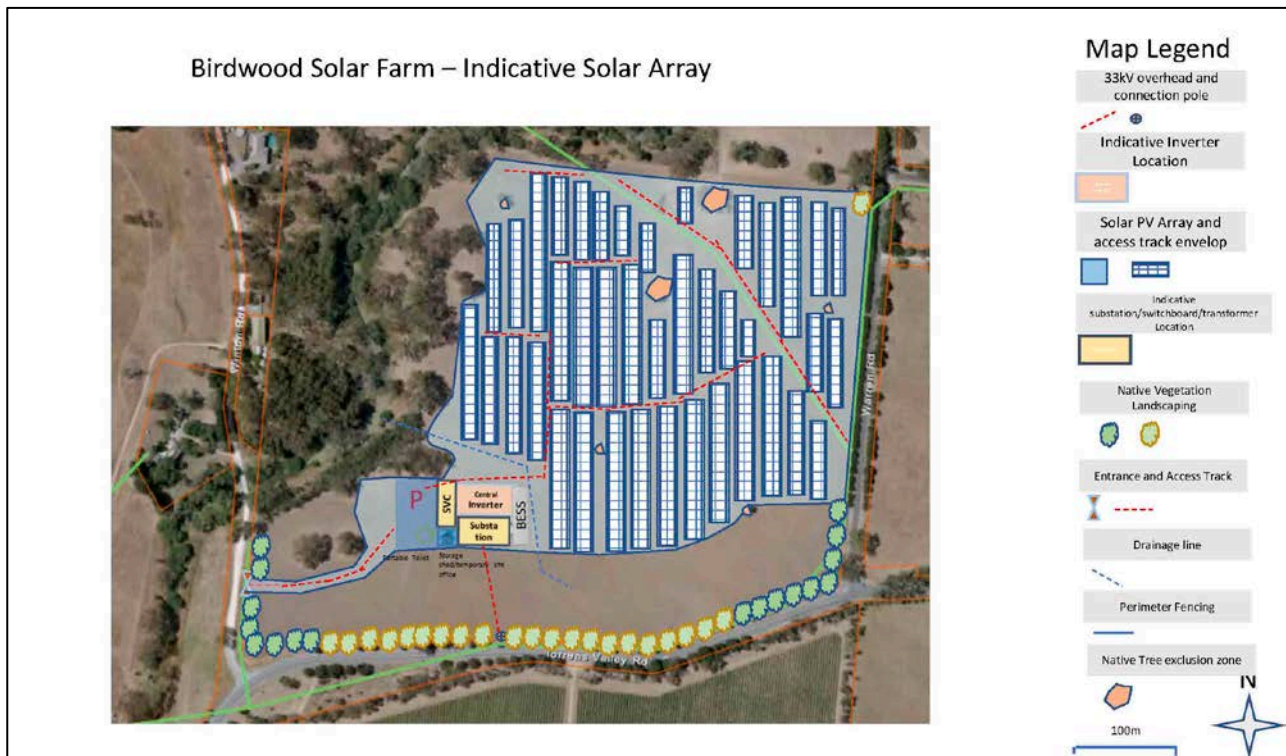
Looking northerly along Winton Road from the location of the new access driveway noting the good sight distance.

Security Fencing

A 2300 mm high chain mesh security fence is to be erected around the perimeter of the solar farm site. An example is shown in the photo below.



The proposed layout of the Solar Farm is shown in the plan below.



3. Locality of the Subject Land

The Subject Land is located in the Watershed (Primary Production) Zone of the Development Plan (Adelaide Hills Council) – refer to Zone Map AdHi/6.

The following aerial plan shows the form of development existing in the immediate vicinity of the Subject Land.



The pattern and form of development existing in the immediate vicinity of the subject land (as shown on the aerial plan above) is described as follows –

- To the south of the subject land there is an established primary production landuses – being viticulture / vineyards.
- To the east of the subject land the landuse is cropping / livestock grazing, while to the north-east along Church Street there is a Church complex.
- The Birdwood Township is immediately to the east of the solar farm site with the nearest residential allotment 180 metres away along Torrens Valley Road.
- To the north of the subject land the primary landuse is livestock grazing.
- To the west of the subject land the landuses comprise primary production activities – being livestock grazing, cropping and horticulture (fruit orchards).

In summary the area in the vicinity of the Subject Land is characterised by a mixed of primary production landuses comprising cropping, livestock grazing, viticulture (vineyards), horticulture (fruit orchards) and residential landuses.

The current condition of the subject land is shown in the photos below.



The looking south-ewasterly across the subject land from
Warren Road towards Torrens Valley Road.



The looking westerly across the subject land from Warren Road.

4. Planning Considerations

The following is an assessment of the proposed solar farm development against the relevant key Objectives and Principles of Development Control of the Development Plan for the Adelaide Hills Council area (Consolidated – 8 August 2019).

The policies for the Council area are expressed generally in relation to all development throughout the Council area, then in more detail for the various zones. All sections and all relevant provisions within each section of the Development Plan must be considered in relation to a Development Application.

In the event of any inconsistency between the Council-wide provisions and the Zone provisions, then the more detailed zone provisions would generally prevail.

4.1 Watershed (Primary Production) Zone

The most directly applicable provisions of the Development Plan in the Watershed (Primary Production) Zone related to the proposed solar farm development are as follows –

Objectives

- 1 *The maintenance and enhancement of the natural resources of the south Mount Lofty Ranges.*
- 2 *The enhancement of the Mount Lofty Ranges Watershed as a source of high quality water.*
- 3 *The long-term sustainability of rural production in the south Mount Lofty Ranges.*
- 4 *The preservation and restoration of remnant native vegetation in the south Mount Lofty Ranges.*
- 5 *The enhancement of the amenity and landscape of the south Mount Lofty Ranges for the enjoyment of residents and visitors.*
- 6 *The development of a sustainable tourism industry with accommodation, attractions and facilities which relate to and interpret the natural and cultural resources of the south Mount Lofty Ranges and increase the opportunities for visitors to stay overnight.*

Principles of Development Control

Form and Character

- 1 *Buildings, should be located in unobtrusive locations and, in particular, should:*
 - (a) *be located well below the ridge line;*
 - (b) *be located within valleys or behind spurs;*
 - (c) *be located not to be visible against the skyline when viewed from public roads and especially from the Mount Lofty Ranges Scenic Road;*
 - (d) *be set well back from public roads, particularly when the allotment is on the high side of the road;*
 - (e) *be sited on an excavated rather than a filled site to reduce the vertical profile of the building;*
 - (f) *where possible be screened by existing native vegetation when viewed from public roads and especially from the Mount Lofty Ranges Scenic Road; and*
 - (g) *maximize the retention of existing native vegetation and the protection and retention of watercourses in their natural state.*
- 2 *Buildings should be unobtrusive and not detract from the desired natural character of the Zone and, in particular:*
 - (a) *the profile of buildings should be low, and the roof lines should complement the natural form of the land;*
 - (b) *the mass of buildings should be minimized by variations in wall and roof lines and by floor plans which complement the contours of the land; and*

- (c) large eaves, verandahs and pergolas should be incorporated into designs to create shadowed areas which reduce the bulky appearance of buildings.*
- 4 *Buildings and structures should not be located within 25 metres of a watercourse and buildings and structures including chain mesh and solid fences should not be located on land subject to flooding as shown on Figures AdHiFPA/1 to 19 or within other areas subject to flooding or inundation by a 1 in 100 year average return interval flood event.*
- 9 *Driveways and access tracks should follow the contours of the land to reduce their visual impact and erosion from water run-off and be surfaced with dark materials. The excavation/filling of land should be kept to a minimum to preserve the natural form of the land and the native vegetation.*
- 10 *Native trees, shrubs and ground covers should be established to screen development, including scree slopes created as a result of the excavation and/or filling of land, in such a way that the bushfire hazard is not increased. Screening mounds may also be appropriate.*
- 11 *Buildings should not impair the character of rural areas by reason of their scale or siting. If necessary, buildings should be screened by trees or shrubs.*
- 14 *Development should not detract from the natural and rural landscape character of the region.*
- 15 *The rural character, comprising natural features and man-made activities, should be preserved by careful siting, design and landscaping of new building development and/or intensive land uses.*
- 16 *Development should ensure that primary production activity is not prejudiced.*
- 17 *Land which is particularly suitable for primary production should be used or remain available for such purposes.*

4.2 Council Wide Provisions

The most directly applicable Council Wide provisions of the Council's Development Plan related to the proposed solar farm development are as follows –

Design and Appearance

Objectives

- 1 *Development of a high design standard and appearance that responds to and reinforces positive aspects of the local environment and built form.*

Principles of Development Control

- 1 *Buildings should reflect the desired character of the locality while incorporating contemporary designs that have regard to the following:*
 - (a) *building height, mass and proportion*
 - (b) *external materials, patterns, colours and decorative elements*
 - (c) *roof form and pitch*
 - (d) *façade articulation and detailing*
 - (e) *verandahs, eaves, parapets and window screens.*
- 2 *Where a building is sited on or close to a side or rear boundary, the boundary wall should minimise:*
 - (a) *the visual impact of the building as viewed from adjoining properties*
 - (b) *overshadowing of adjoining properties and allow adequate sunlight access to neighbouring buildings especially those on which solar panels have been installed.*
- 3 *The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare to neighbouring properties, drivers or cyclists.*
- 6 *Transportable buildings and buildings which are elevated on stumps, posts, piers, columns or the like, should have their suspended footings enclosed around the perimeter of the building, and the use of verandahs, pergolas and other suitable architectural detailing to give the appearance of a permanent structure.*

- 9 *Development should take place in a manner which will minimize alteration to the existing land form.*
- 11 *No building should be erected within 100 metres of the Scenic Routes shown on Figure AdHi(EC)/1 which would impair, disfigure, interfere with or be in any way detrimental to the aesthetic appearance or natural beauty of:*
 - (a) *the scenic routes*
 - (b) *the landscape visible from any part of the scenic routes*
 - (c) *the landscape visible from any vantage point adjacent to the scenic routes.*

Building Setbacks from Road Boundaries

- 19 *The setback of buildings from public roads should:*
 - (a) *be similar to, or compatible with, setbacks of buildings on adjoining land and other buildings in the locality*
 - (b) *contribute positively to the streetscape character of the locality*
 - (c) *not result in or contribute to a detrimental impact upon the function, appearance or character of the locality.*
- 20 *Buildings in rural areas should be sited a minimum distance of:*
 - (a) *100 metres from the South Eastern Freeway*
 - (b) *50 metres from primary arterial road other than the South Eastern Freeway*
 - (c) *50 metres from a secondary arterial road.*

Hazards

Objectives

- 1 *Maintenance of the natural environment and systems by limiting development in areas susceptible to natural hazard risk.*
- 2 *Development located away from areas that are vulnerable to and cannot be adequately and effectively protected from the risk of natural hazards.*
- 4 *Development located and designed to minimise the risks to safety and property from flooding.*
- 5 *Development located to minimise the threat and impact of bushfires on life and property.*
- 6 *Expansion of existing non-rural uses directed away from areas of high bushfire risk.*

Principles of Development Control

- 1 *Development should be excluded from areas that are vulnerable to, and cannot be adequately and effectively protected from, the risk of hazards.*
- 2 *There should not be any significant interference with natural processes in order to reduce the exposure of development to the risk of natural hazards.*

Flooding

- 4 *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.*

Bushfire

- 6 *The following bushfire protection principles of development control apply to development of land identified as General, Medium and High bushfire risk areas as shown on the Bushfire Protection Area Figures AdHiBPA/1 to 14.*
- 7 *Development in a Bushfire Protection Area should be in accordance with those provisions of the Minister's Code: Undertaking development in Bushfire Protection Areas that are designated as mandatory for Development Plan Consent purposes.*

- 8 *Buildings 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 provide an adequate building protection zone*
 - (e) *inability to provide an adequate supply of water for fire fighting purposes.*

Interface Between Land Uses

Objectives

- 1 *Development located and designed to minimise adverse impact and conflict between land uses.*
- 2 *Protect community health and amenity from adverse impacts of development.*
- 3 *Protect desired land uses from the encroachment of incompatible development.*

Principles of Development Control

- 1 *Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:*
 - (a) *the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants*
 - (b) *noise*
 - (c) *vibration*
 - (d) *electrical interference*
 - (e) *light spill*
 - (f) *glare*
 - (g) *hours of operation*
 - (h) *traffic impacts*
 - (i) *stormwater or the drainage of runoff from the land.*
- 2 *Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.*
- 5 *Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses desired for the zone should be designed to minimise negative impacts.*

Rural Interface

- 13 *The potential for adverse impacts resulting from rural development should be minimised by:*
 - (a) *not locating horticulture or intensive animal keeping on land adjacent to townships*
 - (b) *maintaining an adequate separation between horticulture or intensive animal keeping and townships, other sensitive uses and, where desirable, other forms of primary production.*
- 14 *Traffic movement, spray drift, dust, noise, odour and the use of frost fans and gas guns associated with primary production should not lead to unreasonable impact on adjacent land uses.*
- 15 *Existing primary production and mineral extraction should not be prejudiced by the inappropriate encroachment of sensitive uses such as urban development.*
- 16 *Development that is adjacent to land used for primary production (within either the zone or adjacent zones) should include appropriate setbacks and vegetative plantings designed to minimise the potential impacts of chemical spray drift and other impacts associated with primary production.*

Natural Resources

Objectives

- 1 *Retention, protection and restoration of the natural resources and environment.*
- 4 *Natural hydrological systems and environmental flows reinstated and maintained and enhanced.*
- 6 *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.*

Principles of Development Control

- 1 *Development should be undertaken with minimum impact on the natural environment, including air and water quality, land, soil, biodiversity, and scenically attractive areas.*
- 5 *Development should be undertaken with the minimum effect on natural features, land adjoining water or designated Scenic Routes as shown in Figure AdHi(EC)/1 or scenically attractive areas.*

Biodiversity and Native Vegetation

- 37 *Development should retain existing areas of native vegetation and where possible contribute to revegetation using locally indigenous plant species.*
- 38 *Development should be designed and sited to minimise the loss and disturbance of native flora and fauna.*
- 39 *Native vegetation should be conserved, and its conservation value and function not compromised by development if the native vegetation does any of the following:*
 - (a) *provides an important habitat for wildlife or shade and shelter for livestock*
 - (b) *has a high plant species diversity or includes rare, vulnerable or endangered plant species or plant associations and communities*
 - (c) *provides an important seed bank for locally indigenous vegetation*
 - (d) *has high amenity value and/or significantly contributes to the landscape quality of an area, including the screening of buildings and unsightly views*
 - (e) *has high value as a remnant of vegetation associations characteristic of a district or region prior to extensive clearance for agriculture*
 - (f) *is growing in or is characteristically associated with a wetland environment.*

Soil Conservation

- 47 *Development should not have an adverse impact on the natural, physical, chemical or biological quality and characteristics of soil resources.*
- 48 *Development should be designed and sited to prevent erosion.*
- 49 *Development should take place in a manner that will minimise alteration to the existing landform.*
- 50 *Development should minimise the loss of soil from a site through soil erosion or siltation during the construction phase of any development and following the commencement of an activity.*

Orderly and Sustainable Development

Objectives

- 2 *Development occurring in an orderly sequence and in a compact form to enable the efficient provision of public services and facilities.*
- 3 *Development that does not jeopardise the continuance of adjoining authorised land uses.*

Principles of Development Control

- 1 *Development should not prejudice the development of a zone for its intended purpose.*
- 2 *Land outside of townships and settlements should primarily be used for primary production and conservation purposes.*
- 3 *The economic base of the region should be expanded in a sustainable manner.*

Renewable Energy Facilities

Objectives

- 1 *Development of renewable energy facilities that benefit the environment, the community and the state.*
- 2 *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.*
- 3 *Location, siting, design and operation of renewable energy facilities to avoid or minimise adverse impacts on the natural environment and other land uses.*

Principles of Development Control

- 1 *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.*
- 2 *Renewable energy facilities, including wind farms and ancillary developments, should be located in areas that maximise efficient generation and supply of electricity.*

Siting and Visibility

Objectives

- 1 *Protection of scenically attractive areas, particularly natural, rural and coastal landscapes.*

Principles of Development Control

- 1 *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 and coastal areas*
 - (c) *views from the coast, near-shore waters, public reserves, tourist routes and walking trails.*
- 2 *Buildings should be sited in unobtrusive locations and should:*
 - (a) *be grouped together.*
 - (b) *where possible, be located in such a way as to be screened by existing vegetation when viewed from public roads and especially from Scenic Routes shown on Figure AdHi(EC)/1.*
 - (c) *be designed to blend with surrounding developments and landscapes.*
- 3 *Buildings outside urban areas and in undulating landscapes should be sited in unobtrusive locations and in particular should be:*
 - (a) *sited below the ridgeline*
 - (b) *sited within valleys or behind spurs*
 - (c) *sited to not be visible against the skyline when viewed from public roads, and especially from the Scenic Routes shown on Figure AdHi(EC)/1*
 - (d) *set well back from public roads, particularly when the allotment is on the high side of the road, or adjacent to the Scenic Routes shown on Figure AdHi(EC)/1*
 - (e) *have the roof line below the lowest point of the abutting road when the allotment is on the low side of the road*
 - (f) *be sited on an excavated rather than a filled site in order to reduce the vertical profile of the building*
 - (g) *constructed of material colours and finishes which complement those of surrounding developments and landscapes.*
- 6 *Buildings and structures should be designed to minimise their visual impact in the landscape, in particular:*
 - (a) *the profile of buildings should be low, and the rooflines should complement the natural form of the land*

- (b) *the mass of buildings should be minimised by variations in wall and roof lines and by floor plans which complement the contours of the land*
- (c) *large eaves, verandas and pergolas should be incorporated into designs so as to create shadowed areas that reduce the bulky appearance of buildings.*

Transportation and Access

Objectives

2 *Development that:*

- (a) *provides safe and efficient movement for all motorised and non-motorised transport modes*
- (b) *ensures access for vehicles including emergency services, public infrastructure maintenance and commercial vehicles*
- (c) *provides off street parking*
- (d) *is appropriately located so that it supports and makes best use of existing transport facilities and networks.*

Principles of Development Control

Access

- 25 *Development should have direct access from an all weather public road.*
- 26 *Development should be provided with safe and convenient access which:*
 - (a) *avoids unreasonable interference with the flow of traffic on adjoining roads*
 - (b) *provides appropriate separation distances from existing roads or level crossings*
 - (c) *accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision*
 - (d) *is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.*

4.3 Planning Assessment

The primary objectives for the Watershed (Primary Production) Zone seek to maintain and enhance natural resources and water quality, preserve native vegetation, and secure the long-term sustainability of rural production.

The proposed solar farm development (renewable energy facility) is considered to be a form of development compatible with the achievement of these Zone objectives being a low profile and unobtrusive form of renewable energy development.

The location of the solar farm immediately adjoining the existing SA Power Networks (SAPN) Angas Creek – Tungkillo 33kV electricity transmission line on Torrens Valley Road and Warren Road will enable the solar farm to readily connect to the national electricity grid while minimising the amount of infrastructure (ie: overhead transmission lines) required to enable connection of the solar farm to the electricity grid.

With the portion of the subject land being utilised for the proposed solar farm being 13.10 hectares in area, the development of a solar farm on the property will not result in a significant loss of primary production capacity or output.

The proposed solar farm array and its associated infrastructure will be setback 100 metres from Torrens Valley Road (a secondary arterial road) a Scenic Route as shown on Figure AdHi(EC)/1 of Council's Development Plan so as to not impair, disfigure, interfere with or be in any way detrimental to the aesthetic appearance or natural beauty of the locality.

The setback to Torrens Valley Road is in accordance with Council-wide PDC #11 (Design & Appearance).

The solar farm array will be setback 10 metres from Warren Road (local road), while the solar farm array and associated infrastructure will be setback 100 from Winton Road (local road) to ensure the development does not unduly impact on the rural outlook along this section of Torrens Valley Road.

A landscaping buffer of local native vegetation is to be established along the entire boundary to Torrens Valley Road and for a distance of 100 metres along Warren and Winton Roads (from Torrens Valley Road) to further ensure the proposed solar farm array and associated infrastructure is appropriately screened from these roads and preserve the existing aesthetic appearance or natural beauty of the general locality.

The provision of these road setbacks and landscaping buffers are in accordance with the following Council-wide principles of development control – PDC #11 (Design & Appearance) and PDC #5 (Natural Resources).

Access to the solar farm site is to be gained from Winton Road, a local open surface road under the care control and management of the Adelaide Hills Council and will provide all-weather access to the solar farm.

Once constructed the proposed solar farm will not generate any significant traffic volumes that would cause unreasonable interference with the flow of traffic on this road or adjacent local road network.

During the construction phase of the solar farm there is expected to be 18 two-way (in / out) traffic movements from the site on a daily basis. Again, this volume of traffic is not expected to have any adverse impacts on the local road network.

The operation of the proposed solar farm is passive and will not have an adverse impact or create a conflict with the existing landuses in this locality particularly the rural living properties to the east of the site.

A 2300 mm high chain mesh security fence is to be erected around the perimeter of the solar farm site, being setback 100 metres to Torrens Valley Road in accordance with Council-wide PDC #11 (Design & Appearance) and visual appearance of the security fence will be softened by the proposed landscaping buffer (native vegetation).

The solar farm's associated infrastructure, including the sub-station, static VAR compensator (SVC), Battery Energy Storage System (BESS), Central (power) Inverter and office / toilet facilities, are to be grouped together and sited 150 metres from Winton Road and 100 metres from Torrens Valley Road.

The grouping of the buildings and electricity infrastructure together and the setbacks to the adjacent roads is in accordance with Council-wide principles of development control – PDC #11 (Design & Appearance); PDC #5 (Natural Resources) and PDC #2 & #3 (Siting and Visibility).

The proposed landscaping buffer of native vegetation along the entire boundary to Torrens Valley Road and for a distance of 100 metres along Warren and Winton Roads (from Torrens Valley Road) will also screen the buildings and electricity infrastructure from these roads and adjacent properties.

The location, siting, design and operation of proposed solar farm (being a renewable energy facility) has been undertaken to –

- avoid and/or minimise adverse impacts on the natural environment – no native vegetation is impacted, and the development will not give rise to soil erosion on the site.
- avoid and/or minimise adverse impacts on the visual amenity in this locality or cause any nuisance, including glare, to adjoining properties and roads.
- ensure the facility does not pose or create a bushfire hazard.
- provide for the continuation of existing landuses in the vicinity including primary production landuses.

- maximise efficient generation and supply of electricity from the solar farm to the existing SAPN Angas Creek – Tungillo 33kV electricity transmission line where it is proposed to connect to the national electricity grid.

The location and topography of the subject land (and solar farm) provides an ideal opportunity to harvest the natural sunlight for the production of a renewable electricity supply.

The proposed solar farm is considered to be a passive renewable energy facility that will not have any detrimental impacts on the adjoining properties and the continuation of the landuses currently on them or allowed to be undertaken in the future.

5. Social, Economic & Environmental Effects

Social Effects

The proposed solar farm development will have a positive social impact by demonstrating to the local and regional community the benefits of solar and renewal energy projects with the potential to give rise to the broader social acceptance of solar & renewal energy as a cost effective and efficient household energy solution.

There are no envisaged negative social effects arising from the proposed solar farm development.

Economic Effects

The proposed solar farm development will create a positive economic effect in the local area particularly during the construction phase where employment, accommodation and local purchasing opportunities will be available locally.

During the operating phase there will be limited employment opportunities associated with the maintenance of the solar fa facility.

The 4.98MW_{AC} solar farm will generate an estimated 12,500 MWh of clean, renewable energy which will provide sufficient power to supply the Birdwood region and when combined with the 4MWh Battery Energy Storage System will smooth the energy output and provide local electricity network stability.

Environmental Effects

The proposed solar farm development is unlikely to have any impact on the environmental conditions of the locality or give rise to any environmental impact on the locality.

The planting of the landscape buffer of native vegetation along the entire boundary to Torrens Valley Road and for a distance of 100 metres along Warren and Winton Roads (from Torrens Valley Road) will provide habitat for local species.

The proposed development will not removal any native vegetation on the site, while the mapped watercourse on the south-western portion of the site is not being obstructed or built over so as to preserve the natural watercourse path.

Summary – Social, Economic & Environmental Effects

In summary, it is considered that there will be no adverse social, economic and environmental effects of the proposed development on the locality or other existing developments in the general locality.

6. Conclusion

It is submitted that the proposed solar farm development incorporating a solar panel array, inverters / transformers, electricity (switch yard) sub-station and (optional) battery energy storage facility on the subject land is consistent with the respective Objectives and Principles of Development Control in the Council-wide and Watershed (Primary Production) Zone provisions of the Development Plan (Adelaide Hills Council – consolidated on 8 August 2019).

When assessed against the provisions of the Development Plan, the proposed solar farm development is not considered to be at serious variance with the Council's Development Plan and demonstrates sufficient merit to warrant the granting of Development Plan Consent.



F.N. (Frank) Brennan PSM MPIA
Accredited Planning Professional APP20190029
Principal Consultant
FRANK BRENNAN CONSULTING SERVICES

Appendix 1 – Certificate of Title

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5460 Folio 130

Parent Title(s) CT 4287/636

Creating Dealing(s) CONVERTED TITLE

Title Issued 20/10/1997 **Edition** 1 **Edition Issued** 20/10/1997

Estate Type

FEE SIMPLE

Registered Proprietor

JERILDERIE PTY. LTD. (ACN: 007 670 000)
 OF C/- GILES & GILES 68 GREENHILL ROAD WAYVILLE SA 5034

Description of Land

ALLOTMENT 16 DEPOSITED PLAN 13143
 IN THE AREA NAMED BIRDWOOD
 HUNDRED OF TALUNGA

Easements

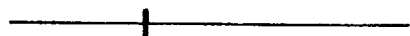
NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



Birdwood Solar Farm – Indicative Site Layout

AMENDED 8 July 2020



Map Legend

33kV overhead and connection pole

Indicative Inverter Location

Solar PV Array and access track envelop

Indicative substation/switchboard/transformer Location

Native Vegetation Landscaping

Entrance and Access Track

Drainage line

Perimeter Fencing

Native Tree exclusion zone

100m



Birdwood Solar Farm – Proposed Setbacks

80m setback
from Torrens
Valley Way
intersection



AMENDED 8 July 2020

10m



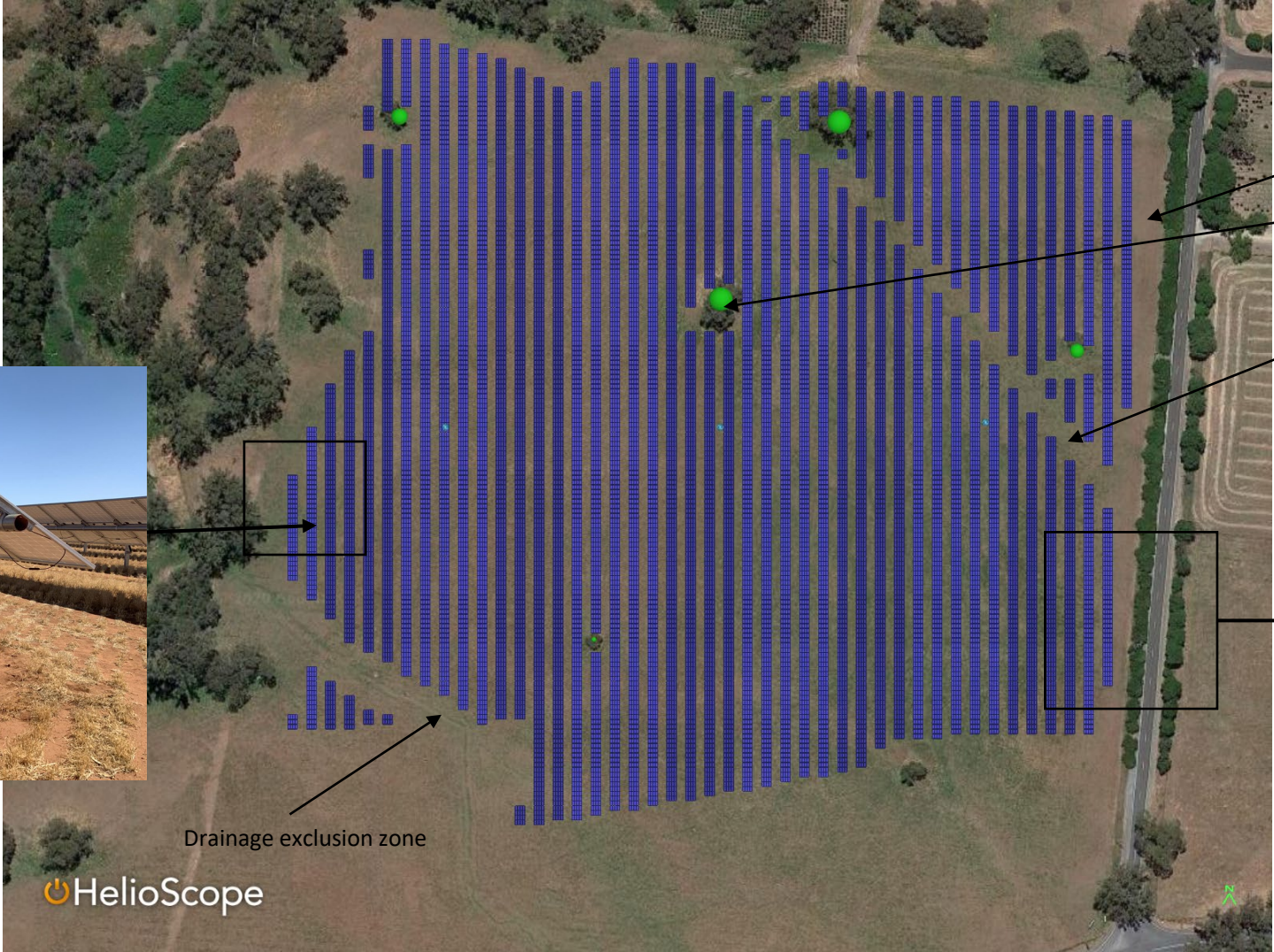
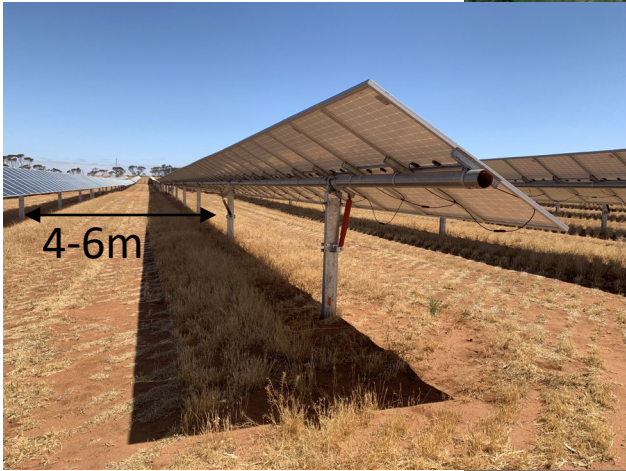
10m setback from
Warren Road

100m setback
from Torrens
Valley Way

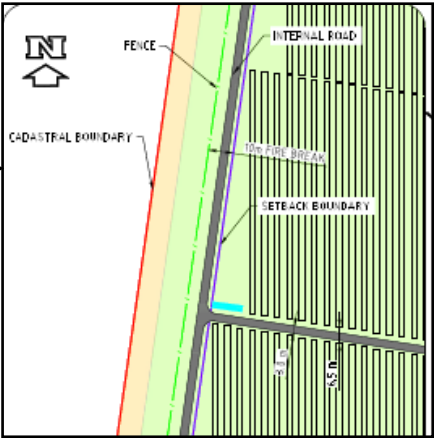


Birdwood Solar Farm – Indicative Arrays

AMENDED 8 July 2020



Fire break
Tree exclusion zone
SAPN 11kV easement



Winton Road – crossover (RFI (g))

AMENDED 8 July 2020



Birdwood Solar Farm – Indicative Solar Array

AMENDED 8 July 2020



Map Legend

33kV overhead and connection pole

Indicative Inverter Location

Central Inverter

Solar PV Array and access track envelop

Indicative substation/switchboard/transformer Location

Substation

Native Vegetation Landscaping

Entrance and Access Track

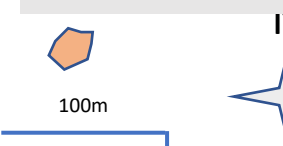
Drainage line

Perimeter Fencing

Native Tree exclusion zone

100m

IN



Birdwood Solar Farm

Landscaping Plan

07 July 2020
Ref: 20/530/473

ADELAIDE HILLS COUNCIL
RECEIVED 8 July 2020

Birdwood Solar Farm – Indicative Solar Array



Map Legend

- 33kV overhead and connection pole
- Indicative Inverter Location
- Solar PV Array and access track envelop
- Indicative substation/switchboard/transformer Location
- Native Vegetation Landscaping
- Entrance and Access Track
- Drainage line
- Perimeter Fencing
- Native Tree exclusion zone



Fig.1. Current view along Torrens Valley Way. The vegetation buffer will be planted along here to enhance the coverage and comply with SAPN clearance requirements.



Fig.2. Representative vegetation along Warrens Road. Screening will be planted in south eastern section where there is a gap.

Planting

The planting will occur within the first 6 months of the solar farm construction being completed. The target planting date will be Winter to align with the rains and springtime growth – this is will be August/September 2021 based on a notice to proceed in late 2020.

Selection

The species will be combination of those selected from the AHC Council's Guide Native Habitat: Landscaping and Gardening Guide. They will be planted in a similar spacing to page 5 and page 6. This is to ensure diversity and coverage at different heights. Soil testing will be undertaken to help inform the final combination and layout plant species.

Source: <https://www.ahc.sa.gov.au/environment/native-habitat-gardening>

Design

The design of the vegetation buffer is outlined on page 5 and 6. This will be further refined once the final species have been selected. The plants will be located within a 3m buffer of the boundary and around 1.5m apart.

Maintenance

The plant selection has been based on suitability with the local climate. Once established, they should be self-sufficient. During the first year the plants will be hand watered as part of the project's operation and maintenance program. The performance of the vegetation screening will be monitored and updated as required. The water will be carted in by either the landowner or the solar farm maintenance crew.



Fig.3. Inset showing location of vegetation buffer along Torrens Valley Way and the section of Warren Road currently not fully screened. The width of the vegetation buffer will be 3m.

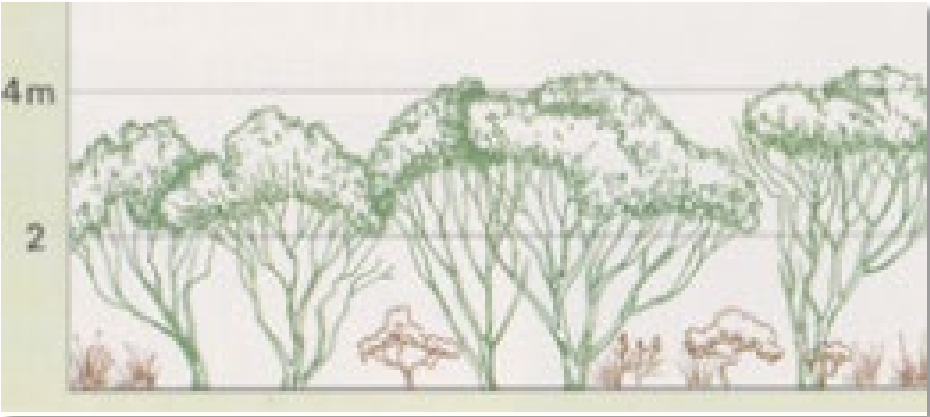
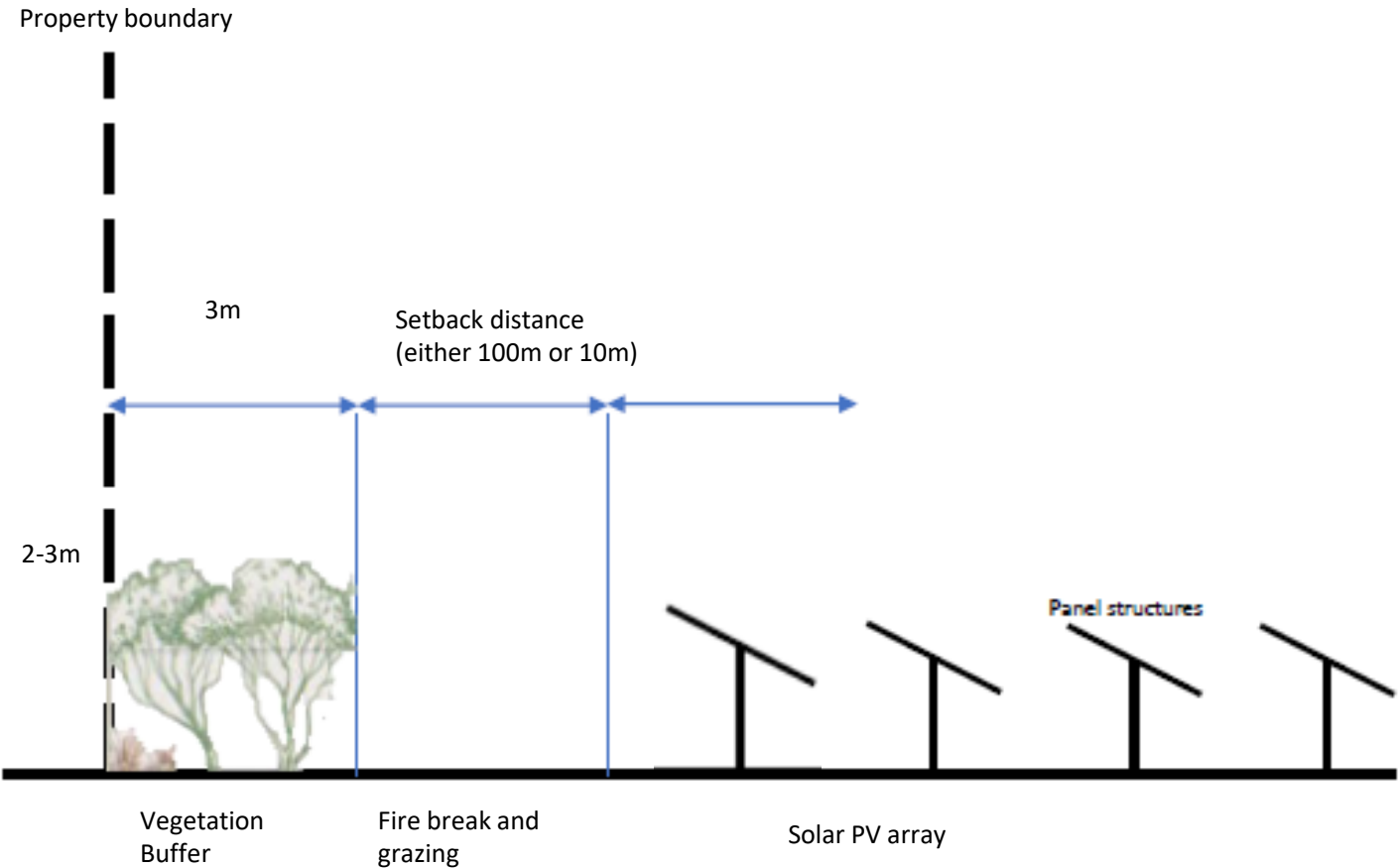


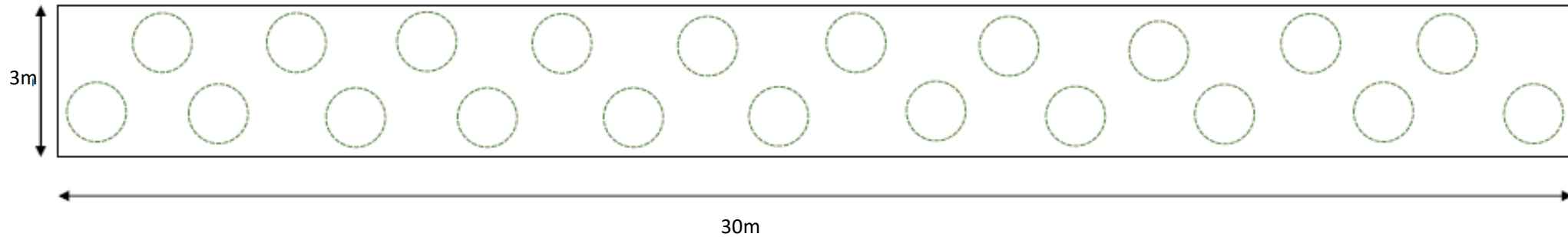
Fig.4. Sectional diagram of proposed plant heights – with an average height will be around 2-3m. The vegetation buffer will include mixed trees and different native shrubs indigenous to the Adelaide Hills region. These have been selected from Council’s Guide Native Habitat: Landscaping and Gardening Guide. The planting within the row will be a mixture of trees, tall shrubs and medium-low shrubs – selected from the species in appendix 1 of this plan.



Objective

To create a native vegetation screen along the Torrens Valley Way, Winton Road and sections of Warren Road that are not already screened.

Medium to large shrubs



Planting notes

- Planting corridor will be 3 metre wide. Target will be to have two rows of medium to large shrubs/trees. Alternating across the corridor to allow sufficient space to grow and room for the smaller shrubs.
- Spacing between plants will be around 1.5 metres. Some of the smaller shrubs will be closer.
- The vegetation screen will be planted as either tube stock or seedlings.
- The vegetation screen will be monitored regularly during the first 3 years to ensure the plants properly establish. Any sections of the vegetation screen that fail to established will be reviewed and replaced.

	Species		Height
Trees	Drooping Sheoak	<i>Allocasuarina verticillata</i>	5-8m
	Cup Gum	<i>Eucalyptus cosmophylla</i>	3-8m
Shrubs	Wreath Wattle	<i>Acacia acinacea</i>	1-2m
	Beaked Hakea	<i>Hakea rostrata</i>	1-4m
	Sticky Hop-bush	<i>Dodonaea viscosa</i> ssp. <i>spathulata</i>	1.5-4m
	Common Oak-bush	<i>Allocasuarina muelleriana</i>	1-3m

Note: See following detailed species profiles from the AHC Guide Native Habitat: Landscaping and Gardening Guide.

Source: AHC Guide Native Habitat: Landscaping and Gardening Guide

Trees





Above: Photograph courtesy of SA Seed Conservation Centre

Drooping Sheoak

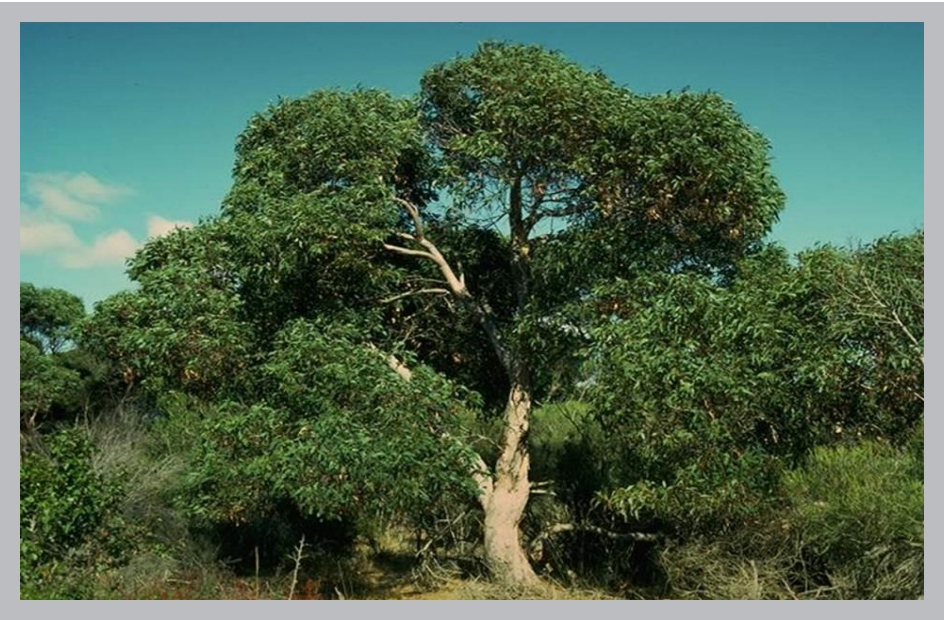
Allocasuarina verticillata

Seeds are important food source for the threatened Yellow-tailed Black Cockatoo. Also eaten by a number of other native birds. Bees will access the pollen. Very hardy and useful windbreak or shelterbelt species. Female flowers have tiny red flowers, males will tint golden brown or rusty. Tolerates drier soil, full to part sun.

They can look impressive as a roadside planting or along a long driveway on larger properties. Smaller trees can provide an interesting feature in garden beds, to provide shade or screening. If you can find room for one, trees in the garden will help provide a wider variety of plant heights, which in turn will make your landscaping project more appealing to a wider variety of animals.

Height:	5-8m
Width:	4-6m
Habitat:	
Flowers:	

Trees



Cup Gum

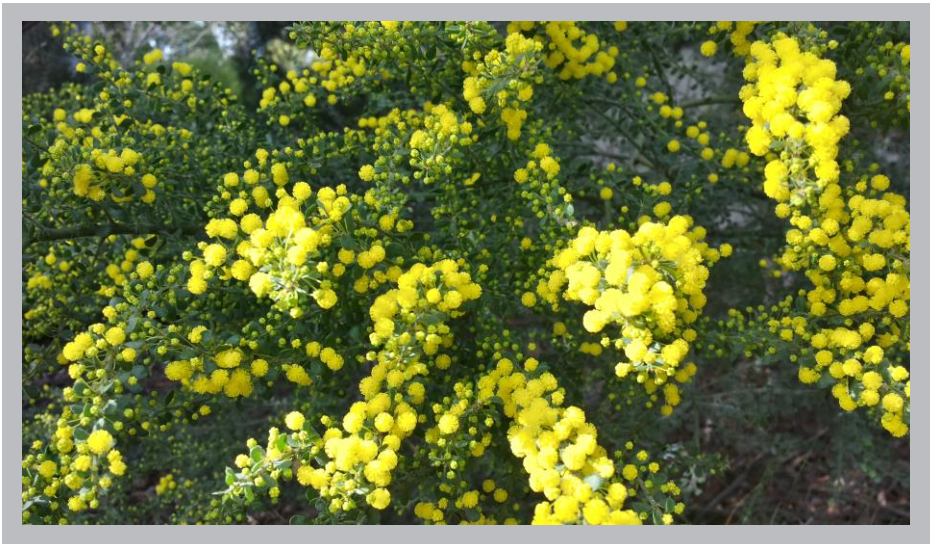
Above: Photograph courtesy of Brooker Kleinig

Eucalyptus cosmophylla

A smaller Eucalypt native to Mt Lofty Ranges. Good for informal screen or shade tree. Tolerate wide range of soil conditions, from boggy to drought. Full sun.

Height:	3-8m
Width:	5-8m
Habitat:	
Flowers:	

Shrubs



Above: Photograph courtesy of Renae Eden

Wreath Wattle

Acacia acinacea

Great hedging or screening shrub. Flowers food source for butterflies and birds. Seeds were used as a food source by Aboriginal people. Tolerates drier soil, full sun to shady.

Shrubs are especially important habitat to birds and mammals as they offer protection as well as food. Many small birds, such as wrens, will only use areas that have a shrubby layer. Some shrubs also make fantastic hedging plants, such as the Wreath Wattle and Sticky Hop-bush.

Height: 1-2m

Width: 1-2m

Habitat:  

Flowers:   

Shrubs








Above: Photograph courtesy of Bill Doyle

Beaked Hakea

Hakea rostrata

All Hakea species are an important food source for the threatened Yellow-tailed Black Cockatoo. Will stay smaller when growing in full sun. Food source for native caterpillars. Contributes to bandicoot habitat. Moderate soil moisture, well drained, full sun to full shade.

Height:	1-4m
Width:	1-3m
Habitat:	  
Flowers:	 

Shrubs



Above: Photograph courtesy of Renae Eden (left), Tonia Brown (right)

Sticky Hop-bush

Dodonaea viscosa ssp. spathulata

Seeds eaten by native pigeons and parrots. Good screening/hedging plant. Tolerates drier soil, full to part sun.

Height:	1.5-4m
Width:	1.5-3m
Habitat:	
Flowers:	

Shrubs







Above: Photograph courtesy of B. Doyle

Common Oak-bush

Allocasuarina muelleriana

Seeds are important food source for the threatened Yellow-tailed Black Cockatoo. Also eaten by parrots and galahs. Great bandicoot habitat. Tolerates dry to moist soil conditions, full sun to part shade.

Height:	1-3m
Width:	2-3m
Habitat:	 
Flowers:	 

EPA Reference: 34857

14 August 2020

Ms Melanie Scott
Senior Statutory Planner
Adelaide Hills Council
PO Box 44
WOODSIDE SA 5244

Dear Ms Scott

ADVICE FOR REGARD - Non-complying development within the Mount Lofty Ranges Water Protection Area

Development Application No.	473/530/20
Applicant	Tetris Energy Pty Ltd
Location	A16 DP13143 HD Talunga, Lot 16 Warren Road, Birdwood SA 5234
Activity of Environmental Significance	Schedule 8 Item 10(a) - non-complying development in the Mount Lofty Ranges Water Protection Area
Proposal	Installation of a 4.98MW solar pv system and associated infrastructure
Decision Notification	A copy of the decision notification must be forwarded to: Client Services Officer Environment Protection Authority GPO Box 2607 ADELAIDE SA 5001

I refer to the above development application forwarded to the Environment Protection Authority (EPA) in accordance with Section 37 of the *Development Act 1993*. The proposed development involves an activity of environmental significance as described above.

The following response is provided in accordance with Section 37(4)(a)(i) of the *Development Act 1993* and Schedule 8 Item 10(a) of the *Development Regulations 2008*.

In determining this response the EPA had regard to and sought to further the objects of the *Environment Protection Act 1993*, and also had regard to:

- the General Environmental Duty, as defined in Part 4, Section 25 (1) of the Act; and

- relevant Environment Protection Policies made under Part 5 of the Act.

Please direct all queries relating to the contents of this correspondence to Helen Malone on telephone (08) 82042078 or facsimile (08) 81244673 or email helen.malone@epa.sa.gov.au.

THE PROPOSAL

The proposal is for a solar farm facility to generate an estimated 12,500 megawatt (MWh) of renewable energy to the Birdwood region. 4MWh of optional Battery Storage would be combined to smooth the output and network stability.

Design of the solar farm incorporates single axis tracking. The single axis tracking system would rotate the arrays from east to west each day to ensure optimal exposure to the sun and ensure greater electricity generation in the morning and evenings. The tracking system would be designed and constructed in accordance with the Australian Standards and would have a maximum height of approximately 4.65 metres.

Inverters (converting energy generation from direct current to alternating current energy) and transformers would be installed throughout the solar farm.

The application also proposes a 2300mm high chain mesh security fence that would be erected around the perimeter of the solar farm.

SITE DESCRIPTION

The site of the proposed development is located at 16 Warren Road, Birdwood and specifically at Certificate of Title Volume 5460 Folio 130. The site has a total area of 55.14 hectares and is an irregular shaped rectangular allotment having road frontages of 983.71 metres to Warren Road, 550.03 metres to Torrens Valley Road and 1,055.86 metres to Winton Road.

The site is located within the Watershed (Primary Production) Zone of the Adelaide Hills Council Development Plan (consolidated 8 April 2019) and is also located within the Mount Lofty Ranges Water Protection Area, as proclaimed under section 61A of the Environment Protection Act. Majority of the site is located within Priority Area 3 of the Mt Lofty Ranges Watershed, with a small strip along the western boundary located within Priority Area 2.

The site is predominantly flat and currently used for grazing and cropping.

The Birdwood Township is immediately to the east of the solar farm site, with the nearest residential allotment located 180 metres east on Torrens Valley Road.

CONSIDERATION

Advice in this letter includes consideration of the location with respect to existing land uses and is aimed at protecting the environment and avoiding potential adverse impacts upon the locality.

The referral trigger of this development application to the EPA was primarily for being non-complying in the Mount Lofty Ranges Water Protection Area, as per Schedule 8 of the Development Regulations. The EPA has therefore only provided an assessment of the potential water quality impacts that may arise from the proposed development. As such, no assessment has been undertaken in regard to other

potential environmental impacts (for example potential noise impacts).

ENVIRONMENTAL ISSUES

Water Quality

Based on the information submitted with the application, the EPA is satisfied the proposed solar farm demonstrates a negligible risk to water quality due to the following:

- No chemical storage is proposed within the solar farm facility. Therefore, the risk of potential water quality impacts from a Class 1 listed pollutant (as defined in the *Environment Protection (Water Quality) Policy 2015*) is considered low.
- The proposed solar farm is set back from the River Torrens by approximately 130 metres.
- Minor access roads are proposed within the site, all of which would be permeable surfaces constructed using an all-weather compressed gravel
- Dense intact native vegetation would not be removed at the site. As such, erosion impacts from construction works would be of a less impact.
- Stormwater from all associated infrastructure would be managed by shallow swales and diversion drains located along the south western corner of the site and would divert stormwater from the upstream catchment of site. This is satisfactory to the EPA.

While the EPA advises that construction management impacts are unlikely given the proximity to the edge of the river, if not appropriately managed, building sites can be major contributors of sediment, suspended solids, concrete wash, building materials and other wastes into the River Torrens. Given the water sensitive nature of the site, all reasonable and practicable measures should be implemented to minimise the potential for environmental harm during construction. Guidance can also be found in the EPA *Handbook for Pollution Avoidance on Building Sites* (www.epa.sa.gov.au/files/7619_building_sites.pdf) and in the EPA's *Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry* (http://www.epa.sa.gov.au/files/47790_bccop1.pdf). A note is included in this regard.

CONCLUSION

When assessing proposed developments in the Mount Lofty Ranges Water Protection Area, the EPA seeks to protect the quality of water and ecosystems within the Watershed. Provided construction is undertaken in a manner that minimises environmental impacts, the EPA considers that the proposed development is likely to have a negligible impact on water quality.

ADVICE

No conditions have been advised by the EPA. However, the following notes provide important information for the benefit of the applicant and are requested to be included in any approval:

- The applicant is reminded of its general environmental duty, as required by section 25 of the *Environment Protection Act 1993*, to take all reasonable and practicable measures to ensure that the activities on the whole site, including during construction, do not pollute the environment in a way which causes or may cause environmental harm. This includes taking all reasonable and practicable measures to minimise the potential for pollution from sediment and waste generated on-site during construction. Further guidance can be sought from the EPA's *Stormwater Pollution Prevention Code of Practice for the Building and*

Construction Industry and the EPA Handbook for Pollution Avoidance on Commercial and Residential Building Sites (http://www.epa.sa.gov.au/files/47790_bccop1.pdf).

- EPA information sheets, guidelines documents, codes of practice, technical bulletins etc. can be accessed on the following web site: <http://www.epa.sa.gov.au>

Yours faithfully

Hayley Riggs

Delegate

ENVIRONMENT PROTECTION AUTHORITY