



12 March 2019

Gunnedah Solar Farm (SSD 8658)

1. INTRODUCTION

1. On 12 November 2018, the Independent Planning Commission NSW (the **Commission**) received from the NSW Department of Planning and Environment (the **Department**) a State significant development application (the **Application**) from Gunnedah Solar Farm Pty Ltd (the **Applicant**) to develop a new 150 megawatt (**MW**) solar farm (the **Project**), within Gunnedah Shire Council (**Council**) local government area.
2. The Commission is the consent authority in respect of the Application under Section 4.5(a) of the *Environmental Planning and Assessment Act 1979* (the **EP&A Act**) and Clause 8A of the *State Environmental Planning Policy (State and Regional Development) 2011* (the **SEPP SRD**). This is because:
 - the Application constitutes State Significant Development under Section 4.38 of the EP&A Act and triggers the criteria in Clause 20 of Schedule 1 of the SEPP SRD; and
 - the Department received more than 25 submissions from the public objecting to the Application.
3. Professor Mary O’Kane AC, Chair of the Commission, nominated Andrew Hutton (Chair), Annelise Tuor and Tony Pearson to constitute the Commission determining the Application.

1.1 Site and locality

4. According to the Department’s Assessment Report (the **Department’s AR**) dated 7 November 2018, the Project is located within a 795-hectare (**ha**) site (the **site**) to the north of Orange Grove Road and comprises a 304ha development footprint. The site is approximately nine kilometres (**km**) north-east of Gunnedah and is located on the Upper Namoi Valley Floodplain.
5. The site is located approximately 900m north of the Namoi River within the Namoi River catchment area and floodplain. The site is approximately 40km south-west and downstream of the Keepit Dam, which is a major water storage in the region. The site contains a network of constructed irrigation and drainage channels however there are no natural waterways on the site.
6. The Applicant’s Environmental Impact Statement (**EIS**) stated that:

“The topography of the area is dominated by the flat plains that form the river valley and these occasionally give way to gentle slopes and rises which can reach low altitudes of 400 to 500m above sea level. There are several highpoints in the region including the town of Gunnedah which is located on an elevated area, Black Jack Mountain which is situated to the south of Gunnedah town and the Kelvin Range to the north...the site is characterised by long gentle slopes with the local relief being in the order of 3-5m [metres (m)], and slopes varying in length from several hundred to over 600m”.

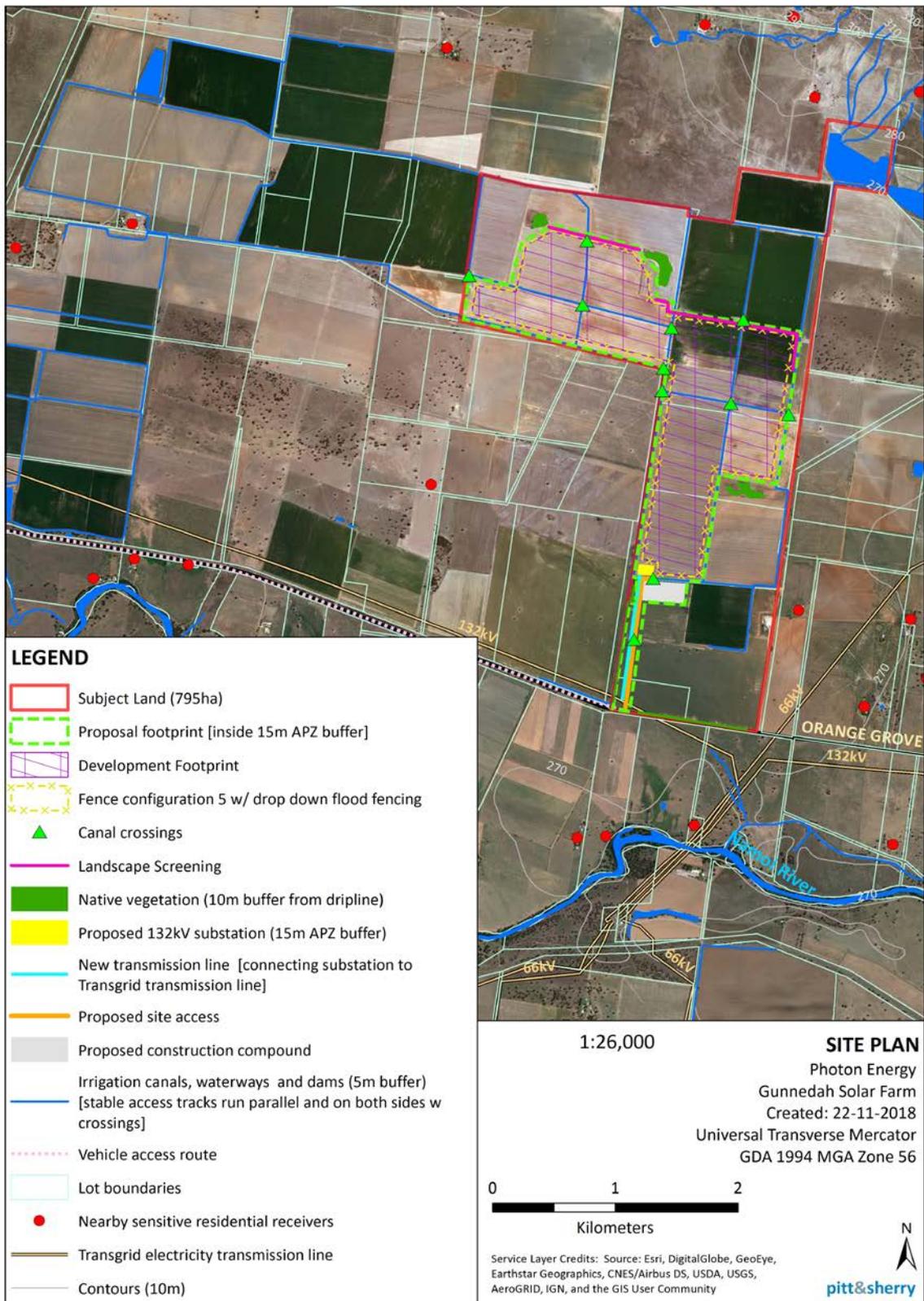
7. The Department's AR stated that there are 24 residences located within 5km of the project, seven of which are located within 2km of the site. The nearest residence is located 800m east of the site boundary.

1.2 Application

8. The Project comprises the construction, operation, upgrading as required and decommissioning of a new solar farm with a generating capacity of approximately 150MW. *Figure 1* shows the site plan and *Figure 2* shows the solar panel layout.
9. According to the Department's AR, the Project includes:
 - *“Project summary*
 - *approximately 460,000 solar panels (up to 3 m high) on a single-axis tracking system and 45 inverter stations (up to 1.2 m in height);*
 - *an on-site substation and connection to TransGrid's 132 kV transmission line which transects the site;*
 - *internal access tracks, staff amenities, maintenance and equipment buildings, offices, laydown areas, onsite car parking and security fencing (which incorporates drop-down fencing);*
 - *vegetation screening along the boundaries of the site; and*
 - *subdivision for the project site (304 ha), the substation (0.5 ha) and the remaining land associate with the property (557 ha).*
 - *Designated haulage route*
 - *over-dimensional and heavy vehicles to the site via the Kamilaroi Highway, Blue Vale Road, Old Blue Vale Road, Kelvin Road and Orange Grove Road.*
 - *Site entry and road upgrades - The site would be accessed utilising an existing access point on Orange Grove Road, approximately 6.3 km east of the intersection with Kelvin Road. Key roadworks include:*
 - *upgrading Old Blue Vale Road to a minimum of 100 m from its intersection with both Kelvin Road and Blue Vale Road to a standard that allows two-way heavy vehicle movements;*
 - *removing loose gravel material at the Old Blue Vale Road and Kelvin Road intersection; and*
 - *upgrading the existing on-site access road, including sealing it for a minimum length of 30 m from its intersection with Orange Grove Road.*
 - *Operational life*
 - *The expected operational life of the infrastructure is approximately 25 years. However, the project may involve infrastructure upgrades that could extend the operational life.*
 - *The project also includes decommissioning at the end of the project life, which would involve removing all above and below ground infrastructure.*
 - *Construction*
 - *The construction period would last for up to 12 months.*
 - *Construction hours would be limited to Monday to Friday 7am to 6pm, and Saturday 8am to 1pm.*

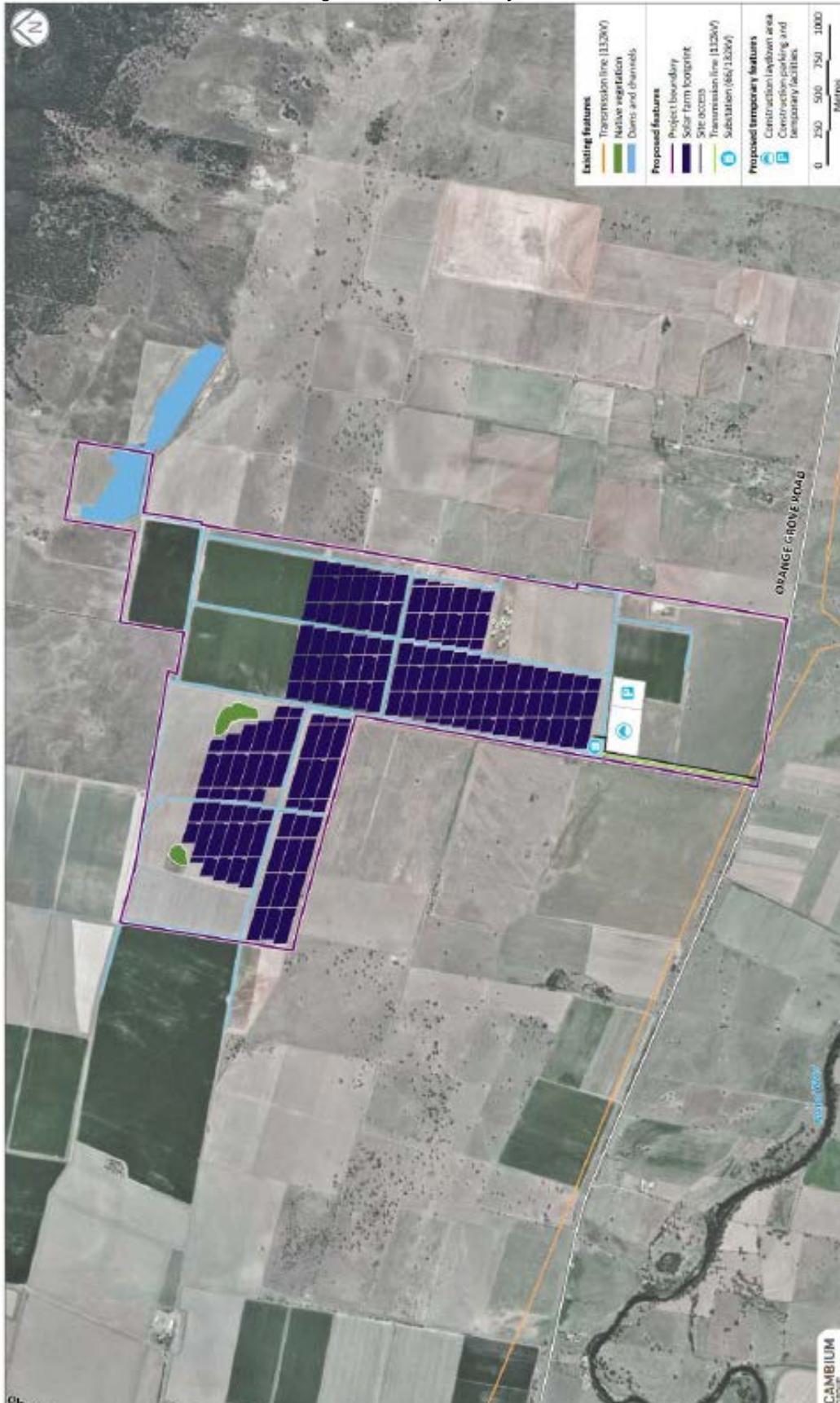
- *Hours of operation*
 - *The project would operate during daylight hours.*
 - *Daily operations and maintenance would be undertaken Monday to Friday 7am to 6pm.*
 - *Employment*
 - *Up to 150 full time equivalent construction jobs, and 10 full time operational jobs.*
 - *Capital Investment Value: \$201 million”.*
10. The EIS stated that: *“the key benefit of the Proposal is the production of renewable electricity reducing our greenhouse gas emissions and reliance on fossil fuels. The production of renewable electricity will help contribute to NSW Governments Renewable Energy Action Plan and other schemes and agreements made. On an annual basis, the Proposal will produce enough electricity to meet the needs of approximately 48,000 households”.*

Figure 1: Site plan



Source: Environmental Impact Statement, Pitt & Sherry Group

Figure 2: Solar panel layout



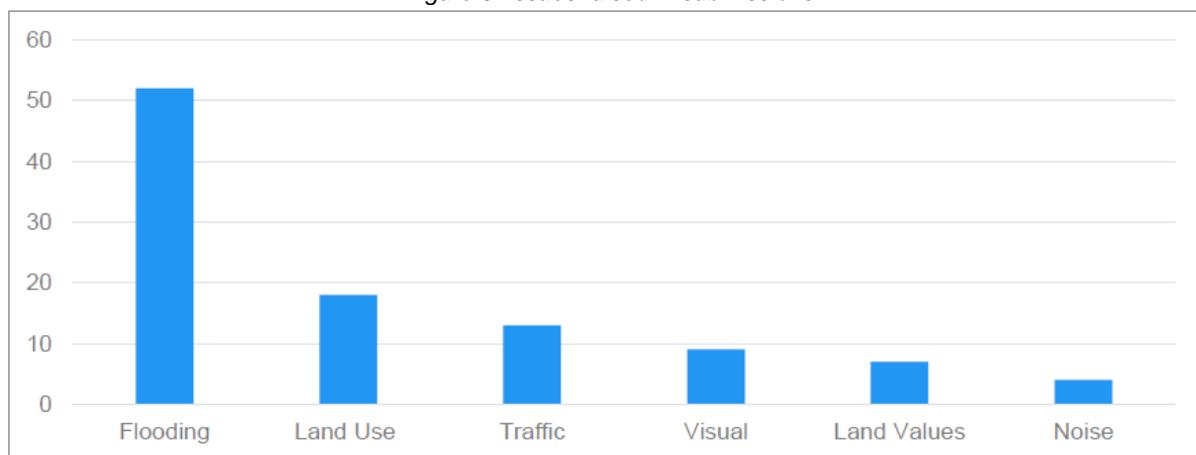
Source: Environmental Impact Statement, Pitt & Shery Group

2. THE DEPARTMENT'S CONSIDERATION OF THE APPLICATION

2.1 Key steps in Department's consideration of the Application

11. The Department received the Application on 17 April 2018, which was accompanied by the EIS.
12. The Department publicly exhibited the EIS from 27 April 2018 until 26 May 2018. The Department received 63 submissions during the exhibition period, including nine from government agencies, two from special interest groups and 52 from the public. Of those received, 48 submissions were in the form of objections, three provided comments on the Project and one supported the Project.
13. A breakdown of the matters raised, and the number of submissions attributed to these matters, is provided in *Figure 3*.

Figure 3: Issues raised in submissions



Source: Department of Planning and Environment

14. In response to submissions received during the exhibition period, the Applicant provided a Response to Submissions report (**RtS**), dated 29 June 2018, seeking to address issues and concerns raised during the exhibition period. The RtS was made publicly available on the Department's website and was provided to key government agencies for comment.
15. Further information was submitted by the Applicant to the Department on 13 August 2018, 7 September 2018 and 17 September 2018.

2.2 The Department's Assessment Report

16. The Department's AR stated that it had identified several key issues associated with the Project, including potential flooding impacts, compatibility of land use and the potential impacts on amenity (visual, traffic and noise). The Department also considered the potential cumulative impacts of the Project together with the proposed Orange Grove Solar Farm, which is located approximately 3km east of the Project, and which, if approved, would generate 110MW and cover 253ha.

17. The Department's AR stated that:

"it considers the site to be appropriate for a solar farm as it has good solar resources and available capacity on the existing electricity network...the project achieves a reasonable balance between maximising the efficiency of the solar resource development and minimising the potential impacts on surrounding land users and the environment...On balance, the Department considers that the project is approvable, subject to the recommended condition of consent."

3. THE COMMISSION'S MEETINGS AND SITE INSPECTION

18. As part of its determination, the Commission met with the Department, the Applicant and Council. The Commission also inspected the site and conducted a public meeting. Transcripts for the meetings with the Department, Applicant, and Council, and the public meeting were made available on the Commission's website on 4 December 2018. A summary of the site inspection is provided in Section 3.5.

3.1. Meeting with the Department

19. On 19 November 2018, the Commission met with the Department to discuss the Department's AR, the Project, the key issues identified by the Department, and the draft conditions of consent.

3.2. Meeting with the Applicant

20. On 19 November 2018, the Commission met with the Applicant to discuss the Project. A copy of the Applicant's presentation from the day was made available on the Commission's website.

3.3. Public meeting

21. On 29 November 2018, the Commission held a public meeting at the Gunnedah Town Hall, 152 Conadilly Street, Gunnedah NSW 2380. The Commission received requests to speak from six people, all of whom elected to speak at the public meeting. A list of speakers was made available on the Commission's website on 28 November 2018. Written comments from speakers who presented at the public meeting are available on the Commission's website.
22. Speakers at the public meeting raised concerns with potential environmental impacts and the proposed management of potential impacts. A high-level summary of the comments is provided below:
- the site is located on a floodplain and the potential for significant flooding impacts;
 - flood modelling is inaccurate and does not account for the unpredictability of floods;
 - potential for the proposed drop-down security fencing to fail and no design for the proposed fencing has been provided to the community;
 - concerns that fencing could become a contour bank during a flood event, moving flood waters and inundating other areas;
 - there are opportunities for the applicant to provide community enhancements to land care or other community enhancements;
 - potential visual amenity impacts of the solar panels when viewed from neighbouring

- properties, particularly to the north where the land is elevated;
- land use compatibility and productivity of the land has not been adequately considered;
- concerns regarding the proposed vegetation buffer and landscape management post approval;
- monitoring of compliance against conditions of consent; and
- potential for the project to impact negatively on property prices.

3.4. Meeting with Gunnedah Shire Council

23. On 30 November 2018, the Commission met with Council to discuss its views in relation to the Project and the draft conditions of consent.

3.5. Site inspection

24. On 30 November 2018, the Commission met the applicant and its consultants and inspected the site. In the absence of any local community group/s or organisation/s (and following a request to attend by one neighbour) the Commission contacted individual surrounding property owners and invited them to attend and observe the site inspection. The invitees that accepted and attended were:
- Chris Avard;
 - Jeff Beckett;
 - Rob Galton;
 - Phil Glover;
 - Chris Mammen; and
 - Steve Woods.
25. The Applicant identified the location of key aspects of the Project and key physical attributes of the site and locality as well as the location of private properties of site inspection attendees. The following provides a summary of the route taken and the features observed by the Commission (see *Figure 4*, on page 15 showing viewpoints (VP)):
- commenced at the southern end of the site. The Commissioners were invited to inspect several properties outside of the site, south of Orange Grove Road, in proximity of the Namoi River and to better understand local flood behavior in the area;
 - viewed the site from the south-east corner from Orange Grove Road. The Applicant pointed out the proposed construction material laydown area, access road and proposed location of the sub-station;
 - travelled north along the eastern site boundary and viewed the site from the host land, VP1;
 - travelled through the site to the western side looking back across the site and the location of the proposed solar panels;
 - travelled north to view the site from VP9 and VP17, looking back across the southern extent of site; and
 - travelled west along Tudgey Road, south along Kelvin Road and east along Orange Grove Road to returned to the starting point. Sections of the school bus route was identified along the way.

26. The Commission also undertook an independent inspection of the heavy vehicle route from Gunnedah travelling north-west along the Kamilaroi Highway, right to travel north at Boundary Street, left to travel west at the Bloomfield Street intersection, left to travel south at Warrabungle Street and west to rejoin the Kamilaroi Highway. The Commission travelled north-east at Blue Vale Road, right to travel south-east at Old Blue Vale Road, left to travel north-east at Kelvin Road and right to travel east at Orange Grove Road to the site.

3.6. Public comments

27. The Commission provided the public with seven days after the public meeting to submit additional written comments. The Commission received a total of eight written comments, which were made available on the Commission's website on 6 December 2018.

4. ADDITIONAL INFORMATION

28. On 20 November 2018, following the public meeting, the Applicant provided clarification regarding the configuration of fencing and its community consultation following questions raised during the meeting with the Commission. The letter was made available on the Commission's website on 23 November 2018. These issues are discussed further in Section 5.
29. On 3 December 2018, the Commission requested additional information from the Applicant in relation to the traffic and transport, visual amenity matters, subdivision plan and fencing. The Applicant provided a response to the Commission on 11 December 2018. The letter was made available on the Commission's website on 8 January 2019. These issues are discussed further in Section 5.
30. On 13 December 2018, the Commission requested further information in relation to the proposed subdivision plan. The Applicant provided responses to the Commission on 18 and 21 December 2018, which were uploaded to the Commission's website on 8 January 2019. A further response was provided to the Commission on 17 January 2019 and uploaded to the website on the same day. The subdivision plan is discussed in Section 5.3.2.

5. THE COMMISSION'S CONSIDERATION

5.1 Material considered by the Commission

31. In determining this Application, the Commission has carefully considered the following material (the **Material**), including:
 - April 2018:
 - Gunnedah Solar Farm, Environmental Impact Statement and associated documentation, 17 April 2018;
 - all submissions made to the Department in respect of the proposed Application during public exhibition, 27 April 2018 - 26 May 2018;
 - June 2018:
 - Response to Submissions and associated documentation, 29 June 2018;
 - August 2018:
 - Water Levels at Fence Boundary, Pitt & Sherry, 13 August 2018;

- Fence Configuration 5, Pitt & Sherry, 30 August 2018;
- September 2018:
 - Fence Configuration 5, Memo and Figure, Pitt & Sherry, 7 September 2018;
 - Constraints Map, Pitt & Sherry, 17 September 2018;
- November 2018:
 - Gunnedah Solar Farm, Department Assessment Report, 7 November 2018;
 - Draft Conditions of Consent, Department of Planning and Environment;
 - the Department and Applicant meetings with the Commission, 19 November 2018;
 - IPC Briefing Clarification Letter, Photon Energy, 20 November 2018;
 - Gunnedah PowerPoint Presentation, Photon Energy, 19 November 2018;
 - the Council meeting with the Commission, 30 November 2018;
 - site inspection, 30 November 2018;
 - comments received at the public meeting, 29 November 2018;
- December 2018:
 - IPC Letter Questions from the Commission, Photon Energy, 10 December 2018;
 - Subdivision Plan, Revision C, Canadian Solar, 10 December 2018;
 - VP9 Visual, Photon Energy, 18 December 2018;
 - written comments received after the public meeting;
- January 2019:
 - Subdivision Plan, Revision C, Canadian Solar, dated 18 December 2018, received by the Commission on 17 January 2019 (as provided in the conditions of consent, Appendix 5).

5.2 Permissibility

32. The Department's AR sets out the permissibility of the Project, noting that under the *Gunnedah Local Environmental Plan 2012* (the **GLEP**) the site is wholly within land zoned RU1 - Primary Production. The Department's AR noted that solar farms are a permissible land use on land zoned RU1 under the GLEP.
33. The Commission finds that the Project is permissible with consent, in accordance with the land use zone provisions under the GLEP.

5.3 Key issues considered by the Commission

5.3.1 Flooding

Public consideration

34. The Commission considered submissions made to the Department during the public exhibition of the Application. The Commission also heard concerns from speakers at the public meeting and received written comments regarding potential flooding impacts, including:
 - the Project has the potential to impact flood behaviour;
 - the proposed security fencing has the potential to cause flood debris to accumulate causing a 'contour bank' and causing floodwaters to be redirected to other areas; and

- flooding in the area is unpredictable, has not been adequately modelled by the Applicant and there is no engineering solution to mitigate against rapidly moving floodwaters.

Applicant's consideration

35. A Flood Impact Assessment (**FIA**), prepared by Pitt & Sherry Pty Ltd, dated 22 March 2018 was submitted with the Application. The flood modelling considered and assessed the Annual Exceedance Probability (**AEP**) and Probable Maximum Flood (**PMF**) and addressed the NSW Floodplain Development Manual. The FIA considered potential flooding impacts associated with the Project. The Applicant's FIA stated:

"Based on the small changes in modelled flood behaviour as a result of the development, it is considered that the development:

- *Would not adversely affect beneficial inundation. The modelling predicts no appreciable change to inundation area*
- *Would not cause changes to erosion, siltation and riparian vegetation. As the site is not located close to the Namoi River, it is considered that the proposed development will not appreciably change erosion, siltation, riparian vegetation or the stability of river banks*
- *Would not affect existing flood Emergency Management and access procedures in place for the region*
- *Would not increase the risk to life from flood*
- *Would not have appreciable adverse social or economic costs to the community. The economic costs relate to the changes to flooding, which are mapped in Appendix A..."*

36. The Applicant's FIA concluded that *"the proposed development is compatible with the hydraulic function of flood storage. Though the proposed security fences create a hindrance to flow as it is distributed through the site, there is no appreciable reduction in flood storage as there would be with, for instance, the placement of a significant volume of fill in the area. It is expected that floodwaters will continue to seep or flow through the fences to occupy the same volume of flood storage as is currently available"*.

37. The Applicant updated its FIA as part of the RtS process. The RtS stated: *"An updated flood model has been prepared using more accurate ground surface data from three sources; LiDAR surveyed in 2000 for the Carroll to Boggabri Flood Study (SMEC, 2003), LiDAR surveyed by drone for Photon in 2017 and the construction drawing for the ring levee around the property at 765 Orange Grove Road (Myalla, or "Lou's Place").*

The available survey data was combined and processed into a single elevation model. With the new data, the flood model indicated more uniform flow depths across the site, with flood depths and patterns of flow that reflected observed conditions".

38. The RtS further stated: *"The modelling indicates that the proposed solar farm would not cause appreciable impacts on surrounding properties due to increasing flood depths and velocities. Nonetheless, GSF recognises that modelling alone may not entirely address community concerns. GSF therefore commits to constructing a perimeter security fence that is designed to allow flood water into and through the development site during significant flood events, which will mitigate the impacts of potential fence blockage on flooding"*.

39. In its 20 November 2018 response to the Commission, the Applicant noted that it held several meetings in January 2018 with sensitive receivers to discuss concerns: *“The concerns raised around flooding pertained to the type of fencing and the blockages that may occur as debris builds up behind the fence. Given this feedback and the modelling outcomes, the footprint of the proposed development was moved 700m north within the site, away from Orange Grove Road and the known flood breakout near this location. The fence configuration was revised to help reduce flooding impacts and further flood modelling was conducted to assess the impacts. This resulted in fence configuration 3 which included gates located every 100m around the perimeter as well as 20m wide laneways in key locations. The intent was to open these gates in times of flood to allow the waters to pass through...”*

Through the exhibition phase further modelling work was completed and configuration 4 was developed. The main difference from configuration 3 was the inclusion of drop-down fencing in strategic areas designed to improve free passage of floodwater through the development site and minimise the likelihood of flow redirection”.

40. The Applicant’s response further noted that during the Department’s assessment of the Project, it was asked to further revise the fencing plan to increase the length of the drop-fence, which the Applicant stated *“...resulted in fence Configuration 5”.*

Department’s assessment

41. The Department’s AR stated the regulatory framework for consideration of flood matters associated with the Project, including requirements under the Gunnedah LEP, the *Draft Floodplain Management Plan for the Upper Namoi Valley Floodplain 2016 (Draft Upper Namoi Valley FMP)* and the *Carroll to Boggabri Floodplain Management Plan (Carroll to Boggabri FMP)*. The Department’s AR stated that the Draft Upper Namoi Valley FMP *“is the legal instrument that coordinates the development of future flood works on this floodplain”* and the Carroll to Boggabri FMP *“applies for all new development within flood prone areas to ensure additional flooding problems are not created”.*
42. The Department’s AR stated: *“the assessments demonstrated that in a 1% AEP [Annual Exceedance Probability] and PMF [Probable Maximum Flood] event, the project would comply with the Gunnedah LEP and the relevant FMP’s assessment criteria for permissible development on a floodplain, without sections of drop-down fencing incorporated into the security fencing”.*
43. The Department’s AR stated: *“Fencing configuration 5 incorporates a combination of conventional security fencing as well as sections of drop-down fencing in key areas modelled to have the greatest potential impact on flood flows”.* The Department’s AR further stated: *“drop-down fencing would be designed to allow floodwater to enter and pass through the site during a significant flood event to minimise any potential impact, including the redirection and/or increase in the velocity of the water”.*
44. The Department’s AR recommended conditions of consent requiring the Applicant to design and construct the site perimeter fencing in accordance with fence Configuration 5, to meet the requirements of the Draft Upper Namoi Valley FMP and the Carroll to Boggabri FMP. It also recommended a condition of consent requiring preparation of a Water Management Plan in consultation with the Department of Industry - Lands and Water (**Dol L&W**) and that subject to the recommended conditions, both the Department and the Dol L&W consider that the Project would not result in significant impacts in the event of a flood.

Commission's findings

45. The Commission sought advice from the Department as to the status and applicability of the Draft Upper Namoi Valley FMP. The Department confirmed, in correspondence dated 18 December 2018, that the Draft Upper Namoi Valley FMP was exhibited from 19 September 2016 to 28 October 2016 and that it understands, based on information provided on the DoI website, that the Draft Upper Namoi Valley FMP is scheduled to be in place by June 2019. The Commission is satisfied that the Draft Upper Namoi Valley FMP along with the Carroll to Boggabri FMP provide a relevant framework and guide to consider the potential impacts of the Project on the Upper Namoi floodplain.
46. Based on the Material, and acknowledging the concerns raised by the public, as referenced in paragraph 34, the Commission finds that the potential flooding impacts of the Project are acceptable because:
- the flood modelling considered the range of flood events, including AEP and PMF and addressed the relevant provisions of the NSW Floodplain Development Manual, see paragraphs 35-38;
 - the Project's modelled flood impacts would comply with clause 6.1 of the GLEP and the relevant assessment criteria under the Draft Upper Namoi Valley FMP and the Carroll to Boggabri FMP, see paragraphs 41 and 42;
 - the Project's flood modelling shows that in a 1% AEP and PMF event, without the proposed drop-down fencing, the Project would comply with the relevant assessment criteria under the Draft Upper Namoi Valley FMP, the Carroll to Boggabri FMP and the GLEP, see paragraph 42 and 43;
 - the drop-down fencing Configuration 5 would enable flood flows to pass through the site to further minimise potential flooding impacts, see paragraphs 39 and 40; and
 - Condition 22, Schedule 3, includes a requirement for the development to operate in accordance with the Draft Upper Namoi Valley FMP and the Carroll to Boggabri FMP.

The Commission accepts the analysis and conclusions set out in paragraphs 41-44, for the reasons provided above.

5.3.2 Visual and landscape

Public consideration

47. The Commission considered submissions made to the Department during the public exhibition of the Application. The Commission also heard concerns from speakers at the public meeting and received written comments regarding potential visual amenity impacts, including:
- potential visual amenity impacts for residences to the north and north-east of the site;
 - potential for the solar panel infrastructure to produce glare or reflectivity; and
 - it is not clear the extent of the proposed landscape screening, what species will be selected and how will it be maintained.

Applicant's consideration

48. A Visual Impact Assessment (**VIA**), prepared by Envisage Consulting, dated 28 March

2018 was submitted with the Application. The VIA investigated the potential visual impacts associated with the Project. The Applicant's EIS stated: *"The proposal would be visible to 22 potentially affected private viewpoints and passing traffic along orange Grove and Tudgey Road"*.

49. The Applicant's EIS provided a summary of the levels of impact for each private residence, as set out in *Table 1*. *Figure 4* provides the Conceptual landscape plan and shows the location of each viewpoint.

Table 1: Summary of identified potentially affected private view points

Impact Level	Number	Residential/private viewpoints identified as potentially impacted
High impact	0	No viewpoints with a high impact
Moderate - high impact	3	VP1, VP9, VP13
Moderate impact	5	VP7, VP8, VP16, VP17, VP23
Moderate - low impact	8	VP2, VP3, VP4, VP5, VP6, VP10, VP18, VP21
Low impact	6	VP14, VP15, VP22, VP24, VP26, VP27

Source: Environmental Impact Statement, Pitt & Sherry Group

50. The Applicant's EIS stated that: *"these impacts could be further reduced to a moderate, or lower, impact through the implementation of mitigation strategies such as landscape screening"*. The Applicant's EIS also stated that visual impacts would be subject to the following mitigation measures:

"Construction and Decommissioning Mitigation Measures

- *Minimise impact through use of siting and design features...*
- *Minimise and repair ground disturbance...*
- *Implement Concept Landscape Plan (refer Appendix C), which includes visual screening.*
- *Retain all existing trees*
- *Retain as much existing ground cover (pasture grasses) beneath solar panels as possible.*
- *Progressively stabilise disturbed area with pasture grasses.*

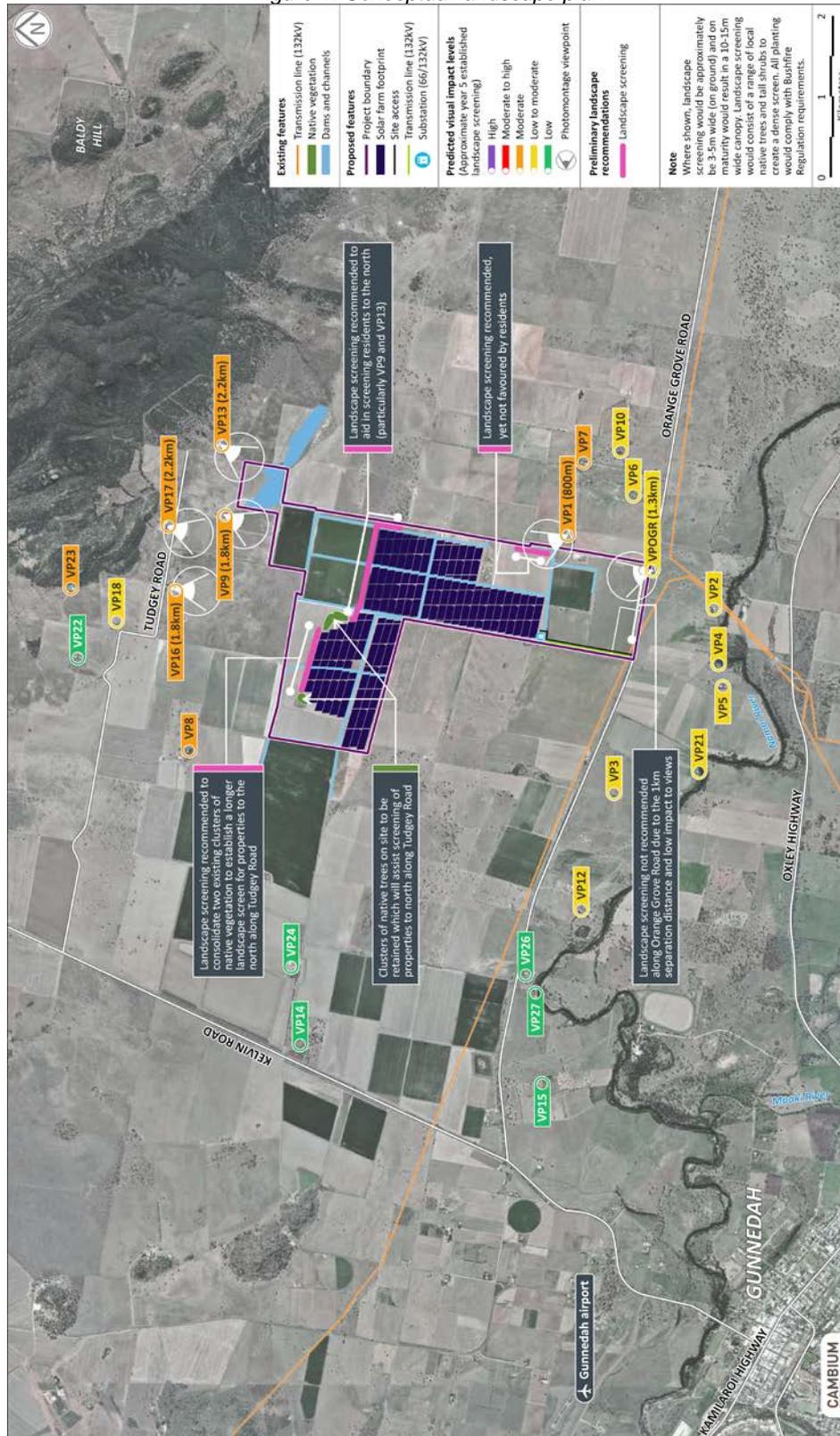
Operational Mitigation Measures

- *Minimise impact through use of siting and design features*
- *Avoid Night Sky Impacts*
- *An OEMP [Operational Environmental Management Plan] will be prepared for the Proposal and will incorporate: A complaints management process.*
- *Monitor performance of screen planting areas six-monthly for the first three years then annually".*

51. The Applicant's 10 December 2018 response to the Commission provided clarification regarding how reflectivity and potential impacts associated with glare would be avoided. The response stated: *"The Solar PV [photovoltaic] modules proposed to be installed at Gunnedah are designed to absorb the light rather than reflect it...Beyond the PV panels there will some instances of glint experienced by nearby receivers, including the road and dwellings, depending on the weather conditions, position of the sun and position of the receptor"*.

52. The response stated: “As the solar farm is designed to track the sun throughout the day the PV panels will block most of the sunlight from reaching the steel mounting frames. As such there will only be very limited potential for glint or glare off steel mounting frames”.

Figure 4: Conceptual landscape plan



Source: Environmental Impact Statement, Pitt & Shery Group

Department's assessment

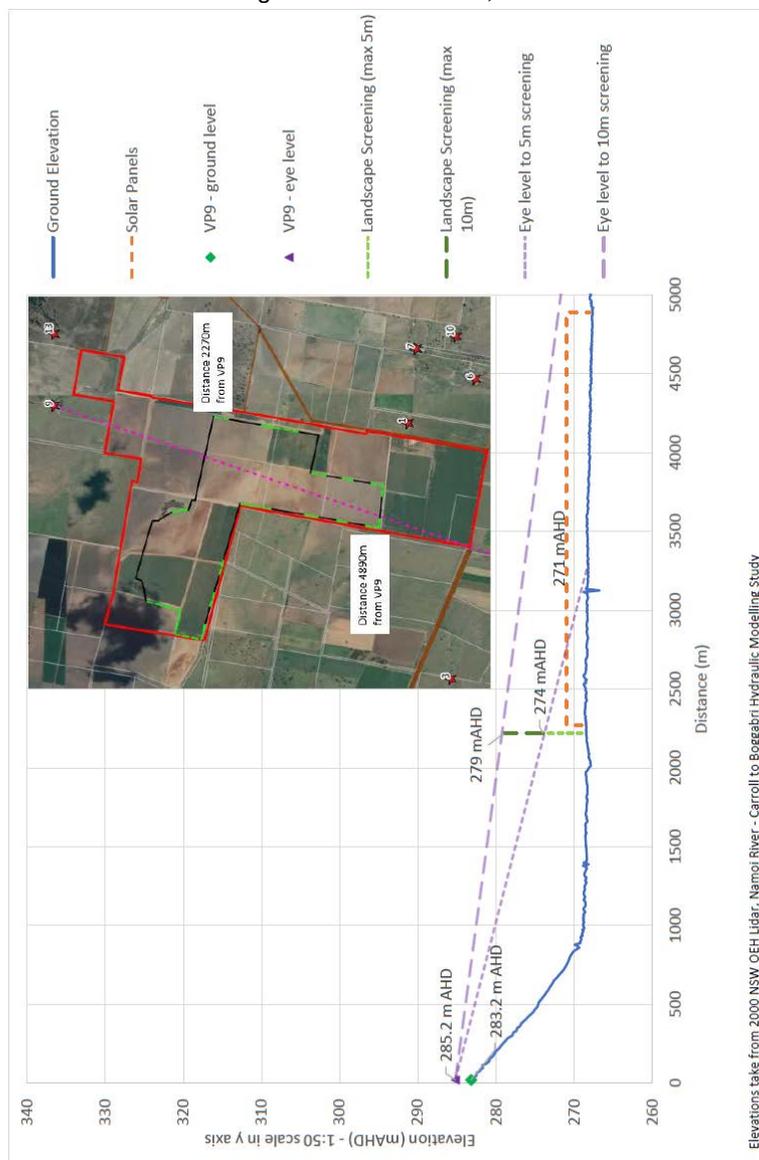
53. The Department's AR stated: *"The Applicant has designed the project to be setback from the northern, eastern and southern property boundaries, including a 1 km setback from Orange Grove Road, to mitigate visual impacts on surrounding residences and public viewpoints"*.
54. The Department's AR further stated that the Applicant has proposed a *"vegetation buffer along the entire northern boundary and sections of the eastern boundary of the development footprint, located outside of the perimeter fence augmenting existing native vegetation, to further reduce visual impacts on residences located to the north and north-east of the site along Tudgey Road"*.
55. The Department's AR stated: *"the maximum solar panel height would be up to 3 m, and the inverter stations would have a maximum height of 4.1 m (including 1.2 m elevated foundations due to potential flooding)". All project related infrastructure would be a similar size to agricultural sheds commonly utilised in the local area. Additionally, the photovoltaic panels are designed to absorb rather than reflect sunlight and the project would not cause noticeable glint or glare compared to other building surfaces"*.
56. The Department's AR noted that *"there would be residual visual impacts to a number of surrounding residences, including VP1 and VP7, located to the project's south-east, and VP8, VP9, VP13, VP16, VP17, VP23, located to the project's north along Tudgey Road"*.
57. In addition, the Department's AR stated that the Applicant *"proposed vegetation screening to mitigate the views of the project from residence VP1, the landowner of this residence advised he would prefer not to have vegetation screening as he was concerned about its impacts on flood behaviour"*. The Department's AR further noted that *"VP7 would have similar views to that of VP1, however, with reduced potential impact due to being located 1.5 km to the project's south-east"*.
58. The Department's AR assessed the *"predicted views looking south towards the project from residence VP9... While the proposed vegetation screening goes some way towards mitigating the visual impact of the project, due to this residence's elevated location, it would still have views of the project infrastructure"*, and the *"predicted views on the other residence located along Tudgey Road (i.e. VP8, VP13, VP16, VP17 and VP23) would be similar to that of VP9, however, with reduced impacts due to increased distance from project's north"*.
59. The Department's AR recommended conditions of consent requiring the Applicant to *"establish and maintain a mature vegetation buffer along part of the site's northern and eastern boundaries"*. The Applicant must also prepare a *"detailed Landscaping Plan for the site, in consultation with Council and surrounding landowners, which must include a description of measures that would be implemented to ensure the effectiveness of the vegetation buffer"*. The Department has also *"required that external lighting is minimised and complies with the relevant Australian Standards [AS4282 (INT) 1997 - Control of Obtrusive Effects of Outdoor Lighting], and prohibits any signage or advertising on the development, unless it is required for safety purposes"*.
60. The Department's AR concluded that *"Subject to the implementation of these measures, the Department considers that there would be no significant visual impacts on surrounding residences, and the rural character and visual quality of the surrounding areas would be maintained"*.

61. At the 19 November 2018 meeting with the Department, the Department provided an explanation regarding the scale and relativity of the Project's visual impacts, the attribution of impact levels and context: "while the applicant is giving them moderate impacts, we would actually consider the impacts to be lower".

Commission's findings

62. During the site inspection, the Commission observed the site from a number of vantage points. The Commission noted the proximity and elevation of VP9 in relation to the Project and subsequently requested that the Applicant provide a cross-section showing the location and elevation of VP9 and the Project, to determine whether the proposed landscape screening would achieve a sufficient height to screen the Project. On 18 December 2018, the Applicant provided *Figure 5*, which uses a vertical exaggeration of 1:50. The Commission is satisfied that the information provided in the Materials was adequate to assess the visual impact of the Project on the other properties.

Figure 5: Cross-section, VP9



Source: Photon Energy, December 2018

63. The Commission requested that the Applicant submit a proposed subdivision plan that incorporated all proposed and existing landscape screening within the Project's development footprint (Lot 2) to ensure that the obligation to maintain the landscaping screening would be part of the Project. The Applicant submitted the subdivision plan on 17 January 2019. The Commission has determined to include the subdivision plan as an appendix in the conditions of consent and has imposed Condition 13, Schedule 2, which provides:

'The Applicant may subdivide the site to create three new allotments, as identified in the figure in Appendix 5 and in accordance with the requirements of the EP&A Act and EP&A Regulation'.

64. The Commission acknowledges VP1's preference not to install vegetation screening based on flood impact concerns (see paragraph 57). However, the Commission is of the view that the entitlement to vegetation screening should be open to VP1, should the landowner elect to have the screening installed within three years of the commencement of operations. The Commission has subsequently added Condition 12 'Extension of Vegetation Buffer', to give effect to this entitlement. The Commission has also amended Condition 11(b), Schedule 3, to require the program for monitoring and reporting on the effectiveness of landscape screening measures, to include consideration of whether additional locations may be required to achieve the objectives set out in Condition 10(c) and (d).
65. Based on the Material, and acknowledging the concerns raised by the public, as referenced in paragraph 47, the Commission finds that visual impacts of the Project are acceptable because:
- the proposed vegetation screening would appropriately screen the Project, particularly once the vegetation buffer reaches maturity, a view further supported by observations made by the Commission during the site inspection and by the detail shown on *Figure 5*, see paragraph 62;
 - the implementation of the measures set out in the conditions of consent are appropriate for managing potential visual impacts, including the requirement for the Applicant to:
 - establish and maintain a mature vegetation buffer at the locations identified in Appendix 1 of the conditions of consent;
 - prepare a Landscaping Plan in consultation with the surrounding landowners and Council, for approval by the Department (the Secretary), which will provide a mechanism for those most impacted by the development to be involved in setting out measures for achieving an appropriate vegetation screen;
 - the flat topography of the site, the setback of the Project from the boundaries, and the height of the solar panels reduce visual impacts, see paragraphs 6 and 55-58.

The Commission accepts the analysis and conclusions set out in paragraphs 53-61, for the reasons provided above.

5.3.3 Roads upgrades

Public consideration

66. The Commission considered submissions made to the Department during the public exhibition of the Application. The Commission also heard concerns from speakers at the public meeting and received written comments regarding potential traffic impacts on local roads during construction and concerns that local road upgrades had already commenced.

Applicant's consideration

67. A Traffic Impact Assessment (TIA), prepared by Seca Solution Pty Ltd, dated 29 March 2018 was submitted with the Application. The Applicant's EIS stated *"there will be an increase in the number of heavy vehicle movements associated with the construction work which will impact the local road network. Heavy vehicles will use a designated route which currently caters for a large number of heavy vehicles including B-double combinations. It is considered that this route can safely accommodate the additional traffic movements associated with the project."*

The major road safety impact is associated with the heavy vehicles accessing the site and their impact upon the operation of the intersections along the haulage route. Several upgrade requirements on Old Blue Vale Road and Orange Grove Road have been proposed to address these risks".

Department's assessment

68. The Department's AR stated that the infrastructure components required for the Project would be delivered *"via the Kamilaroi Highway, Blue Vale Road, Old Blue Vale Road, Kelvin Road and Orange Grove Road. This route would utilise the existing designated heavy vehicle route that avoids the centre of Gunnedah..."*

69. The Department's AR stated: *"The site would be accessed via an existing site access point located on Orange Grove Road in the south-west of the site."*

There would be minimal traffic to and from the project site during the operation of the development...Consequently, the only material traffic impacts would occur during construction, decommissioning and major upgrades".

70. The Department's AR stated: *"daily vehicle movements during construction would not exceed 125 vehicle movements per day, comprising 75 light vehicles and 50 heavy vehicles movements."*

Projected traffic during decommissioning and major upgrades would be similar to construction traffic levels, but over shorter durations".

71. The Department's AR further stated: *"Both RMS and Council support the proposed site access, provided the required road upgrades are undertaken to support the increased traffic volume....the Applicant has committed to preparing road dilapidation surveys, repairing any damage resulting from the construction traffic and developing a flood response plan as part of the Traffic Management Plan in consultation with RMS and Council".*

72. The Department's AR concluded: *"Subject to the recommended conditions, the Department, RMS and Council consider that the project would not result in significant impacts on road capacity network capacity, efficiency or safety"*.

Commission's findings

73. On review of the draft conditions of consent, the Commission has determined to impose Condition 7, Schedule 3 to require the applicant to undertake a dilapidation survey of the condition of the heavy vehicle transport route prior to commencement of construction, upgrading and/or decommissioning, and within one month of the completion of construction, upgrading and/or decommissioning, in order to ensure that local roads at the time of any future Project upgrade or decommissioning are upgraded to support such construction activity. In addition, the Commission has amended Condition 9, Schedule 3 to require that the drivers code of conduct, required under the Traffic Management Plan, include a program to ensure drivers working on the development receive suitable training on the code of conduct, including an induction that addresses travelling speed, fatigue procedures to ensure drivers use designated routes and implementation of safe driving practices as well as any other relevant obligations under the Traffic Management Plan.
74. Based on the Material, and acknowledging the concerns raised by the public, as referenced in paragraph 66, the Commission finds that the potential traffic impacts and road upgrades are acceptable because:
- the TIA was prepared in accordance with the SEARs, including the assessment of the site access route, access points, likely impacts on the capacity and condition of roads as well as measures that would be implemented to mitigate any impacts during construction is appropriate;
 - the heavy vehicle route can safely accommodate traffic movements associated with the Project, see paragraphs 67-70;
 - the requirement to upgrade roads would be identified prior to the commencement of construction, upgrading and/or decommissioning, in accordance with Condition 7, Schedule 3. Any road upgrade would be required to be carried out in accordance with the relevant Australian Standards and to the satisfaction of the relevant roads authority, see paragraph 71; and
 - the Traffic Management Plan, to be prepared in consultation with RMS and Council, to include details of transport routes, measures to minimise traffic safety issues and disruption to local users during construction, upgrading and/or decommissioning, a drivers code of conduct, and preparation of a flood response plan detailing procedures and options for safe access to and from the site in the event of flooding, see paragraph 71.

The Commission accepts the analysis and conclusions set out in paragraphs 68-72, for the reasons provided above.

5.3.4 Agricultural land, decommissioning and rehabilitation

Public consideration

75. The Commission considered submissions made to the Department during the public exhibition of the Application. The Commission also heard concerns from speakers at the public meeting and received written comments regarding the loss of agricultural land, as well as the decommissioning and rehabilitation of the site following cessation of the Project.

Applicant's consideration

76. The Applicant's EIS stated: *"The solar farm has an operational timeline of approximately 25 years following which the infrastructure would be reviewed and either*
- Updated - the plant would be updated for continued use*
 - Decommissioned - the plant will be permanently removed.*

Should the decision be made to remove the plant, then the Site would be returned as close as possible to its existing condition and will be decommissioned as per standard solar plant isolation and disconnection procedures. Key elements of proposal decommissioning would include:

- The PV arrays would be removed, including the foundation posts*
- Materials would be sorted and packaged for removal from the site for recycling or reuse. Much of the solar PV panels would be recyclable*
- All equipment would be removed and materials recycled or reused, wherever possible*
- All posts and cabling, and stabilising infrastructure (concrete footings) would be removed and recycled*
- All areas of soil disturbed during decommissioning would be rehabilitated with the aim of meeting the existing (pre-construction) land capability*
- Traffic required for decommissioning would be similar in type but considerably less in quantity than that required for the construction phase.*

The substation would remain in place to service the locality subject to review of viability by TransGrid".

77. The EIS further stated that following consultation with receivers, the Applicant *"addressed concerns through clearly stating the responsibilities of GSF to remediate the land...A detailed Remediation plan will be completed as part of the Construction Environmental Management Plan (CEMP), if the proposal received approval".*

Department's assessment

78. The Department's AR stated: *"The whole of the project site is mapped as BSAL [Biophysical Strategic Agricultural Land (BSAL)], and while historically it has been used for grazing, portions of the site have been used for irrigated cropping for the past 20 years. The land is mapped as capability Class 2 under the Land and Soil Capability Mapping in NSW (OEH, 2017), which means that the land is not suited to continuous cultivation.*

At present the landowner is only able to effectively crop an estimated 180 ha of the 795 ha site, which leaves the remaining 615 ha uncultivated. The development footprint would occupy 304 ha of the remaining 615 ha of the site, allowing the landowner to

continue using the most productive land for agricultural purposes. As such, the agricultural output of the site would not be materially affected by the project”.

79. The Department’s AR further stated: *“the land would be returned to agricultural use following decommissioning...the Department has recommended suitable conditions to ensure the agricultural capability of the land is reinstated following the decommissioning of the project”.*

Commission’s finding

80. The Commission notes that the site is mapped BSAL however it agrees with the Department that the development footprint of the Project represents a small component of the overall agricultural output in the region (see paragraph 78). The Commission also finds that the agricultural capability of the land would not be affected due to the limited disturbance associated with the development of a solar farm, and that the agricultural capability would be reinstated following decommissioning of the Project.
81. The Commission notes that the Applicant’s EIS and associated assessments, assume a Project lifespan of up to 25 years however given the nature of the Project, in an area with good solar resources, the Project could be upgraded in the future, should technological or infrastructure advances occur. The Commission is satisfied that the Applicant and the Department has adequately considered the potential impacts associated with upgrading and that the draft conditions of consent provide appropriate measures for managing any future upgrades. The Commission notes that any works outside of the stated definition of ‘upgrading’ would require a separate development Application.
82. On review of the draft conditions of consent, the Commission has determined to impose Condition 32, Schedule 3, to require the Applicant to prepare a Decommissioning and Rehabilitation Plan, within three years of the commencement of operations, to include detailed completion criteria for evaluating compliance with the rehabilitation objectives set out in Table 2 of Condition 31. The Decommissioning and Rehabilitation Plan must describe the measures that would be implemented to minimise the waste generated during decommissioning, in accordance with the NSW Environment Protection Authority (EPA) waste hierarchy objectives of avoidance, resource recovery and disposal, and include a program to monitor and report on the implementation of these measures against the detailed completion criteria. The Commission finds that this approach is consistent with the management measures set out in Applicant’s EIS, including the commitment to prepare a Remediation Plan (see paragraph 77).
83. Based on the Material, and acknowledging the concerns raised by the public as referenced in paragraph 75, the Commission finds that potential impacts of the Project on agricultural land as well as future decommissioning and rehabilitation are acceptable because:
- although the site is mapped BSAL, the development footprint represents a small portion of the overall BSAL in the region and the site’s classification, Class 2 is unsuitable for continuous cultivation;
 - the Project could be decommissioned, and the site rehabilitated following cessation of operations and reinstated to its current agricultural capability; and
 - the requirement to prepare a Decommissioning and Rehabilitation Plan would require the Applicant to set out the proposed approach to rehabilitate the land including suitable completion criteria for evaluating compliance with the rehabilitation objectives.

The Commission accepts the analysis and conclusions set out in paragraphs 78 and 79, for the reasons provided above.

5.4 Public interest

Applicant's consideration

84. The Applicant's EIS stated: *"The proposal is in the interest of the public for the following reasons:*
- It will assist in the reduction of greenhouse gas emissions to further combat climate change*
 - It will provide a source of clean electricity generation*
 - It will directly contribute to aiding Australia in meeting the RET [Renewable Energy Target];*
 - It will create localised economic benefits for the region, including employment, stimulation of local business' and diversification of land use, developing new skills in a growing industry.*

Department's assessment

85. In relation to the objects of the EP&A Act, the Department's AR provided a detailed consideration in Appendix D as they relate to the Application, which stated: *"The Department considers the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 5(c)), particularly as the project is:*
- a permissible land use on the subject land;*
 - located in a suitable location for efficient solar energy development;*
 - able to be managed such that the impacts of the project could be adequately minimised and managed to an acceptable standard; and*
 - consistent with the goals of the NSW Renewable Energy Action Plan and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions.*
86. The Department's AR stated: *"The NSW Climate Change Policy framework, released in November 2016, sets an aspirational objective for NSW to achieve net zero emissions by 2050. The NSW Government also has a Renewable Energy Action Plan, which promotes the development of renewable energy in NSW.*

In March 2018, the NSW Government identified 10 potential Energy Zones across three broad regional areas, including the New England, Central west and South West regions of NSW. The project would be located between the proposed Central West and New England Energy Zones".

87. In relation to the principle of ecologically sustainable development (**ESD**), the Department's AR stated that its *"assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences... Following its consideration, the Department considers that the project can be carried out in a manner that is consistent with the principles of ESD".*

Commission's finding

88. In determining the public interest merits of the Application, the Commission has had regard to the objects of the EP&A Act.
89. Under section 1.3 of the EP&A Act, the relevant objects applicable to the Application are:
- a) *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
 - b) *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
 - c) *to promote the orderly and economic use and development of land,*
 - e) *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
 - f) *to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State, and*
 - g) *to provide increased opportunity for community participation in environmental planning and assessment.*
90. A key relevant object of the EP&A Act to the Application, as outlined in paragraph 89, is the facilitation of ESD. The Commission notes that section 6(2) of the *Protection of the Environment Administration Act 1991* states that ESD requires the effective integration of social, economic and environmental considerations in its decision-making, and that ESD can be achieved through the implementation of:
- a) *the precautionary principle;*
 - b) *inter-generational equity;*
 - c) *conservation of biological diversity and ecological integrity; and*
 - d) *improved valuation, pricing and incentive mechanisms.*
91. The Commission finds that the Application is consistent with the ESD principles, the objects of the EP&A Act, and is in the public interest because the Project:
- will assist in reducing greenhouse gas emissions and climate change, see paragraphs 85 and 86;
 - must minimise waste generated by the development in accordance with the EPA's waste hierarchy objectives of avoidance, resource recovery and disposal, see paragraph 82;
 - would not result in a significant reduction in the overall agricultural productivity of the land and can be appropriately rehabilitated following decommissioning, see paragraphs 82 and 83; and
 - achieves a reasonable balance between maximising the use of the solar resource and managing potential impacts on the environment and on surrounding landowners, see section 5.

6. HOW THE COMMISSION TOOK COMMUNITY VIEWS INTO ACCOUNT IN MAKING ITS DECISION

92. The views of the community were expressed through public submissions and in written comments received (as part of public exhibition and the Commission's determination process), and members of the public who spoke at the public meeting or sent written comments during or after that meeting, as discussed in paragraphs 22, 34, 47, 66 and 75.

93. The Commission carefully considered all of these views as part of making its decision. The way in which these concerns were taken into account by the Commission is set out in **Section 5** above.

7. CONCLUSION: THE COMMISSION'S FINDINGS AND DETERMINATION

94. After carefully considering all the Material before it, including the community's views, the Commission has determined to approve the Application, subject to conditions of consent.
95. The Commission is of the view that the proposed Project is in the public interest, finding that the Project's modelled flood impacts would comply with the assessment criteria under the relevant flood management plans and the GLEP (see paragraphs 45-46), the setback of the Project from the boundaries and the height of the solar panels reduce visual impacts and that the proposed vegetation screening would appropriately screen the Project (see paragraphs 62-65). The Commission also finds that the flat topography of the site will assist in mitigating these impacts.
96. The Commission also finds that the heavy vehicle route can safely accommodate traffic movements associated with the Project and amended the conditions of consent to ensure that local roads, at the time of any future upgrading or decommissioning, would be upgraded as necessary to support such activity (see paragraphs 73-74). The Commission further finds that the Project site represents an area of mapped BSAL and that the site could be decommissioned and rehabilitated back to its pre-existing agricultural capability (see paragraphs 80-83).
97. The Commission finds that the Project will assist in reducing greenhouse gas emissions and climate change and achieves a reasonable balance between maximising the use of the solar resource and managing potential impacts on the environment and on surrounding landowners.
98. The Commission has imposed conditions of consent designed to prevent, minimise and/or offset adverse environmental impacts and impacts on the community.
99. The reasons for the Decision are given in this Statement of Reasons for Decision, dated 12 March 2019.



Andrew Hutton (Chair)
Commission Member



Annelise Tuor
Commission Member



Tony Pearson
Commission Member