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NSW Independent Planning Commission
SYDNEY NSW 2000

Dear Commissioners

Application SSD-21208499 – Proposal for Glanmire Solar Farm: 4823 Great Western Highway, Glanmire.

We represent Newton Rural Pty Ltd ABN26798134878, trustee of the Newton Rural Trust, owners of [Redacted] Great Western Highway, Glanmire, directly, adversely impacted neighbours of the proposed Glanmire Solar Farm. Our clients made a submission objecting (“Objection” made 14 December 2022 ref SE-5244 8710) to the proposal contained in Development Application SSD-21208499 in respect to 4823 Great Western Highway, Glanmire.

The key concerns and objections were set out in our Objection and in expert consultant reports we submitted with the Objection. We adopt that Objection, including the consultant reports, for the purpose of this Submission and request that the Independent Planning Panel consider the contents of those documents for the purposes of this independent process and Determination. We note that subsequent to the lodgement of our Objection, the Proponent provided responses to the submissions (which we have not had the opportunity to comment upon), and amendments to its proposal. The Department has now published its Assessment Report and Proposed Conditions.

We note that an Amendment Report was lodged on behalf of the Proponent at the same time as the Proponent’s Submissions Report. This Amendment Report related to one proposed change relating to the battery components of the Project, which would extend the on-site storage duration of the Project from 1 to 2 hours. The Report asserted that there was no change to the level of impact assumed prior to the amendments and that none of the mitigation strategies recommended in the EIS would be altered on the basis of the amendment.

However, it is noted that the Amendment Report also disclosed that the power capacity of the Project was reduced to 52.5 MW (compared with the “up to 60 MW”, as stated in the EIS).

We submit that the Department is critically conflicted in carrying out the Assessment of the Glanmire proposal, as at the same time it was the Government agency setting the rules through the Large-Scale Solar Farm Assessment Guidelines, and, as an agency of Government, the Department is charged and obliged to give effect to Government policy. This conflict is demonstrated in the treatment of the Amendment – “Under the delegation from the consent authority (i.e. the Commission for this development), the Department accepted the amended application for the reasons outlined in the (Department’s) Assessment Report.” (Department letter to the Chair IPP 10/11/23).

The Department is explicit in the Assessment Report noting that it was not strictly guided by the planning legislation and instruments, but heavily influenced by broader strategies ... “The Department considers that the project is compatible with the LEP and broader strategic planning objectives for the site” (Assessment paragraph 68).

Our clients and other close neighbours are encouraged that an Independent Panel is now considering the proposal and materials provided by all affected parties, in order to make an appropriate determination.

As many of the matters raised in our Objection have been ignored or dismissed in the Assessment, we set out below our chief objections and supporting material. Our clients have also instructed consultants to review the material lodged since the Objection, and the Assessment, in order to provide you with further information.

1. Compromises scenic character of the land: the development of a solar farm on the proposed site directly contravenes the local and state planning policy provisions that encourage maintenance of the “rural and scenic character of the land” (*Bathurst Regional Local Environmental Plan RU1 zone*), and require limited impact on the “scenic quality and landscape character” (s 2.42(2), *State Environmental Planning Policy [Transport and Infrastructure] 2021*).

The site is in the middle of broad rolling hills with sparse development of residences, and buildings, used for farming and storage activities. The land is primarily open grassland, grazing land and crops, interspersed with attractive stands of native and other trees.

Clause 6.3 of the BRDCP requires developments, particularly near main roads and “gateway approaches to the City” to minimise “visual impacts” and ensure they are “compatible with the rural landscape.” The BRDCP recognises the importance of the Region’s “rural vistas” (cl 7.10.1) generally and requires that landscaping should aim to improve “visual amenity and ensure that developments do not dominate their surroundings” as well as “provide landscaped buffers to reduce the potential for conflict between land uses.” (cl 13.3.1) Section 4.15(b) of the *Environmental Planning and Assessment Act 1979* requires the consideration of “the likely impacts of that development, including the environmental impacts on both the natural and built environments...” on the consent authority as they determine a development application.

The 2018 Large-Scale Solar Energy Guidelines identify visual impacts, including “the impacts on landscape character and values and the visual amenity of landholders and communities” (pp. 11) as a relevant issue during the assessment process. The 2022 Large-Scale Solar Energy Guidelines reinforce this, stating “applicants must consider the landscape character and visual impacts early in the site selection and design process to minimise impacts and conflicts where possible,” and “where solar energy projects are likely to result in moderate or high visual impacts, mitigation strategies must be adopted to reduce or manage impacts” (pp. 23).

The Department of Planning, Industry and Environment noted in the September 2021 document describing the then Proposed Infrastructure SEPP Amendments, that “solar and wind energy developments also have unique (ie adverse) visual characteristics that can impact on the scenic qualities of an area” (DPIE, pp. 3).

The Vision Impact Analysis originally submitted by the Proponent, and based upon a panel maximum height of 3.5m, included Scoping Report, Figure 7: Zone of Theoretical Visibility, P 14, also IRIS Visual Figure 6.1 which show that there will be over 50% visibility of the panels and the infrastructure on the site from at least 3 km to the East, towards the north and south, and west towards the city of Lithgow, the site disrupting the views enjoyed by neighbours, Bathurst residents and tourists alike. The Scoping Report also noted the dwellings and potential future dwellings within 3kms of the site with ... “potential for greater visibility of the site.” (Scoping Report p15).

The Scoping Report also notes that the northern most area of the site along the Great Western Highway, 300m wide, was being removed from the proposed footprint to minimise the potential visibility of the site from the highway (Scoping Report p15).

The EIS, which was produced to inform the Assessment, states – “The site can be effectively screened to minimise views from the Great Western Hwy. Few dwellings would be impacted by extensive views or glare from the Project. One public viewpoint, directly adjacent to the site has been assessed as a low impact. All other public and residential views have been assessed as very low.” (EIS p30), without any explanation or basis for these assertions, other than the VIA.

The Departments evaluation duly observed that... “the visual assessment concluded that the visual impact for all residences surrounding the site would be nil to low, due to distance, topography and extent of intervening vegetation along the project boundary, which would be further enhanced by Elgin’s proposed screen planting.” (Assessment para 130).

However the Department does not appear anywhere to have actually formed its own opinion as to visual impacts on neighbours. Contrast that with the Proponent’s treatment of the boundary with the Great Western Highway, where the Proponent voluntarily provides for a 300 m buffer zone between the highway and the solar array, which the Assessment notes is designed ... “to minimise the visual impacts...”(para 99), and, ...”vehicles travelling in both directions... would be largely shielded due to the 300 m setback.” (para 101). The visual

impacts are apparently adverse for transient traffic passing along the highway at speed, but not sufficient to be even recognised for owners and occupiers of permanent residences adjoining the site.

A number of other objectors also expressed concerns about the adverse scenic impacts and effect on views.

Section 2.42(2)(b)(ii) of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* stipulates development consent cannot be granted unless the consent authority is satisfied, among others, the development “is unlikely to have a significant adverse impact on the regional city’s... scenic quality and landscape character.” Glanmire is part of the Regional City of Bathurst and the site is at a prominent point on the main road entry to the City from the east. The site is 4.1 km from a residential area of the City of Bathurst, namely Raglan. Raglan is largely zoned R1 General Residential land, with areas of RE1 Public Recreation land. (See Assessment para 77). The Assessment also notes that Council is still in the process of investigating future growth. (para 79).

Nevertheless, the Department’s Assessment concludes that the project would not result in conflict with existing or approved residential or commercial uses of land surrounding the development, nor would it have a significant impact on Bathurst’s capacity for growth or scenic quality or landscape character (Evaluation para 128).

The Department did not obtain any independent assessment of visual impacts. A glaring omission in the VIA and the Department’s Assessment is the failure, in any way, to assess the view impacts from Mount Panorama/Wahluu, crucial tourist and economic locations in the City, which will clearly experience and intrusion into its scenic outlook. Nor did the Department provide any compelling explanation or guidance as to how it reached its conclusions, except apparently relying on the advice of the Proponent, and its paid consultant.

We also note that the Proposed Conditions envisage the possibility of further development to 4 m high panels but without any justification or process for this potential and also without assessing the impact on views should the panels be increased in height to 4 m. The Assessment simply states that the project ...”includes underground power lines and...upgrading and decommissioning over time.” (para 2).

The proposal, accepted the Assessment Report, includes upgrade and “refurbishment” to the transmission infrastructure outside the site, by replacing approximately 47 poles and soil disturbance and vegetation clearing works, including increasing the height of transmission poles by 6 m to 15 m. Work includes relocating the transmission line including directly bordering the Raglan township to the west and north, from the boundary of the site, for some 7 kilometres, to the substation in Raglan. Objectors were not given the opportunity to respond to this proposal. Whilst we note that this requires a separate approval from Essential Energy, the Assessment proceeded to include these changes without any further evidence or information as to the impact of this potential additional visual impediment along such a very

significant part of the Great Western Highway, or any detail of the replacement poles and lines which obviously will have to be much more substantial to support the additional height and capacity of the lines. A full approval process including visual impacts, risk and other impacts is required before the battery proposal and refurbishment to the transmission lines can be undertaken.

The Visual Impact Assessment carried out for the Proponent actually used the 2021 Draft Amendments proposed for the SEPP –“Photographs taken in April and May and July 2022 were used to verify the results of the preliminary assessment which was based on GIS modelling. Assessment took place applying the “Preliminary Assessment tool as recommended in the Draft Large-Scale Solar Farm Assessment Guideline (2021) (EIS p 103). The EIS states that the Department agreed to this approach. (EIS pp95,96). This leaves a great deal of uncertainty and unfairness for neighbours and their consultants in attempting to analyse and accept the results of the VIA.

It is noted with concern that the final plan with the EIS, Figure 6.1 - Visibility, and the plan in the Assessment does not correctly identify existing dwellings and does not show all of the future residential sites, including on the Objector’s property, approved by Council in DA 2020/299 or the existing bore. The plan prepared by NGH at Appendix 1, General Layout of Development, refers to “unapproved potential receivers”, incorrectly.

Whilst the VIA study was discussed at the meeting on 7 September 2022 and selected photo montages were displayed by video, the actual VIA was only provided in electronic form on 10 October 2022 (by email at 6.15pm), thus avoiding any opportunity for detailed discussion, attempted resolution of concerns and consideration of mitigation options other than the Proponent’s proposal to use tube planting, which would only take place after completion of construction for screening. The use of such methods effectively means that there will be no effective screening for at least 5 to 10 years after the site is disturbed which is contrary to the BRDCP requirements (clause 13).

Further, the photo montages provided by the Proponent only purport to depict the solar panels on the site, with no certainty of the presumed angle of the arrays and do not show structures and the very ugly perimeter fence being proposed, including razor wire – seriously out of character for the area!

The EIS states that “For visibility and photomontages modelling, LIDAR data from 2013 and 2018 is used. Accuracy is improved via site inspections with survey points used to ground truth images. However, it is noted the images produced are still only a representation of what the final infrastructure will look like in particular conditions. Weather conditions on the day of the photographs will have influenced the results.” (EIS p126).

Further, as is discussed under Consultation below, neighbours were disappointed that promised detailed discussions with the Proponent’s visual consultant did not occur and the visual consultant did not attend the September and October meetings to explain the montages and process, contrary to earlier undertakings from the Proponent.

2. Not located to avoid conflict and resource quality: the *Bathurst Regional Local Environment Plan 2014* specifies for RU1 Primary Production land, developments must minimise fragmentation of resource land and reduce conflict between land uses. These requirements are echoed in the *State Environmental Planning Policy (Transport and Infrastructure)* and the Large-Scale Solar Energy Guidelines. The proposal not only is not located to avoid conflict but will have a significant negative impact on Bathurst as a regional city, for a minimum 40 years, including the requirement for additional intrusive transmission and electrical storage facilities and locking up a key 186 ha site just over 4 km from the City edge, where growth would be expected over 40 years.

The site is in a designated Gateway Investigation area according to the Bathurst Regional Local Strategy Planning Statement (Bathurst Regional Local Strategy Planning Statement, 'Figure 3: City of Bathurst Structure Plan', pp. 33), and is part of the main gateway and Highway to the east, proximate to the airport, and likely to be developed at least for rural residential development, given that Gorman Hill to the south and north are reserved for recreational land, Charles Sturt University and Mount Panorama are not available for development, and Kelso and other suburbs including Eglinton are already substantially developed. Other areas to the north and west noted for "Residential Expansion" may not be satisfactory as it is currently largely identified as RU1 Primary Production, with further E2 National Park and Nature Reserves to the East of Eglinton. The site is also desirable for constructing housing as it adjoins the existing employment lands to the west of Raglan and to the north of the highway next to the airport. Consequently, the proposed solar industry development on the site limits ability for residential and commercial expansion and therefore will negatively impact Bathurst's capacity for growth.

The test under this provision is not satisfied by a consultant's glib conclusion that the impacts are "considered reasonable", but requires the consent authority to undertake a serious investigation of the possible impacts of the development and to form a view as to whether the proposed development is:

- a) *"Located to avoid significant conflict with existing ... uses of land surrounding the development"*.

The industry of electricity generation, transport and storage proposed, for the site unequivocally significantly conflicts with the existing rural residential and primary production surrounding the site;

By selecting a site in the middle of six to eight productive farms, the proposed site does not minimise the fragmentation and alienation of resource lands, but instead monopolises it. Developments should also "minimise conflict" of land uses. A solar farm, in such close proximity to other farms, will force changes to the functions and means of production of neighbouring sites.

To use a common Australian expression, a solar farm comprising over 128,000 panels, battery and other facilities will..."stand out like a sore thumb...!" The changes to hydrology, access, and fire and risk will deprive the neighbours of their entitlement to the use and enjoyment of their properties, reduce their income. and force changes which could not have been foreshadowed or anticipated.

The Assessment baldly states ... “introduction of solar energy generation would contribute to a more diverse local economy ... supporting the local economy and community.”(para 66). Other than the short term construction work there will be very little local economic benefit from the solar farm, probably significantly less than the current farms provide. The capital expenditure will largely go to other countries which produce the solar panels and other infrastructure, and the profits generated are almost certainly going to go to shareholders who are not local, during the proposed 40 year life of the project.

The BRLEP objectives for RU1 Primary Production land includes to “encourage sustainable primary industry production, to encourage diversity of primary industry enterprises and systems appropriate for the area... to minimise conflict between land uses...”

If the large-scale solar energy project is sited on or adjacent to important agricultural land or located on moderate capability land (LSC class 4), the applicant must verify the agricultural quality and capability of the land (s 5.2.3, Large Scale Solar Energy Guideline 2022, pp. 26). The Assessment notes that ... “while the revised guideline does not strictly apply to this project,... the project is broadly consistent with the principles in the revised guideline.” (para 19).

The Proponent EIS and supporting consultant reports identified the soil type of the proposed site as “92%... of Class 4 and 8% of Class 5... The soil type is described as Sodosol with a moderate (Class 4) and moderately low (Class 5) agricultural capability rating” (Scoping Report, pp.8).

Refreshingly, the Department took note of the numerous objections and concerns about the soil assessment and engaged an independent expert to review the assessment,” which found deficiencies in the methodology and recommended additional work be conducted.” This work resulted in revised land classification of the site including the addition of 39.4 ha of class 3 land within the development footprint assessment P40).

Notwithstanding that revision and correction, the Assessment concluded that ...”although the project would include disturbance to a small area of class 3 land, the inherent agricultural capability of the land would not be affected given the relatively low scale of development, and Elgin’s commitment to return the land back to existing levels of agricultural capability following decommissioning.” (Page 40). The Department repeatedly referred to the class 3 land as a small area, notwithstanding that it represents approximately 25% of the development footprint (probably in excess of 25,000 or 30,000 panels) is described as “high capability” (Assessment para 8) and the Appendix 1 Plan refers to “Verified important agricultural land” being the class 3 which is a significant central part of the development footprint.

As set out in our Objection, the Objectors instructed independent Earth Science expert David McMahon who found significant inadequacies in the report used by the Proponent.

Mr McMahon’s comments and conclusions were supported by a report obtained by the Glanmire Action Group which instructed a Certified Environmental Practitioner, David Will

Harbison of D.R. Agriculture Pty Ltd, Masters, a Site Contamination Specialist. Our clients have obtained a further review report from Mr McMahon which we have forwarded to the IPP as Annexure A.

More recently, at the meeting held by the IPP on 30 November, it was disclosed that only some 6% of land in the Bathurst regional area is capable of cropping use. The site is part of that cropping land and given the potential adverse impacts to adjoining farms there is a significant likelihood that a very large area of land would be lost to cropping for a minimum 40 years, with no guarantees that the remediation and restoration relied upon by the Department will actually take place.

The Objectors say that a solar farm with 128,000 panels, 4 times the number of internal roads as exist for agricultural use, a one ha BESS surrounded by steel fencing and barbed wire, floodlights and CCTV, all further encased in a 2m high steel fence topped with barbed wire, plus extra transmission facilities outside the site, for a period of 40 years or more, clearly conflicts with the rural character of the area.

3. Ineffective mitigation measures: the *State Environmental Planning Policy (Transport and Infrastructure)*, Section 2.42(3) requires that “in determining whether to grant development consent, the consent authority must consider measures proposed to be included in the development to avoid or mitigate... adverse impacts referred to in subsection (2)(b).”

Mitigation measures must address construction, which will span a minimum 12-month period, and include material laydown areas, construction vehicle parking and temporary construction offices.

The extensive infrastructure, tracking systems, underground and above ground cabling, battery energy storage system and internal access tracks to enable site maintenance, all indicate that significant earthworks must occur.

Despite the Proponent’s assurances in the 9 August 2022 CCC meeting that existing trees will not be axed, and dams avoided, rather than filled in, the General Layout of Development prepared by NGH dated 24 October 2023, indicates that the proposal envisages removal of 10 existing mature trees, leaving only 5 trees to be retained, and 4 dams being filled in. No proper hydrology study was conducted to test these removals.

The NGH plans purporting to show the location of hydrology on the site are incomplete and inaccurate. The plans failed to show a further riparian zone and ephemeral watercourse across the centre of the site where 2 of the dams are removed. This riparian zone and watercourse were shown in the plan prepared by Footprint which formed part of the EIS (page 197), but has been left off the current plans. The dams should be retained to ensure the natural flow of water to remove excess water from the site.

The conditions must include the Proponent’s promise that panel heights will be limited to a maximum height of 3.5m for the life of the project. If there is a proposal to increase the height or shape of the panels then that should be the subject of a new approval process including appropriate visual and other assessments.

Screening methods, such as trees, will be inadequate to effectively mitigate the extensive visual impacts posed due to the size and unsuitability of the site.

The Visual Impact for close neighbours shows that screening may include multiple layers of plant screening. The Visual Impact Analysis landscape plan includes trees and shrubs. The Proponent's suggested use of tube stock, stating it grows quickly, is disputed as the need to grow a thick hedge along a 1.2 km boundary (with our client's) property is highly improbable and will take a considerable number of years to reach mature tree growth. However, the images presented of the tree growth in the short time, 3-5 years, were grossly inadequate to mask the visual impact of the solar farm. Further, the long-term images at 5-10 years, did little to demonstrate the visual mitigation attempts are adequate to disguise the negative visual impact and to preserve the scenic character of the land. Based on images provided by the Proponent, there should be mature or semi-mature landscaping planted as a key mitigation measure. A 5 m vegetation buffer is wholly inadequate for visual mitigation and protection from the risk of fire.

Is aware of and will provide scientific evidence which indicates that mitigation of the adverse visual impacts and heat island effect will require a much wider buffer zone, up to 800 m to completely eliminate the heat island effect.

The Amendment Report concludes that no changes are required to mitigation proposals in the EIS.

4. Site suitability: the *Environmental Planning and Assessment Act* requires the consent authority to consider the suitability of the site for development (Section 4.15(1)(c)). The requirement of site suitability is reinforced in the BRDCP and other plans and in both the 2018 and 2022 Large-Scale Solar Energy Guidelines.

The proposed site is wholly unsuitable given proximity to Bathurst, the visual impacts, the introduction are out of character and no doubt imposing transmission poles or structures along the Great Western Highway, the conflict of uses, and that there is an alternate REZ zone, Central-West Orana, close by and available for solar production.

Whilst the Government policies recognise that some development will have to occur outside the REZ areas, these policies require protection of regional cities such as Bathurst and their surrounds. Outside the REZ developers must establish the suitability of the site and social licence for the development and must conduct adequate consultation and implement satisfactory mitigation measures.

The communities of Glanmire and Bathurst have not consented to the social licence required to construct and operate a solar farm in the location and the Department has not given any consideration to that requirement.

In relation to land use conflict, the NSW Agricultural Commissioner's report, "Improving the Prospects for Agriculture and Regional Australia in the NSW Planning System", the agent of change principle, placing the onus of mitigating potential land use conflict is on the introduced development is supported. The IPP is encouraged to consider if land use conflict mitigation measures, e.g. increased setback distance, vegetated buffer, or an alternative approach, could be applied within the site of the proposed development to reduce the land use conflict risk.

This recommendation essentially places the onus of mitigating potential land use conflict on the introduced development.

Instead of careful site selection, the EIS stated that selection of the site was based upon a desk top review of the region (EIS P7) and “a screening process based on generation capacity, desktop environmental due diligence studies, high -level ground truthing(?) and landowner interest. The process commenced in 2019 with Elgin Energy validating the quality of the solar resource” (EIS p 78) and the scale of the project has been influenced by...”availability of agricultural land from landowners willing to enter into lease or purchase agreements.”(EIS p28). The EIS also asserted significant community support for the project.

In fact, Elgin sought expressions of interest in providing land to be leased for solar farm development and only received one offer of land, the subject site, for development and lease. We ask that the IPP take account of this poor process.

We also note that of the five projects listed within 50 km, most are at least 35 to 40 km away, not within 4 kilometres of the Bathurst Regional City residential areas, 2 are pumped hydro projects on existing water bodies and 2 are battery projects. This proposal is the only intrusive solar panel farm in the 50 km² area of Bathurst Regional City. The very poor response to Elgin’s request for available land also contradicts the proposition that there is significant community support.

As to solar access, our Objection provided analysis of Bureau of Meteorology data which indicates that Bathurst has the lowest solar production of the 20 sampled sites (see Appendix A in our Objection), as measured by kWhm² and MJm², providing further weight to the proposition that an alternative site should be selected. This is not unexpected given the well-known susceptibility of the Bathurst region to high rainfall, cloud cover, frost and fog. The Proponent should, instead of proposing a site of conflicting land uses, choose a site with the best available solar production, that is productivity per panel, in a location preferred for such development.

The Objectors have obtained advice from Town Planner, Andrew Burge (which was Annexure B to our Objection) who notes the conflict with rural use, potential limitations on the future growth of the Regional City of Bathurst, location within 5 kilometres of residential development and the requirement for a 50metre setback pursuant to the Bathurst Regional Development Control Plan.

Mr Burge also pointed to the failure of the Proposal to provide the required 50m setback for rural industry at the front, sides and rear of the project pursuant to clause 6.2.3 Setbacks, of the BRDCP.

5.Lack of consultation: the facilitation of meaningful consultation is a necessary requirement of NSW state and local planning policies. S 4.15(1)(b) of the EP&A Act imposes requirements on the consent authority to consider the social and economic impacts in the locality. Further, both the 2018 and 2022 Large-Scale Solar identify community and stakeholder consultation as a key objective.

The Proponent has failed to facilitate meaningful consultation with direct and adversely impacted residents and owners ,or to genuinely consider options for mitigation and did not

provide sufficient detail to enable neighbours to fully access the impacts of the Proposal necessary for the consent authority to grant approval.

We outlined detailed concerns as to the inadequacies in consultation in our Objection which we repeat for the IPP. In addition we emphasise the following matters;

-Neighbours originally invited to participate in the CCC were all so frustrated and disappointed by the process and meetings that they resigned from the CCC rather than be characterised as in some way endorsing the process. They considered that the process did not genuinely consider their views and concerns.

The Proponent held several briefings and information sessions which did not allow any meaningful discussion of neighbour concerns and issues and were dominated by the Proponent's consultants.

The EIS (Table 5.2) provided a description of the activities purportedly conducted by or on behalf of the Proponent. In summary, the activities reached a derisory small number of Bathurst residents. Some visits to near neighbours did occur however, the Visual consultant failed to return to discuss the photographs and failed to attend the October 2022 briefings. Accordingly, little utility was seen in attending meetings at times set to suit the Proponent and its consultants, but not working neighbours.

Sufficient detailed site plans and construction and operation information was not provided to allow affected parties to identify the risks and impact to their properties, persons and occupations.

For example, the locations and appearance of the 18 inverters to be installed in the array are not certain, the Plans for Typical BESS configuration (figure3-4 p38& pp266,267) and Typical Switch Room configuration (figure3-6 p40) are marked "Conceptual Not for construction"; and – "The final location and design for new access tracks...will not be completed until post approval." (EIS p47).

The Proponent maintained that there was community support for the proposal and sought to validate this by producing a voluntary survey with very poor results.

On the other hand, a survey of the community within 3.25 km radius of the site was conducted by active members of the neighbour group, in the absence of genuine consultation. Of 309 interested people, including 57 landowners within a 3km radius of the site, 90% considered themselves adversely affected and objected to the development. There is no evidence in the EIS to support the conclusion that – "The broader community 's sentiment was generally supportive." (EIS p81).

Indeed, the underwhelming response to the Proponents request for interest in leasing or selling land for the purpose might be a truer measure.

Specific shortcomings and deficiencies in the process were communicated to the Proponent, but not rectified. We submit that the IPP cannot simply accept the assertions of the Proponent that the required and effective consultation took place but must make its own enquiries and assess the conclusions and comments of those who were intended to be the subjects of that consultation.

6.Policy uncertainty and change: there was ongoing confusion and uncertainty regarding how the former 2018 Large-Scale Solar Energy Guidelines and the Proposed 2021 Amendments interact with the newly adopted 2022 Large-Scale Solar Energy Guidelines and Secretary's

Requirements. Further, both the Agricultural Commissioner and the NSW Fire Brigade were still to release reports on solar farms and their impacts at the conclusion of the Submissions process.

Agriculture Review in Recommendation 9 provides that:

- *“A comprehensive policy for agricultural land use planning should recognise the agent of change principle and require consideration of buffers in the Standard Instrument LEP because at present it is the most used and effective case-by-case mechanism for minimising land use conflict.”*

The agent of change principle could apply only to those zones where agriculture is permissible.

The Agricultural Commissioner has undertaken a Renewable Energy and Agriculture Review to evaluate the legal and policy framework for handling issues and opportunities raised by the predicted increase over the next 20 years in the renewable energy and agriculture sectors in NSW. In addition, the New South Wales Fire Brigade is currently (at time of writing) reviewing solar plants. Any decision to approve this project, which is non-compliant with any of the policies and proposed arrangements, is not in the public interest.

The Ag Commissioner’s 2 reports are:

https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0019/1361611/Improving-the-Prospects-for-Agriculture-and-Regional-Australia-in-NSW-NSW-Ag-Commissioner.pdf

including recommendation 9, page 51 Agent of change principal

https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0005/1449860/210395fd12ea058abf3b424f4370204d64e105bb.pdf

7: Insignificant energy contribution: the insignificant (in the context of NSW requirements of 69,398 GWh in 2020) amount of energy the solar farm could potentially produce cannot justify the negative impacts of the proposed development on direct neighbours, Bathurst locals and Bathurst as a regional City, and should not be approved as a potential precedent for further such projects in unsuitable locations.

The EIS stated “2955 MW of new capacity (will be) added across 27 solar farms.”(P20) This represents an average of 109.44MW capacity per new solar farm, which highlights the minimal capacity of the Project.

In fact the Amendment Report now discloses that the power capacity is even lower at 52.5 MW.

The EIS also claimed that the Project would provide energy for approx. 28,000 homes in NSW (EIS pps 20,312,317) which was not supported or explained. The Assessment, however, states that the 60 MW of renewable energy produced is “...enough to power approx 23,000 homes” (Executive summary), another instance of uncertainty about the accuracy of the proponents propositions which becomes apparent upon further analysis.

8. Impacts on primary production and farming activities: an electricity generation and battery industry facility in the midst of traditional farming properties will have an adverse impact on

the adjoining properties, potentially requiring changes to farming practices as risk is transferred to those adjoining properties, through the heat island effect, and to flooding and unintended water flows on neighbouring properties, all possible outcomes of a Proposal for over 40 years.

We have added a separate document addressing the possible impacts of flooding and examples of the possible income and economic impacts which were also included in our objection in the separate section of this submission.

The proponent appears to suggest that a few sheep maintaining the height of the grass under the panels constitutes an agricultural use approximate to the significant cropping which is available for the site, and is the primary purpose, rather than the industrial purpose of energy production, storage and distribution.

As noted in the section on Site Suitability, the increased insurance risks of solar farms increase premiums for neighbours and cover is limited as to availability and potential coverage. The Objectors have been advised that the maximum coverage available would be \$20million, subject to an actual application and responses from insurers, against a potential disastrous fire which could cause total loss of the solar farm (not considering economic loss) in the order of \$150-200million (see also opinion of Alison O'Brien, O'Brien Ag in other submissions). This limited coverage would also be conditional on changes to the farming properties and practices to limit the fire risk, probably including setbacks on adjoining farms. Our clients have sought public liability insurance cover of \$30 million through their broker, who has sought cover from overseas, but have not been successful in obtaining the cover

Neither the EP&A Act nor the RLEP provides a definition of productive land. S 10AA of the *Land Tax Management Act 1956*, however, provides a definition for "land used for primary production", as follows:

"Land used for primary production" means land whose dominant use is:

- a. cultivation, for the purpose of selling the produce of the cultivation, or*
- b. the maintenance of animals (including birds), whether wild or domesticated, for the purpose of selling them or their natural increase or bodily produce, or*
- c. commercial fishing (including preparation for that fishing and the storage or preparation of fish or fishing gear) or the commercial farming of fish, molluscs, crustaceans or other aquatic animals, or*
- d. the keeping of bees, for the purpose of selling their honey, or*
- e. a commercial plant nursery, but not a nursery at which the principal cultivation is the maintenance of plants pending their sale to the general public, or*
- f. the propagation for sale of mushrooms, orchids or flowers.*

The proposed site is primarily used for the cultivation of produce and grazing cattle and sheep, it is cropping land. The Objector's property is virtually 100% arable cropped on a rotation basis and recently harvested producing >200 tonnes of oats. Further, the surrounding land is comprised of active and productive farms. Consequently, in interpreting productive land

based on the bare definition in the *Land tax Management Act 1956*, the land in question is productive.

Concerns that change of land use would lead to losses in income of farms (some estimated at \$250,000 per annum for the 40 year life of the Project) through reduced local economic inputs, were raised (EIS pp 82,88) which the Proponent claims were addressed by SLR through an Agricultural Impact Statement which found negligible impacts. The Objectors dispute this conclusion. The issue is of such fundamental importance that disagreement must be fully explored and resolved.

A report prepared by Tremain Ivey Advisory, Agricultural Consultants for the Glanmire Action Group examined the Agricultural Impacts of Proposed Glanmire Solar Farm. The report found the proposed land is “capable of supporting an intensive mixed crop and livestock farming system” (Appendix E, pp. 4), reinforcing the productive nature of the land. Further, an analysis of financial returns from alternative sites, in areas with lower agricultural production potential, compared to estimated financial returns from agricultural production on the Solar Project area demonstrates the unsuitability of the proposed site for alternate purposes (Appendix E, pp. 5).

Overview - Whole Farm Budget - Average Year

Budget Overview	
Income	\$228,714
Operating Expenses	126,664
Operating Return	102,050
Non Operating Costs	12,750
Total Cash Outgo	126,664
Net Cash Surplus/Deficit	\$102,050

Overview - Whole Farm Budget – NSW Far West

Budget Overview	
Income	\$4,512
Operating Expenses	1,868
Operating Return	2,644
Non Operating Costs	250
Total Cash Outgo	1,868
Net Cash Surplus/Deficit	\$2,644

In comparing the two, the report concluded “the annual gross income for the Solar Project site is \$228,714 compared to \$4,512 for NSW Far West”, less than 2% of the proposed site

area (Appendix E, pp. 5). The productivity of the proposed site for farming purposes cannot be understated, and it renders the site entirely unsuitable for alternate purposes.

The viability and land use practices of adjoining farms are also going to be adversely affected by the heat effect of solar production where the adjoining lands are used for grain cropping (both production and harvesting sowing and for feeding stock). Mr McMahon also notes that – “d) vi. Weed management is inadequate and there is no mention of the practicality of weed control under a solar array with limited access for machinery. There is no plan around this. (Page 31 – section 5.12). Further, the Proponent has not demonstrated how a change in land use from cropping to solar industry with some grazing has been included in the model. This will over time lead to soil compaction, less absorption and higher run-off.

9. Impact of fire risk and insurance risks: if the solar farm does not implement fire prevention and fighting measures which ensure that fire cannot spread either from the facility to adjoining properties or from adjoining property, damaging the facility, the implications of costs and loss and difficulty in obtaining appropriate public liability insurance for a reasonable premium are unreasonably imposed on the neighbours.

Setbacks are an essential requirement to address risk of fire and flood damage, in particular, and assist in mitigating adverse visual impacts. The setbacks suggested for this project at 30m are inadequate, particularly where they purport to utilise Brewongle Lane, which is a public road, and more outrageously where they actually use parts of the adjoining farmlands. The zoning requires a minimum setback of 50 m for residential rural development and Elgin itself and its consultants have voluntarily provided a 300 m setback along the northern frontage from the highway, which the Assessment Report comments ... “Views of the project for vehicles travelling in both directions along the Great Western Highway would be largely shielded due to the 300 m setback ...” (para 101).

There are various opinions about required setbacks which should be a minimum 100metres for an asset protection zone on the site, with a further 300m fuel reduction zone, although our client will produce a scientific study which indicates that impacts require up to 800 m setback. Neighbours should be indemnified and/or compensated for fire escape from the solar farm, and for loss of farm income.

Our Objection identified the increasing occurrence of fire and risks associated with solar farms. We repeat some of these that are material as the significant transfer of risk and liability from the solar farm to the adjoining farm owner can have catastrophic impacts. In particular the neighbours could be liable for total destruction of a facility, projected to cost over \$150 million to build, for which coverage is not available.

In a 2022 report titled ‘Hidden Danger: Why solar farm risk could be greater than you think’, Firetrace International concluded the risk of solar farm related fires is potentially grossly underestimated “due to under-reporting and a lack of available data”, while, moreover, “a number of studies have indicated that solar fires are on the increase. One US study found that solar system fires had tripled over a three-year period, while data from Australia showed that there had been a six-fold increase in the period 2018 to 2020” (Firetrace International, pp. 14). The US study Firetrace International cites is a data set released by US Fire Administration that found solar farm fires more than doubled from 2015-2018 (Firetrace

International, pp.6). They additionally cite Fire and Rescue New South Wales (NSW) data that shows a six-fold increase in solar panel fires attended by firefighters from 2018 to 2020 (Sydney Morning Herald, ‘The irony’s not lost on me’: Solar panel safety device led to 500% rise in rooftop fires, 2021).

The UK’s BRE National Solar Centre researched, in detail, eighty potential PV-related fire incidents in their 2018 report ‘Fire and Solar PV Systems: Investigations and Evidence’.

Among their conclusions, are two important, relevant points:

- BRE National Solar Centre found that 72.5% of solar farm fires were caused by photovoltaics, and 37.9% of those fires were “serious fires”, denoting fires that were “difficult to extinguish and spread beyond the area of origin” (BRE National Solar Centre, pp. 20).
- Researchers were led to “strongly suspect a degree of under-reporting, especially amongst solar farms and domestic thermal events that were resolved by a solar installer/maintenance engineer” (BRE National Solar Centre, pp. 32).

Severity of fires	PV involvement			Total
	Caused by PV	Involving PV but not caused by	Cause unknown	
Serious fires	22	15	1	38
Localised fires	27	1	5	33
Thermal events	9	0	0	9
Total	58	16	6	80

Table 2: Summary of severity of fire and PV involvement

These reports and data sets indicate a serious, and growing, fire risk posed by solar farms using photovoltaic systems. This risk, therefore, calls for extensive mitigation measures imposed by the Proponent to ensure surrounding land is protected where a proposal is considered by the Consent Authority to be suitable for consent, and such measures must be included in any conditions of consent.

However, the EIS states – “The land is not bushfire prone, standard setbacks are included in the Development footprint.” (EIS p30).

We contacted a fire consultant, Graham Swain, the director of the Australian Bushfire Protection Planners who completed an initial review of the Scoping Study and reports in July 2022 (which were not materially changed in the EIS –(which was attached to the Objections as Appendix G1 &G2). With over seventeen years of experience, he raised numerous concerns on the suitability of the proposed site, including:

a 20 metre wide Defendable Space within the Solar Farm was suggested measured from the perimeter security fence to the panels. There is a 4m wide access road to the perimeter of the Solar Farm. He concluded that beyond the security fence and within the site there must be a 300 metre wide fuel reduced buffer zone

managed by the property owner specifically managed to reduce the bushfire fuels around the Solar Farm, which is the responsibility of the landowner. The management of OAPZ reduces the fuel loads and the intensity of the grass fires and spotting spread .

- The Glanmire Solar Farm proposal occupies the entire site, except for a small area in the northern area and southern tip of the site. The proposal includes a 10-meter-wide Asset Protection Zone to the perimeter of the solar panels. The 10-metre Asset Protection Zone recommended by the NSW Rural Fire Service (Planning for Bush Fire Protection, s 8.35, Wind and Solar Farms) does not adequately address the bushfire risk to the Solar Farm. It will not prevent a fire from escaping from the solar farm onto the adjoining properties. This will impose the need for adjoining property owners to implement measures including fire breaks around the solar farm.
- The external risk to the Solar Farm will be from a fire spreading across the adjoining property that results in flame contact on the panels and ember spread which will ignite the vegetation within the Solar Farm. The operation of the adjoining properties for cropping means the risk from a fire that occurs in a crop (or standing stubble) cannot be mitigated without maintaining the height of crop to less than 100mm during the bushfire danger period. This will lower the financial return from the cropping land. It is also likely to increase the legal liability of the landowner for not meeting the requirements of s 63(2) of the *NSW Rural Fires Act 1979*.

Mr Swain also notes that recently approved solar farms in the ACT were located within large land-holdings where the owner manages the rural activities around the solar site to reduce risk. He states that solar farms are more appropriate in these larger sites.

In a further report to the Glanmire Action Group Mr Swain also addressed the potential for fires to break out on neighbouring properties, the speed at which fire spreads and can overcome or outrun fire fighters, suggesting aerial water bombing is the safest method of control , spot fires and the risk that planting along the boundary of the solar farm combined with proposed screening will in fact increase the level of radiant heat on the arrays and increase the risk attack from burning bark and leaves (see Objection Appendix G2).

Mr Burge also comments upon the failure of the EIS to discuss bushfire risk to the solar farm infrastructure emanating from adjoining agricultural land and notes the maximum Public Liability Insurance on the market only provides \$20million coverage, well below replacement value of the solar farm and supply loss obligations to its customers. He further recommends a requirement that any approval conditions require the Proponent to indemnify adjoining owners for damage caused by natural or accidental bushfire emanating from their properties.

The fire risk particularly when added to the insurance problem requires very considerable measures to be taken to mitigate the potential for disasters. We have looked at a number of possible guides for the design and operation of fire facilities for renewable energy. The Victorian CFA guidelines represent best industry guidance and cover both construction and

operations. The guidelines include requirements for access roads to have passing lanes each of 600 m, fuel load within the site to be maintained under 100 mm in peak fire season, water tank requirements of at least 288,000 L for batteries and multiple water tanks for array. These guidelines are accessed via the following website:

www.cfa.vic.gov.au.

Accordingly, the 10-metre-wide Asset Protection Zone recommended by the RFS will not prevent fire from escaping from the Solar Farm onto adjoining properties. This will introduce the need for adjoining property owners to implement measures, including fire breaks, around the Solar Farm.

The consultant stated in his professional opinion that 'the location of the Glanmire Solar Farm is poorly chosen. The preferred location is within a larger landholding, used for grazing, and where the risk to the Solar Farm can be reduced through management of the area surrounding the Farm. This management is undertaken by the property owner (or operator of the Solar Farm) – either by intense grazing or slashing when the fuel hazard is higher than 100mm and exceeds 70% cured.'

He also raised other matters to be considered:

1. A fire within the panels will create toxic fumes and toxic run-off,
2. Fire-fighting access should be provided in the perimeter security fence, a larger site would be better suited to accommodate this provision,
3. Transformer explosion creates the danger of fire escape from the Substation compound
4. Battery Storage, including:
 - Noise pollution,
 - The impact of bushfire on Battery Storage Cabinets,
 - Fire spreading from a fire in the Battery Storage Cabinets and escaping onto adjoining properties.

In addition, there must be mitigation to ensure that after a fire, toxic pollution and contaminants will not be washed into watercourses or neighbouring properties. This risk will be exacerbated with the removal of dams.

10.Hydrology: the earthworks and potential removal of dams, watercourses and vegetation on the property increase the risk of run-offs adversely affecting adjoining properties particularly given the significant run-off due to the physical concentration of the panels and the diversion of water away from existing drainage to the layout of the solar panels and parks and roadways.

The site for the proposed solar farm is impacted by several unmapped water courses in addition to the creeks and dams on the property. These have been integrated over decades with the adjoining properties and more distant Salt Water Creek, and together provide runoff and storage capacity for the site and surrounding properties which are integral to supply for farming practices and also provide protection and removal capacity in high volume storms and rain events.

The EIS states “Two unnamed 2nd order streams and six 1st order drainage lines are within the Subject land” and “eight dams”(EIS p23); and also “...hydrological catchment models show the proposal would not impact local hydrological function or exacerbate erosion or flooding to any substantive degree” (EIS p 30); and “... hydrological assessment has identified flood behaviour on the subject site in relation to the proposed infrastructure.” (EIS pp61,203 ,204.).

Even with these existing water courses and storage, rain events produce pooling and runoff as the land does not have the capacity to rapidly absorb large falls of water. The Scoping Study (page 28) noted that the site has “poor drainage” and “The granite based parent material is susceptible to erosion and the impacts of this limitation are evident across the broader landscape where extensive creek rehabilitation works undertaken by landowners continue to be implemented to restore gully erosion.” Further - “The design of the solar farm layout will need to ensure off-site hydraulic impacts do not occur over time.” And “The EIS will need to demonstrate how solar farm infrastructure interfaces with drainage features over the development site. This will require both hydrologic and hydraulic modelling to quantify predicted impacts.”

The Indicative Site Layout and the Development Footprint which accompanied the EIS (as Appendix F1 and F2) did not show the existing waterway traversing the site, and 2 dams, to the south of the main Waterway Crossing and do not show the existing dam to the north (as depicted on Annexure F1 to this Objection).

Mr McMahon considered, in Annexure C to our Objection, that the long term climate data for the site, from Bathurst Airport 1988 to 2022 is insufficient, suggesting – “The patched point data set with interpolated records dating from 1889 .. would be preferable ...The result is around a 100mm difference in annual rainfall.” The hydrology is misconceptualised with the Fish River flowing to the west not the east as suggested.). He also found that the hydrology does not adequately characterise stream order, drainage or impacts on-site and downstream and there is no conceptual model for groundwater including water bores and water tables providing an inadequate base for a risk assessment framework and soil erosion potential, the impact of removal of dams, groundwater and potential downstream impacts.

We submit (see Objection Appendix F2, Calare Civil Pty Ltd) that the Proponent has not adequately taken into account the impacts of proposed earthworks levelling the site and removing watercourses and dams, and that the Proponent’s proposed mitigation strategy, providing trenches under the panel lines, cannot be guaranteed to control waters runoff and erosion. Whilst it may be accepted that the same quantity of water covers the site whether the use is farming or solar, it is submitted that it is indisputable that the concentration of panels must lead to the concentration of flows and runoff and that over time, perhaps short time frames in the case of heavy storm events, directed flows will find and cut new flows and erosion with unknowable consequences for adjoining properties, particularly if dams are no longer collecting and directing flows. Trenches may be acceptable mitigation where a project is otherwise acceptable, but the risks of unknown adverse impacts require rejection of the proposal to facilitate the paramount objectives of protection of productive land and rural activities and uses. Otherwise, the Proponent should retain the current dams and build a

channel and disposal facilities from the ends of any trenches under the solar panels to satisfactorily remove and control any flows.

Mr Burge noted that downstream properties are adversely impacted by increased water flow, erosion and bank instability and removal of dams and that it would be in the public interest to require that the Proponent contain all increased water flows on the site by retention (Objection Annexure B).

Given the uncertainty associated with changes to hydrology a new study should be undertaken to ensure that all changes involving human, velocity and direction of water flows is fully understood and mitigated.

11.Social and health issues: The consent authority must in the evaluation of the proposal (pursuant to section 4.15 of the EP&A Act) conclude that the likely adverse environmental, social and economic impacts of the development and the unsuitability of the site, public interest requires that the proposal be rejected.

The uncertainty associated with the proposal and its potential impacts over 40 years or longer, the change of character of the area from rural residential and production to industry and the potential that this project will be a precedent for other similar projects to proliferate cause great anxiety to all of the neighbours which impacts not only on their amenity and ability to use and enjoy their properties but also their health and mental well-being in an unreasonable, unnecessary and adverse manner.

The NGH Submissions Report (P82) accepts that there are adverse impacts being seen in the community.

12.Remediation guarantees: Given the poor history of successful remediation of industrial sites, particularly in rural and regional mining sites, there must be sufficient guarantees and funding reserved to ensure remediation at the earlier of the end of operations or 40 years from approval, particularly if the NET Zero policies create ongoing demand for renewable energy, there will be a risk of extension of the term.

The EIS made an argument that the BRLEP requirement to “maintain and enhance the natural resource base ... “is satisfied by the “commitment to maintain soil capacity after decommissioning” (clause 2.2.1) (in 40 years or more) and by “committing to planting and best practice water crossing design and rehabilitation”, that “the natural resource base is likely to be enhanced.” is a stretch at best and not convincing. The statements conflict with the later statement that - “The Project has committed to retain agricultural production values, after the Project is decommissioned.” (EIS p15). Further, the statement that “No fragmentation or alienation would result ... “ignores the 40 years plus separation of the site, surrounded by a 2m steel fence topped with barbed wire! commitment to return the site to its pre-solar farm condition is ambiguous and limited and does not extend to any sub-station or transmission equipment (EIS page xxi-xxii and discussion). It is not appropriate to approve the solar farm unless these matters are also dealt with in the application and assessment. There must be an appropriate security arrangement to ensure funding will be available and utilised for full remediation at the end of the use of the project.

Rehabilitation has become an essential element to balance development which has adverse environmental or social consequences, however the experience in relation to remediation has been poor in many cases because insufficient guarantees and supervision have been put in place.

The Proponent should provide assurances to secure the rehabilitation and remediation of the site after the 40-year, or earlier, lifespan of the solar farm. There also must be protection if the site is abandoned early eg in the case of hail or fire or other event which damages the facility or halts operations (especially as the proponent does not have significant assets). This is to ensure future agricultural land uses are supported and any long-term impacts of the solar farm on the land are mitigated.

The EIS states “After its operational life, the infrastructure would either be upgraded or decommissioned. The decision to refurbish or decommission would be made by the Proponent based on the economic opportunity at the end of life ...” (EIS p54). There is currently no guarantee of the many statements that the solar farm will be removed or that the site will be restored to its former rural state. Further, even if the remediation occurs the substation and transmission equipment including poles (both on and off-site) are excluded and below ground infrastructure is only to be removed to a depth of 500mm (EIS p7) with no detail provided.

Mining in NSW has been a major industry but with a record of disturbing rural land and environments and a very mixed experience of remediation successes, however current practices provide a compelling set of lessons and guidance which should be applied to solar farms. Amendments to the *Mining Act 2016 (NSW)* that commenced in 2021 require mining lease holders to avoid harm to the environment, rehabilitate land and water as soon as reasonably possible post land-use, commence a rehabilitation risk assessment and establish methods to prevent or minimise risks and undertake an annual rehabilitation report to explain progress of rehabilitation (New Standard Rehabilitation Conditions on Mining Leases, NSW Government). Further, the *Mining Act 2016 (NSW)* stipulates a rehabilitation security bond must be provided before activities begin. This ensures there is financial security in place to fund necessary remediation. While solar farms are not legally bound by these government regulations, they achieve a sustainable final land use following the completion of development and should be considered.

We argue that in line with these principles, the Proponent must provide assurance of future land remediation through four components:

- Work required – the Proponent outlines in detail the work required and the impact on the land in conjunction with future rehabilitation needs to convert the land back to its prior, agriculturally productive state.
- Time frame – the Proponent specifies not only a time frame for when the land will be used for a solar farm, but an approximate time frame for remediation efforts.
- Guarantee of funding – the Proponent guarantees funding as security for remediation and rehabilitation of the proposed land.

- Enforcement mechanism – the approval, (if any) conditions must establish and require the Proponent to submit to an enforcement mechanism to ensure assurances are followed closely, including both incentives and penalties to comply and consequences to deter ineffective remediation.

The 2022 revised Large-Scale Solar Energy Guidelines, in Clause 5.5, discuss decommissioning and rehabilitation of large-scale solar farms. The Guidelines state ‘the operational life of a large-scale energy project is likely to range between 20 to 30 years’. However, the Glanmire Solar Farm is suggested to have a lifespan of 40 years which immediately exceeds the average life of a solar farm referred to in the Guidelines. Consequently, the impact is likely to be more disruptive, and more extensive.

The EIS informs the reader that there will be – “Approx 128,000 modules ... Steel poles would be used to support the solar modules and the mounting system Where possible, driven-pile foundations would be used, ... where the soil is not compatible with driven-piles, helical or screw piles may be used. This may require additional processes such as pre-drilling and grouting if bedrock is encountered.” (EIS p35). Further “Key elements of decommissioning would include – Some fencing would be removed. The removal of fences would be coordinated with the landowner and their preferences.” (EIS p55). The process would hardly be as simple, fast and inexpensive as has been made out.

Clause 5.5.1 of the Guidelines suggests the owner of the solar energy facility should be liable for decommissioning and rehabilitating the land, but that this should be reflected in an agreement with the landowner. In this case the operator is to be a long term lessee of the site, is an uncapitalised subsidiary of an Irish company and although the solar farm may be valuable while operating, the assets will be essentially worthless at the end of operations, and a cost to remove and dispose. The agreement *may* also allocate assurances to fund decommissioning, with evidence that the applicant can afford to fund decommission of the site. The 2022 Guidelines permits decommissioning and rehabilitation obligations to be determined between the Proponent and the landowner, and therefore facilitates less stringent requirements to return the land to its original state. Based on the emphasis the 2022 Guidelines places on environmental care and upkeep, to permit the Proponent and landowner to determine rehabilitation and remediation between themselves compromises fundamental sustainability values and further impacts surrounding neighbours.

13. Use of public roads: The EIS states that the subject land comprises Lot 141 DP1144786 plus “Two Council administered roadways and road reserves: Great Western Hwy, zoned SP2 Infrastructure under the BRLEP and Brewongle Road”. (EIS p23).” However zone SP 2 infrastructure does not permit use as a solar farm. Brewongle Lane is used to support farming activities on the surrounding farms along its length, including access for heavy equipment for drainage works, clearing, planting and harvesting and transport of suppliers to the farms, delivery of water and other requirements and for transport of waste and agricultural crops and animals from the farms. It already supports this heavy traffic and is not suited to further construction and industry activity. It is not suitable for use as a setback given the risks of a

heavy vehicle accident or lack loss of control. Council was asked on October 22 to commit to seal Brewongle Lane to the site access point but does not appear to have done so (EIS p96).

Mitigation Requirements and Community Benefit Payments

In the event that's the consent authority dismisses the objections and determines to approve the Proposal, the following mitigation conditions must, as a minimum, be required. The principles should be that solar generating facilities should be located in a REZ, unless social licence has been granted by the community and that costs of mitigation should be borne by the party benefiting from the activity in this case the proponent or operator rather than shifting costs and consequences, such as for insurance, to neighbours:

1. View lines from existing residences and future residential sites identified in further negotiations with neighbours must be protected by removal of any proposed solar panels in direct site lines as has already been accepted and proposed by Elgin in the southern section of the site.
2. All screening Planting for must be mature plants and trees (at least 5 years growth) approved by neighbours in further negotiations prior to issue of any approval and planting must be regularly inspected at least quarterly and any dead or diseased plants must be replaced within one month of notification by neighbours or Council to the operator.
3. There must be a minimum 30 metre set back for all construction and solar panels from all boundaries to assist in fire protection and prevention and the operator must provide and maintain adequate fire detection and suppression equipment on site to the satisfaction of the Rural Fire Service and have regular inspections of all fire fighting equipment on the site. The requirements set out in the Victorian CFA guidelines should be applied to ensure an independent assessment of setbacks and other requirements.
4. The operator must obtain and maintain public risk insurances including for damage to any person or property from fire for a minimum the sum of \$200million (or higher amount necessary to cover catastrophic loss and associated loss of profits and rapid rises in electricity wholesale prices), adjusted annually for inflation, naming the neighbours from time to time as insured parties and any contractors, and on terms and conditions approved by direct neighbours. Prior to commencing construction the Proponent must agree and provide adequate compensation to neighbours for any loss of productive land and reduction in farm income arising directly or indirectly from any measures required to reduce or manage fire risk and any conditions to the insurance relating to restrictions on farming practices.
5. The operator must prior to commencing any work on the site execute a deed indemnifying the neighbours (owners at the time and their contractors or tenants) from time to time for any loss or damage caused by any operation or event (including fire) on the site and releasing the neighbours from time to time for any loss or damage occurring as a result of any activity or event (including fire) emanating on any neighbouring property and must not transfer the site or part with possession or control of the site or any part of their site without previously obtain execution of a similar deed by the incoming party.

6. Prior to commencing any earthworks the operator must obtain the approval of Council to the works and satisfy Council that the proposed works, including any levelling, filling in dams or watercourse and any trenches and drainage will not result in any inundation or flows to any adjoining property greater than existing flows. Mr McMahon describes the failure of the EIS to assess soil protection resources on site as a “major limitation” of the ASLR report (Appendix C, 3j). The Proponent must retain all existing dams and watercourses on the site and build a channel and disposal system for all runoff from the solar panel arrays and any trenches collecting such runoff.
7. Prior to commencing any work on the site the operator and its parent company must execute a deed with the Department of Planning agreeing to remediation of the site as outlined in the Remediation section above, such work to be completed to the satisfaction of the Department within 6 months of the earlier of cessation of generation on the site or 40 years from the approval, failing which the Department may complete the works at the expense of the operator and landowner, and providing satisfactory guarantees and security for such obligations.
8. Council is to be engaged at the expense of the operator for the entire period of operation of the farm to monitor the operations and compliance with approval conditions with authority to enter the site and at any and to give binding directions to the operator to take any remedial, maintenance or corrective actions required by Council.
9. The operator must appoint a community reference group including at least 2 adjoining owners which will meet at least each 6 months during the term of operations to consult on any issues relating to operations on the site and must annually provide funds , to be agreed with the neighbours and Council of annual revenue of the solar farm for expenditure as determined by the reference group for the benefit of the Bathurst community. We note that the most recent draft guidelines from the Department suggest the community benefit some should be calculated at \$850 per megawatt which would equate to \$45,000 per annum, and should be indexed.
10. Any default by the operator for the time being in relation to any of the conditions of approval shall be unequivocal grounds for suspension of the operations on the site on a direction of Council to suspend.

Conclusion

We strongly object to the proposed development. The uncertain and confusing governance framework that oversees the consideration of renewable energy projects renders any approving decision by a consent authority unfair and inappropriate, and in conflict with the public’s interest.

The site is wholly unsuitable for development of a solar farm. Not only is the proposed energy production insignificant, but it creates unnecessary conflict with land uses, scenic quality and landscape character of surrounding land. It unreasonably impacts the amenity and use of neighbouring properties and could limit the future growth and productivity of the City of Bathurst in the future.

Given the Government's Policies for avoidance of conflict between regional and rural lifestyles and productivity and regional growth and alternate uses including industrial generation, the proposal should be rejected and reconsidered in a Renewable Energy Zone or a substantially more appropriate, yet close, alternate location for the proposed development, with less dramatic conflict and adverse impacts to agricultural productivity.

Further, the Proponent's required community consultation has been wholly unsatisfactory throughout the entire process and has not only impeded the directly impacted neighbours' ability to provide the feedback they are entitled to give but fails to fulfil the clear obligations under legal planning frameworks.

Whilst the SEPP probably creates a capacity to approve a solar farm, the discretion and obligations on the consent authority must be exercised in accordance with the EP&A Act, s 4.15, SEPP S 2.42(2), (3) and other requirements. In this case, these requirements clearly outweigh and overwhelm the proposed for approval in the Assessment Report.

Therefore, we further object, on behalf of our clients, to the Proposal which should be rejected by the consent authority.



S J Governance Services and Solutions Pty Ltd
An incorporated legal practice

1: Selected: Daily solar exposure

Data about

Type of data Observations Statistics

Daily Monthly Daily Monthly

Daily solar exposure data and graphs for a selected year. Data download for one or all years.

2: Select a weather station in the area of interest

Matching towns (click one to select it)

Bathurst, NSW, 33.42°S, 149.58°E

Bathurst, NSW, 32.93°S, 151.57°E

Bathurst Island, NT, 11.60°S, 130.31°E

Bathurst Island, WA, 16.04°S, 123.53°E

Nearest Bureau stations (click one to select it)

Only show open stations (may no longer report all data types)

063239 Bathurst Regional Council Enviromon Base NSW (0.0km away)

063287 Bathurst Stanley Street (Macquarie River NSW (1.1km away)

063005 Bathurst Agricultural Station NSW (2.4km away)

063291 Bathurst Airport AWS NSW (6.9km away)

063306 Bathurst (The Rocks) NSW (16.1km away)

Data available for the selected station



17 October 2023

Attention: Ewan Chandler
Newton Rural Trust

[REDACTED]
Glanmire NSW 2795

[REDACTED]
BY EMAIL

Dear Ewan

Re: Independent review of the Soil, Land and Agricultural Impact Assessment for the proposed Glanmire Solar Energy Project

1. I refer to the written instruction from yourself to undertake an independent review of the Soil, Land and Agricultural Impact Assessment conducted by Minesoils Pty Ltd (Report Ref: MS-103, August 2023) for the proposed Glanmire Solar Energy Project. The objective of this review is to provide you and the planning authority with an assessment of the adequacy and accuracy of the Soil, Land and Agricultural Impact Assessment compared to industry resources and recognised guidelines, namely the:

- a) Soil Landscapes of the Bathurst 1:250,000 Sheet, Kovac M, Murphy BW, and Lawrie JA (2010).
- b) Land and Soil Capability Mapping for NSW, Department of Planning Industry and Environment (2021).
- c) Large-Scale Solar Energy Guideline, Department of Planning and Environment (2022)
- d) National Committee on Soil and Terrain (2009), Australian Soil and Land Survey Field Handbook.
- e) Guidelines for Surveying Soil and Land Resources, McKenzie NJ, Grundy MJ, Webster R and Ringroase-Voase AJ (2008).
- f) The Australian Soil Classification, Isbell RF and National Committee on Soil and Terrain (2021).
- g) Soil physical measurements and interpretation for land management, McKenzie N, Coughlan K, and Cresswell H (2002).
- h) Soil chemical methods, Rayment GE and Lyons DJ (2011).
- i) What surface soil is that? 2nd edition Extension Brochure, Lawrie J, Murphy BW and Packer IJ (2002).
- j) Soils and sustainable farming systems in soils: Their properties and management, 3rd edition, PEV Charman and BW Murphy, Lawrie J, Murphy B, Packer IJ and Harte AJ (2007).
- k) The Land and Soil Capability Assessment Scheme, second approximation, NSW OEH (2012).

2. The scope of work is to provide an independent review of the Minesoils assessment namely:

- a) Regional context.
- b) Soil survey methodology.
- c) Soil survey findings.
- d) Land and soil capability assessment.
- e) Level 3 assessment.

3. I am suitably competent to undertake this independent review being a Certified Environmental Practitioner with expertise in soils and geomorphological assessment with over 25 years' experience. I am well qualified, holding an undergraduate degree in Applied Science (Agriculture) specialising in soils and land management, a graduate diploma (Water Management) specialising in geomorphology and hydrology, and a master's degree (Environmental Management) specialising in hydrogeology. I am an active member of the Environmental Institute of Australia and New Zealand, the Australasian Land and Groundwater Association, and Soil Science Australia.

3. Background

The proposed Glanmire Solar Energy Project is located at 4823 Great Western Highway Glanmire NSW with a real property address of Lot 141 DP 1144786. The project area is around 186ha in area with an elevation range of around 760 to 800 mAHD, with a general south west aspect. The landscape is gently undulating rises with slope gradients generally < 10%. Soils are mapped as deep Brown Soils and Red and Yellow Earths (Chromosols) and deep Solodic Soils (Sodosols) overlying granite parent material (Kovac et al 2010). From a review of the available historical aerial photography and satellite imagery (1954-2022) and discussions with yourself the project area has been rotationally farmed since at least the 1950s with a mix of pasture, fodder, and grain crops. The project area is mapped as being Class 3 and 5 Land and Soil Capability (DPIE, 2021).

4. Results

a) Regional context.

- i. The long term climate data is inaccurate for the project area as it is taken from Bathurst Airport with data records only from 1988 to 2022. The patched point dataset with interpolated records dating to 1889 for Glanmire would be preferable to use. The result is around a 100mm difference in annual rainfall. (Section 2.2 page 15).
- ii. There is no characterisation of hydrology. As the hydrology is not adequately characterised this can have significant impacts not only for planning purposes but also for the agricultural, ecological, and construction function within the project area and downstream. (Section 2).
- iii. No conceptual model has been offered for groundwater. There is no mention of the nearby and down gradient registered stock/domestic and water supply water bores (GW031913 and GW802908). This is inadequate to assess the potential interflow that can occur, deep drainage, or potential high-water tables from a change in land use to a solar energy project. This is inadequate to base a risk assessment framework on (Section 2).

b) Soil survey methodology

- i. The soil survey methodology is based on an integrated free survey by reference to (McKenzie et al, 2008). This hybrid method of soil surveying relies heavily on the experience of the soil surveyor to develop a model based on existing mapped data during the survey which is rarely communicated leading to fact and opinion being blurred (McKenzie et al, 2008). Although this hybrid method is low cost and efficient it can lead to inaccurate assessments owing to inexperienced samplers (if that is the case) and the intensities of sampling are rarely adequate for a precise and accurate survey (McKenzie et al, 2008). It is unclear who conducted the soil survey for Minesoils as there are no names on the soil log sheets nor is it stated in the report; however, it can be reasonably assumed a less experienced surveyor may have conducted the survey owing to the following inaccuracies and inadequacies.
- ii. Further to the above if integrated free surveys are not conducted by adequately experienced and qualified soil surveyors the catena and toposequences of a soil landscape can be misinterpreted, noting that Kovac et al (2010) suggests there is only some degree of relationship between soil and topography in the Bathurst 1:250,000 sheet.
- iii. In summary Minesoils offer no justification for the survey methodology and how it best fits with the available data for the project area or experience of the soil surveyor. This is a major limitation of the Minesoils methodology.
- iv. The soil survey methodology relies on data collected by SLR Consulting Australia Pty Ltd (Report Ref: 630.30108.001, September 2022) in an Agricultural Impact Assessment. Although it is not clear in the Minesoils report, the SLR soil sample points were revisited, the profile described, and the original samples collected by SLR were used in the soil classification for that revisited site. It is noted that no GPS coordinates were supplied by SLR so it is reasonably assumed a visual estimation was used to locate these sample points. This is noted by the varied (significantly varied at times) landform description, profile description, and classification of these sites which has led to the SLR samples being used that in some cases do not align well with the soil profile or landform described by Minesoils. It is my professional opinion that the six sample points sampled by SLR then revisited by Minesoils should be disregarded from the survey as the assumption of a factual correlation between the sites has been made when in practical terms it is an opinion that lacks scientific basis. No justification has been offered for this part of the methodology.
- v. On sampling it appears the laboratory results for sample point 14 have been incorrectly summarised and the results possibly have been misinterpreted. I am assuming based on the results the subsoil and topsoil samples have potentially been mistakenly mislabeled. This is another sample point that cannot be relied upon.
- vi. No subsoil samples were taken for sample points 16A to 22A where these have been classified based on the assumption of chemical analysis or dispersion testing on the subsoil. No justification for not sampling the subsoil has been made nor how Minesoils could reasonably classify the soil without chemical analysis nor dispersion testing as required by the The Australian Soil Classification. Again, fact and opinion have not been differentiated here and these seven sample points cannot be reasonably used for soil classification and should be disregarded from the assessment. This is a major limitation of the soil classification and findings of the Minesoils assessment.

- vii. Given up to 14 sample points cannot be relied upon for soil classification this reduces the number of reliable data points for the 186ha project area to just eight.
- viii. Considering the spread of the sample points and unjustified concentration of them in the northern half of the project area, this leaves only two reliable sample points in the southern half. Seeing the 'as mapped' lower land capability classed land is in the southern half of the project area this requires further investigation and assessment. This is a major limitation of the Minesoils assessment.
- iv. Due to the narrowly defined objectives in the Minesoils assessment and inadequate quality assurance and quality control of the sampling the soil survey was selective in data collection and presentation and therefore cannot serve well for risk assessment. Because of the sparse and irregular reliable sampling over a relatively large area, only general conclusions are able to be drawn by Minesoils, for they are based on a very limited amount of data. Based on the departure from standard and best practice and no justification for the investigation methodology, nor clear delineation of what is fact and opinion, the findings of the Minesoils report cannot be relied upon without more data and scientific rigour to justify their findings.

c) Soil survey findings

- i. The findings of the soil survey rely on a compromised dataset that includes but is not limited to the inadequate soil survey methodology as mentioned beforehand but also the discrepancy between the field texture results and the laboratory grain size analyses conducted (see Appendix 3 of the Minesoils report). Soil texture in the field has an interpretive nature and is highly subjective, where laboratory grain sized analysis is quantitative. When comparing the field results to the laboratory results the textural interpretation (to the texture triangle in the Australian Soil and Land Survey Field Handbook) they are at times quite different. It is well established that under drier conditions many soils are field textured lighter than what may be the case, especially for inexperienced samplers. This goes on to impact some of the Land and Soil Capability Assessment criteria as they rely upon accurate soil texture. It is puzzling for example why Minesoils have not used the grain size analysis when considering factors in assessing wind erosion hazard where clay content is critical and have chosen to use the field texture instead, giving a lower land and soil capability. Again, the lack of differentiation between fact and opinion is a major limitation of the soil survey findings.
- ii. The soil survey and land and soil capability assessment also rely upon LIDAR slope analysis (Section 3.2.4 page 46) however no data is presented or referenced. Assuming Minesoils have relied upon the slope analysis presented by SLR, this data only has a scale of 10m AHD meaning it cannot be reasonably used to predict slope classes of less than 10 m AHD giving a lower land and soil capability for water erosion for example. Given much of the project area is very gently inclined the reliance on a not readily referenced and coarse scale dataset is a major limitation of the report.
- iii. In summary, the findings of the soil survey cannot be relied upon owing to a compromised methodology, poor sampling quality assurance and control, lack of scientific rigour to justify opinions, and the selective use of data.

d) Land and soil capability assessment

- i. Water erosion – water erosion assessment relies upon an accurate slope classification. Minesoils have used a dataset that is not referenced and is assumed to

be coarse scale meaning the slope classification is possibly gentler than what is presented. This would place most of the project area as Class 2 or 3.

- ii. Wind erosion – wind erosion assessment relies upon the clay content of the surface soil and average annual rainfall. A field assessment of soil texture 'surface soil texture' has been used by Minesoils in the assessment of wind erodibility and has been mischaracterised as evidenced in the laboratory soil grain size distribution analysis. Most surface soils have more than 13% clay content meaning they are likely Class 1, 2 or 3.
- iii. Structure – relative to the project area the structure assessment relies upon an accurate assessment of the arrangement of soil grain sizing and organic matter and the degree of sodicity. Given the lighter field texture used instead of the more accurate grain size analysis, the soils in the project area are likely Class 1, 2 or 3.
- iv. Acidity – acidification assessment relies upon the great soil group, surface soil texture, and geology. Given Minesoils have disregarded the grain size analysis for clay content for their assessment they have mischaracterised the conditions in the project area. Most surface soils are heavier textured than reported meaning they are likely Class 3.
- v. Salinity – The project area is non-saline and is likely Class 1.
- vi. Waterlogging – waterlogging assessment relies upon the typical waterlogging duration, return period, and typical soil drainage. The waterlogging assessment should also rely on information contained in soil landscape reports to determine the waterlogging duration and return period as outlined in The Land and Soil Capability Assessment Scheme. Minesoils describe the soils as being imperfectly drained or better and Kovac et al (2010) describe the drainage of the dominant soil types in the soil landscape report for the project area as moderately well drained to well drained. Given the lowest or worst drainage described by Minesoils as imperfectly drained, this has a typical waterlogging duration of only several weeks by reference to the Australian Soil and Land Survey Field Handbook; because of this and the drainage described in the soil landscape report it is difficult to justify how Minesoils have assessed parts of the project area as Class 4 which is applied to poorly drained soil with a waterlogging duration of months. Minesoils also note that there is no evidence of soil gleying which is a key indicator of poorly drained soil (Section 3.2.3 page 45). In addition, the Glanmire area has experienced two extremely wet years (2021 and 2022) and neither SLR nor Minesoils make comment on any waterlogged soil suggesting the project area is likely Class 2 or 3.
- vii. Soil depth – soil depth is >1m meaning it is likely Class 1.
- viii. Movement – there is no evidence of mass movement meaning it is likely Class 1.
- ix. In summary based on the available data the project area has a land and soil capability of Class 3, however given the low reliability of the data more investigation and assessment by a suitably qualified and experienced person is required to confirm this.

e) Level 3 assessment

The key principle of the Level 3 assessment as described in the Large-Scale Solar Energy Guideline is to provide a detailed justification for the project and include an assessment of whether the project would significantly impact the local or regional agricultural industry for project area with a land and soil capability of Class 1, 2 and 3. The assessment undertaken by Minesoils appears to be a formality at best. The issue of avoidance or alternative management of Class 1, 2 and 3 land has not been explored thoroughly, and as the land and

soil capability assessment completed by Minesoils is based on a fundamentally compromised soil survey it appears most of the project area is Class 3 land or better.

f) Summary and conclusion

In summary Class 1, 2 and 3 land should be avoided for the siting of solar energy infrastructure as outlined in the Large-Scale Solar Energy Guideline. The Minesoils Soil, Land and Agricultural Impact Assessment contains many inadequacies and inaccuracies that has led to the project area being mischaracterised and misclassified. In conclusion based on the available data the project area is likely Class 3 land or better and the assessment provided to support the proposal is inadequate to provide a risk assessment framework to protect agricultural land.

If you have any queries about the contents of this independent review, please contact the undersigned.

Yours sincerely



David McMahon CEnvP SC
BAppSc SA
GradDip WRM
MEnvMgmt
MALGA MEIANZ MSSA

7 December 2023

Attention: Ewan Chandler
Newton Rural Trust

[REDACTED]
Glanmire NSW 2795

BY EMAIL

Dear Ewan

Re: Biophysical Strategic Agricultural Land (BSAL) assessment of the proposed Glanmire Solar Energy Project

1. I refer to the verbal instructions from yourself to undertake a BSAL assessment of the proposed Glanmire Solar Energy Project area based on the findings of the Independent Review of the Soil, Land and Agricultural Impact Assessment conducted by Minesoils Pty Ltd (Report Ref: MS-103, August 2023).

The objective of this assessment is to assess the BSAL of the landform and soil conditions as the initial BSAL determination (as mapped) does not match the known and indicative conditions of the locale.

2. I am suitably competent to undertake this assessment being a Certified Environmental Practitioner with expertise in soils and geomorphological assessment with over 25 years' experience. I am well qualified, holding an undergraduate degree in Applied Science (Agriculture) specialising in soils and land management, a graduate diploma (Water Management) specialising in geomorphology and hydrology, and a master's degree (Environmental Management) specialising in hydrogeology. I am an active member of the Environmental Institute of Australia and New Zealand, the Australasian Land and Groundwater Association, and Soil Science Australia.

3. Background

The independent review of the Minesoils Soil, Land and Agricultural Impact Assessment found that the proposed Glanmire Solar Energy Project area is located at 4823 Great Western Highway Glanmire NSW with a real property address of Lot 141 DP 1144786. The project area is around 186ha in area with an elevation range of around 760 to 800 mAHD, with a general south west aspect. The landscape is gently undulating rises with slope gradients generally < 10%. Soils are mapped as deep Brown Soils and Red and Yellow Earths (Chromosols) and deep Solodic Soils (Sodosols) overlying granite parent material (Kovac et al 2010). From a

review of the available historical aerial photography and satellite imagery (1954-2022) and discussions with yourself the project area has been rotationally farmed since at least the 1950s with a mix of pasture, fodder, and grain crops.

Although reliable data is limited in the Minesoils Soil, Land and Agricultural Impact Assessment the findings of the Independent Review found the project area has a land and soil capability of Class 3 or better.

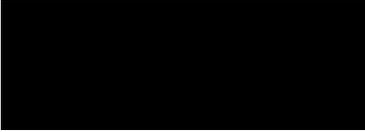
5. Regarding BSAL by following Sections 5 and 6 of NSW OEH (2013) Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land the following applies to the project site:

Hazard	BSAL
Reliable water supply	Yes (reliable rainfall \geq 350mm per annum)
Contiguous area of \geq 20ha	Yes (contiguous area of \geq 20ha)
Slope (\leq 10%)	Yes (maximum slope is 7.1%)
Rock outcrop ($<$ 30%)	Yes (rock outcrop $<$ 30%)
Surface rock fragments (\leq 20%)	Yes (no surface rock fragments)
Gilgai (\leq 50%)	Yes (no gilgais)
Soil fertility (soil type)	Yes (moderate - Soils usually require fertilisers and/or have some physical restrictions for arable use)
Effective rooting depth to a physical barrier (\geq 750mm)	Yes (no physical barriers or hard pans noted)
Soil drainage (better than poor)	Yes
Soil pH (4.5-8.1 in CaCl_2 in the top 600mm of the profile)	Yes (average 6.4 (H_2O) from 55 samples – allow one pH unit adjustment for CaCl_2 – 5.4)
Salinity ($\text{ECe} \leq$ 4dS/m and chloride $<$ 800 mg/kg in the top 600mm of the profile)	Yes (highest EC was 2.7dS/m. Chloride not tested but improbable to be above 800 mg/kg based on the EC)
Effective rooting depth to a chemical barrier (\geq 750mm)	Yes (roots found at \geq 750mm 16 of the 22 sampling locations)

6. In summary based on the available data it is assessed that the Glanmire Solar Energy Project area is highly likely to be BSAL but further investigation is required to confirm this.

If you have any queries about the contents of this independent review, please contact the undersigned.

Yours sincerely



David McMahon CEnvP SC

BAppSc SA

GradDip WRM

MEnvMgmt

MALGA MEIANZ MSSA

References

Kovac M, Murphy BW, and Lawrie JA (2010), Soil Landscapes of the Bathurst 1:250,000 Sheet.

Minesoils Pty Ltd (2023), Soil, Land and Agricultural Impact Assessment (Report Ref: MS-103, August 2023) for the proposed Glanmire Solar Energy Project.

NSW Office of Environment and Heritage (2013), Interim protocol for site verification and mapping of biophysical strategic agricultural land.