

Dear Commissioners,

I again pray that you are truly listening to the people of OUR community and seriously consider the independence of your assessment as Commissioners of the Independent Planning Commission (IPC) seeking truth, evidence and complete risk mitigation of the ultimate potential ramifications without the overriding intention of the current NSW Government energy agenda as appears to have been the focus from NSW Planning and other associated bodies and agencies. At the end of the day we can live without power but not without food and we can live without this development but we may not be able to live with it as it is presented.

Our family has 3 residences, not only are we R24, but we are also Stephen, Sharon, Ryan & Casey, our son Joshua and his partners intended future residence of R32 (purchased after neighbours moved away due to not wishing to live near the solar farm, currently being renovated), and Stephens parents Neville and June at R29 with regularly visiting grandchildren, family and friends.

There are many affected by this development but between ourselves and the Pumpa family that also consist of multiple homes and family units we will be massively affected having such a serious degree of impact both with kilometers of frontage of prime agricultural land

My previous submission is available on the NSW Department of Planning website and I have given enough of my time to this disgusting development than to rehash all of that information, all our concerns have a source, are researched and real and I don't think anyone has given that the time of day. A copy has been attached at **APPENDIX 1** for your information and we also had input from Habitat Planning to assist with our business part of the submission attached at **APPENDIX 2**.

A sensible measured approach to renewables should form part of the energy transition in our country but opportunities in arid marginal zones like that to become available from the NSW Renewable Infrastructure strategy must be the target for extremely large scale development to protect food for the future. Smaller scale opportunities to support farmers direct use with supply back into the grid is a more sensible approach for populated areas where land use conflicts exist and true evidence based mitigation can occur. Sustainability is the key, this is stupidity. The concern of climate that may produce hotter and drier seasons with increased incidents of drought reflect an increased importance to protect strong agricultural land.

I usually believe there is a sensible medium in most things, but the Culcairn Solar Farm has no fair sensible medium. The size, that it does NOT need to be is negligent from a planning perspective, it misses the intent of numerous pieces of legislation, with no balanced outcome. The community fracture has been absolutely horrendous and most certainly opposes the aim of the Renewable Energy Action Plan to build community support for renewable energy. Once people realise the cumulative impacts of multiple developments and the massive size of Culcairn Solar there is no doubt we will see great regret and anger towards renewable energy in our area. It is interesting to note how many people have driven past the Winton development on the Hume Freeway and now say WOW that's huge without realising that the development here will be 8 times its size. Unfortunately, afterthought to these developments will be too late and changes must be made now. I believe if this development proceeds in its current form it will be the start of a massive objection towards large scale solar and as neighbours with a view to all we will ensure every effect is published, made public and those people involved with the development and the approval of such will be referenced as being accountable.

What has become increasingly evident through publication of the recommendation is that the NSW Department of Planning is not addressing our issues and simply showing bias towards the NSW Government Energy agenda. We are one of many NSW families struggling to deal with neighbouring solar developers and government bureaucracy that leaves no clear certainty as to people's future. NSW Planning is wrongly facilitating the poor consideration of neighbouring farm businesses through allowing these companies to do as little as possible with no ramifications of impacts nor sufficient measurable conditions to which they must comply. This needs to stop now and developers must be shown that responsible projects are the only way forward. It can be achieved and then people can

sleep at night including yourselves and maybe you can even participate to show what is reasonable for the future. Through NSW Farmers and other landowners we are realising that the statewide cumulative effect is raising the voice of concern and that changes must occur.

The bias is proven through backwards wording of 2 aims of the LEP making effort to skew the law into their framing to facilitate their agenda. Most people would say something is consistent or is not consistent with an aim but to say something is not inconsistent is just again pure marketing but this time by government. Not only are we listening to the skewed marketing of the developer but now the department are doing the same. I could argue both of the LEP aims to which they refer saying it is not diversification it is displacement and that agricultural land will be fragmented through this development.

What is the absolute worst is that the department then fully neglects the rest of the remaining LEP aims to which it contradicts, being:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To maintain the rural landscape character of the land.

The intent of these 3 aims are totally missed by the department and form an important part of the legislation to ensure for the protection of agricultural land.

The Rural SEPP and the Ministerial Direction are conveniently just totally left out of the equation. I understand that permissibility is applicable under the infrastructure SSEP but we should not overlook the rest of the law and its truthful intent. The ministerial direction is in place to protect the agricultural production value of rural land. What must be considered is that the protection of agriculture can occur AND the economic benefits can be also achieved for our state IF we put these developments out west on less productive land. We do not need to destroy one to have the other, we just need sensible planning and infrastructure that is already in the process of occurring.

There is so little consideration towards the value of prime cropping land. How can the amendment as they state, still leaving the development so massive in size at 900 hectares, adequately respond to concerns about the loss of agricultural land, impact on native vegetation and aboriginal heritage and local amenity as the company states is its purpose? It is terribly disappointing that the department feels it appropriate to advise in the recommendation that no comments were made to the final amendment when I personally sent emails to address my concerns. I question how the department could expect that people make comment if the amendment is not exhibited. At this size one would think any amendment should be exhibited for further scrutiny or at least sent to those subscribed to the development information.

The amendment has done little to alleviate concerns at this continuing ridiculous size for this agriculturally valuable location. The landowners first told us the size of this development would be 400 hectares, why did that need to increase? We believe it was caused by massive objection from local landholders and an effort by the developer to gain other landholders acceptance that could be achieved through financial reward. That size of 400 hectares was still large. although still wrong in this area, our family has quietly considered 100 or 200 hectares could allow mitigation and tolerance. 400 would still be better than 900 but 900 with an L shape is just ridiculous, intolerable and far too much risk.

We sent options thought possible to the department but achieved no response.

Greater Hume Council also agreed to forward to NSW Planning our suggestions to achieve a more balanced medium as can be seen in the NSW Planning agency correspondence for this development.

What we have endured for the last 3 years is deplorable. We have been bullied, subjected to lies, defamatory comments, disgusting anonymous letters, badmouthed and had inappropriate reports to the police. People have been rudely and incorrectly labelled as solar protesters and believe efforts to discredit our name have perhaps been a marketing tactic to avoiding appropriate consultation and to diminish our concern from the community. I seriously cannot believe the most recent

ridiculous statement during the verbal public meeting that anti-solar group contacted businesses and individuals in the community and threatened economic and legal retaliation if they publicly supported this project, what an absolute load, in truth I suspect they are probably referring to the fact that community members feel they can no longer visit local businesses as clients are badmouthed in store. Sounds to me a bit like legal student exaggeration, is it again just an attempt to skew the facts?

We are, along with many others, quite simply, neighbours exceptionally concerned about the risks of this massive size development trying to seek responses to questions that we are not confident are being truthfully answered or receiving the appropriate action. Through the frustration of nil or inadequate responses neighbours just got to the point where they stopped asking questions.

Interactions with the company were met with obnoxious attitude that simply downplayed concerns or received no action. The marketing twisted to sound enticing to both community and government with little ground truth or clarification with evidence by anyone. How can we simply trust the marketing of such a massive foreign company with a financial agenda set to increase their share price on the Paris Stock Exchange. The French would not allow this development on their productive agricultural land so why allow it here.

An unfortunate theme appears to be that some people required to keep a certain public profile in their jobs appear to have been closed down from speaking through the conflict created. We have had some of the most beautiful neighbours, totally opposed to this development, whom we know have been left at little choice but to negotiate due to the intensity of this project on their property now gagged and unable to voice their concerns with little choice but to move away from their beloved family homes away from this disgusting development.

Our family was offered millions to partake in this project but could not live with the conscience of great risk and the loss of our peaceful rural amenity in exchange for a huge ugly industrial landscape whilst knowing the significant value of agriculture in this area. We researched, visited Griffith, Colleambally and other solar plants, sought views of neighbours and many local agricultural community members all believing this was the wrong place for solar development. Since then all communication with the developer has been extremely difficult, achieving little with minimal consideration of our needs or business to maintain the life that we currently lead. The only occasion achieving considerate response was after Council objected. A Neoen staff member tried to assist, but shortly after we received a text stating he had been let go by the company, he wished us well, hoped we could achieve a mutually beneficial outcome to our challenge and a resolution. He stated appreciation for being forthcoming and allowing the opportunity to elaborate on our needs and challenges surrounding the renewable energy transition. He stated he was leaving with a newfound reminder to the balances that must be achieved with stakeholders and broader regional communities. He apologised for not personally responding to our email but encouraged colleagues to do so which they neglected for some time.

Some have a view they should be able to do whatever they want with their land. A moral compass however requires us to consider the impact of what we do to others around us. I would love to drive my car at 200kms an hour down our road. It may not hurt anyone, but laws prevent me from doing this as a precaution to avoid dire consequences. So too the Government has numerous laws, policies and plans intended to protect agriculture, but they are being ignored for want of energy at the expense of all else. At the end of the day my family will be the ones in the car crash.

The development is repulsive and way too huge for this agriculturally viable location. We have successfully farmed here since 1909 supporting 5 generations. To grow a crop you must plant it, love it, feed it, harvest it, all with correct timing. If crops are not sown at the right time and given the passion they deserve they will come to nothing. Easy financial gain is no excuse for the displacement of agriculture. This project will rival some of the largest solar developments in our country yet be on some of the most valuable agricultural land you can find. Most other countries would put these developments in the desert.

And what of the massive number of objections. Why are we put through this longwinded arduous process? I feel that the government should just be truthful and tell communities that the Government energy agenda will proceed at any cost if it be the case. As far as I know none are declined. It is just ticking boxes, following process but not truly considering why the process is in place. Giving a free ticket to ride for developers to do as little as possible. The Large Scale Solar Guidelines objectives are certainly not being met here, many issues of constraint exist particularly the land soil capability class and the fact that this land was potentially to be mapped as Important Agricultural Land amongst other issues.

We strongly believed the class 4 Land Soil Capability categorisation that the department facilitates is incorrect.

Our success is proof that land here has consistent and reliable climatic conditions and rainfall for productive cereal cropping. The project land achieved excellent results for our 3 year lease term and whilst severe drought was declared in many areas of NSW this area remained safe. The reduced production of other areas at that time intensified demand for hay, grain and straw with significant tonnages being sent from this land to feed stock in drought and fire affected towns. We also saw record hay yields results producing massive 10 tonne to the hectare oaten hay crops.

The DPI has been significantly incompetent in their assessment of the land regardless of their knowledge of problems with land soil capability mapping through the Important Agricultural Land Mapping project. Lillian Parker of the NSW DPI stood at a NSW Farmers meeting of the Brocklesby Corowa Branch and advised soil mapping problems had led to serious issues with that project for the Greater Hume area. If you now look at the current Important Agricultural Land Mapping available online with a publish date of July 2019 the site of the Culcairn Solar Farm is shown mapped as Important Agricultural Land.

I implore you as commissioners to read that which the Department of Planning has inaccurately read in the Agricultural Impact Statement that confirms the land is not class 4 under the Land Soil Capability Mapping and I cannot understand how they can state in the recommendation “ *The assessment validated the mapped Class 4 land (moderate limitations), which can support grazing but requires active management to sustain cultivation on a rotational basis.*”

WHEN THE AGRICULTURAL REPORT ACTUALLY STATES.....

“The report authors **DO NOT consider the solar farm area as ‘having moderate to severe limitations’ and ‘productivity may be seasonally high but overall is low’. We note these descriptions arise from the Land and Soil Capability Assessment Scheme. Discrepancies between mapped land capability and actual productivity often arise from interpreting broad-scape data at the scale of individual farms.”**

I would also like to know where and how the Department of Planning have come to the conclusion as stated in the recommendation report that “*DPI Agriculture has accepted the conclusions of the soil and agricultural studies and agreed that the productivity of the land is limited due to waterlogging issues*”. **I cannot see any correspondence from the DPI in the NSW Planning suite of documents relating to this development that says this at all. It is, in fact, the landowner** that states and makes issue of waterlogging which was not a problem in the term of our lease and is not a major impact on the cropping capacity of the land being overstated by the landowner as it is in his financial interest to do so to favour his application for this development.

In the early stages of this development our expert agronomist confirmed her view that the land is predominantly class 2 or 3. In addition prior to the completion of the Agricultural Impact Statement we had held discussions with the consulting agronomist - Michael Ryan during our own preparation of a report by Habitat Planning in which he confirmed in an email to us (**attached as APPENDIX 3**) that:

“ In any event I think the description of the land in the EIS as **Class 4 land with moderate to severe limitations is inaccurate** and the land is prime agricultural land and **likely to mapped as Important Agricultural Land** when this mapping is completed.”

I suggest therefore as we have said all along and has been acknowledged numerous times and is evident through our successful production, even through periods of drought in much of the state, that this land that would have been mapped as important agricultural land IS better than class 4 description being either class 2 or 3 and, IF THAT BE THE CASE that as outlined in the Large Scale Solar Guidelines should be an area of constraint.

THEREFORE WE ASK, WHERE IS THE RESPONSE TO CONSTRAINT IN A 900 HECTARE SOLAR DEVELOPMENT IN AN L SHAPE SURROUNDING OUR FARM.

We have continued to see a pattern where the Government, in its attempt to facilitate the energy agenda, has again let down agriculture through not following the guidelines that they put in place.

We would like to ask a) if the land was truly so waterlogged how on earth do they think will they run Merino sheep, sheep suffer from wet feet and b) how do they think they will maintain pasture if the property is waterlogged. Pasture is more difficult to grow than crops and there are likely to be difficulties around resowing, topdressing and general improvements to soil and pasture conditions which we believe will not be able to occur between panels particularly with the drivelines between each row while it is used as a solar development.

From a cropping perspective our family has seen there are benefits to the soil type. We note that some have taken the decision to make comment on the unusually wet 2016 that saw huge rainfall from June through to October in this region and our land here actually outperformed our other undulating country. Where we would get bogged on our undulating hills at Henty we could still undertake a variety of tasks on Billabong Creek Country. Where crops were sown at the correct time that year getting an early start out of the ground they performed well however for anything late the excessive rainfall proved difficult. It must be considered that land in this area was wet EVERYWHERE, nothing to do with the soil type or nature of the land, we had so much rainfall people were getting bogged EVERYWHERE. Do not try to twist it into something to do with the poor quality of the land, IT WAS RAIN!! We were quite happy that year with our sharefarming agreement on the solar site continuing to return a profit from its haymaking production regardless of the late decision of the landowner resulting in late sowing. It must be considered that the ability of this land is inhibited by management not by soil type.

I think it is important to contemplate that the landowner of this property removed all stock from this property with sheep removed in 1999 and cattle in 2002 due to the disastrous and detrimental introduction of the weed Silver Leaf Nightshade that nobody has ever been able to completely eradicate. Livestock was only reintroduced upon our lease of the property viewed as a value adding activity supported by the cropping ability of grazing crops and stubble after harvest which is what makes land here so valuable with mixed farming ability. The Silver Leaf Nightshade was managed through the annual cultivation activities of this land which will no longer be able to occur under panels.

The attached document **APPENDIX 4** being Holbrook Landcare Silverleaf Nightshade Management Project information shows of the removal of stock, the issues with this weed managed through cropping (that still exists today) and we also note that the sheep left the paddock a dustbowl reflecting how this property may not respond well in a solely grazing environment.

I note that the DPI believes that sheep grazing has been successfully undertaken on a number of solar farms across the state, I would question whom is advising it has been successful and to what extent, is it again the solar farm developers or financially benefitting landowners marketing their own intention, is it just successful vegetation management cleverly worded or are there really true studies conducted independently by the DPI.

If climate change is to increase heat and droughts into the future how on earth are they going to feed sheep on this place, there could be no pasture as we have seen in past years. We need crops for feed. It is interesting to watch the Dubbo video where sheep graze under panels. Smart farmers will see past the marketing of a landowner who receives financial return from solar will note in this video that the ground is bare and the stock are actually being fed hay from a hay feeder with barely a blade of grass on the ground. What they are most surely being fed is hay from cropping operation which this development will remove from production. The benefits of mixed farming with cropping will be destroyed by this development including the ability to sow grazing crops and stubble as a feed source after harvest.

I am happy to state publicly my own consideration of a conspiracy theory, and that is all it is just a theory, but think the question is valid, that the government has withheld the important agricultural land mapping project that has been on the table for over 2 years to facilitate a means for these developments to fulfil their government energy agenda. I know there are numerous others that feel the same theory is a real possibility.

In regards to the proposed sheep grazing our family and other knowledgeable sheep producers seriously question the information contained in the Agricultural Impact Statement. The numbers appear grossly overestimated. The sheep being grazed at both the Numurkah and Dubbo sites are considerably less than the report. If so the economic calculations are totally incorrect and a much greater loss to agriculture as we expect is the case would be evident. .

Numurkah was quoted to be carrying 750 sheep on 515 hectares equal to 1.45 sheep per hectare. Dubbo quoted at 167 sheep on 55 hectares equal to just over 3 sheep per hectare. The author of the report has estimated the carrying capacity on the Culcairn Solar Farm Southern property will be 10609 sheep which on the subject land of 1030 hectares equalling almost 10.3 sheep per hectare and this includes the 25% reduction due to the solar infrastructure. Is the company really going to consistently run 10609 sheep on this property? We very strongly doubt this. These DSE figures used are more appropriate for annually planted grazing crops not perennial pastures and even then would be hard to achieve at that rate. We note that the published NSW DPI estimated carrying capacity for [Southern Slopes for Sub clover/ryegrass plus fertiliser is 5-10 DSE](#) which would strongly suggest an overestimation and if there is an overestimation this would result in a further increase to the loss of agriculture which the author previously confirmed in his report was to be \$23,970,000 over the 30 year period. We also note that these figures do not include an estimation of any initial cost to purchase such sheep which at current prices could equate to over \$3,000,000 nor does it appear to have any costs for replacement of pastures which would need to occur on many occasions especially as they will diminish over time. Not sure how this would occur with panels in the ground. The financial outlay for these sheep and the viability of the operation must be a serious consideration. No neighbour is going to carry sufficient sheep just to provide for vegetation management as the company has implied. The whole scenario leaks with holes. The carrying capacity has also been worked on the Biomass of past years at which time much of these properties would have been under crop and will show a higher biomass and therefore to assume biomass from pasture will be similar will be incorrect. As stated by the authors "some care must be taken in interpreting the images as the report authors do not know which of the selected farms are in crop or pasture at any given time." We know the property site was continually cropped through the years for which the author has conducted the study. One would think therefore that the biomass is most definitely from cropping and could not adequately reflect how these properties would perform under pasture let alone under panels. We do not proclaim to be experts but after consideration by a number of knowledgeable sheep producers in the area there are many questions raised by this report that would be interesting to direct to Local Land Services or independent agronomists not receiving a financial gain for their opinion.

They have on many occasions asserted that they will offer adjacent neighbours sheep grazing rights however our questions in relation to this have also fallen on deaf ears with no response. They just say it will be up to the maintenance contractor. We have received no detailed reports of how this will work and there appears to be no formal sheep grazing plan at this point.

The agricultural report acknowledges agricultural losses but as the DPI requested, it does not really address the impact to the grain supply chain apart from advising that business relating to servicing grain production would be most affected. We cannot see a further response from the DPI in this regard.

We also have questions about the ongoing spraying and fertilising referred to by the author that he states will be with smaller equipment. It is our understanding that drive lines between the solar panels prevent travel down the rows and therefore this machinery would not be able to be operated, we wonder whether the author understands this.

One has to question why other solar developers state they do not graze stock under solar panels for Workplace Health and Safety Issues. We question how appropriately husbandry practices can occur with sheep under solar panels and wonder if we may see animal activists visiting our area through the grazing of sheep around electrical infrastructure, who knows of the cancer implications of having sheep around ELF and EMF frequencies and at the end of the day if the department only requires the practice of grazing "Where Practicable" and they decide it is not practicable the economic data is up the creek and where is the agricultural retention, remembering that there is supposed to be law in place to protect it. Again, is it just convenient marketing to achieve their goals.

I cannot understand how NSW DPI allow that the land use risk assessment is just left to the developer and they not include nor even mention that there is conflicting agricultural activities such as livestock with construction noise and cropping production with heat impacts. Our rear paddocks in the L shape section are sown to grazing crops for the location of our cows and sheep which during noisy construction in lambing and calving season could result in death due to mismothering. Research exists and was provided with our original EIS submission confirming that stress can impact the health, fertility and growth of livestock, but again no answers.

At this size the only way to mitigate many issues and to truly keep the agricultural landscape alive from the very start would be to establish an earth bank to the height of the panels to screen the whole development. This could insulate noise, mitigate heat and avoid stress to livestock from the outset. Another suggestion we offered but again no consideration in trying to do as little as possible for the cause.

The landscaping plans showing proposed vegetation continues to be seriously inadequate with the definition simply that vegetation will be a minimum of 2 rows. They do not state how many trees or the spacing which gives us no comfort of alleviating either the visual aspect or any heat impact. The department does not take into serious consideration the potential impact of heat on our cropping and livestock property which will be exacerbated in the surrounding L shape. In a hot windy September/October when crops our crops might be thirsty an increase in heat will result in our loss. There is insufficient research on developments of this size, even the clean energy Council acknowledges heat concerns. The department is saying that based on a Shepparton Study (which we understand is a collated report, not a study as such) that a 30 metre buffer supposedly allowed by the company will ensure that heat impacts will be negligible and that vegetation screening would further reduced impacts once vegetation is effective. Regardless, it is **most concerning that in the L shape surrounding area of the landscape plans there are ZERO vegetation lines to the west of our southern boundary and also ZERO vegetation to the south of our eastern boundary. The company also cannot plant their proposed western boundary vegetation in the location it is situated as there is an 11KVA power line within 20 metres of that boundary that will prevent planting of that buffer as Essential Energy require a 15 metre exclusion zone from their power lines. This only leaves 5 metres for vegetation. Additionally, In the section where there is vegetation shown to the south of our property on the landscaping plans ([appendix E Map 5 to the EIS](#)) this shows only a 25m buffer being described as their North boundary vegetation buffer 15m width + 10m APZ. Do the sums, the buffer is not 30 metres, it shows 25 metres.**

A diagram follows to explain.

INADEQUATE LANDSCAPE PLAN

2

North boundary vegetation buffer 15m width + 10m APZ

THERE IS NOT EVEN 30 METRE BUFFER HERE 15 + 10 = 25!!!!

8

05.

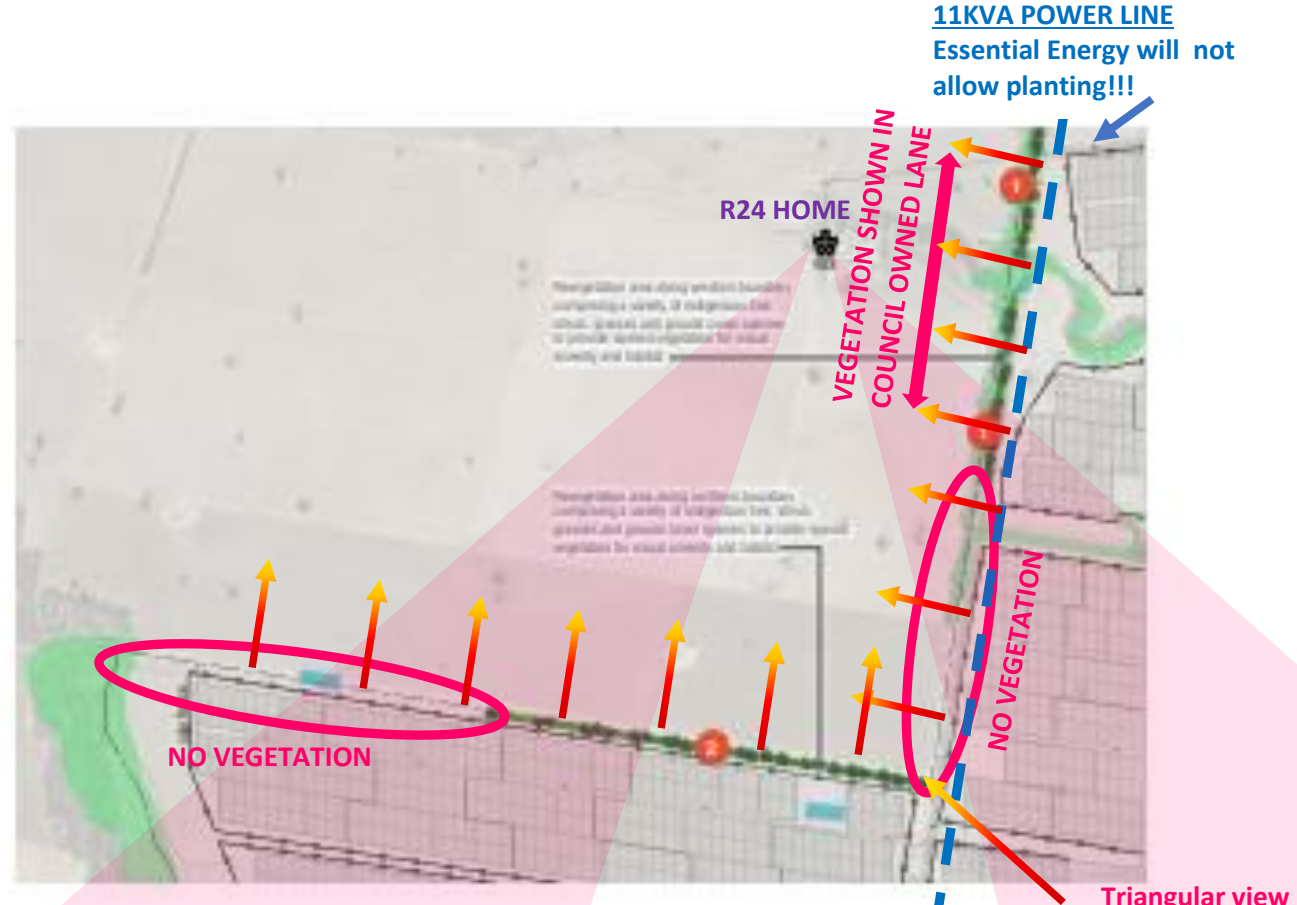
CULCAIRN SOLAR FARM

CUMMINGS ROAD / WEAMERA ROAD - CULCAIRN

KEY

- West boundary vegetation buffer 20m width to adjacent existing natural vegetation
- North boundary vegetation buffer 15m width + 10m APZ
- Existing natural vegetation to be retained
- Proposed vegetation buffer
- Existing areas to be retained
- Existing adjacent structures
- 11KV distribution lines

Vegetation species to include the following species:
SMAI indicates Plant Selection (2020)
Large evergreen trees e.g.
Eucalyptus nitida (White Gum)
Eucalyptus pagenstecheri (Red Gum)
Medium evergreen trees e.g.
Alnus incana (Silver Birch)
Alnus vulgaris (Common Alder)
Ailanthus altissima (Tree of Heaven)
Alnus matricaria (Common Alder)
Shrubs and groundcovers e.g.
Rosa rugosa (Rugosa Rose)
Rosa alba (White Rose)
Rosa gallica (Dog Rose)
Rosa blanda (Damaged Rose)
Rosa rugosa (Rugosa Rose)



Triangular view from kitchen bench

Triangular view from back yard

Potential Heat Impact

I cannot understand how the department neglects to note most of the comments in the Shepparton independent advice, notably for us the Shepparton paper states the following indicating the need for vegetation over and over as follows:

- 56. Based on these three papers it is my view that there will be an elevated temperature within the PV farm compared to the same site in current use and that the increased temperature will be of the range: *In winter, night time air temperatures above the panels will be 0.2 – 3.0 °C above temperatures outside the PV farm, In summer, temperatures will be 0.1 – 4 °C higher above the panels than outside the PV field and: In the soil under the PV panels, temperatures are cooler during the day and warmer at night, than outside the PV field.*
- 60. PV panels are thin and relatively lightweight therefore, have little heat retention capacity per unit area. Consequently, the array temperature will quickly reduce once the sun goes down. PV modules emit thermal radiation both up and down, and this is particularly significant during the day when PV modules are often 20 °C warmer than ambient temperatures
- 64. Vegetation is often removed from PV power plants. If retained, or replanted, vegetation under the panels will provide an extra heat removal mechanism through transpiration, however, this may require high levels of maintenance that could be impractical. *Vegetation surrounding the solar farm will also contribute to cooling through transpiration.*
- 70. Heat flow from the solar farm to adjacent properties could take place by radiation or by convection. Radiation will transfer heat through empty space where there is a clear view from the hot body to a cooler body. Convection is the movement of a hot fluid to cooler region. It can be natural convection (hot air rising) or forced convection due to air moving across the surfaces by wind or similar.
- 71. Heat flow both by radiation and convection from the PV farm to the surrounding area can be substantially reduced by suitable screening.
- 75. Natural convection will take the warm air upward, so it will not spread heat into neighbouring properties. Forced convection could move heat from the PV farm to surrounding areas if there is no barrier to reduce air flow. In a mild breeze the influence of natural convection will quickly lift the warm plume upward and in a stronger wind the heat may be spread wider, but temperatures will dissipate quickly as the air is mixed more quickly, diluting the heated air with unheated air. A dense vegetation screen will effectively block air flowing from the solar farm to a neighbouring orchard, thereby reducing the temperature impact from the solar farm.
- 76. Radiation from one surface to a nearby area can be effectively eliminated by 'shading' the cooler area from the hotter one. The vegetation buffers or hedges, proposed in most applications and required in the proposed conditions, will, if higher than the panels, screen the warm panels from radiating to adjacent orchards.
- 77. In my opinion a suitable screen would lead to a substantial reduction of the heat flow both by radiation and convection from the PV farm to the surrounding area.

What can be done to mitigate any possible effects?

- 89. There are a number of options to reduce heat build up within the solar farm and reduce transmission of any heat that is retained into neighbouring properties.
- 92. A vegetation buffer may assist with cooling of the solar farm due to transpiration, however it may also reduce cooling winds across the panels during the day. On balance the impact on heat build up within the array will vary from a tendency to increase or decrease depending on the particular

conditions at a particular time. However, a vegetation buffer will reduce impacts of radiation to the surrounding area in all conditions.

- 94. An effective strategy to mitigate heat transmission out of the solar farm is to provide a buffer of dense vegetation surrounding the solar farm. The vegetation should be visually dense from the ground to higher than the top of the PV array at its highest point.
- 95. In my opinion a dense vegetation buffer will effectively stop heat transmission to neighbouring properties. There will be minimal effect on temperatures more than 100m from the outside of the vegetation.

Inform the panel as to your views in relation to the conditions

- 96. The conditions set out in the draft proposed by the City of Greater Shepparton include conditions covering, screening vegetation, setback and the angle of tilt at which the PV array will be held overnight.

Vegetation screen

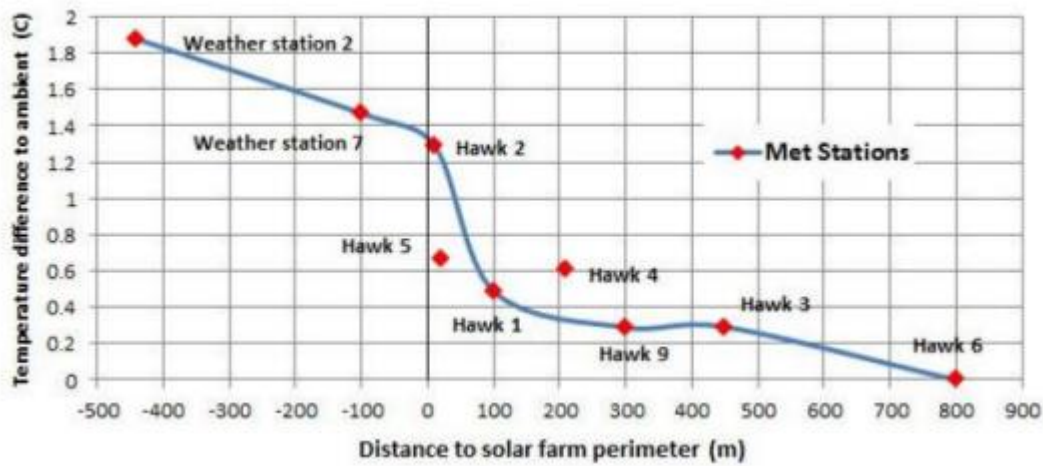
- 97. The recommended conditions include that “the landscape plan must include details of permanent screening trees and shrubs with a minimum of six rows using a mixture of local trees and understorey species.” (Shepparton Conditions!) and “Once the landscaping planting is carried out the landscaping must be maintained including the replacement of any dead or diseased plants to the satisfaction of the responsible authority.”
- 98. In my view this does not adequately define the requirement as there is no specification of the height. The height of the vegetation should be added to the condition so that the screen is in excess of three metres once the plants are grown. Panel height 4 metres here.
- 99. The conditions should also require that the vegetation screen be planted and maintained along all boundaries of the solar farm.

Setback

- 100. The recommended conditions include that “the solar arrays are set back at least 50 metres from the lands boundary”. At Shepparton
- 101. Whilst there is limited data upon which to make a definitive recommendation, in my opinion, if the screening is adequately defined and maintained, then that will provide an adequate buffer to heat flow so that there will not need to be a large setback. In my view this condition could be reduced to a setback of 20 metres from the vegetation screen, or approximately 30 metres from the boundary.

I would like to remind you that this development is absolutely massive in comparison to the Shepparton developments and Even the clean energy Council acknowledges heat concerns.

It should be noted that the Ftenakis and Yu research on heat island shows a heat impact is still applicable at 700m reaching zero difference at 800m.



Is this impact, said to be different temperatures in various research, going to be multiplied with such a massive development, it is going to dissipate at greater distance due to the size, is it going to be greater due to the L shape surrounding design, nobody knows, and therefore the L shape must be removed, the size reduced and significant mitigation applied to apply the precautionary principle. The only common thread between multiple pieces of research is that more research is required based on the scale.

If there is no vegetation there is no mitigation of potential heat. A condition of consent applying the precautionary principle must provide for heat mitigation measure and protect us and ensure our livelihood can continue. Who knows, with a development this size the heat could extend out kilometers.

We have research on how high air temperatures impact on wheat growth and development reducing grain yield and is attached as **APPENDIX 5**

http://www.giwa.org.au/literature_212837/Rebetzke_Dr_Greg_Effect_of_heat_on_Wheat_Development_and_Phenology_PPT

The vegetation screening proposed in the layout of this development is an absolute joke and will do nothing to alleviate our concerns in view of the above listed issues.

It makes me angry that the department says our dominant view from the residence is to our north, how on earth do they know, only our bedrooms face north with our living area and kitchen bench south with a clear view from our slightly raised home framed by 2 peppercorn trees above our pool area towards the west of our southern boundary that has ZERO screening where I look much of the time every day of my life. One outbuilding is 6 metres wide and we have views to the east and west of this outbuilding across our paddocks.



We absolutely dispute the departments comments in the recommendation where it states that there would be no significant visual impacts on surrounding residences and receivers and that the rural character and visual quality of the area will be preserved WHILST there continues to be minimal screening along most of the development including along Cummings Road where local residents drive every day.

There is absolutely no way possible that within 3 years the miniscule number of trees suggested, particularly young tubestock, will be able to meet the departments recommended condition to “minimise views” (and what does that mean anyway). Furthermore, what happens at the end of the 3 years when they do not meet that requirement. Nothing??

The recommended condition for vegetation could read along the lines that the Department recognises the RU1 zone aim “to maintain the rural landscape character of the land” for the full term of the development through construction and operation (eg must be in place prior to construction) by applying a condition of consent for 99% visual screening around the **entire perimeter** of the project site through defined vegetation screening of minimum 6 rows of visually dense trees, with upper, middle and lower cover, to the height of the solar infrastructure (4 meters) and additionally considers soil earth banks as mitigation towards areas of greatest impact for visual, noise, heat and livestock mitigation. Monitoring and assessment of vegetation screen should be independently undertaken.

A fire recently occurred on the solar site at the rear of our property. We now see much greater risk. Under panels that day fire suppression could not have occurred. The 10 metre APZ would not protect us from embers and whirl winds. Back Creek is mapped as bushfire prone with limited access and will be surrounded by the volatile fire risk of crops and trees . A Bush Fire Emergency Management and Operations Plan as required should be considered as part of the approval process for such a massive development to ensure the community and towns are safe. How can this be trusted to a developer?. Brigades and RFS are not being adequately consulted or providing sufficient advice. To call RFS members to these fires would probably breach WHS laws. Sensible planning would not allow a development with increased fire risk on property that is mapped as bushfire prone and therefore the size of this development should be reduced to be only on land that is not of this nature. It is concerning that the Numurkah Fire meeting was conveniently attended by the landholder as a representative of the RFS whom will achieve a substantial gain from this development if approved.

How will electrical infrastructure and shorts increase our risk, is lightning a concern with so much metal and transgrid alerted us to cockatoos chewing wires being a problem. Where is the correspondence from RFS on the website?

Stormwater at other solar sites has now been revealed as a real issue. The flood study confirms changes will occur. We have massive concern that increased runoff from the site through our property via the waterway in front of our house increase flooding to our house and land. Why should we incur the risk? We know that the landowner constructed large drainage channels in the past however these lead nowhere and we are unsure whether past approvals have been sought for these via NSW Water. We now feel in view that water drainage may be affected by this development that confirmation such approval was granted must be clarified to ensure that there are no dire ramifications that would lead floodwater into our paddocks.

Furthermore, we are truly worried that chemical leaching into our waterway could be seen in the future.

For us our waterways, particularly that which travels in front of our house to the lagoon, are an important area that we value due to the abundance of wildlife, birds and frogs that give us the most beautiful peaceful amenity. It has been previously fenced in a riparian landcare project. In our very

first meeting we pleaded to avoid the area surrounding this woodland with this knowledge in mind. Again, no consideration whatsoever.

We don't even know if energy from this development has capacity in the grid. Through the whole process numerous people implied that not all the developments in the NSW Planning pipeline in our area would be able to proceed due to limited grid capacity. Two have been now approved and this is the third, yet we still proceed. Is there a chance that limited capacity could affect the financial viability of the others. Are we doing this all for nothing at the stake of prime agricultural land? Is there a chance it may become a solar wasteland? Why is grid capacity such a secret, it is difficult to get clarity in this space. Why don't Transgrid respond? Is it all just for offsets that will actually provide no power to anyone? What a waste of amazing agricultural land.

I consider the true environmental impact of this development as absolute hypocrisy, destroying the environment to save the environment. So many trees will be removed. I don't think there has been enough realisation of the ecological impact here, the birdlife is unreal, we have migratory birds come to the lagoon including the impressive Brolgas, spoonbills, cormorants, pelicans, herons and more and we regularly see many different animals such as echidnas and goanna's. We know there are swift parrots and have seen a curlew. Squirrel gliders locally exist and although we are not environmental greenies the words you don't know what you've got till its gone rings heavily in our ears.

Why do we have to defend and protect our exceptionally productive farming land, our way of life, the environment, our future and our childrens future. We have agriculturally prospered whilst farming elsewhere has most seriously struggled. Land here is a gift from god, next door is no different.

And how do we overcome land value losses with our property surrounded. Most likely another furphy, how on earth can our property continue with the same value considering such risk in our area. Valuers are unable to give us clear indication of such impact. There are already properties passed in at auction affected by solar and US reports of land value reductions to neighbouring properties. We rely on our land value to ensure our borrowing capacity is upheld and our interest rates are priced based on risk. How can we be ensured that our lending will not cost more?

I wish you would take the time to imagine you will spend almost every day surrounded by 900,000 solar panels with electrical infrastructure, substation, hazardous Battery Storage Systems and the industrial outlook. The anxiety of the risk is so immense. Imagine the place you once went to bed listening to the roar of frogs and have woken to the song of birds is now overcome with the high pitched ring of 67 inverters and the night time noise of humming Battery Energy Storage Systems. Imagine driving in and out of our property looking at solar infrastructure every time we cross the road between our Roseview and Avalon properties opposite each other on Cummings Road. Imagine the next few years surrounded by construction, dust and pile driving that we have been told requires double ear protection for workers yet no indication of how we as neighbours will manage this.

Stephen and I have built an amazing family home and most resilient farm that we intended we would spend the rest of our lives with our family and be handed down through generations to our boys with a love of farming... but now I feel that my only future peace may be in my grave. Now imagine the stress, sadness, frustration and health of the people within our family with what our future will endure. Stephen has the soil of this land in his veins and to move would kill him but for me it will kill me to stay, either way we are screwed.

HOW CAN THIS DEVELOPMENT BE CORRECTED?

Where are the answers, mitigation and measurable conditions? What happens when conditions are not met? What happens if we have loss? How will we be compensated?

Any conditions of consent must be watertight and indisputable to ensure that the developer can not legally avoid their responsibilities including to compensate if they do not meet their obligations.

In conclusion I would like to summarise what could be changed and the conditions of consent to focus on measurement and compliance accountability as follows:

1. Primarily, this development of such a monstrous size of 900 hectares is incorrectly located with great hazard and risks in this agriculturally valuable location close to populated towns. The project should be declined, and the developer should seek a more appropriate location on arid land in NSW and not near populated townships on prime agricultural land.

If this primary consideration does not occur then:

2. The L Shapes must be removed to ensure neighbours do not endure the increased impacts of a surrounding development.
3. The size must be further significantly reduced to actually achieve that which the previous amendment does not.
 - a. Some of us hold the view that with strong mitigation measures, a development size of up to 100 hectares, maybe 200 at the absolute most may be potentially tolerable. This would need to include removal of the L shapes, mitigation to visual, heat and livestock impacts including to road users and removal of the project around bushfire prone and riparian waterway areas to reduce fire risk and ecological destruction. This could occur if the development was centrally located with large buffer zones on the primary landholders property only of "Roseworthy" only (not south of our "Avalon" property) and placed behind the unnamed waterway that leads to our home. This option could reduce cumulative impact both to road usage and receiver R17 (eg would not be north of that property).
 - b. We consider any size approaching around 400 hectares and above becomes increasingly difficult to mitigate anything due to the surrounding shape required and significantly increases the cumulative impact with the Walla Development.
 - c. 900 hectares in this agriculturally valuable location near two towns is ridiculous, intolerable, with too many risks, hazards and cumulative impacts for our whole community.
4. This development should not be located on any area of bushfire prone mapped land due to the difficulty of access along Back Creek as is too much risk for neighbouring properties and rural firefighters
5. That Council and the community should be given an opportunity to make comment on any amendment.
6. That the agricultural value of the land must be a consideration.
7. That all conditions of consent must have exact clear measurable parameters including a number to quantify what is required.
8. That a condition of consent be to have neighbour agreements in place to provide annual compensation to receivers where ANY condition is EVER not met, including a condition for full screening of the development, from day 1 during both construction and or operation. Compensation agreements should be made in consultation with neighbouring landowners eg equate to the loss off production off any land that may be affected or for a value considered appropriate for the loss of visual amenity. This would benefit both Council (as the EPA authority) and the Community to ensure conditions are met.
9. That the Department puts in place a condition that recognises the RU1 zone aim "to maintain the rural landscape character of the land" for the full term of the development through construction and operation (eg must be in place prior to construction) by applying a condition of consent for 99% visual screening around the **entire perimeter** of the project site through defined vegetation screening of minimum 6 rows of visually dense trees, with upper, middle and lower cover, to the height of the solar infrastructure (4 meters) and additionally considers soil earth banks as mitigation towards areas of greatest impact for visual, noise, heat and livestock

- mitigation. Monitoring and assessment of vegetation screen should be independently undertaken. If unable to be achieved compensation payable from day 1..
- 10.** That a condition of consent should be that no increase in heat will be caused by the solar development on neighbouring properties and that measurement of heat must be conducted on neighbouring properties by an independent body at the developers expense. If unable to be achieved compensation payable.
 - 11.** That a condition of consent should be that land values must be retained by primary receivers comparable with the market in the area and should a reduction in land value become evident caused by the solar farm that the developer becomes liable for compensation for the difference in value. A valuation of neighbouring properties should be undertaken at the cost of the developer prior to commencement, after construction, and at 5 year intervals with compensation payable at a point where impact is evident as assessed by a valuer acceptable to landowners.
 - 12.** That further consideration should be sought by the Rural Fire Service in view of the bushfire prone land next to hazardous battery storage in the vicinity of a major gas pipeline.
 - 13.** That to allow for protection of neighbouring property a condition of consent should include additional resources be provided by the developer to the Culcairn Southwest Fire Brigade to be permanently housed on the R24 and R33 properties possibly 2 additional Fire Trucks with large water storage capacities in appropriately constructed sheds with large tank water storage and quick fill (pump) water supply .
 - 14.** That a condition of consent be that Traffic Management Plans be developed in consultation with neighbouring landowners to ensure livestock and machinery movement is considered.
 - 15.** Community benefit fund payments payable must be included as a condition of consent.
 - 16.** That a condition of consent be that there are no negative impacts to neighbouring properties from changes caused to stormwater movement by the solar development such as erosion, flooding or fencing or compensation payable to cover losses at the expense of the developer.
 - 17.** That the developer must arrange for annual independent water testing in nearby waterways to ensure no contamination is occurring at the commencement of construction and then annually to be provided to the Department and neighbouring landowners or compensation payable.
 - 18.** That a management plan for the containment and eradication of the noxious weed, Silver Leaf Nightshade, be a condition of consent due to the current issue on the property. If Silver Leaf Nightshade management is unable to be achieved compensation payable to neighbouring landholders .
 - 19.** That the removal of Hairy Panic from Fencing and Solar Infrastructure be a condition of consent.
 - 20.** That it must be a condition of consent that the Government recognise neighbouring farming activities under the Right to Farm and that any activity not be affected including chemical application. If unable to be achieved compensation payable.
 - 21.** A condition of consent must be that a financial guarantee is provided by either the developers or government for decommissioning and remediation of the land.
 - 22.** A condition of consent must be that any unforeseeable loss incurred by neighbouring farmers caused by the solar development will require assessment by a fully independent loss assessor at the cost of the developer with compensation payable to neighbours for any loss.
 - 23.** That a condition be that the developer indemnifies landowners in the event of a claim and must use their own insurance to cover any losses (as neighbouring landowners are unable to insure for over \$20M)

Our future viability and life depends on your determination.

A copy of our verbal submission from 2 March 2021 to the open meeting is attached as **APPENDIX 6** which contains much of the information outlined in this submission.

Photos of the so called class 4 land also attached separately.