8 October 2024

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Attn: Mr. Cameron Collins, Development Assessment Coordinator

RE: DA23/0598 - OURA STATION 2056 (2052) Oura Rd OURA - Abattoir & Power Station

Supplementary Objection Reasons to Amended Development Application

This submission prepared by the Oura Riverine Protection Inc. (ORP) provides an assessment of the Amended Development Application (DA) and the Applicant's response to Requests for Information (RFI) by NSW EPA and DPI Agriculture.

This submission is to be read in conjunction to the ORP submission made to the Council on 9 February 2024 to the original lodged development application.

The proposal remains inadequate and unsuitable, despite the two main areas of change made to the development in the Amended DA:

1. Hydroflux tank treatment process of abattoir effluent, and removal of treated sludge "off site"
2. Removal of manure, paunch contents and destroyed carcasses "off site".

The significant reasons for objecting to this proposal raised in the ORP's original submission have not been adequately addressed, nor have the NSW EPA and DPI Agriculture RFI's.

Following are the reasons the ORP continues to strongly object to this proposal and why the DA should be refused.

1. Environmental

1.1. Waste Water/Effluent treatment

- The proposed Hydroflux system cannot treat total dissolved solids (TDS). Onsite Wastewater Management Strategy (Amended DA, July 2024), Appendix I – Hydroflux STP Design, page 4 states, *"It is understood that Okeview is intended to negotiate with the EPA on the TDS limit, thus no treatment for TDS has been included. Treatment of TDS will require the use of a reverse osmosis (RO) system, which is both costly to install and operate, and is not appropriate for this use case."*
- This is contradicted where Martens Groundwater Assessment (Amended DA, July 2024), page 15, Table 6: Potential groundwater hazards and impact mitigation measures states, *"Treated abattoir effluent to be irrigated at sustainable rates which avoid nutrient or salt overloading."*
- This is contradictory statement is repeated on page 17 in relation to *"Degradation of GDE's".*

- A number of different, and inconsistent climate data sets have been used in analysis, including *"Wagga SILO"* for a selective period and excludes most recent 2020-2023 high rainfall years (McMahon Advice, September 2024).
- Phosphorus sorption of the soil remains inadequate to absorb and dissipate the proposed waste water phosphorus application rate of 10mg/L over time (McMahon Advice, September 2024 and February 2024).
- Wet weather storage capacity discussed in the Onsite Wastewater Management Strategy (Amended DA, July 2024) on page 4 states, *"will ensure that overflow or over-irrigation events will occur no more frequently than 23 % of years."*

  There is no contingency for this overflow (McMahon Advice, September 2024). This means that *'over irrigation'* can occur about 1/4 years which means that the effluent irrigation area below the feedlot with a 6% slope (Paradice, September 2024) can be at field capacity (from both rainfall and irrigation) facilitating the entrainment of manure and other effluent from the feedlot via surface water to either the dams to the north of the site or directly to the flood plain (see further notes below under Surface Water).

1.2. Surface Water

- The unconsented feedlot, which has been and continues to be used, remains excluded and unassessed in the Environmental Impact Statement (EIS).
- The feedlots 8% slope (Figure 7) exceeds best practice of 2.5% to 4% slope considerably and would provide significant runoff velocity and possible entrainment of manure in most rain events over 5mm in one day (Paradice, September 2024).
- In periods the feedlot has been in use, runoff will carry a heavy nutrient load and will be of higher strength for nutrient, salts and elemental density than the abattoir water (Paradice, September 2024).
- Runoff from the feedlot will flow over the effluent irrigation area which is on a 6% slope (Figure 6).
- The runoff is then directed via a contour to the dams on the north side of the site, also unassessed, which overflow to the flood plain (Figures 1 & 2).
- The dams on the north side of the site also capture leaching from silage pits located above the dams and will capture flooding through the proposed abattoir buildings as modelled by Martens in the Amended DA (Figures 2 & 4)
- Wet weather storage is designed to be exceeded 1/4 years (McMahon Advice, September 2024), where Martens (Onsite Wastewater Management Strategy, July 2024) states, *"As the storage approaches its capacity, treated effluent would be irrigated (known as 'over-irrigation') to ensure no physical overflow occurs… the maximum monthly over-irrigation forecast would be in the order of 19.7 mm/month… This is well within the soil's absorption capacity and indicates that runoff would not occur during any over-irrigation event."*

  However, this assumption is based on using "Wagga SILO" rainfall with the limit data set of 1942 to 2019, excluding the most recent high rainfall years of 2020 to 2023, and so it is questionable that the soil sorption will not be at field capacity or that runoff would not occur during *"any over-irrigation event"*.

1.3. Groundwater

- The Applicant continue to ignore existence of closest neighbour's bore 40WA416489 (license number and location previously supplied) (Figure 1).

- Groundwater elevation from constructed test/monitoring bores indicate they are connected to the neighbour's bore, and this is not assessed (McMahon Advice, September 2024).
- No plan or methodology is provided for the location of the test/monitoring bores individually or as a network.
- The unassessed dams on the north side of the site, which capturing runoff via the aforementioned contour, have not been assessed as to leakage and so there is a perceivable risk that there will be vertical and or horizontal percolation to the groundwater and beyond.
- The Amended DA has not considered the groundwater gradient, sub-catchment size, recharge, etc. (McMahon Advice, September 2024) or testing and monitoring of groundwater in the flood plain immediately below the proposed site.

1.4. Overland flooding

- Martens PMF Critical Storm modelling (Figure 4) shows the site wide flood pathways from the contour below the effluent irrigation area and the feedlot, the watercourse from the east down slope via the silage pit area, as well as through the abattoir/buildings area below the solar array, to the dams on the north side of the 12 hectare site and from there overflow to the floodplain (Figure 2). The 1% AEP Critical Storm model (Figure 5) also shows the same flow pathways.
- It is highlighted that the NSW Department of Planning's newly adopted guideline, 'The Flood Impact and Risk Assessment - Flood Risk Management Guideline LU01', directs all assessments related to flood impacts and flooding constraints to be assessed across the full range of flood risk, including the Probable Maximum Flood (PMF) level.
- Feedback to Council by the Department of Climate Change, Energy, the Environment and Water, Biodiversity Conservation Science (BCS) division, we believe, was deficient as it was based on incomplete site information, as well as inconsistent and selective climate data. Consequently, we believe, BCS was misdirected to conclude that the flood risk for the proposed development as minor (letter to Minister Sharpe, June 2024).

  We are advised that BCS is reviewing its feedback to Council, given new information (Amended DA and submissions previously made).

1.5. Biodiversity impact

- Further to these points above, we have requested that BCS review its initial biodiversity assessment and ensure these additional factors of flood risk, plus entrainment of manure and high density nutrients (Paradice, September 2024) in the overflow to the floodplain, wetlands, Endangered Ecological Communities (EEC) and Groundwater Dependent Ecosystems (GDE) are included in BCS's assessment.
- This overflow is up-slope of an existing pivot irrigation area which can be at field capacity in flood events and, therefore increase volume and velocity of overland flood flow (contaminated) to the wetlands and lagoon system immediately to the west and south/west of that irrigation (Figure 1), and these are areas of sensitive environmental listings (Oura Riverine Protection submission February 2024).
- Further to this, it is unknown if BCS considered the interflow (McMahon Advice 2023, February 2024) moving water (and potential contaminants) horizontally through and across the landscape below the proposed development site to the wetlands, lagoons, GDE and EEC of the Mid-Murrumbidgee.

- The Amended DA proposal again fails to recognise the environmental listing Endangered Ecological Communities (EEC) and its importance for environmental consideration.

1.6. Site Investigation

- This does not follow relevant guidelines and legislation under NSW EPA and State Environmental Planning Policy (McMahon Advice, September 2024).
- It does not follow the Wagga Wagga City Council Contaminated Land Management Policy (McMahon Advice, September 2024).
- The filled dam/pit and groundwater has not been investigated (McMahon Advice, September 2024).
- Hydrocarbons noted have not been discussed (McMahon Advice, September 2024).
- There has been no audit to determine if relevant procedures or guidelines have been followed (McMahon Advice, September 2024).

1.7. Cumulative Impact

- This is acknowledged in the Amended DA "Response to Submissions", however, there remains no assessment, other than two sentences in the original DA simply claiming there are no cumulative impacts (Environmental Impact Statement, October 2023).
- Given the level of industrial development on the River from Gundagai to Wagga Wagga, including PFAS contamination in the local groundwater system, and Hunter Water Australia (2001) report stating, *"Undoubtedly, the Murrumbidgee River is being polluted and the underlying deeper groundwater resources are potentially vulnerable",* we believe claims of no cumulative impacts is inadequate.
- *"The NSW Environment Protection Authority (EPA) has requested that a cumulative impact assessment be provided as part of the planning process for the abattoir in addition to the usual site-specific air, odour, water, noise and waste assessments."* (correspondence from The Hon Penny Sharpe MLC, February 2024)

1.8. Amenities waste water/effluent treatment

- Martens (Onsite Wastewater Management Strategy, July 2024) states there are two options, either a septic tank / Aerated Wastewater Treatment System (AWTS) with effluent directed to an absorption bed or trenches, or by combining in the Hydroflux treatment process
- As stated above, there is already a high nutrient load for the site wide area and Councils previous reports state, *"Proximity to the Murrumbidgee River and underlying water sources renders these resources vulnerable to pollution from septic effluent. DLWC estimates the movement of contaminates to and between water resource systems would be comparatively quite fast. Alternative sewerage technology is essential to safeguard these water bodies."* (Hunter Water Australia, 2001).

2. Planning

2.1. Abattoir Use and expansion

- The chiller rail for 60 head is proposed to be used once per week. Most abattoirs use the chiller rail 5 times per 5 day week, so this latent capacity could increase throughput to 300 head per week or 15,600 per annum, or by 500% (Paradice, September 2024).
- Thus, throughput could be increased x 5 times at the 'flick of a switch'.

- Increased throughput would increase the environmental load proportionally (Paradice, September 2024).

2.2. Feedlot use and expansion

- It seems unlikely that the proponents will leave the abattoir idle in times of drought when they are unable to finish cattle to kill on grass.
- Most likely they will operate the feedlot for production feeding to ensure the abattoir continues operating, to keep processing their stock and consistently supply end users.
- The feedlot has the capacity to supply in excess of 60 head of cattle per week, at up to 140 days on feed, on a continuous basis (Paradice, September 2024).
- Therefore, there is likely to be ongoing and at times increased environmental impact from the feedlots operation which remains unassessed.

  "It is remarkable that the possibilities of feedlot synergy in drought and latent abattoir processing capacity have not been explored and addressed in the EIS for the proposed abattoir development." (Paradice, September 2024).

2.2. Biosecurity

- No biosecurity plan is submitted, which is concerning when biosecurity is a critical issue for agriculture generally, as well as locally and regionally, for both health and economic reasons.
- In the Amended DA, the LUCRA report (Goldsworthy, July 2024) states, *"There is little discussion on biosecurity measures to be implemented at the proposed development, save for a small piece in the Operational Management Plan (Martens, 2023f)."*
- It is also stated that it's not intended to run pigs on the property or process them through the abattoir immediately and consequently implies no biosecurity plan is required for pigs.

  We believe that this is unacceptable given the significant risk to human health (Japanese Encephalitis Vaccination Update, NSW Health, November 2022). If the proponents wish to apply for a DA and license to process pigs, then surely they need to have a biosecurity plan in place for when that may occur.

2.3. Animal Welfare

- The proponents state they cannot consider an alternative site at the Bomen Special Activation Precinct (SAP, industrial development area that includes existing Teys abattoir) 20km away, for animal welfare transport reasons and, yet, they plan to transport cattle from their other properties as far away as Scone, about 600km.
- If this is the case, an Animal Welfare Plan should be included in the DA to ensure the welfare of the cattle being trucked and to justify their own standards, as well as the exclusion of Bomen as an alternative site on that basis.

2.4. Source of Livestock, RFI DPI Agriculture

- DPI Ag (RFI, February 2024) has stated *"DPI would support a small-scale facility processing livestock bred and raised on the existing farm Eringoarrah based on the following points:"*
- While it is not made entirely clear, we are advised that Okeview intends to bring cattle from its other properties and so does not meet the terms of support given by DPI Ag, nor its own claims of not transporting livestock for animal welfare reasons (see notes above)

- It is also unclear as to the future source and management of pigs to be processed through the proposed abattoir

2.5. Land Use (Land Use Conflict Risk Assessment, Golsworthy July 2024)

- This report makes no assessment of consented Farm Tourism DA on neighbouring property to the north (ORP Letter to DPI Agriculture, September 2024)
- Only partially assesses the consented Rural Subdivision DA (hobby farm) to the west and inaccurately claims it has lapsed (ORP Letter to DPI Agriculture, September 2024)
- It makes an inaccurate claim that valuations provided (Herron Todd White, June 2023) that showed relative loss of value from conflicting land use were *"high end"*, when no values were provided (ORP Letter to DPI Agriculture, September 2024)

2.6. Visual Amenity

Visual amenity is addressed in the Land Use Conflict Risk Assessment (Golsworthy July 2024), Landscape & Visual Impact Assessment (Moir, July 2024) and in the letter entitled Memorandum (Moir, July 2024). These reports also contain similar inaccuracies, omissions and inadequate assessments to each other, as follows.

- They do not take into consideration the combined visual impact from the existing unconsented feedlot and the glint currently given off from its roof visible for 3.5km, the proposed 11.7 meter high abattoir and the glint and glare from the 1.5 hectare solar array that tilts east west. These will be in view of all 4 lots in the neighbouring approved development to the west and 3 of the 5 safari huts for approved tourism development to the north (ORP Letter to DPI Agriculture, September 2024)
- The statement that the abattoir, power station and feedlot will only be visible for about 200m of the Oura Road is inaccurate. The site is significant at 8.2 hectares plus 3.7 hectare feedlot which totals just under 12 hectares. Consequently, and given its position up-slope, it will be highly visible for over 1.5km along the Oura Road, aerially and to neighbours (ORP Letter to DPI Agriculture, September 2024)
- The claim that the tree lot planted along The Applicants western boundary will screen the site is inaccurate, as it is in the valley floor while the proposed site is upslope, and so it will only screen the view for about 200m of road directly in front of the proposed site
- It also needs noting there are no current photos showing the feedlot in the LUCRA report, or any other report. Photos provided are out of date and do not show the existing central tin roof that can be seen for a distance of 3.5km (ORP Letter to DPI Agriculture, September 2024)

The aforementioned Moir reports also, similarly to the LUCRA report, include the following inaccuracies and inadequate assessment.

- Photomontage images use a wide angle lens to 180 degrees and so do not accurately reflect the "view".
- Does not assess approved developments of Farm Tourism to the north or Rural Subdivision to the west, all with building rights.

The amended Landscape Plan and Visual Impact Assessment is stated to be *"supported by a memorandum to the Visual Impact Assessment"* (Addendum to Environmental Impact Statement, July 2024), as the assessment did not considered neighbouring Approved Developments.

- The memorandum letter, again, ignores the consented Farm Tourism development to the north.
- It acknowledges only two lots of the Rural Subdivision approved development to the west, excludes two other lots and ignores the lot closest to the site of the proposed abattoir and power station.
- The letter inaccurately claims that, *"Due to the time that has lapsed since the proposed development was approved and an absence of a Construction Certificate, a detailed assessment is not deemed necessary for the potential dwellings."* when, as previously stated, this development has been commenced and has no time limit to its completion.
- The letter goes on to inaccurately state, after making no assessment, *"the visual impact of the proposal from these locations will be negligible."*

3. Roads and Traffic

The Amended DA is not supported by an amended road and traffic report.

- There is no new traffic survey and The Applicant states *"The number of vehicle trips generated by the site also will not change under the proposals so there would be no impact to the local or broader road network resulting from the change."* (Addendum to Environmental Impact Statement, July 2024).

  Yet there is documented increases to transport in other reports where revised plans are to cart off-site noxious materials of paunch contents, manure, destroyed animals and Hydroflux treated sludge on a regular basis.
- Concerns raised, and clarification requested in previous submissions, of holiday timing of traffic surveys, have still not been addressed.
- Inaccuracies of vision and safety distances at the Oura Road entrance to the proposed site remain unaddressed.
- There are now inconsistent vision distances for the Oura Road entrance in reports provided, stated as 350m in Traffic Impact Assessment Report (PDC Consultants, November 2023) and 200-250m in the LUCRA (Golsworthy, July 2024).
- The closest intersection of the Oura Road and the Oura village remains unassessed.
- There is still no assessment to the Wagga Wagga Transport Plan (WWTP) released by Transport for NSW in 2022.

4. Odour, Dust & Noise

As stated earlier in this submission, the Applicant has amended the DA with the following:

1. Hydroflux tank treatment process of abattoir effluent, and removal of treated sludge "off site"
2. Removal of manure, paunch contents and destroyed carcasses "off site".

However, no further assessment has been provided as to the risk and impacts of the above in relation to odour, dust and noise. The associated concerns, risks and impacts from the above amendments to the DA are:

- **Odour:** The transport of sludge off site, especially particularly odorous phosphorus and nitrogen sludge, as well as noxious products of manure, paunch contents and destroyed carcasses
- **Dust:** Increased traffic movements has not been assessed for additional dust impacts

- **Noise:** Sludge pumping, manure collection etc. will naturally increase noise emanating from the site and this has not been considered.

We also note that dust has emanated from the use of the unconsented feedlot and this was not included in the original DA, nor this Amended DA (Image 8).

5. Bushfire

The Bushfire Assessment Report (Amended DA, August 2024) report has corrected the inaccurate location listings for the proposal of the Mid North Coast and the Lower Hunter, and addresses protection of the development from bushfire and the potential of fire during construction but it does not address the potential of a fire originating from the site when it is fully operational. Consequently, the risk to the community and neighbours continue to remain unchanged and includes the following issues.

- Volunteer fire fighters being put at risk from industrial fire exposure.
- The risk of thermal runaway of batteries during periods listed as extreme or catastrophic fire risk. The risk of battery thermal runaway is only considered in the context of electric vehicle (EV) batteries and does not assess the proposed 1,500KWh battery to be fed from the 1.5ha solar array.
- Lack of assessment and growing community awareness that solar factories are fire ignition points. (Firetrace International, 2022)

The assessment report states that the buildings will be timber clad and also states the following, which seems inconsistent for fire safety:

- *"Locate combustible materials such as woodchips/mulch, flammable fuel stores away from the building."*
- *"Locate combustible structures such as garden sheds, pergolas, and materials such as timber garden furniture away from the building"*

6. Alternative Sites

6.1. Assessment

As part of any DA due process, under *Environmental Planning and Assessment Regulations 2021*, Section 192(1)(c), it is a requirement that Applicants show detailed consideration of alternative sites for development. This still has not been done adequately or with any level of rigour, and includes inconsistent and unfounded justifications.

- The chosen site was justified by The Applicant during consultation for it's proximity to existing yards, weighing scales and irrigation pivot, so that cattle can be fed on irrigated grass, drafted and weighed in yards prior to slaughter. In previous submissions, it was pointed out that The Applicant has exactly the same facilities in a replicable site at the main Eringoarrah homestead area of the property, only 9km further from Wagga. This site would not be in sight, sound or smell of any neighbour, as per the image provided in ORP's previous submission and, yet, this site remains unassessed as an alternative in the Amended DA.
- Bomen SAP is assessed as not suitable for animal welfare transport reasons and, as previously mentioned, and The Applicant still plans to transport cattle up to 600km from their other properties. So this assessment excluding Bomen SAP cannot be justified on that basis.

6.2. Expansion

When considering alternatives, we trust Council will seriously assess this DA against the Strategic Plans of the State, Region and Local Governments (ORP Submission, February 2024) that have been commissioned, developed and paid for, for good long term planning.

With that strategic planning background in mind, our experts tell us they are not aware of any abattoir or feedlot that has not been expanded at some point beyond the scale, size and throughput originally proposed and consented. We also note recent and local examples of this:

- Ladysmith feedlot - this has gone through three stages of expansion, as we are aware, the most recent approved by Council in 2021 under the current owners Australian Fresh Milk Holdings (previously Moxey Farms). Local residents advise that this has considerably increased truck movements, odour, dust and general disruptions that go way beyond the original consented plans
- Tumblong Non-Putrescible Waste Disposal Facility - this toxic waste treatment site was purpose built to take toxic waste from the Visy plant at Adelong, as we understand it. We also understand that it has been expanded and is now taking toxic waste from Canberra, as well as Adelong. This site is under ongoing investigation by NSW EPA for odour impacts and potential breach of licensing requirements (https://www.epa.nsw.gov.au/working-together/community-engagement/updates-on-issues/odour-investigations/tumblong-odours)

This leaves Planners, Councillors and the public with one simple question - is Oura an area and environment we would like to see developed and expanded industrially as an abattoir and/or feedlot? If the answer is no, then this proposal should be refused on that basis alone.

7. Consultation

7.1. Agreements

- It was agreed at the Oura consultation meeting that the proponents would include the feedlot in the survey area of the EIS, this has not been done.
- The ORP also wrote to the proponent after the meeting confirming this and further requesting that the feedlot be included in the project area of the EIS, this letter was ignored.

7.2. Neighbours

- The position of all neighbours does not seem to be accurate, which mischaracterised the majority as being supportive of the proposal, when it would seem the majority of neighbours are not supportive (Letter to DPI Agriculture, September 2024)

7.3. Response to Submissions (Response to Submissions, SJB Planning, August 2024)

While ORP has discussed in some detail the claims made throughout the document and the reports it refers to in other parts of this submission, we wish to make some further general comment here:

- The document gives the impression of thoroughness, however when read carefully this is not the case.
- The format uses section headings, lists the concerns raised in submissions and provides The Applicants response. In many cases the response only addresses some of the concerns listed e.g *"12. Unsuitable Site/Location/Zoning"* lists Eringoarrah main homestead alternative location as a concern raised and then does not respond to that.

- On other occasions the concerns are inaccurately listed and the response is then to that inaccuracy e.g *"1. Traffic and Infrastructure"* section does not list the request for survey dates or inaccurate of sight distances at the Oura Station entrance and so no response is provided.
- In other sections concerns raised in submissions are not listed at all e.g *"6. Water Contamination"* does not list the large number of concerns raised about the existing feedlot not being assessed or included in the EIS, with the risk of untreated effluent running from it over the effluent irrigation area and to the environment.

We also draw to the reader's attention to the 19 areas of additional information required to adequately meet the requirements of an EIS raised in response to the original DA (ORP Submission, February 2024 p70-71). Of these, only 5 have been provided and 14 remain unaddressed.

8. Public Opinion

It is clear that public opinion is sensibly opposed to this development for its inappropriate location amongst existing and potentially contaminating infrastructure, near the sensitive and protected environs of the Murrumbidgee River, it's lagoons and wetlands.

For these reasons, many in the local community and the region have come together at considerable time, cost and effort to protect the area from this proposal, that is clearly designed to serve The Applicants own interest without reasonable consideration of the environment or the community. This is all being done under the claim of being carbon neutral and, while we have not been able to verify these claims, we are conscious of public discussion and the recent Senate inquiry into 'greenwashing' (beefcentral, 23/04/2024), also dubbed as 'destroying the environment to save the planet'. Thus the Oura Riverine Protection Inc. community association was formed with the mission, *"To protect the natural and rural environment for the community of Oura, for the benefit of the region and future generations"*. The ORP has a steering committee of 10 and approximately 100 members.

- Submissions to the original DA in February 2024 drew a significant number of submissions as follows:
  - Opposed to the concept - 0
  - Opposed to the location = 62
  - Supportive of the concept = 8
- We are aware of approximately a further 18 objections to the Amended DA, which would take total submissions objecting to the proposed location to 80.
- Additionally, on 4 June 2024 a petition was commenced to garner public opinion and support. The petition now has:
  - Over 520 signatories (link to petition)
  - 21 further comments (Petition Comments, October 2024).

  Generally, people who have signed and commented on the petition, similarly to ORP, wish to protect the environment, water quality and the character of the natural and rural landscape. Many also note that under State and local Strategic Planning, the Bomen SAP, has been planned and implemented for exactly this purpose

Conclusion

Given the information the ORP and it's experts have submitted, the Amended DA is deficient, at times inaccurate and ultimately inadequate in addressing the RFI's, nor providing adequate information for Council to prudently justify any approval for this DA.

NSW EPA RFI

It is both inadequate in it's addressable methods used for the RFI and by the omission of key sources of surface and groundwater contamination, their capture and spread to the floodplain and groundwater system.

We refer the reader to NSW EPA, The Use of Effluent by Irrigation (https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/epa/effguide.pdf)

> *"**1.2 Environmental performance objectives***
>
> *The following environmental performance objectives apply to the use of effluent by irrigation.*
>
> ***Protection of surface waters:** Effluent irrigation systems should be located, designed, constructed and operated so that surface waters do not become contaminated by any flow from irrigation areas, including effluent, rainfall runoff, contaminated sub-surface flows or contaminated groundwater."*
>
> [Inadequate response, refer section 1.2 Surface Water]
>
> "***Protection of groundwater:** Effluent irrigation areas and systems should be located, designed, constructed and operated so that the current or future beneficial uses of groundwater do not diminish as a result of contamination by the effluent or runoff from the irrigation scheme or changing water tables."*
>
> [Inadequate response, refer section 1.3 Groundwater]
>
> "***Protection of lands:** An effluent irrigation system should be ecologically sustainable. In particular, it should maintain or improve the capacity of the land to grow plants, and should result in no deterioration of land quality through soil structure degradation, salinisation, waterlogging, chemical contamination or soil erosion."*
>
> [Inadequate response, refer section 1.1 Waste Water/Effluent Treatment]

With regard to the risks associated with this development and the already polluting load on ground and river water (Hunter Water Australia, 2001), we also draw Councils attention to this extract from the same report commissioned by Wagga Wagga City Council. While the report was written in 2001, the soil geology, hydrology and the sewerage treatment systems used in the village of Oura remain unchanged.

> *"Highly permeable layers overtop many shallow aquifers, and thus the wrong choice of sewerage system to service the properties in these areas, could leave Council exposed to serious ongoing risk. There are numerous bores that draw water from these shallow aquifers for stock watering and irrigation processes. Furthermore local hydro-geologists confirm that there is a relatively rapid transfer from these shallow aquifers into the Murrumbidgee River system, above which the city's popular summer river bathing activity occurs."*

The report goes on to state specifically for Oura:

> *"Undoubtedly, the Murrumbidgee River is being polluted and the underlying deeper groundwater resources are potentially vulnerable. The frequency of pollution at least of subsoil water, which migrates to the floodplain, would be high in wet periods."*

The reader can be left with no doubt that by the EPA's own standards, the Mid-Murrumbidgee sensitive environmental listings, the evidence provided by McMahon Earth Science and Paradice, the physical layout of the site and it's infrastructure, along with the previous findings of Hunter Water Australia, that this site is inappropriate for the construction and operation of an abattoir with an existing feedlot.

DPI Agriculture RFI

We also point out that the Amended DA and RFI is inadequate in addressing DPI Agriculture's request, for the following summarised reasons:

- It does not answer the question adequately as to the source of livestock to be processed, and consequently does not meet DPI's stated terms of support.
- The LUCRA report requested is inaccurate, deficient and ultimately inadequate in addressing the RFI or providing accurate information to Council.
- There is no Biosecurity Risk Management Plan for managing risk and impacts to the agricultural economy or human health.

Amended DA

The Amended DA remains deficient as it does not accurately or adequately address the following:

- Environmental contamination sources, risks and impacts.
- Omits key infrastructure including the closest bore, the existing feedlot and the dams that capture site wide runoff, which then overflows to the floodplain and/or percolates to groundwater.
- Does not recognise key environmental listings including Endangered Ecological Communities (EEC).
- Roads and Traffics Assessment does not incorporated the changes to the Amended DA or prior inaccuracies.
- Odour, dust and noise assessments have not been updated to incorporate the changes to the Amended DA.
- Bushfire Assessment does not address the risk of thermal runaway, or the risk to the community as an ignition source of fire, nor the management of that risk.
- Visual amenity, conflicting land uses and changes to land use characteristics remain inadequately assessed based on inaccurate assumptions and omissions, also used to inaccurately claim that these assessments are not required.
- Alternatives have not been adequately assessed as per planning regulations on the basis of selective data and inaccurate justifications.
- Consultation continues to be inadequate with what seem to be inaccurate claims of support and a lack of follow through to matters publicly agreed.

Future Risks, Impacts and Costs to the Community

Further to this, there is a clear and evidential risk of future expansion given the latent processing capacity of the abattoir and the existing feedlot, along with the Applicants refusal to consider alternatives sites without a feedlot, as well as publicly stating that they have some very ambitious goals. Further to this, expert opinion is that nearly every abattoir approved in Australia has been expanded at some later date.

As has been shown with just two examples out of many, these kinds of industrial developments placed outside of strategically planned areas often become ongoing problems for communities, authorities and

Council, proving to be difficult and costly to manage. For these factors alone, the proposal does not fit or meet the Strategic Planning goals of the State, Region or Council.

It is clearly evident that this proposal is not in the public interest, with the environment and community bearing the risk and impacts of a private abattoir, where public opinion in the vast majority is opposed to the proposal, as shown with 80 odd objections and over 520 petition signatures.

The ORP has repeatedly and publicly stated that we are not opposed to The Applicant's idea for a private abattoir. However, why should the environment, community and future generations bear the risk and impact of this proposed private abattoir for the Scone based owners, when realistic alternatives exist that fit within the Strategic Plans already developed for Wagga Wagga and The Region. We would encourage The Applicant to find a more appropriate location where the community would be willing to support their aspirations and stated ambitious goals.

Ultimately, this is an environmentally risky project, without community interest and that is likely to grow beyond what is being applied for, and we request that Council act in the best interest of the environment and the community by refusing this DA.

Yours Sincerely,

Tom Kelsall
B. App Sci (Rural), MBA

President, Oura Riverine Protection Inc.

Attached

Figures and images 1 - 8

Attachments

1. McMahon Advice, September 2024
2. Paradice, September 2024
3. Letter to Minister Sharpe, June 2024 (excluding attachments, included in ORP Submission, February 2024)
4. Hunter Water Australia, 2001 (extract)
5. Japanese Encephalitis Vaccination Update, NSW Health, November 2022
6. ORP Letter to DPI Agriculture, September 2024
7. Firetrace International, 2022
8. Petition Comments, October 2024

Figures and Images

Figure 1: Site Conceptual Map

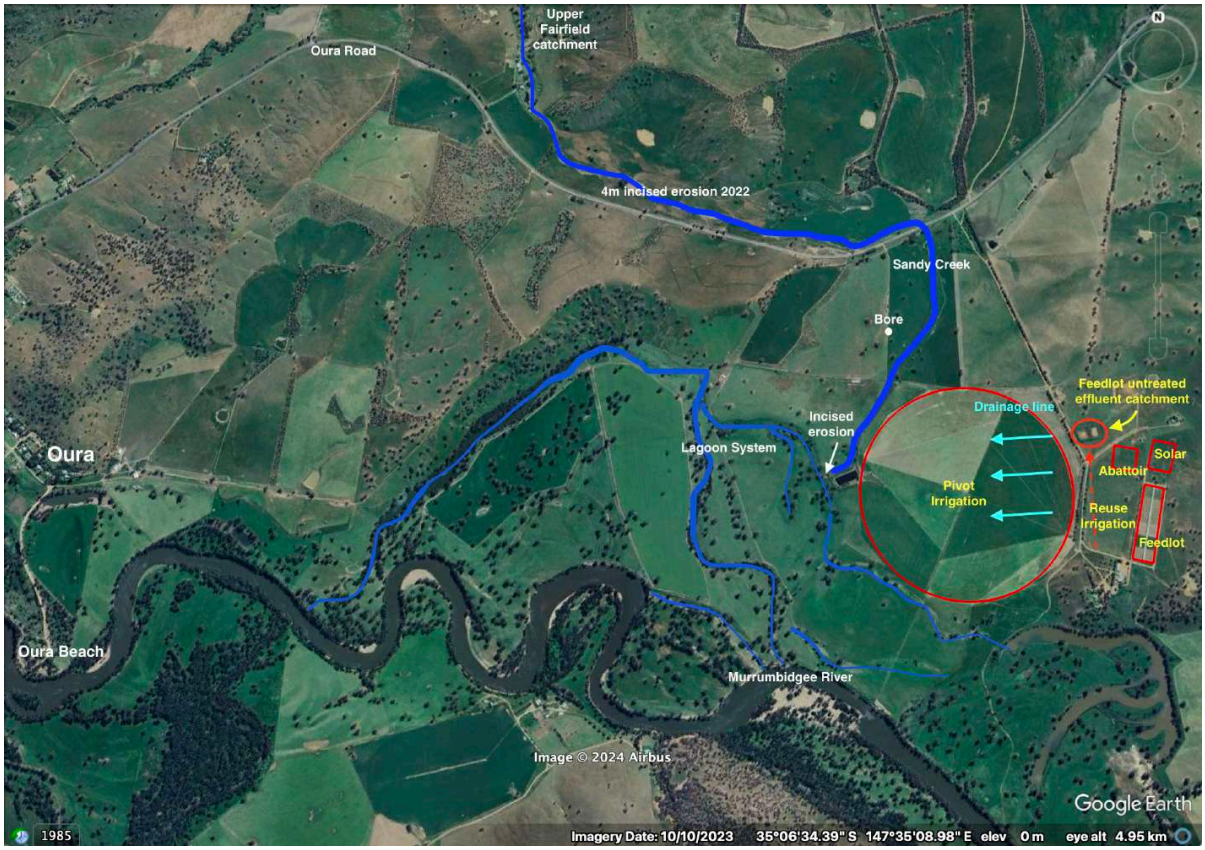

Figure 2: Site Wide Runoff Model

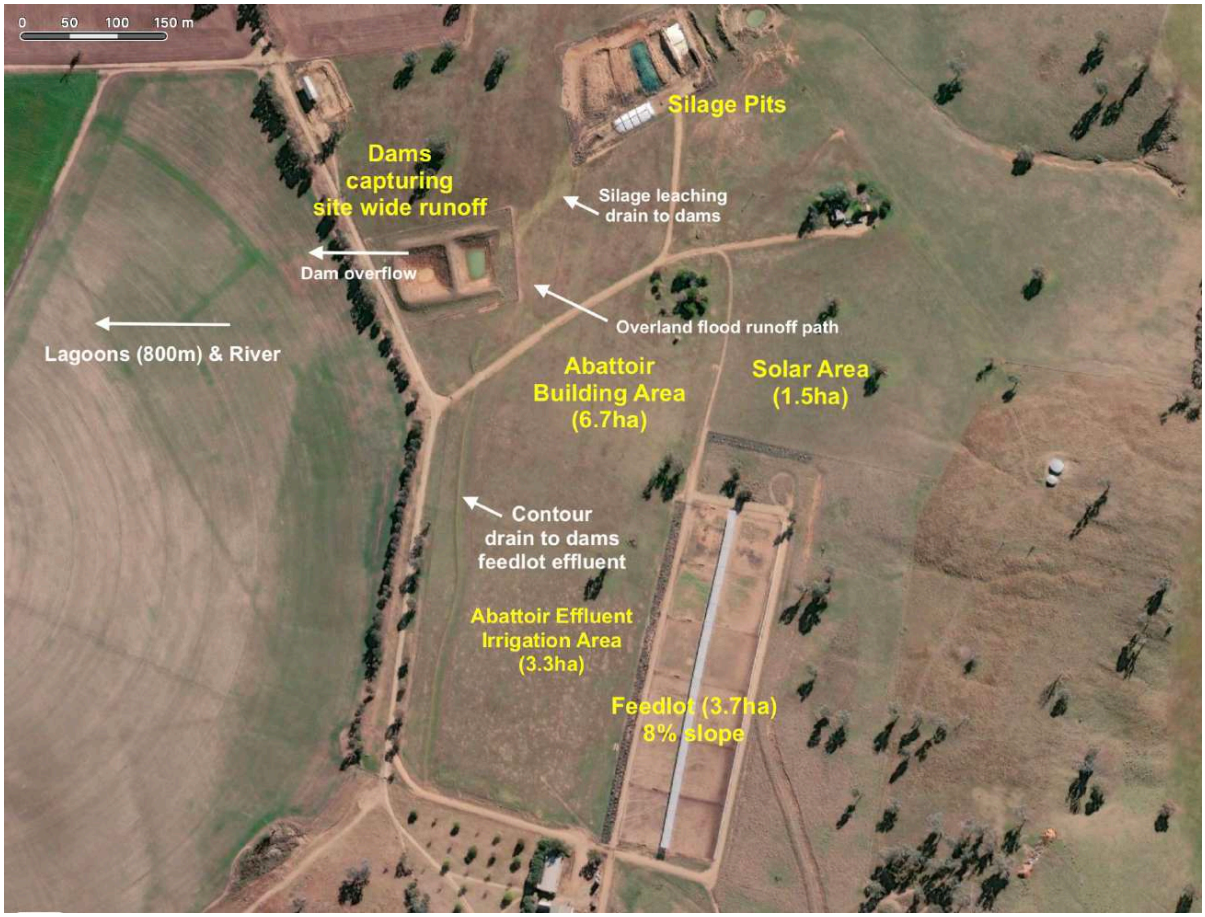

Figure 3: Catchment Area 33 km²

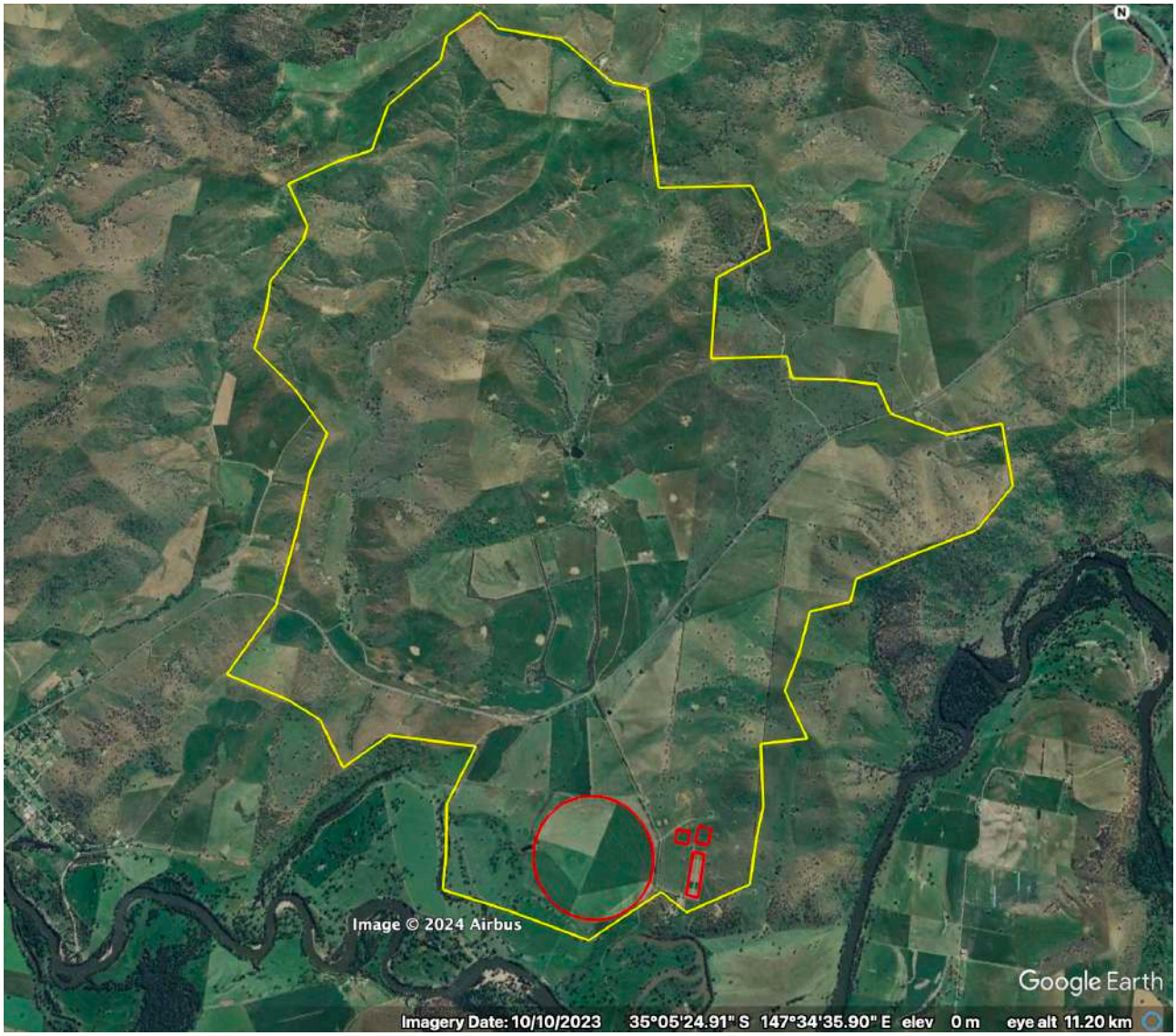

Figure 4: Flood Model PMF

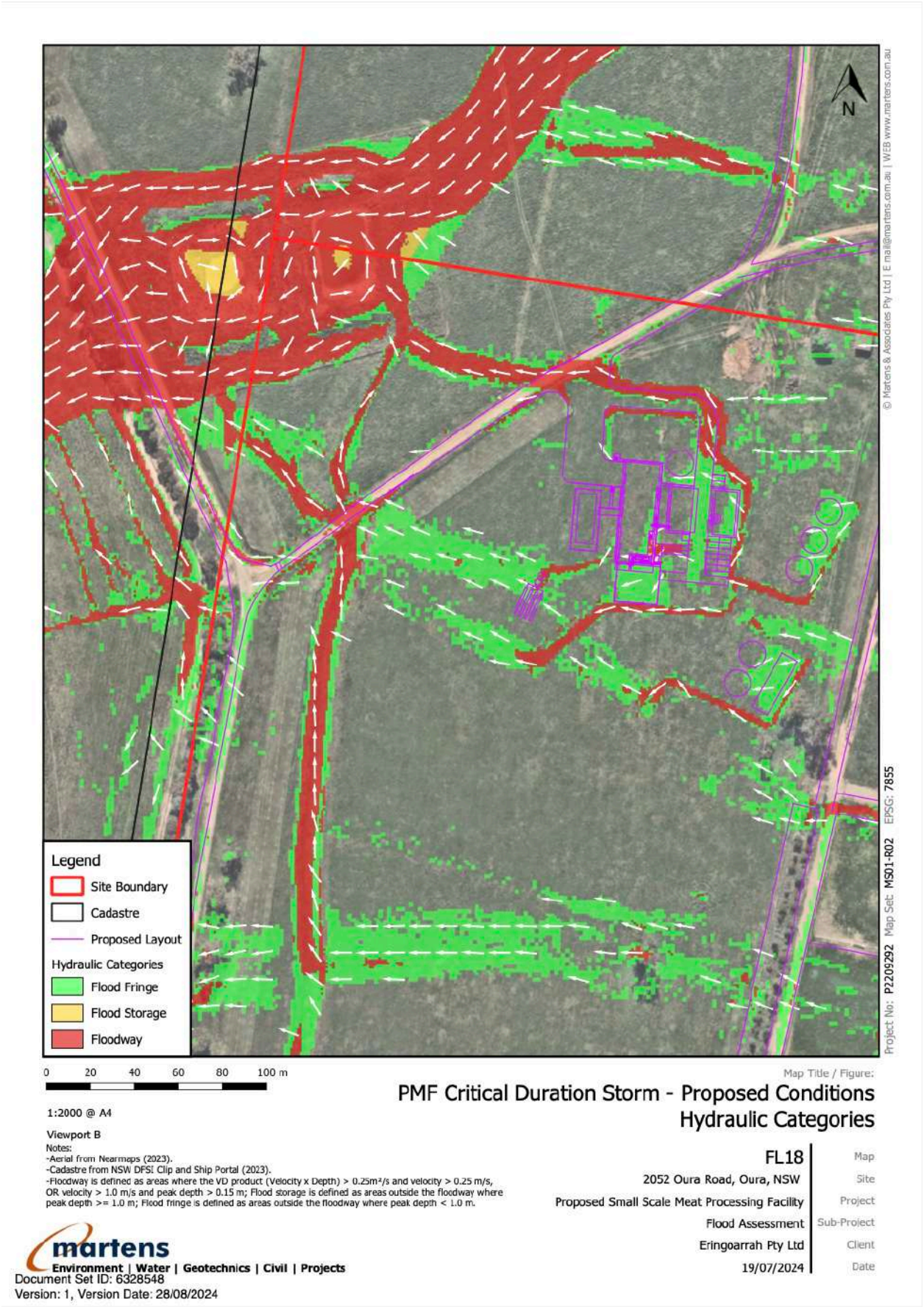

Figure 5: Flood Model 1% AEP

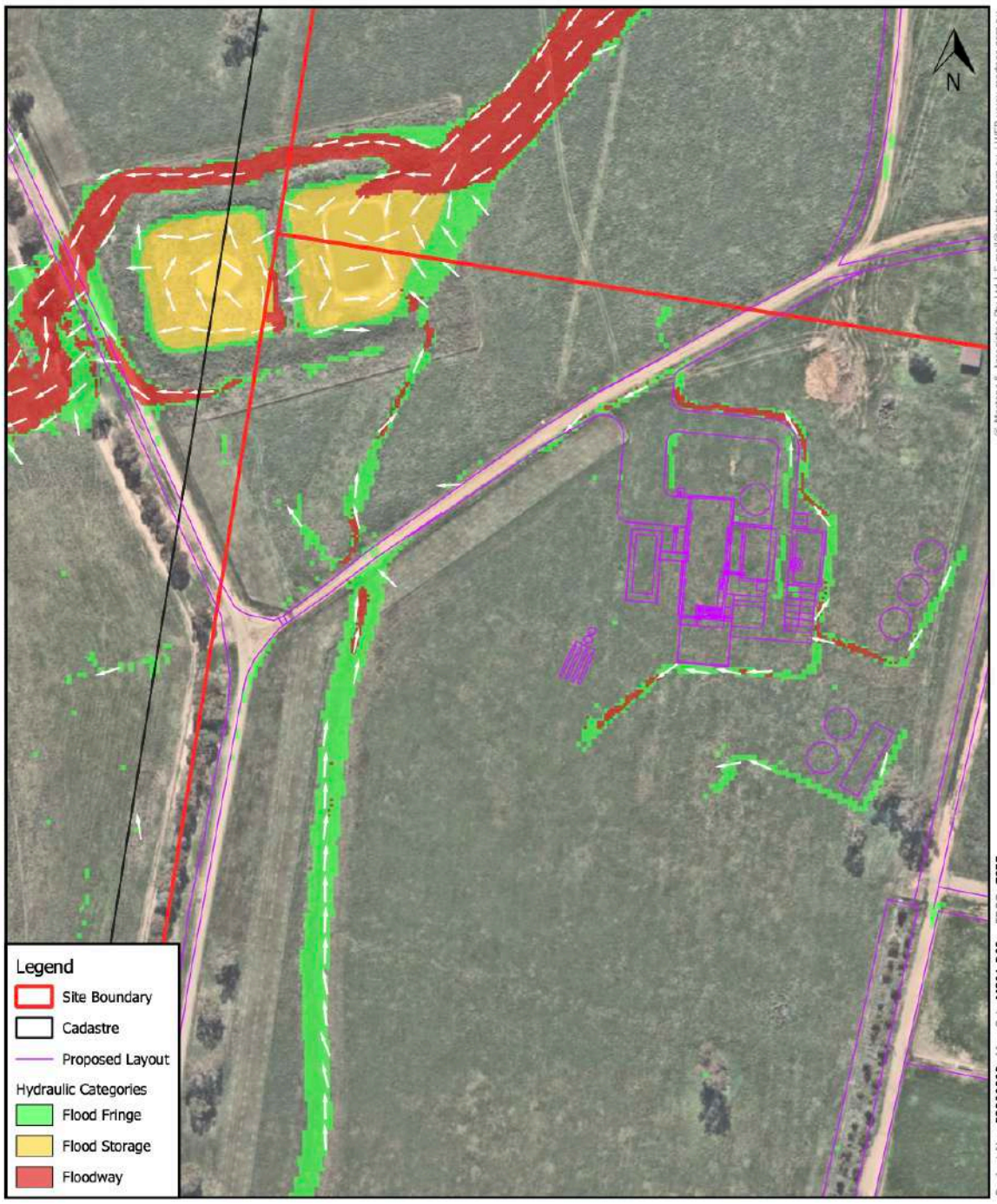

Figure 6: Effluent Irrigation Area Slope 6%

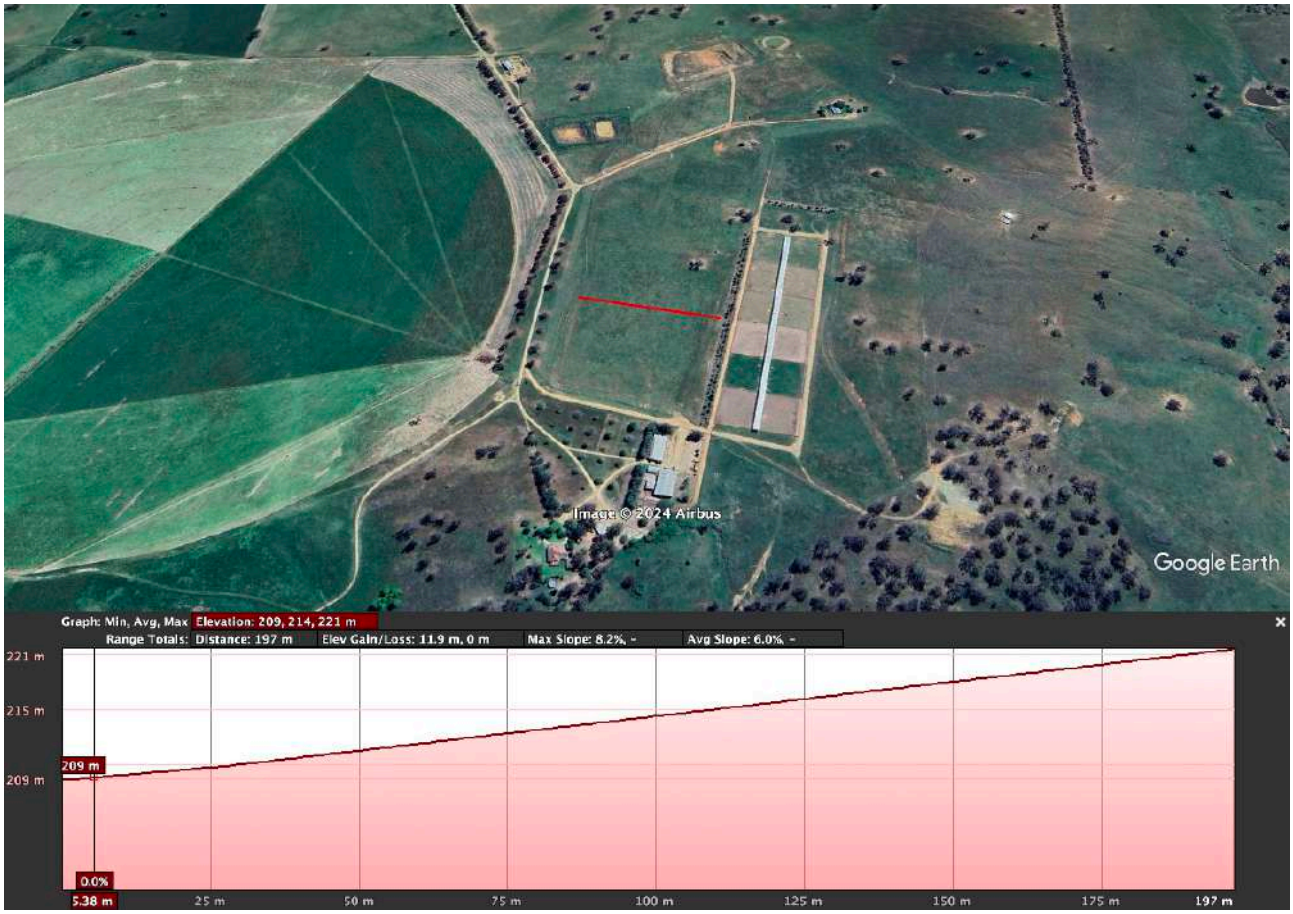

Figure 7: Feedlot Slope 8%

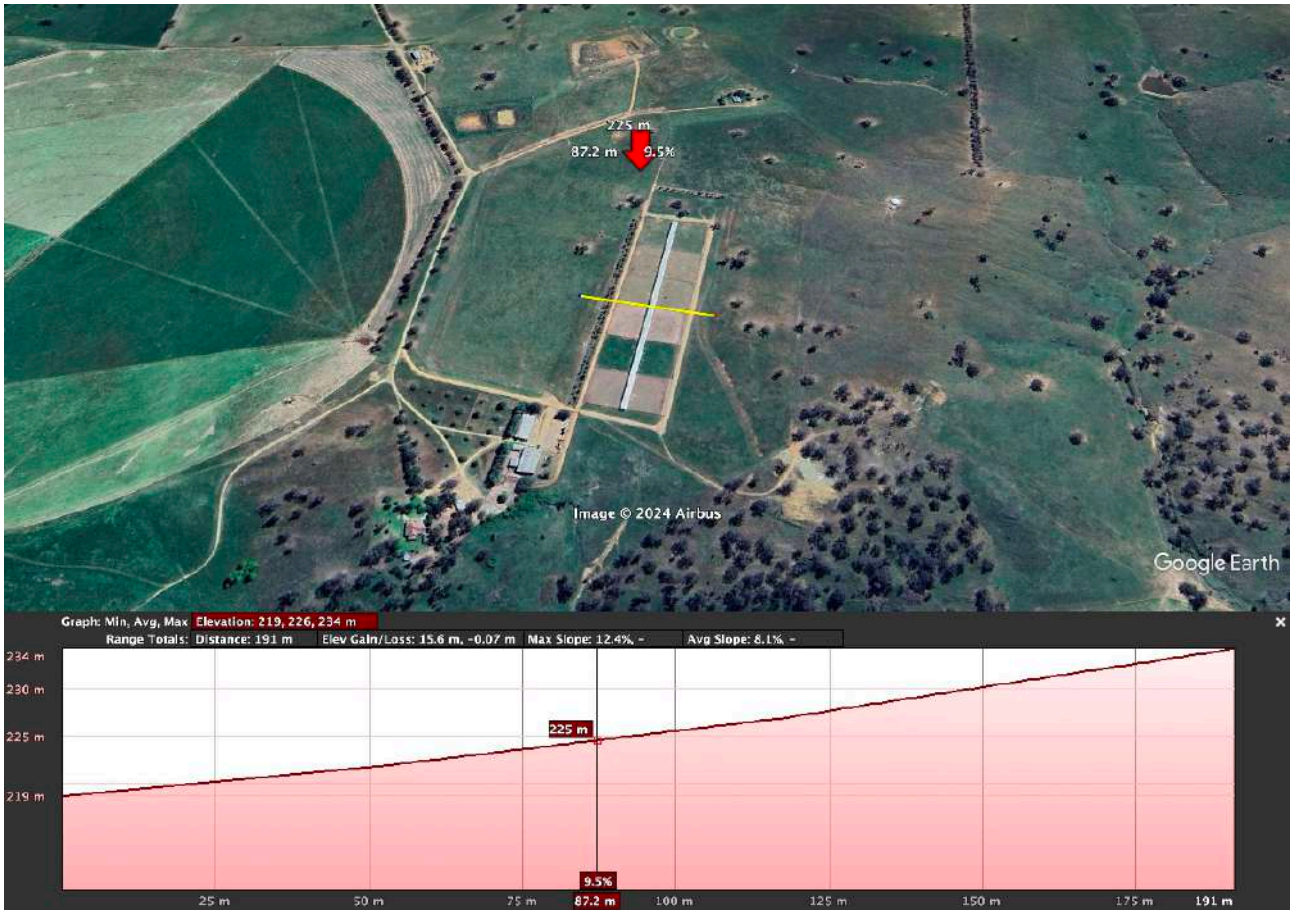

Image 8: Feedlot Use re Dust (March, 2023)

DM McMahon Pty Ltd
6 Jones St (PO Box 6118)
Wagga Wagga NSW 2650
t (02) **6931 0510**
www.dmmcmahon.com.au

23 September 2024

Attention: Oura Riverine Protection Inc. (ORP)
c/- 1994 Oura Road
Oura NSW 2650
ourariverineprotection@gmail.com
BY EMAIL

Dear ORP

Re: Advice around the Oura Meat Processing Facility proposal (DA23/0598)

1. I refer to the verbal instruction from yourself to provide advice around the adequacy and accuracy of the technical reports submitted to Wagga Wagga City Council for the proposed Oura Meat Processing Facility (the abattoir). The technical reports I am reviewing are:

A. Groundwater Assessment Report, Martens & Associates Pty Ltd, November 2023 Report No. P2209292JR06V03.
B. Supplementary Groundwater Assessment, Martens & Associates Pty Ltd, July 2024 Report No. P2209292JR10V02.
C. Preliminary Site Investigation, Martens & Associates Pty Ltd, November 2023 Report No. P2209292JR03V04.
D. Detailed Site Investigation, Martens & Associates Pty Ltd, November 2023 Report No. P2209292JR09V03.
E. Detailed Site Investigation, Martens & Associates Pty Ltd, July 2024 Report No. P2209292JR09V04.
F. Onsite Wastewater Management Strategy, Martens & Associates Pty Ltd, November 2023 Report No. P2209292JR07V03.
G. Water Balance Assessment, Martens & Associates Pty Ltd, November 2023 Report No. P2209292JR01V04.
H. Water Balance Assessment, Martens & Associates Pty Ltd, July 2024 Report No. P2209292JR01V05.

2. It is recommended that this advice is read in conjunction with the Interim Advice I provided ORP dated 27 September 2023 around the proposed abattoir setting and potential environmental impacts.

3. I am suitably qualified and experienced to prepare this Interim Advice being a Certified Professional Soil Scientist and Certified Environmental Practitioner (Site Contamination Specialist) with expertise in soils and geomorphological assessment and 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.

4. Technical Report Review and Advice.

A. Groundwater Assessment Report (Original DA, November 2023).

a) The Groundwater Assessment Report mischaracterises the groundwater processes on the proposed abattoir site and surrounds:
    i. There are overlooked hydrogeological units in Tables 4 and 5 and importantly no monitoring bores have been installed targeting these units, both the identified and overlooked ones.
    ii. For example, the downgradient Wagga Wagga alluvium upper aquifer (Cowra formation) starts from the surface not 25m depth and water bearing zones start at around 6-8m as identified in Table 6.
    i. Also, there is no mention of interflow where this is a common occurrence in the Oura landscape and has been identified in the Interim Advice I provided to OPR dated 27 September 2023. Interflow being subsurface runoff in the unsaturated zone that may return to the surface as overland flow as elevation and relative incline decreases.
    iii. The fractured rock aquifer from 5m down has also been overlooked where it is well documented that water bearing zones locally reside in the relatively impervious contact between the weathered geology and underlying bedrock (usually 15 to 35m depth).
b) The four monitoring bores that were installed on site to a maximum of 4.2m depth were dry. This is not surprising given they were drilled on the higher elevations to shallow depths. These bores are inadequate to characterise groundwater on the proposed abattoir site and surrounds as:
    i. There is no groundwater data to benchmark current conditions to make future monitoring meaningful.
    ii. There are no deeper bores targeting all the hydrogeological units.
    iii. There are no bores directly downgradient of the dam site or irrigation area.
    iv. No slug tests were undertaken, nor hydraulic gradient measured.
    v. There is no baseline data to gauge temporal change from any development.
    vi. There is no characterisation of groundwater flow lengths, transmissivity, specific yield, sub-catchment size, recharge, residence nor responsiveness to change.
c) Overall, the report is an inadequate and inaccurate representation of likely groundwater conditions on the proposed abattoir site and downgradient of the site.

B. Supplementary Groundwater Assessment (Amended DA, July 2024).

a) This document follows on from the Groundwater Assessment Report but does not address any of the inadequacies or inaccuracies noted above in Section 4 other than constructing monitoring bores in the fractured rock aquifer and sampling them.
b) It is particularly noted that there is no characterisation of the groundwater gradient, flow lengths, transmissivity, specific yield, sub-catchment size, recharge, residence nor responsiveness to change, and no conceptual hydrogeological model (that includes interflow) developed.
c) From the data presented in the Supplementary Groundwater Assessment around the four deeper bores installed (MW05-MW08) and my observations around the groundwater elevation at the bore constructed on the neighbouring property (Lot 8 DP 1212361) in an alluvial aquifer, the groundwater level is similar, therefore it can be argued the two groundwater systems are connected. This connectivity has been overlooked and more information is required around this.
d) The groundwater information presented is inadequate to base a risk assessment upon.

C, D, E. Preliminary & Detailed Site Investigation (Original DA, November 2023 & Amended DA, November 2024).

a) Although mentioned these reports do not follow the relevant guidelines and legislation, namely:
    i. NSW EPA, Consultants Reporting on Contaminated Land: Contaminated Land Guidelines, (2020).
    ii. State Environmental Planning Policy (Resilience and Hazards) 2021.
    iii. National Environment Protection (Assessment of Site Contamination) Measure (NEPM), (2013).
b) Nor do the reports follow the Wagga Wagga City Council Contaminated Land Management Policy:
    i. When reports are required to be submitted to the EPA and/or Council they must comply with the requirements of the CLM Act to be prepared, or reviewed and approved, by a practitioner certified under an EPA recognised scheme.
c) General comments are:
    i. There appears to be a filled dam or filled rubbish pit on the proposed abattoir site from the historical aerial photos and this has not been investigated.
    ii. Sampling for asbestos does not follow any recognised guidelines or standards.
    iii. The hydrocarbon impacts at BH205, SP01 and SP04 have not been discussed.
    iv. Groundwater has not been investigated.
d) In my opinion the reports cannot be relied upon unless accompanied by a Site Audit that addresses these inadequacies and inaccuracies. A Site Audit is required as to determine whether, in the auditor's opinion, the consultant's work complied with relevant procedures and guidelines, whether it provides a robust basis for decisions or actions relating to the land concerned and/or whether the land is suitable for the proposed land use.

F. Onsite Wastewater Management Strategy (Original DA, November 2023).

In summary, this report cannot be relied upon owing to a compromised methodology, inaccurate information, lack of scientific rigour to justify opinions, and the selective use of data, for example:

a) The climate data is inaccurate and inconsistent:
    i. Data for the project area is taken from Wagga Wagga with records only from 1941 to 2023. The patched point dataset with interpolated records dating to 1889 for Oura would be preferable to use - the result being a 300mm difference in evaporation per year, among others.
    ii. The report quotes a median annual rainfall for Wagga of 566mm while the Irrigation Field Salt Balance uses a median of 573.6mm and the water balance uses a figure of 484mm. These different figures coupled with the inaccurate evaporation data is a major deficiency of the reliability of these models.
b) Further regarding the water balance this is open to criticism owing to:
    i. The inaccurate climate data.
    ii. The percolation rate being assumed not measured.
    iii. The runoff factor is not in line with any of the detailed available data or modelling done for the area by Adamson, or McClymont and Freebairn et.al.
    iv. Higher decile rainfall has not been modelled for wet weather contingency.
c) Regarding the nutrient balance this is also open to criticism owing to:
    i. Phosphorus sorption in the soil is low and is a major limitation of the site. From my estimate it would only take a few years of irrigation of wastewater for the release of soil phosphorus to occur to both surface and subsurface runoff waters.
    ii. A phosphorus plant uptake of 20kg/ha/year has been adopted in the nutrient balance with no justification. It is well document that some fodder crops such as maize can uptake such an amount, but generally cereal crops and pasture cannot. There is a wide variety of published data around this (Reuter and Robinson for example), and it is an inadequacy of the model not to present different cropping rotations and long-term rolling scenarios.
    iii. A wastewater phosphorus figure of 20mg/L has been adopted which is borderline high strength effluent by reference to NSW EPA guidelines. In the interests of environmental protection with readily available modern technology a low strength wastewater should be pursued.
d) Regarding soil:
    i. There is no soil survey methodology which can lead to fact and opinion being blurred and site conditions mischaracterised. The soil survey appears to be low intensity (and low cost) and is inadequate for a precise and accurate survey. The soil analysis is inadequate and soil horizons have not been sampled - only predetermined depths which may misrepresent soil conditions. There are no field measurements for percolation or run off - only assumptions have been used.
    ii. There is a real erosion potential as evidenced by the mass movement down gradient I observed while digging the soil pits adjacent to the site as reported in the Interim Advice I provided ORP dated 27 September 2023, this is a risk exacerbated by the evidence of high sodium concentration in the subsoil.

iii. There is no soil benchmarking, nor groundwater benchmarking, and no proposed ongoing monitoring locations or program.
iv. There is no geotechnical data nor engineering recommendations around the proposed construction of the dam and how design can overcome the identified site and soil limitations.

e) Around runoff water:
   i. There is no mention of the down gradient Groundwater Dependent Ecosystem or interflow I identified in the Interim Advice I provided ORP dated 27 September 2023.
   ii. There is no contingency for periods of extended wet weather and dam overflow including but not limited to the dam northwest of the proposed abattoir that catches runoff from the feedlot and proposed effluent irrigation area via a contour bank.

G, H. Water Balance Assessment (Original DA, November 2023 & Amended DA, July 2024).

a) The latest Water Balance Assessment does not state if it replaces or supplements the original report and it looks like the same report has been re-issued.
b) The rainfall data used in the water balance is different again from those presented in the Onsite Wastewater Management Strategy. The average rainfall has been presented as being 574.3mm and 560.3mm which differs again from those used in the previous report of 566mm, 573.6mm, and 484mm. This selective use of different rainfall averages for different modelling outputs is open to scrutiny and casts doubt on the validity of the assessment.
c) The modelling provided in this assessment does not show the workings or the detailed data input/output. Based on the concerns above and around the Onsite Wastewater Management Strategy it is difficult to make any assumptions around the modelling as the methodology and data appear to be based on selective and inaccurate data.
d) It is interesting that the sections in the Water Balance Assessment around impacts and mitigation strategies (Section 4) do not talk to the Supplementary Groundwater Assessment around Risk Assessment and Mitigation (Section 4.1) nor the Onsite Wastewater Management Strategy (Hydroflux Technical Report – Attachment I). These reports contradict each other with discussion around untreated wastewater being discharged to groundwater on one hand, being sustainably irrigated on the other, and incredibly the total dissolved solids being left untreated as the proposed wastewater system is inadequate to do so (reverse osmosis required).
e) The information around wastewater management as a whole is inconsistent, confusing, and is inadequate base to a risk assessment upon.

5. Conclusion

a) In summary the proponent has presented data that remains inadequate to base a risk assessment upon due to inaccurate and inconsistent data and assumptions. More information has been received by means of supplementary reports but these follow on from the initial reports compounding the uncertainty. The implications are potential harm to the environment and human health as the connectivity between the potential contamination source, migration pathways, and these receivers has not been adequately established.

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

Yours sincerely

Certified Professional Soil Scientist
Certified Environmental Practitioner (Site Contamination Specialist)
BAppSc (Ag) GradDip (Water) MEnvMgmt
MALGA MEIANZ MSSA

27 Marns St.
Wagga Wagga NSW 2650
16 September 2024

Lynne Wallace
Secretary
Oura Riverine Protection Inc.
OURA NSW
By email: ourariverineprotection@gmail.com

Dear Lynne,

Re: The Eringoarrah Livestock Processing Facility - Environmental Impact Statement (EIS) 2023

I write in response to an invitation from the ORPI to review the Eringoarrah Abattoir EIS and supplementary information provided by the proponent responding to matters raised in the initial DA exhibition review process.

The review is conducted "pro bono" for the purpose of increasing the appropriate knowledge of the citizens of the Oura community.

My background is as a manager of corporate feedlots and abattoirs for 30 years (1978-2008) and subsequently advisor to feedlots and abattoirs for 15 years (2009-2024). My area of expertise has evolved to include the management of environmental aspects and impacts of Australian feedlots and abattoirs.

I have considered key supplementary information to the core EIS document. Matters discussed below relate to elements that I think may remain unaddressed.

1 OBSERVATIONS

<u>Effluent disposal, salts and utilisation</u>

1. The EIS does not appear to discuss provision for capture and recycling of irrigated wastewater tailwater runoff from the designated irrigation area which sits below the six (6) pen feedlot. (This control may be envisaged by the proponent but is not clearly proposed.)
2. The Hydoflux report produced in support of the DA uses irrigation effluent quality parameters for TDS (1000mg/kg) and EC (1500uS/cm). These levels may be significantly less than actual levels generated. Licence conditions may need to be used to govern these levels and protect the sustainability of the irrigation area.
3. Poor operational management of the irrigation system may result in localised effluent application exceeding field capacity and creating runoff. The average slope in the irrigation area appears to be 6% as illustrated in Figure 2.

Drought feedlot runoff (Figures 1, 2 & 3.)

4. An existing drought feedlot facility on the property is close to the proposed abattoir.
5. The feedlot is unapproved by the Wagga Wagga Council however facilities of this type are legal for use when a zone is drought declared.
6. The drought feedlot has a significant one-time standing capacity to hold and feed cattle.
7. Based on normal feedlot standards for standing area and bunk space the feedlot has capacity (a conservative estimate) for 1,200 Standard Cattle Units (SCU's).
8. The feedlot slope from bunk-line to back gate appears to be about 8% (refer Figure 1) which would provide significant runoff velocity and possible entrainment of manure in most rain events over 5mm in one day.
9. The National Guidelines for Beef Cattle Feedlots (MLA 2012) specify that …"*to ensure that pens drain quickly after rainfall, but that runoff is not so rapid that it scours excessive amounts of manure from the pen surface, the downslope gradient in all new feedlot pens should be between 2.5 and 4%."*
10. The feedlot sits immediately upslope of the proposed abattoir effluent irrigation area.
11. It is understood from the EIS that runoff from the feedlot will be diverted from draining onto and through the effluent irrigation area. It is also understood that feedlot area runoff will be managed as clean water runoff diversion.
12. Runoff diversion water is understood to drain to the twin pond system to the northwest of the feedlot and west of the abattoir development. Is this pond/s adequately sized to meet the spill frequency guidelines for beef cattle feedlots?
13. It is likely that in periods of drought declaration, when the drought feedlot is in use, or has been in use for some time, the stormwater or rainfall runoff from the feedlot will carry a heavy nutrient load due to the steep slope of the pens. This water will be higher strength for nutrient, salts, and elemental density than the abattoir water. Ideally the operator would create and maintain structures and systems to capture and reirrigate this runoff.

Drought feedlot operation and latent abattoir capacity

14. The abattoir proponent advises that the drought feedlot will not be used to grow feedlot cattle to slaughter or hold/house and/or feed cattle immediately prior to slaughter. It is expected that the feedlot will be left standing and used in times of drought to support the grazing herd on the farm.
15. It seems practical and likely that in times of drought, cattle will be feed for production in the feedlot to ensure the abattoir can keep the business model running. After all, with 1,200 SCU head feedlot capacity and an abattoir kill capacity of 60 per week, the feedlot has capacity to supply 60 cattle per week with up to 140 days on feed, on a continuous basis.
16. If this is the case then the environmental impact of an operational feedlot, adjoining and assisting the abattoir in times of drought, should reasonably be assessed as an element of the EIS.
17. The abattoir has chiller rail for 60 head of cattle proposed to be used once per week. Other abattoir facilities on average use the chiller hanging rail 5 days a week for 5 separate kill runs which would give the facility the capacity to process 300 head per week. This would increase the environmental load proportionally and increase the kill throughput by 500%.
18. If the latent capacity of the proposed abattoir design is 300 head per week (15,600/annum) then this should be assessed as an element of the EIS. If this assessment is not provided, then it would be appropriate for the consent authorities to apply a limit condition of 60 head per week to the development. This specific limit condition should not be subject to variation in the EPL without submission of a new DA supported by an EIS or SEE.

19. It is remarkable that the possibilities of feedlot synergy in drought and latent abattoir processing capacity have not been explored and addressed in the EIS for the proposed abattoir development.

Cattle supply in times of drought

20. The EIS states that “as a general rule” all cattle will be slaughtered directly from grazing on grass at “Eringoarrah”. In the Australian situation with normal seasonal variation, drought, and variable feed quality, it seems unlikely that this rule will be easy to apply.

Operational flexibility

21. There are operating systems outlined in the EIS and attachments that will likely change over time. For example, no cattle on trucks delivered direct to slaughter if likely to be found to be impractical in the long term. Perhaps this proposed system should be made a condition of approval?

I trust these observations are of assistance in your considerations and response to the EIS and supplementary information lodged with the Wagga Wagga City Council.

Yours sincerely,

Peter Paradice
0404 444650
27 Marns St
Wagga Wagga NSW 2650

2 Appendices

2.1 Appendix A: Feedlot and irrigation area slopes

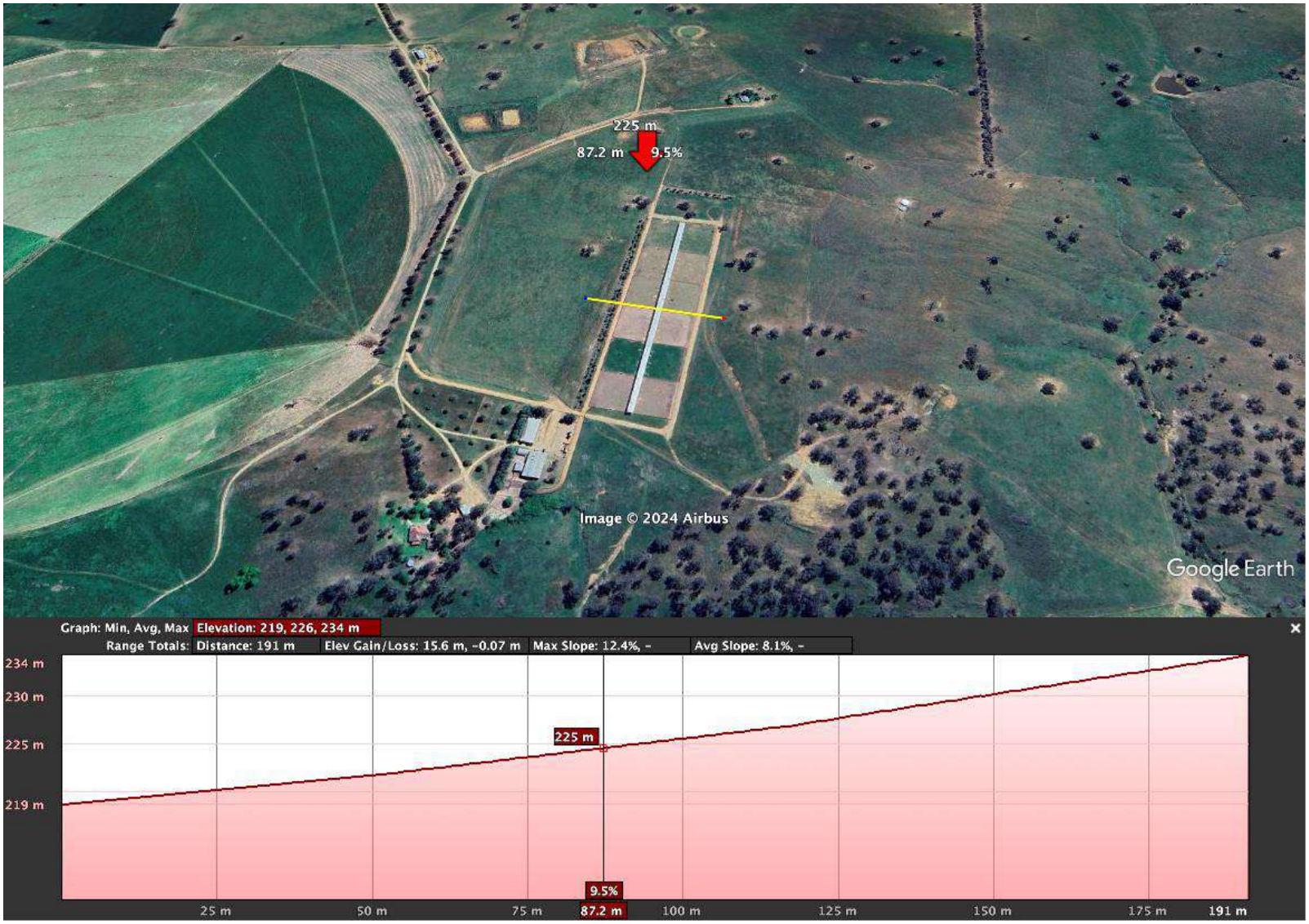

Figure 1: Average slope through existing drought feedlot (beef cattle)

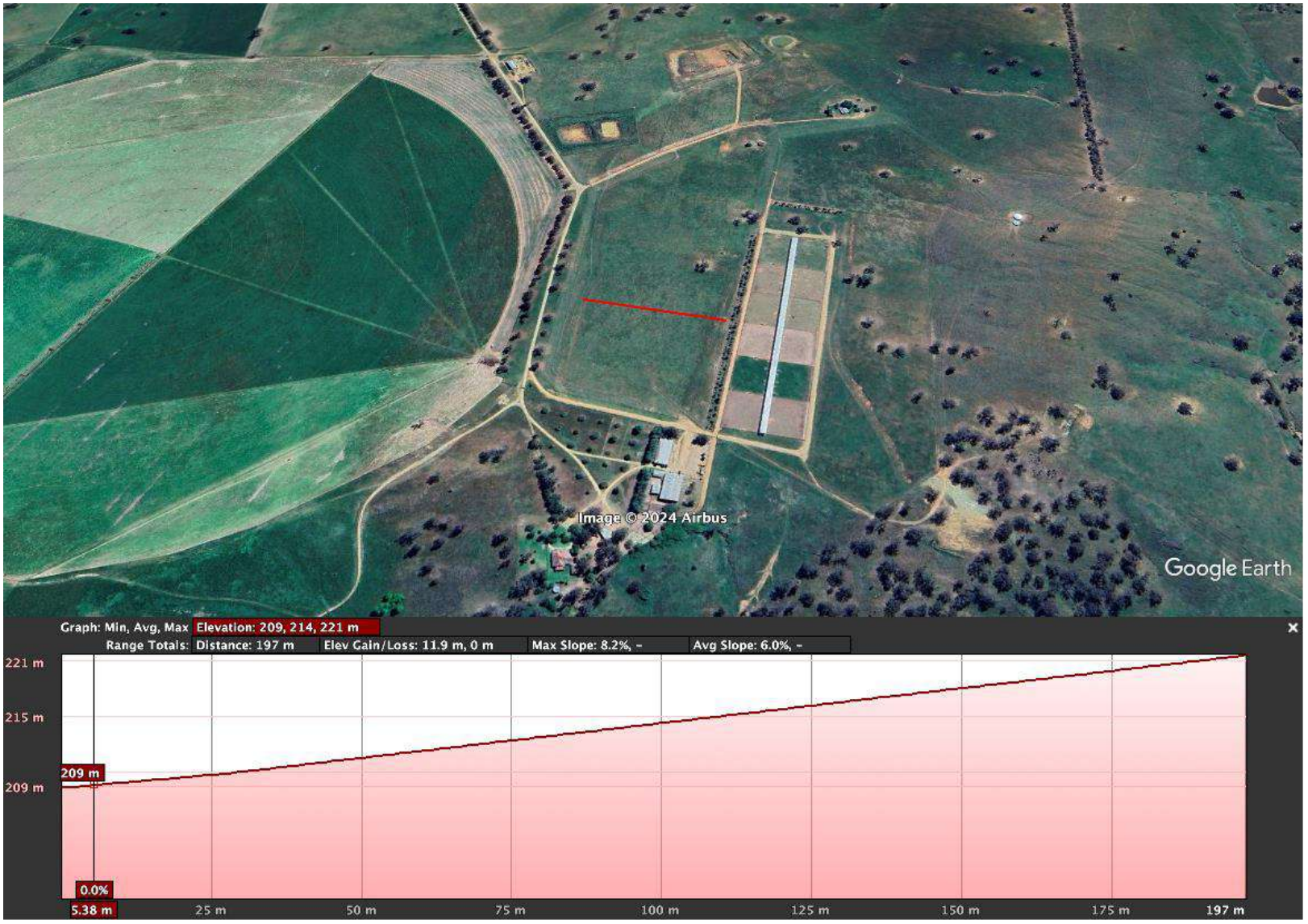

Figure 2: Average slope through proposed effluent irrigation area

Figure 3: Drought feedyard pens, irrigation area and downslope collection drain to twin dams

ourariverineprotection@gmail.com

15 June 2024

The Honourable Penny Sharpe,
The Minister for Climate Change, Energy, the Environment and Heritage,
Parliament House,
6 Macquarie Street,
Sydney NSW 2000

via: nsw.gov.au/ministersharpe

Dear Minister,

Re: DA23/0598 - Oura Meat Processing Facility, Oura Road, Oura
BCS ref DOC24-72532, Via Planning Portal CNR-65025

We are writing to you to seek your intervention to the proposed meat processing facility (abattoir) development located in Oura near Wagga Wagga. We share and highlight our concerns with the feedback supplied to Wagga Wagga City Council (Council) by the Biodiversity, Conservation and Science Branch (BCS) of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) on 26 February 2024, with respect to the proposed development.

At a strategic level this project is inappropriate for the site, as the NSW State Government has spent significant resources to establish the nearby Wagga Wagga Special Activation Precinct (SAP) for the purposes of delivering increased diverse employment opportunities and economic benefits to the region. Specifically, the SAP is established to concentrate industry and agri-industry businesses from the local area and region. Further, the proposed uses are already characterised in the Bomen industrial/business area in Wagga Wagga, as well as the SAP. Hence, this proposal is contrary to the NSW State Government objectives and planning priorities, and highly inappropriate for the subject site.

We engaged a planning expert to assess the strategic planning merits of the proposal with respect to the subject site and the SAP. The strategic planning assessment prepared by our expert consultant, which found that the proposal contravenes key current strategic urban planning priorities published by the NSW State Government and Council, is provided in Attachment 1 of this letter.

Further to the unsuitability and strategic urban planning inappropriateness of the proposal, the Oura Riverine Protection Inc. (ORP) has serious concerns regarding the significant adverse environmental impacts generated by the proposal. With your assistance, we seek clarification regarding the feedback provided by the BCS to Council with respect to the environmental impacts, which are as follows:

Flood Impacts

The BCS feedback states, *"BCS considers the proposed development presents a minor flood risk and is not likely to have a significant impact on overland flow flood behaviour."*

1. The statement, *"is not likely to have a significant impact"* is unclear. What type of impacts, and to what, does the statement refer to? It is evident from the points below that the assessment is not conclusive and that there are serious potential flood impacts.

2. It is highlighted that the NSW Department of Planning's newly adopted guideline, '*The Flood Impact and Risk Assessment - Flood Risk Management Guideline LU01',* directs all assessments related to flood impacts and flooding constraints to be assessed across the full range of flood risk, including the Probable Maximum Flood (PMF) level.

   The Applicant's expect consultant's report prepared by Martens & Associates Pty Ltd shows overland flooding likely to occur through the building area during a PMF (see ORP submission p51, Figure 18. PMF Critical Storm Future Conditions (source: extract from Martens Flood Impact Assessment)). Has BCS considered the PMF within those locations and the generated impact? This includes the additional flood impact velocity and flow from the proposed solar array located above the abattoir buildings and the hard surfaced car park area?

3. Has BCS taken into account the risk of contamination in those impacts of overland flooding through the proposed abattoir buildings and the existing adjacent feedlot that is unconsented? (Refer above to point 2 for reference in the ORP submission, as well as p45, Figure 16. Site Conceptual Model in the ORP submission).

4. Has BCS taken into account the flow and contamination risk of overland flood into the catchment dams located to the north of the site with combined catchment from the landscape, solar array, building site and feedlot? (Refer to ORP submission references found in point 2 and point 3 on previous page).

5. Has BCS taken into account the landform, geology and hydrology of the site and land downslope into account for this assessment? We refer you to the expert report in our submission that shows geology of mass movement downslope, e.g. evidence of historical overland flooding. Then there is interflow thereafter moving water horizontally through and across the landscape to the wetlands of the Murrumbidgee River. (Refer to ORP submission McMahon Interim Advice 2023, Appendix 1).

6. Has BCS considered the location of the proposed effluent irrigation area below the un-consented feedlot, which has an 8% slope, and the existing irrigation pivot area located below that, which can be saturated and is adjacent to the wetlands and lagoons of the Murrumbidgee River? This clearly exacerbates and provides a contiguous linkage for the flow of water and contaminants from the proposed abattoir and adjacent infrastructure to the protected Mid Murrumbidgee Wetlands. (Refer to ORP submission p45, Figure 16, Site Conceptual Model and Paradice review, Appendix 4, points 9-18 and Figure 1.)

7. The BCS letter states *"The Flood Assessment (Attachment 9 of the EIS) indicates the values have been derived from the Wagga Wagga Major Overland Flow Floodplain Risk Management Study and Plan. Upon review however, BCS identified a discrepancy between the values."* What is the discrepancy?

8. Did BCS also incorporate the inaccurate and inconsistent climate data used in the EIS in its assessment of the overland flood risk? (Refer to ORP submission supporting assessment McMahon Interim Advice 2024, Appendix 2, page 3, points 6. a) i and ii).

Biodiversity Impacts

BCS states, *"The evidence provided does satisfy Council's duty. The proposal is unlikely to have any impact on threatened species."*

We strongly disagree with the above statement and assessment for the following reasons and questions:

1. Has BCS identified and included in its assessment of the omission in the EIS, of the proposed area being in the Mid-Murrumbidgee, close to the wetlands that are listed as Endangered Ecological Community (EEC) and, as such, gives all species the same status and protection as threatened species? (Refer to ORP submission Section 7.1.5, p52).

2. Did BCS identify the inaccurate information supplied in the Applicant's expert consultant's report, 'OzArk Biodiversity Assessment Report', which incorrectly stated, that there is *"one minor non-perennial watercourse (unnamed)"* nearby. When in fact this watercourse is known as Sandy Creek and has a catchment of about a 3,300 hectare, or 33 square kilometres.

   In 2022 Sandy Creek eroded down to a 4m deep gully on Broughton Brook (property to the north west of the subject site). The creek does flow perennially at a subterranean level and this flow is likely to intersect with the perched water table (interflow) as reported by McMahon (Refer to ORP submission Section 7.1.1, p44).

3. Did BCS review and consider that the Applicant's 'OzArk Biodiversity Assessment Report' that supports the EIS only assesses a selective area, which results in a minimal identification of High Potential Groundwater Dependant Ecosystem in the locality? (Refer to ORP submission BOM GDE ATLAS MAP, Appendix 5 and OZARK GDE MAP, Appendix 6).

   We also refer to the advice of Dr Patricia Murray, Aquatic Ecologist, in the ORP Submission (refer to pages 53-54), as to the importance of biofilm in GDE's and its vulnerability to nutrient contamination. There is clearly a nutrient transfer risk from the proposed abattoir and existing feedlot via overland flooding and subterranean interflow, as discussed. Did BCS consider these risks and impacts to biofilm?

4. Did BCS assess and consider the 'OzArk Biodiversity Assessment Report' comments in reference to *"Survey Limitations",* that stated:

   "Specific limitations to this study include the following:

   - *The short duration of the field survey (being completed in a single day). As such, the fauna list cannot be considered comprehensive of the greater diversity of species likely to use the site.*
   - *Fauna trapping, frog surveys, aquatic surveys and nocturnal spotlighting were not undertaken.*
   - *Microbat ultrasonic call capture and analysis was not performed."*

General Comments

We note that the feedback to Council does not acknowledge or refer to the receipt of our submission to BCS (via email on 26 February 2024 at 7:23 AM) in the documents reviewed by BCS, where we highlighted and developed the issues we again raise in this letter.

We believe the feedback made to Council is ill informed as it has, in the majority, relied on inaccurate information provided by the Applicant in its EIS and has ignored important information we provided.

The information supplied by ORP was provided to BCS prior to its feedback to Council and/or could have been incorporated with amended feedback to Council as well.

Request

Given the issues identified in this letter, we request:

1. That you form the opinion that the proposal is not suitable for the site due to its strategic planning inappropriateness, as the proposal is contrary to the already established SAP and Bomen industrial/business area. The SAP provides the strategic planning merit for the inclusion of the proposal, and has been established to capture a diverse industry, employment opportunities and economic benefits of the region.

The SAP has existing controls and development standards in place, that encourages and manages the proposed development, and is not located within an environmentally sensitive area. Hence, has the framework to manage and to mitigate the environmental risks and impacts identified with the proposal; and

2. In addition to the above, we request that with your intervention and further assessment of the questions listed in this letter, that your Department, DCCEEW, form the opinion that the proposal generates adverse environmental impacts as a result of the issues raised in this letter and the ORP submission.

Importantly, we are of the view based on our deep assessment that the proposal does not align with key NSW State Government and Council planning priorities, and does generate an adverse impact in a sensitive environmental area. Therefore, the proposal is unsuitable for the site and inappropriate for its location.

We are open to meet and discuss our concerns with the proposal with you. We look forward to hearing from you.

Yours sincerely,

Lynne Wallace (Secretary),
on behalf of the membership, Oura Riverine Protection Inc.

Attached: BCS Feedback to Council, EPA letter to Council, ORP submission to Council

CC: Mr Peter Thompson, City of Wagga Wagga Councillors, Mr Cameron Collins, Mr Andrew Fisher (BCS), Mr Marcus Wright (BCS), Dr Joe McGirr MP, Michael McCormack MP, Tudor Planning and Design, Salvestro Planning, Oura Riverine Protection

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Prepared for

The Council of the City of Wagga Wagga
&
The Department of Land and Water Conservation

VILLAGES AND CENTRES OF POPULATION LIQUID WASTE MANAGEMENT OPTIONS PROJECT

FINAL REPORT

R1303

September 2001

HUNTER WATER AUSTRALIA

Hunter Water Australia

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4. CURRENT VILLAGE MANAGEMENT

Current village sewerage requirements are intended to be met by on-site sewerage systems. Localised site and climatic conditions will always govern the actual performance of such systems, and some of the localised conditions that apply in the Wagga Wagga region include the following:

- ***Reticulated water in all of the villages;***
- ***Soil profiles that indicate the soils are unsuited to receiving septic discharge;***
- ***Small allotment sizes (quarter acre) in some of the villages;***
- ***Limited evaporation leading to a build-up of moisture on the allotments;***
- ***Groundwater salinity (including urban salinity) problems;***
- ***Presence of groundwater, which forms the basis of the drinking water supplies;***
- ***Some villages located on floodplains and within the one in one hundred flood levels.***

All of these background or localised conditions need to be factored into any decision in respect to the type of solution being advocated.

4.1 WAGGA WAGGA REGION GENERAL INFORMATION

Wagga Wagga, the largest inland city within the state of New South Wales, is located on the junction of the Olympic and Sturt Highways, as well as being in close proximity to the Hume Highway (refer **Exhibit 1**). Indeed Wagga Wagga is nearly half way between the Australia's two largest cities. It has both a sound industry base in its city precincts as well as a strong agricultural industry in the surrounding region.

Not unexpectedly Wagga Wagga has a number of small villages, or centres of population surrounding the city area, offering an alternative life style to regional personnel. These villages all now have reticulated water supplies but, in some areas, its arrival has been relatively recent. 'Used water" is generally managed by on-site sewerage treatment systems in the majority of villages, although the villages of Tarcutta, Uranquinty, Forrest Hill, North Wagga and Ladysmith have now been sewered. Tarcutta, Uranquinty and Forrest Hill have their own sewage treatment plants whilst North Wagga is pumped into the main Narrung Street plant and Ladysmith is pumped into the Forrest Hill system.

This study therefore concentrates on the villages (or centres of population) of:

1. Collingullie
2. Currawarna
3. East Wagga

4. Gumly Gumly
5. Humula
6. Oura
7. Mangoplah
8. San Isidore
9. Alfred Town (an area at the junction of the Sturt Highway and Holbrook Road).

The location of these villages and centres of population, relative to the city of Wagga Wagga, is shown on **Exhibit 2**.

However, Wagga Wagga is a relatively dry environment and assuming that the on-site treatment units are the appropriate technology to meet the sites needs and are operated correctly, they can also represent a potential mechanism to recycle Australia's most precious resource. Thus, in reviewing the performance of these existing units, there is a need to focus on ensuring that the most sustainable solution can be developed, rather than just any preconceived perception of the need to migrate to a centralised sewerage system.

Site factors such as the general topography, the size of the site (parcel of land), the soils experienced on the site, the overall density of the village and the climate, in which the site is located, determine the success and limitations of the on-site systems. Indeed these constraints need to be understood when choosing the most appropriate type of on-site treatment units for the site.

Wagga Wagga has a number of distinctive site factors, which are dealt with individually in the following Sections. It also has several somewhat unique features in terms of the urban salinity problems and the proximity of many of the villages to the environmentally sensitive Murrumbidgee River system. Both of these also need to be considered with the choice of sewerage management systems.

There is considerable scientific data available on the above site constraints. However, one additional site factor, on which very limited information exists, is that of the site owners themselves. In short the human factor.

Within the Wagga Wagga region this is further compounded by the fact that within the villages there has been significant growth bringing with it many persons who are not familiar with the operation of on-site systems. They often have a limited appreciation of the complex inter-reliance of biological, chemical, hydraulic, mechanical and natural systems that are a part of on-site systems and are not always able to provide the care, maintenance and management required ensuring satisfactory operation of these units. Indeed, to some extent, there would appear to be elements of an 'install and forget' approach. Aerated systems are the exception as residents report difficulties in obtaining suitably qualified staff for the mandatory quarterly maintenance.

One aspect that does not appear to be well understood is that the smaller the sewerage system the more vulnerable it is to biological loads. Also the more limitations regarding what can be discharged into it and the higher risk of malfunctions. Hence there is some compromise imposed on the lifestyles of those living with on-site systems, particularly those with the more conventional systems. A factor not always appreciated by those who are not familiar with

these systems is that they are somewhat out of step with some of the modern, water using appliances that are becoming more common within the urban household.

If sewerage systems are in private ownership then it is incumbent on the approving authority to develop a system to ensure that they are being operated appropriately. Accordingly, Council has implemented a process whereby all existing septic systems will be inspected during 2000. The results of this inspection process are discussed in Section 5.5.

The ability of residents to understand how to operate their on-site systems, their ability to attain appropriate maintenance of the more complex systems and even their preparedness to continue with these units, all form key inputs into this study. A community consultation process was thus mandated, as a means to tap into this particular site constraint, and has been the backbone of this study.

4.2 SOIL PROFILES GENERAL AND ISSUES ARISING FROM THESE PROFILES

The Department of Land and Water Conservation (DLWC) has conducted extensive soil profiling for the region and has recently published a document on the soil landscapes for this area. This publication has been used extensively to examine the general soil natures and types within the villages.

Of some concern was a further DLWC map on the various Wagga Wagga soil landscapes and their capacity to deal with sewerage effluent, as might be experienced from septic tanks. Soils in the study villages have ranged from marginally suitable, at best, to generally unsuitable. The green colouration that denotes an area as generally able to deal with septic effluent was noticeably absent, from this map.

Thus the nature of soils, and by implication the lot size, would appear to be key issues when considering the types of treatment available for the villages in this study. The reference guideline "On-Site Sewage Management for Single Households" [3] also records the minimum size for lots with particular soils, but concurrently also indicates that the standard quarter acre lot will struggle to meet revised requirements, for conventional on-site systems.

Council, aware of these soil profile difficulties and the evolution of related regulation, has advised that no lots of five acres, or less, are now being permitted without a sewerage connection. Thus there is some potential that the on-site systems could also be a constraint to the further development of these villages, although there is, in most villages, considerable land under current subdivisional arrangements to cater for growth in the short term. Nevertheless, there remains the very real issue of risk and liability, associated with allowing further development on existing small holdings, as these will only further add to the problem Council faces when it has to upgrade these systems to a more acceptable risk profile

If any embargo were to be placed on further development of these existing lots, it will have a significant impact not just on the growth of the villages, but also upon land values. Politically, and probably legally, Council might find it too difficult to prevent further development in accordance with approved plans. Department of Land and Water Conservation feedback indicated that some Councils have allowed development to proceed in these circumstances provided that pump out systems are installed, rather than place a

moratorium on development. The costs of those pump outs in these locations based upon other residential development would be quite high unless a closer discharge point can be located.

4.3 AVERAGE EVAPORATION AND RAINFALL PROFILES

Wagga Wagga has a general rainfall of around 600mm and has average maximum summer temperatures of the order of mid to high thirties. Evaporation during the summer months is always well in excess of the rainfall, with irrigation required to maintain lawns and gardens. However, during the cooler or winter months, there is insufficient evaporation to remove the rainfall within a reasonable time frame with the effect that moisture on an allotment will build up. Figures compiled by the Wagga Wagga Office of DLWC, determining irrigation requirements for possible effluent reuse in the Wagga Wagga region (refer **Table 4.1** below), indicate that at minimum no water should be added to the soil during the period June to July. However for one in ten (or 9th decile) figures, this period could effectively be extended to May through to September.

Thus whilst these are only average figures, and actual site practices will need to be adjusted to actual seasonal conditions, they do clarify that if water is added to the ground during these cool months the soils can become saturated, particularly where they have low wet bearing strength. This is the experience related by those communities, not on highly permeable material soils, in that their yards (particularly those in close proximity to the disposal area) becoming quite boggy and almost inhabitable.

For the village of Humula average rainfall however is of the order of 900 mm with a corresponding decrease in the amount of evaporation. Thus periods when the site is wet will be increased over those shown in **Table 4.1** below.

Table 4-1 *Water Balance for the Wagga Wagga Area (Kooringal Site)*

Month	Mean Effluent that can be Applied (mm)	Median Effluent that can be Applied (mm)	9th Decile Effluent Application (mm)
January	268.5	275	212.6
February	219	235.3	164
March	170	190.3	95.6
April.	74.5	80.8	14.8
May	13.7	21	-37.7
June	-22	-16.5	-65.3
July	-12.1	-9.3	-52.8
August	5.4	5.8	-33.9
September	37.3	38.1	-5.2
October	88.9	92.5	32.3
November	168.8	165.3	114.3
December	250.4	256.3	198.4

Note:

1. The figures above essentially represent the subtraction of rainfall from the evaporation requirements on a monthly average basis. Positive figures indicate the amount of irrigation that can be applied to make up for any shortfall in the rainfall. Negative figures indicate an accumulation of moisture on the site and it would be recommended that no additional moisture be applied for fear of contributing to groundwater or runnoff to stormwater channels.

Thus if any effluent re-use were to be utilised with any form of solution, then it should have a minimum of six months on-site retention. When annual considerations are made in terms of overall evaporation losses it has been calculated that there will be a 10 to 15% loss to evaporation, depending upon storage depth, embankment slopes etc.

4.4 GROUNDWATER/ URBAN SALINITY

Wagga Wagga is experiencing urban salinity problems with extremely high water tables in certain locations. In the general region bricks and other construction materials are being severely impacted by this rising salinity. The addition of water in the ground in certain locations therefore has the potential to contribute to these rising water tables and thus must be managed carefully if on-site systems are to be persevered with. **Table 4.1** confirms the danger of this occurring during the winter months.

Wagga Wagga and the villages make use of a considerable amount of ground water (aquifers located under and near the villages) that is used for extraction purposes. For example the city of Wagga Wagga's water supply comes from underground sources, as does the water supply for most of the villages. In the case of Wagga Wagga, recent studies have shown that there is some potential for interconnectivity between the groundwater lenses, but there has been no indication, at this time, of any groundwater pollution being revealed at the extraction points. Nevertheless the practice of maintaining septic tanks above a groundwater water supply must be regarded as somewhat inappropriate and not in accordance with water industry directions.

Highly permeable layers overtop many shallow aquifers, and thus the wrong choice of sewerage system to service the properties in these areas, could leave Council exposed to serious ongoing risk. There are numerous bores that draw water from these shallow aquifers for stock watering and irrigation processes. Furthermore local hydro-geologists confirm that there is a relatively rapid transfer from these shallow aquifers into the Murrumbidgee River system, above which the city's popular summer river bathing activity occurs.

4.5 FLOODPLAIN MANAGEMENT

Many of the villages are located either next to, or wholly within, the one in one hundred flood plain and thus have potential to either be impacted by such flood activities, or could lead to some pollution of the ground and surface water applications associated therewith. Gumly Gumly for example is entirely in the floodplain and many of the homes in Oura have raised floor levels, to keep them out of the flood plain. However their septic tanks would remain susceptible to flooding.

Flooding of a village with on-site systems and/or even conventional sewerage schemes could result in the need to evacuate the entire village even if the majority of homes have been designed to remain out of that flood plain. Clearly this would not be a desirable result, but could be forced on Council through duty of care requirements.

9.2 MEASURING ENVIRONMENTAL RISK

Local government is encouraged to adopt formal on-site management strategies, which amongst other things embrace the principles of risk management and quality management systems that lead to continuous improvement. A necessary starting point in the development of any environmental management system is the assessment of risk associated with activities that impact on the environment. Various models for assessment of environmental risk are available and several appropriate ones are described by the Water Services Association of Australia (WSAA) in its 1995 environmental management guidelines.

One easy-to-use model rates each environmental impact exposure against three criteria in accord with the following formula:

Risk Exposure = Frequency x (Severity + Sensitivity)

Outrage is another common parameter that can be added to this formula but if there was to be some form of pollution occurring in or downstream of one of the villages the outrage factor would be somewhat common from an environmental perspective. However, from a public health factor, it could vary considerably. Pollution of a town's water supply would generate a far different outrage depending on whether the impact is a few sick people or the majority of the town's population. The latter would generate a particularly high outrage factor if there were, for example, a failure of a treatment plant, or the nature of the infection was outside of the plant's design capacity.

A rating of 1 to 5 is assessed and assigned to each criterion, with 5 being the highest (refer **Table 9.1**). Where no environmental risk is perceived, frequency is assigned a value of zero. Hence the maximum rating for environmental risk exposure is 50. Decisions are usually made by the user of the model about how final ratings might be prioritised or grouped for action purposes – for example: low to moderate risk might be assessed at 0 to 20; high risk 20 to 35; and very high risk at 35 to 50.

disposal of effluent discharges within properties. In any event, local soil conditions and DLWC's septic suitability ratings show this form of sewerage to be unsatisfactory for local conditions.

Do Nothing Option

Review of the current situation in this village also leads to the conclusion that environmental pollution events are occurring on a continuous basis at the very least in wet months, and probably intermittently during the whole year from laterally moving effluent above the underlaying clayey sub-soil. *Frequency* of environmental events was rated at 4.5. Pollution would inevitably extend to the Murrumbidgee River in wet periods and, when considered in a total catchment sense, leads to a high rating for *Severity*, ie 4 to 5. Pollution of the river is of significant environmental and public concern, and breaches statutory requirements and sewerage management guidelines. These impacts have been given a *Sensitivity* rating 4.

Overall, therefore, environmental risk exposure is rated at 35-40.

The present approach to sewerage in Currawarna is not viable, even in the short term, on environmental and health grounds. It requires rectification.

9.7 OURA

Existing Situation

Oura is perched next to and partly on the Murrumbidgee River floodplain upstream from Wagga Wagga. Almost two thirds of the village is subject to floods. Soils in the village include windblown sands from the floodplain and more alluvial conditions for the floodplain. DLWC noted that, the Murrumbidgee Alluvium provides town water supplies and is a very permeable unit; it is site specific in respect to aquifer linkages of shallow to deep aquifers. The landscape in the village area is undulating to flat with gradients in the order of 1-5 per cent. Topography slopes gently from the upper sections to the lower areas and the floodplain.

DLWC's preliminary work relating soil conditions to septic suitability shows the Oura area as being only 'locally marginal' for septic systems. A critical issue is the proximity to the river and shallow groundwater system. Even more importantly, the underlying deeper groundwater system is utilised for extraction of water supply for inland towns of Temora, West Wyalong and Junee.

Allotment sizes in Oura are ½ acre which fall significantly short of the criterion of 4000 m^2 per household on-site system [3]. A majority of present residences, which total about 40 odd dwellings, are situated inside an area of just under one km^2. There is comparatively reasonable village growth and pressure for ongoing development given commuting distance to Wagga Wagga.

Proximity to the Murrumbidgee River and underlying water sources renders these resources vulnerable to pollution from septic effluent. DLWC estimates the movement of contaminates to and between water resource systems would be comparatively quite fast. Alternative sewerage technology is essential to safeguard these water bodies.

Do Nothing Option

In environmental risk exposure terms, soils involving silty clays and sandy conditions overlying the deeper alluvial river sediments provide opportunity for environmental pollution events to occur almost continually as a consequence of on-site household septic systems in a large part of the village. Undoubtedly, the Murrumbidgee River is being polluted and the underlying deeper groundwater resources are potentially vulnerable. The frequency of pollution at least of subsoil water, which migrates to the floodplain, would be high in wet periods. To the present, the Council inspection program in Oura is identifying over 10 per cent of systems associated with surface effluent. A *Frequency* of 5 has been allocated to septic effluent pollution beyond property boundaries.

It can be argued that these pollution events need to be viewed in the context of the levels of surrounding land and water pollution occurring as a consequence of other pollution loads such as that from grazing and watering stock. However, when considered in the wider catchment context and in light of the vulnerable water resources currently being utilised for outlying town water supplies, a *Severity* rating of 4 has been assessed. Pollution which has the potential to foreclose water supplies for future generations is serious, and if able to be proven would draw a severity rating of 5. Transfer of effluent beyond property boundaries and to the Murrumbidgee floodplains breaches regulations and sewerage management guidelines. It has been given a *Sensitivity* rating of 5.

Overall, therefore, environmental risk exposure is rated at 45+. There is a clear environmental imperative to provide more appropriate sewerage for Oura, where the current system is clearly unsustainable.

9.8 HUMULA

Existing Situation

Humula is situated at the confluence of the Umbango and Carabost Creeks. It is much closer to Tarcutta than Wagga Wagga. Topography includes undulating rises, broad crests and ridges and moderately broad drainage depressions. Dominant soils are clay and sandy clay loams, overlying clays. ***While further work on the Tarcutta map sheet is currently being undertaken, DLWC's preliminary work relating soil conditions to septic suitability would indicate that soils in the Humula area are 'generally marginal'.*** The geology in the locality, hosts spring activity.

The vast majority of allotment sizes in Humula are $_{1/4}$ acre which fall significantly short of the 'Silver Book' criterion of 4000 m^2 per household on-site system [3] although vacant lots separate most buildings. A majority of present residences, which total around 30, are situated inside an area of under 0.5 km^2. There is no growth in population numbers and housing, despite the presence of a sawmill, and increased growth is not foreseen.

Rainfall at Humula is half as much again as Wagga Wagga. The village area has a high water table and it is estimated, as highly likely, that effluent soakage from septic systems would be affecting springs and perhaps reaching shallow groundwaters. Village water supply is extracted from a point about 200 metres upstream of the road-bridge below Walker Street and Sports Club? In some cases, given the nature of local soils, surface effluent could be

could be expected that in the high slope areas even with large blocks available to these households, inevitably there will be run-off polluted with septic effluent in wet months. The locality where the creek below San Isidore receives this run-off is about 7 kilometres above its discharge point with the Murrumbidgee River.

Do Nothing Option

Environmental pollution events are occurring from on-site sewage management systems in relation to surface water and run-off from the larger upper occupied allotments. In addition, soil condition and small block size associated with the 6 or so ¼ acre allotments in San Isidore are expected to be contributing pollution to the local creek especially in wetter months of the year. The *Frequency* of these types of event have been assessed at 3 to 4. *Severity* would be in the order of 3 and, because these events breach regulations and sewerage management guidelines, *Sensitivity* is rated at 4.

Overall, therefore, environmental risk exposure is rated at about 25 to 30.

While there is uncertainty about pollution levels in surface water and the creek below San Isidore, nevertheless precautionary measures are appropriate; particularly in relation to the inadequately sized allotments, where environmental and health grounds dictate different sewerage technology. Council's efforts to improve the performance of on-site systems presently on the large allotments will need to be focused to achieve the necessary standards of operation required. Given the poor rating of local soils for septic suitability, re-siting of some soakage areas may be essential to improve performance of some systems.

9.10 EAST WAGGA

Existing Situation

The general landscape here is in a more elevated variation of the extensive level plain of the higher Murrumbidgee River. Land can be subject to occasional flooding and, according to DLWC, this area is influenced by a large amount of spring activity. Water logging and salinity problems are apparent in the locality. Silty clays and clays are present, overlying the deeper alluvial river sediments. Information on private bores in the area shows high variability in groundwater depth and quality, with water depths varying from around 20 metres to some 120 metres.

Given the soil conditions, septic suitability is at best considered to be only 'generally marginal'. Given the location on the higher floodplain, with the potential for pollution of surface waters, ie the Murrumbidgee and also underlying shallow groundwater, on-site sewage management systems are highly inappropriate for this locality. These risks are not outweighed by the fact that allotments in this subdivision are 5 acres or greater.

Council's septic inspection program is identifying a significant percentage of septic systems in the vicinity of Wagga Wagga as having surface effluent present and 30 to 40 per cent requiring effluent pump out. Given local soil conditions, and proximity to shallow groundwater it could be expected that pollution from septic effluent is occurring. In wet

months, the soil profile is saturated and surface water and the river are being polluted. Alternative sewerage technology is necessary to safeguard these environmental resources.

Do Nothing Option

In environmental risk exposure terms, given local soil conditions, underlying groundwater resources and the Murrumbidgee River are vulnerable to pollution. Without doubt these events are occurring as a consequence of the discharge of septic effluent. The frequency of pollution may be constant for groundwater pollution and, in wet periods would be high for surface water pollution. A *Frequency* of 4 has been assessed for septic effluent pollution events.

When considered in the wider catchment context, and in light of the vulnerable water resources of the Murrumbidgee River catchment, a *Severity* rating of 4 to 5 has been assessed. Pollution which has the potential to foreclose water supplies for future generations is serious, and if able to be proven would draw a severity rating of 5. Transfer of effluent beyond property boundaries and to the Murrumbidgee floodplains breaches regulations and sewerage management guidelines. It has been given a Sensitivity rating of 5.

Overall, therefore, environmental risk exposure is rated at about 40. There is a clear environmental imperative to provide more appropriate sewerage for East Wagga.

9.11 GUMLY GUMLY

Existing Situation

The Gumly Gumly locality is also part of the extensive level plain of the higher Murrumbidgee River. This population centre includes low-lying land where the majority of households are located and which is subject to flooding and localised water logging. As in the case of Oura, this site is located on the Murrumbidgee Alluvium, which supplies town water. In the higher locations, close to the Sturt Highway, land is outside the 100 year floodplain, however, soils are still subject to localised water logging and saturated profile.

Given the soil conditions, septic suitability is at best considered to be only 'generally marginal'. However, given the location of households on the floodplain, with the high probability of pollution of the Murrumbidgee River and underlying groundwater systems (shallow systems at 10 metres or less), on-site sewage management systems are highly inappropriate for this locality. These risks are not outweighed by the fact that allotments in this subdivision are 5 acres or greater.

Council's septic inspection program is identifying a significant percentage of septic systems in Gumly Gumly (around 29 per cent) as having surface effluent present and 30 to 40 per cent requiring effluent pump out. This situation could be expected to be much worse in wet conditions. Given location and soil conditions, the Murrumbidgee River is being polluted, at the very least in wet weather, and shallow groundwater below is undoubtedly being polluted on a regular basis. Alternative sewerage technology is essential to safeguard these environmental resources.

Do Nothing Option

In environmental risk exposure terms, given the location of Gumly Gumly and soil profile, it is concluded that pollution from septic systems is occurring in relation to shallow groundwater resources and the river. A *Frequency* of 5 has been allocated to septic effluent pollution events.

When considered in the wider catchment context, and given the potentially irreversible nature of groundwater pollution, a *Severity* rating of 4 to 5 has been assessed. It is also noted that deeper groundwater is potentially vulnerable, which is of concern.

Transfer of effluent beyond property boundaries to the Murrumbidgee River and to underlying groundwater breaches regulations and sewerage management guidelines. It has been given a *Sensitivity* rating of 5.

Overall, therefore, environmental risk exposure is rated at 45 to 50. There is a clear environmental imperative to provide more appropriate sewerage for Gumly Gumly, which is currently unsustainable.

9.12 ALTERNATIVE SEWERAGE OPTIONS

Common Issues

The matrix of possible environmental issues at **Appendix C** was developed from Department of Urban Affairs and Planning (DUAP) EIS Guidelines. This matrix has been used as a broad checklist in identifying key environmental issues for the alternative options in this report, which are identified in the next paragraph. Issues for ongoing consideration in implementing preferred options for population centres are also listed in this sub-section.

An alternative to the do nothing option (for Council) in terms of on-site treatment is to encourage the residents to replace the existing units with new units more specifically suited to the Wagga Wagga situation. Although some preliminary research might be required to determine exactly what that technology is and how it best works.

These units will be costly as mentioned elsewhere in overall report and will have to overcome some resident 'mistrust' of onsite systems. However the shear cost of these units, is expected to see the majority of residents adopt a do nothing option because they cannot meet this expenditure. An alternative would be for Council to subsidise these units but they do not represent the lowest cost option to Council.

Key environmental considerations for onsite units would be:

- the quality of treatment to ensure runoff is safe to the environment as well as for health purposes;
- ensuring the runoff from one site does not impact other residential sites during the cooler months;
- ensuring that performance of the units is monitored and inspected.

the year. Given these circumstances, until full funding is available, the interim solution proposed for the particular village situation is to build a portion of the treatment ponds associated with the preferred option and provide pump out and collection facilities to transport septic effluent to treatment during the wet months of the year. Important environmental considerations needing to be addressed for this type of approach include:

- those listed above for the final preferred sewerage options relating to treatment lagoons;
- use of licensed tankers for this work;
- trained tanker operators;
- contingency actions in the event of vehicle accident and/or spillage from tankers;

9.13 SUMMARY OF ENVIRONMENTAL RISK EXPOSURE

The following **Table 9.2** summarises the outcomes of discussion and assessment of risks provided in this sub-section of the report.

Table 9-2 *Summary of Sewerage Options and Associated Environmental Risk Exposures*

Locality	**Sewerage Options** **Preferred Option ##Possible Interim Option	**Environment Risk** (0-50) (***Priority***)	**Key Issues**
Mangoplah	On-site systems Convent^{l} retic^{n} + ponds Modified retic^{n} + ponds** Common Drainage + ponds Pumped retic^{n} + ponds Pump out tanks + ponds##	35 (*6*) <5 <5 <10 <5 <20	Surface water pollution/Burkes Creek/health risks.)$cost prohibitive. Selection,)siting and capacity of treatment)ponds. CED allows more storm)water entry. Contingency plans. Still depends on septics. As above plus tanker operations.
Collingullie	On-site systems Convent^{l} retic^{n} + ponds Modified retic^{n} + ponds** Common Drainage + ponds Pumped retic^{n} + ponds Pump out tanks + ponds##	45+ (*2*) <5 <5 <10 <5 <25	Surface, groundwater, 'Bidgee pollution/health risks.)$cost prohibitive. Selection,)siting and capacity of treatment)ponds. CED allows more storm)water entry. Contingency plans. Still depends on septics. As above plus tanker operations.
Currawarna	On-site systems Convent^{l} retic^{n} + ponds Modified retic^{n} + ponds Common Drainage + ponds Pumped retic^{n} + ponds** Pump out tanks + ponds##	35-40 (*5*) <5 <5 <10 <5 <20	Surface water and 'Bidgee pollution/health risks.)$cost prohibitive. Selection,)siting and capacity of treatment)ponds. CED allows more storm)water entry. Contingency plans. Still depends on septics. As above plus tanker operations.

Table 9-2 (cont'd) *Summary of Sewerage Options and Associated Environmental Risk Exposures*

Oura	On-site systems Convent^{l} retic^{n} + ponds Modified retic^{n} + ponds Common Drainage + ponds Pumped retic^{n} + ponds** Pump out tanks + ponds##	45+ (*3*) <5 <5 <10 <5 <25	Surface, groundwater, 'Bidgee pollution/health risks.)$cost prohibitive. Selection,)siting and capacity of treatment)ponds. CED allows more storm)water entry. Contingency plans. Still depends on septics. As above plus tanker operations.
Humula	On-site systems Convent^{l} retic^{n} + ponds Modified retic^{n} + ponds Common Drainage + ponds Pumped retic^{n} + ponds** Pump out tanks + ponds##	35 (*7*) <5 <5 <10 <5 <20	Surface and creek pollution/ health risk.)$cost prohibitive. Selection,)siting and capacity of treatment)ponds. CED allows more storm)water entry. Contingency plans. Still depends on septics. As above plus tanker operations.
San Isidore	On-site systems ('do nothing') **<u>for majority</u> On-site systems **<u>for minority</u> Pumped retic^{n} + Kapuka STP Convent^{l} retic^{n} + Kapuka STP Modified retic^{n} + Kapuka STP CED + Kapuka STP	25-30 (*8*) <25 <5 <5 <5 <10	Surface and creek pollution/ health risks. Impacts will remain)$cost prohibitive. Capacity of)present sewerage systems/STPs.)Attention to contingency)plans for blockages, bursts and)storm events.
East Wagga	On-site systems Convent^{l} retic^{n} + Wagga STP Modified retic^{n} + Wagga STP CED + Wagga STP Pumped retic^{n} + Wagga STP**	40 (*4*) <5 <5 <10 <5	Surface, groundwater, 'Bidgee pollution/health risks.)$cost prohibitive. Capacity of)present sewerage systems/STPs.)Attend to contingency plans for)blockages/bursts/storm events.
Gumly Gumly	On-site systems **<u>Sturt Hwy</u> Convent^{l} retic^{n} + Wagga STP **<u>Floodplain</u> Pumped retic^{n} + Wagga STP Modified retic^{n} + Wagga STP CED + Wagga STP	45-50 (*1*) <5 <5 <5 <10	Surface, groundwater, 'Bidgee pollution/health risks.)$cost prohibitive. Capacity of)existing sewerage)system/STP.)Inappropriateness of floodplain)development. Attention to)contingency plans for blockages)bursts and storm events.

19. OURA

Oura is a rapidly growing village and its close proximity to Wagga Wagga makes it an ideal location to sustain such growth. Much of this growth would appear to have occurred since the arrival of town water and this growth is likely to accelerate. The only potential dampener on this growth might be that much of the village is within the one in one hundred year flood plain but it is this flood prone area that has been the recipient of much of the recent growth. Possibly a constructed levee will overcome this with time.

There is no doubting the beauty of the village's current location and there is sufficient land within the existing subdivisional plans to allow for accelerated growth for the next twenty years or so.

The fact that the village floods, requires that considerable thought to be given to the nature of any sewerage system that is installed. Whilst any building in the floodplain would be required to have floor levels above that floodplain, it would be unacceptable therefore to evacuate homes because the sewerage system could not cope with flooding. Similarly the sites available for a treatment plant are limited and as such there is a strong need to minimise any inflow and infiltration to ensure the size of the plant is kept to a minimum.

At an average cost of $6,400 per rateable property in the first instance, it is a low cost sewerage option that is cheaper than what it would cost the residents to totally replace their current aerated treatment plants. Total costs for the 2000 scheme are estimated to be $700,000, rising to $805,000 to meet 2020 needs.

19.1 BRIEF DESCRIPTION OF THE VILLAGE

Oura appears to be a relatively rapidly growing village located on the Wantabadgery Road, approximately 10 minutes easy drive (15 kms), from the city of Wagga Wagga. Much of this growth has been relatively recent and is attributed, by the local residents, to the arrival of a reticulated water supply. As such the village has some relatively old homes and a large number of relatively new homes. Most of the properties are located on sealed roads. The village is situated in a picturesque setting located in close proximity to the Murrumbidgee River. The village has a lovely beach area, which offers residents a much valued asset. The village also has a major saw mill and second hand dealership, which attracts many Wagga Wagga residents.

With larger lot sizes it would appear that this village has much to offer in terms of an attractive alternative lifestyle for some Wagga Wagga residents. The only detraction being that some of the homes within the village area are located within the one in one hundred year floodplain. However the extent of flooding appears to be relatively minor in that it is neither deep nor likely to cause significant scouring. It is within the floodplain though that most of the recent development has occurred. It is certainly not inconceivable that, considering the growth of the village, that a levee might be constructed to protect those areas of the village impacted by floods. Residential feedback in the consultation process indicated that the last significant flood occurred in 1974.

A quite small amount of employment locally would appear to be possible in the saw mill and second hand dealership, but essentially all of the employment opportunities would be based on the village's close proximity to Wagga Wagga. The village has no school with education provided in Wagga Wagga. For commuters, their journey (in terms of time) would be less than that for 95% of commuters in Australia's larger cities. As such it could be argued that despite its remoteness, Oura potentially falls less in the category of a stand alone village and potentially more into the category of a centre of population, given its interrelationship with the Wagga Wagga city area.

Oura's homes are situated on half-acre lots with a large number of blocks within the current subdivisional plan for growth. Council's population figures and projections documentation indicates sample sales prices for vacant land within the village being between $15,000 and $37,500.

The village features a saw mill, as well as a derelict saw mill building, nursery, tennis court, church, bush fire truck shed, and a community hall. A winery in close proximity also provides an evening dining out opportunity. It is conceivable that the arrival of sewerage will further contribute to the growth of the area and thus would also be impacted by the construction of a village flood levee.

Currently sewerage is provided through on-site treatment systems with essentially all differing types of the on-site units represented. Where the units are situated atop highly permeable material there would appear to be little concern with the units, but on the more clayey area, towards the hill, that dominates the village landscape, there are some difficutlies in terms of the disposal areas becoming saturated during the cooler months. These home sites, all slope towards the riverplain area.

19.2 VILLAGE POPULATION AND GROWTH POTENTIAL

1996 Census Data

The 1996 Census indicated a total of 21 lots with dwellings on them and a population estimate of 59, representing an occupancy ratio of 2.8 persons per dwelling. The population capacity of the village based on that data was identified as 400 persons.

Current Number of Dwellings

A house count conducted as part of this study has indicated a total of 45 dwellings with 40 of these being residential. Subdivisional plans indicate around 150 lots south of Wantabadgery Road and a further 40 odd blocks to the north of that road if that option was to be taken up, although Council has a current policy of not developing both sides of a highway, or major road.

In terms of determining the number of rateable properties then this becomes a difficult exercise as the consultation process revealed some individuals who owned more than one property within the village and who could amalgamate some of these for rating purposes. This hasn't been currently done so no guide is provided from current figures and thus some degree of guesstimate is required. For the purpose of this exercise it has been assumed that there are or will be 110 rateable properties.

Costs are to be based upon both rateable properties and the number of existing homes to provide some guide as to what will be the real costs involved in sewering this village area.

Estimated Population

Based upon occupancy ratios of 2.8 to 3.0 persons per dwelling this would represent a population of around 110 to 120 persons and as such this would confirm the villages continued popularity and growth. Discussions with the village's residents have confirmed this population to be of the correct order.

Council Predictions of Growth

Council's projections for the village continuing without sewerage vary under a number of scenarios:

- A population of 80 under a 0.5 to 1.0 % growth rate for Wagga Wagga.
- A population of 91 under a 1.5% growth rate for Wagga Wagga.
- A population of 203 if the High Technology Park was to go ahead
- A population of 203 if the Wisdom Industrial Estate was to go ahead.

Factors Impacting Growth

These include:

- The arrival of sewerage facilities.
- The construction of a levee bank.
- A continuation of the impacts of the arrival of town water.
- Degree of infill in existing area.
- Sealing of all roads within the village.
- Continued employment opportunities in Wagga Wagga itself for residents.
- Current land sales and rates remaining at comparable levels to what they currently are.

Comments on Growth Potential

Based upon feedback to the authors of this report on the overall appeal of the village, as confirmed in discussions with residents and local real estate agents, there is a high priority attached to the need for sewerage as it is expected that rapid growth will continue within the village. The predicted figures for 2020, based upon normal growth for Wagga Wagga (0 to 1.5%), would appear to have already been exceeded thus some form of revised population prediction will be required.

Based on the 1996 census information the village has been growing at the rate of four new dwellings each year since that census. Sewerage and demand are only likely to increase this growth rate but a conservative estimate might be to conclude that the growth will continue at current rate until 2020, thus giving a total of 120 residential dwellings.

It is probable that this growth rate might accelerate above this rate, particularly when sewerage arrives. However, with 125 of the 150 odd blocks already built upon there will be some land availability constraints. This could be easily accommodated if the land on the northern side of Wantabadgery Road were to be opened up and thus a growth of five new dwellings would represent a total of 140 residential dwellings. For the purposes of this exercise it is estimated that 130 residential dwellings will develop with a potential population of 360.

19.3 DESIGN LOADINGS ON OPTIONS

2000 Design Loads

Adopting the current maximum population of 120 persons the village would yield approximately a daily production of around 26 Kilolitres (kL) of sewerage.

The annual volume of sewerage produced will be of the order of 9.6 ML and thus there needs to be about 5.0 ML of storage in the treatment ponds.

2020 Design Loads

Based upon a maximum expected population of 360 the following design loads have been calculated.

Daily Volumes of Sewerage Produced	79 kL/day
Annual Volumes of Sewerage Produced	29 ML
Storage Capacity in Treatment Plant	15 ML

19.4 SOIL PROFILE

Nature of soils

Oura also is not covered in the soil landscape information published by the Department of Land and Water Conservation. However a detailed examination of the DLWC publication did identify one bore sample taken near the pumping station 1km south of Oura road near the north-eastern area of the mapping area. It is thought that this sample is typical of much of the soil being encountered in Oura township.

- (Layer 1 A11 0-15 cm **asm**) Brown loamy fine sand, single-grained, sandy loose, highly permeable, no coarse fragments. (pH 6.0
- (Layer 2 A12 15-60 cm **asm**) Brown loamy fine sand, single-grained, sandy loose, highly permeable, no coarse fragments underlain by sandy and clayey alluvial sediments. (pH 7.0)

Section 9 of this reports records the soil profiles in this area and concludes that these are 'locally marginal' in terms of receiving septic tank effluent.

19.5 RISK PROFILE

Results of the 2000 Septic Tank Inspection Process

Results of this visual inspection of these existing septic tanks have revealed the data summarised in **Table 19.1** below. In general, there would appear to be a significant amount of work required by the village residents to upgrade their systems to a satisfactory standard.

Of particular concern are the pit toilets at the beach area located on the lower floodplain area in extremely close proximity to the river.

Table 19-1 *Oura Septic Tanks – Council Inspection Results*

Item Requiring Attention	% of Village this Applicable to
Fencing off of the disposal area	82
Divert grey water into Septic Rank	26
Pump out Septic Tanks	24
Submit Quarterly Reports	21
Need to flyproof Induct Vent	18
Bury Distribution Lines	16
Erect Warning Signs	16
Seal Septic Tank Lids	16
Slumped Disposal Areas	13
Exposes Pipes	13
Remove Fruit Trees from Disposal Area	11
Effluent on Surface	11

Notes:

1. Fencing was not required previously and as a result, the location of the disposal areas are such that to fence now, would isolate much of the back yards, with fences running through the middle of many of the properties.
2. Inspections were effectively conducted in summer 2000, in what was a hot period, and as such, should represent the systems at their best in terms of effluent on the surface, etc. Yet there were still 11% of properties with effluent on the surface in this hot period. Adding to this is the fact that a large number of properties are located on permeable soils and allowing for this would result in a much more disturbing statistical indicator.
3. As with other villages, the number of aerated systems is only a fraction of the total number of units in the whole village. If there were, say only 30% of the total number of units inspected that were aerated, then this statistic would be 72% of all aerated systems that were not submitting quarterly reports. If it were only 25% then this would represent about 85% not submitting reports and so on.

Summary of Public Health Risks

Health risks here essentially arise from:

- The close proximity of this township to major water supply offtakes (less that 2.0 kilometres) to Junee, West Wyalong Temora given that those newer homes in the village are on the river plain. Thus potentially effluent could discharge into that ground/ surface water supply source, although insufficient is known in terms of the interconnectivity of the groundwater lenses.
- The village deriving its own water supply from a deep aquifer, with the bore located on the same riverplain as numerous septic tanks, which are discharging into the permeable materials on that riverplain. Again the interconnectivity of the lenses remains unknown and the potential to infect this source is unknown.
- The village is only a few kilometres upstream of the urban area of Wagga Wagga and its water supply sources.
- The clay soils generate saturated disposal areas during the winter periods and given the elevated nature of these blocks, effluent will run both to the lower blocks and the permeable riverplain in the cooler months. This would also contribute to the stormwater area directly feeding into the river during rainfall events.
- Parts of the village flood and it could become necessary to evacuate the village with some choices of sewerage solutions.
- There is thus some degree of risks, to any visitors to these wetter blocks, particularly where few disposal areas are effectively fenced off.
- The village's rapid growth rate and the fact that much of the recent growth has been happening in the permeable areas, might mean that any possible pollution plumes are yet to reach the areas of concern as expressed above. However to double or triple the current population without sewerage will significantly increase these plumes and their potential to pollute.

Residents expressed concern that these units could be leading to possible downstream pollution. The results of the inspection process indicate that, despite many of the existing units being relatively new, some money would need to be spent in the short term on upgrading the units.

Environmental Risks

Whilst environmental issues are effectively dealt with in Section 9.0, some of the key environmental factors in relation to Oura that lead to environmental risk are:

- The close proximity of the village to the Murrumbidgee River with a significant slope towards it.
- A highly permeable soil for those homes on the floodplain area.
- Saturated disposal areas on the more elevated parts of the village sloping towards the riverplain.
- The village is on the floodplain and parts of whatever sewerage system is installed could from time to time be under water. The treatment plant needs to

be located out of the floodprone lands, but care needs to be exercised that whatever system is installed it is unlikely to transfer too much of the floodwaters to the treatment plant leading to its capacity being breeched.

- A relatively rapid growth rate for the village.
- A tendency to develop relatively high urban densities.

19.6 ON-SITE OPTIONS

General Views of On-Site Options

Residents overall wanted to move away from their septic tanks, but there were a number who have not that long ago invested up to $10,000 in aerated systems and were happy if the system took a few years before the new systems were installed. Residents (in general) on the permeable soils were happier with their units, whilst those that were on the clay soils were less happy and did not see these as a long-term solution to the village. None of the residents indicated a willingness to upgrade on-site facilities as a permanent solution.

As stated above, however there was a concern that the village's septic tanks might be contributing to downstream pollution.

Costs for improved on-site treatment options are estimated to be of order of $750,000 (this cost includes additional on-site units for the Nursery, Campbell's Mill, the park and the Community Hall).

19.7 OFF-SITE OPTIONS

Set out below are the details of the total costs to Council (and the NSW Government where subsidy is applicable) of the various forms of preferred technology proceeded with under this study. Details of how the costs are derived are set out in **Appendix E** for reasons of brevity in what is already a substantial report.

Individual costs to the residents will comprise the following

- One off connection costs;
- Annual Council sewer rate;
- Costs to operate and maintain pumping units.

Offsetting this will be an estimated $10,000 –$15,000 rise in property valuations with the arrival of sewerage.

APPENDIX G

Community Consultation Newsletter

WAGGA WAGGA
VILLAGES SEWERAGE INVESTIGATION
SUMMARY OF MAJOR FINDINGS

1 Purpose of Study

In recent years NSW State Legislation in respect to septic tanks has tightened in recognition of the fact that some septic tank practices have been found to be creating public health and environmental problems. Householders are now required to register their septic tanks and an ongoing Council inspection regime established, with frequency based upon an assessment of risk applicable to each property.

The State Government has assisted this by allocating limited funds to address those villages where it sees an urgent need exists and thus these funds are not generally available. Indeed it would appear at this stage that those villages not on that program have little chance of being included and will be a matter for individual Councils to try and finance themselves. In the case of the City of Wagga Wagga those villages nominated as being on that program are:

- Collingullie
- San Isidore
- Lady Smith (already sewered)

2 Environmental and Public Health Risks

The requirements of the new legislation effectively requires of any sewerage systems/arrangements that they:

- do not pollute ground water
- do not pollute surface water
- do not constitute a health risk within the village

In Wagga these risks are further complicated by:

- Base soils that have been identified as marginally suitable for receiving septic effluent at best and at worst totally unsuitable.
- During the months May to September there is on average a need to avoid adding additional moisture to the ground as rainfall is well in advance of evaporation during these months. Many of the villages effectively become saturated under foot and do not dry out until well into the drier months.
- The quarter acre block has been identified as too small for conventional sewerage systems and there is insufficient land to allow for an alternative disposal area.
- A growing urban salinity problem in the eastern parts of the city.
- Some villages located atop highly pervious alluvial soils in close proximity to the Murrumbidgee River.

Table Setting out Brief Overview of Risks Associated with Villages

Village	Public Health Risks	Environmental Risks
Collingullie	Current septic tank arrangements are in poor state. Blocks too small Flow from property to property during cooler months occurring as much of village wet underfoot soils here identified as totally unsuitable for septics.	Atop floodplain and therefore significant runoff during wet months directly into floodplain. Rapidly growing village Current sewerage needs addressing before plan subdivision can occur
Gumly Gumly	Many properties on alluvial sols next to river upstream of Wagga Blocks too small on Hwy and soils retain moisture	Alluvial soils atop shallow aquifer from which many others take water Rapid transfer from aquifers to river
Oura	Many properties on alluvial sols next to river upstream of Wagga and major water supply offtakes to other towns Rapidly growing village	Alluvial soils atop shallow aquifer hence ground water pollution Rapid transfer from aquifers to river hence surface water pollution
East Wagga	Larger properties hence relatively less health concerns. Area expected to continue to develop and potential for more subdivision in long term future	Area identified as having a large number of springs potentially feeding Lake Albert and the River Water in ground here potentially feeding urban salinity problems
Currawarna	Blocks retain moisture due to clay sub layer and become extremely wet underfoot Many properties on alluvial sols next to river downstream of Wagga	Alluvial soils atop shallow aquifer hence ground water pollution Rapid transfer from aquifers to river hence surface water pollution
Mangoplah	Blocks retain moisture due to clay sub layer and become extremely wet underfoot. Slopes in village could result in property to property to property transfer of effluent from tanks Many blocks too small	Some wash of into local streams possible during cooler months but these are non perennial streams Some potential for further development
Humula	Blocks too small essentially all being ¼ acre. Slopes in village could result in property to property to property transfer of effluent from tanks Some blocks extremely wet during cooler months and stay that way for prolonged periods hence problems with existing systems	High water table potentially being polluted by septics. Much higher rainfall contributing to greater wash of and potential for pollution of local creeks.
San Isidore	Larger properties hence relatively less health concerns. Small number of quarter acre blocks with slopping properties that need addressing. Area almost 100% developed unless other land dedicated for other purposes was sold and subdivided	Significant surface flow in major rainfall events and eventual wash off into river systems., However significant area to be covered and occurrence only in relatively extreme events

Accordingly the villages have been grouped into the following risk categories

High Risk	Some/ Moderate Risk	Low Risk
1 Collingullie	6 Part San Isidore	9 San Isidore(Remainder)
2 Gumly Gumly	7 Mangoplah	
3 Oura	8 Humula	
4 East Wagga		
5 Currawarna		

Notes.

1. The part of San Isidore that falls into the moderate risk category are the small ¼ acre properties.
2. Risk is magnified by the size of the village, growth rates and potential and the ability to impact larger numbers downstream.

Clearly in the longer term Council will need to develop a plan to provide some form of centralise sewerage system to the villages based upon these risk profiles and its ability to fund such works. It is conceivable that many of those in the high-risk category will take some years to address simply because Council does not have the funds available and as such there is a need to also look to interim measures.

Recommended Solutions

Ultimate Solutions

The recommended direction to Council is to install an on property pumping system rather than the conventional or modified systems gravity systems. Such a system will totally replace the current septic tanks but the pressurised system will allow much smaller diameter pipes layed at minimum grade and in all of the villages this is by far the lowest cost option providing an acceptable level of service to the residents. Indeed the cost to provide those more conventional schemes is such that it would considerably lengthen the period till when Council could progressively service each of the villages and potentially could mean that some villages will never receive sewerage as it cannot be cost justified.

In Gumly however it is recommended that those ¼ acre properties along the Sturt Highway be serviced by a modified conventional sewerage scheme as this solution is well suited to that application. The remainder of the properties along the highway and throughout the village being pumped applications.

In Gumly, East Wagga and San Isidore it is intended that the new systems will connect to existing sewerage networks but for the remaining villages/ centres of population a stand alone treatment plant is to be constructed. These plants will take the form of a series of ponds as well as sufficient storage capacity to last some six months. The treated effluent will then be available for some opportune re-use on the farm property in compliance with the appropriate guidelines. The plants are to be located approximately 1.0 Kms from the village but each location will depend upon negotiations to attain suitable land. Such systems already exist at Tarcutta and Uranquinty and are not proving to be a source of significant odour or environmental problem.

Residents will remain responsible for all on components of the system on their property but in support of this it is recommended that all costs to install the pumping units be included in the village sewerage scheme. Residents should then be required to pay some $2,000 to Council for the smaller blocks (up to 1 acre) to cover what would be the expected their costs to connect to the sewerage system. Costs for the larger blocks should be $2,400. The logic behind this being:

- The need to be able to get residents to connect to these systems quickly and the estimated $4,500 to $5,500 cost per property would be cost prohibitive and set up some equity difficulties. Subsidising these would encourage residents to connect quickly removing the risks identified earlier
- These costs set out above were those identified as the average cost to connect to the Council sewermain for North Wagga and thus residents here would be paying what most people on a conventional system paid. The additional $400 for the larger properties is to cover the additional length of line on such large properties.
- The additional costs run the pumping units offset by both the potential savings in tree root penetration for the residents and the subsidised nature of the village sewerage schemes.

Other recommendations being made in support of these solutions are

- The window of opportunity for residents to achieve the subsidised costs be limited to two years from the date of appropriate notification by Council, at the start of the works. Any connections after that time will meet the full costs to install these systems.
- Council should explore the option for residents to meet the costs to them over time, by allowing some form of prepayment, that is, if the residents want such a system.
- No resident should be compelled to join these schemes if they can adequately demonstrate that their onsite unit is not leading to environmental or public health difficulties but the onus of proof will be ongoing and need to remain with the resident.
- Council will need to make special arrangements for those unable to pay to join such a system similar to the way in which it dealt with residents in North Wagga
- Whilst the pumping systems have additional storage, Council will need to ensure that residents have access to a 24 hour a day 365 days a year service call system. Whether this is achieved through on call private plumbers or Council's own call centre is a detail left for Council to finalise.
- There is a need to ensure that sufficient local plumbers are trained in the servicing of the pumping stations and it is further suggested that Council carry a few spare units which can be used in emergencies as a temporary measure so that the residents are not disadvantaged.
- That Council enter into a long-term bulk contract with the suppliers of the pumping station units. This is so that if individuals or subdividers wish to pursue the installation of these systems before Council is able to carry out the works throughout the village area then they are able to achieve the best possible price for these units even without subsidy monies.

Interim Solutions

East Wagga

For East Wagga it has been identified that the construction of four receiving pumping stations and sufficient lines would at least allow each of the streets to individually proceed if required. Council could stage these works over a period of say four to six years thus allowing these residents some opportunity to proceed themselves or to chime in with potential subdividers. To some extent there is the opportunity to review if these options are being taken up along the way before proceeding too far.

It is recommended that Council pursue this interim option based upon the potentially high risks, associate with this area. It has the spin off effect that given the size of the development it arguably represents a relatively economical proposition. An initially step would be to write to all residents seeking feedback on which areas are likely to proceed to assist with any scheduling of the works.

Currawarna, Humula, and Mangoplah

In each of these villages a major proportion of the problem is that the properties become so wet underfoot that they effectively become quite wet and it is nearing Christmas before the properties are able to effectively dry out. Thus it is recommended that a portion of the treatment plants be constructed to provide winter storage and that some form of community pump out might be permitted during the winter period to prevent the build up of moisture. Typically this might involve using the Bush Fire tankers with some modification but is clearly not limited to that option. However it would represent a good means of raising money for such a body.

It is further recommended that one of the villages be trialed to determine the success of this interim solution with the residents from the other villages able to witness the result. It is suggested that Humula given its high rainfall be used for this trial. If successful Council might be able to progressively expand the treatment plants and build the pipeline to town so that residents in the village could also take advantage of these units when it is time to replace their existing units.

Humula

This village is essentially all quarter acre lots and with the high rainfall this area is too small to deal with the volume of effluent. Currently no properties are able to discharge to others but given there is very little development and that few properties are close to one another, an alternative might be to provide special planning laws that allow individuals to dispose of effluent on neighbouring properties with the owners permission. It is recommended that Council formally explore the feasibility of this option and put in place the mechanisms to enable this to happen.

It is further recommended that Council consider making available to existing residents in all of the villages subsidised units to assist them in proceeding before their schemes are available. Such residents would have been entitled to those subsidies had they waited.

Timing

It is recommended that the villages need to be addressed in the following order based upon the environmental and public health requirements. It is noted that Council will potentially take three to four years to gain sufficient funds to complete the next project. However if subsidy money is available for San Isidore then this will clearly change the priority for that village.

1	Collingullie (immediately)	5	Currawarna
2	Gumly Gumly	6	Mangoplah
3	Oura	7	Humula
4	East Wagga	8	San Isidore

Although a part of San Isidore is likely to proceed before its stated order to deal with the smaller properties.

It is also suggested that the interim solutions for East Wagga and the Humula trial commence immediately after Collingullie (and possibly San Isidore) works conclude. All of the interim solutions should then proceed on an iterative basis providing they do not significantly delay the Gumly or Oura schemes.

Community Views

These findings come at the end of an extensive consultation process and the final report will include the Consultants perceptions of the feedback this is summarised below so residents are aware of what is being reported. It does not represent all views within each village only what was perceived as the general consensus. The villages asked a series of the equity questions, which have been dealt with in the minor recommendations. The pumped option was discussed and accepted by all of the villages.

Village	Residential Feedback
Collingullie	Residents are supportive of a centralised sewerage system as soon as proposed and are keen that it proceed as soon as possible. There is a perception that the lack of a sewerage system is holding up the development of the village.
Gumly Gumly	Residents are supportive of a hybrid centralised sewerage system as soon as proposed and are keen that it proceed as soon as possible
Oura	Residents appear to accept that there is an inevitability towards sewerage but are happy that this will take a little while so as they can gain some value from current systems given that many have only recently been installed
East Wagga	Residents are supportive of a centralised sewerage system as soon as proposed and are keen that it proceed as soon as possible. Several residents are keen to proceed ahead of the council scheme if this becomes possible.
Currawarna	Residents are supportive of a centralised sewerage system as soon as proposed and are keen that it proceed as soon as possible
Mangoplah	Residents are supportive of a centralised sewerage system as soon as proposed and are keen that it proceed as soon as possible.
Humula	Residents expressed a strong desire for a non, hole in the ground solution and are thus are supportive of a centralised sewerage system. They also would like it as soon as proposed and are keen that it proceed as soon as possible
San Isidore	The initial meeting indicated some desire to retain the septic tanks but subsequent meetings have revealed that they also would prefer a centralised sewerage system. Again

Japanese Encephalitis Vaccination Update

GENERAL PRACTITIONERS and ABORIGINAL MEDICAL SERVICES

ISSUED 3.20PM 4 November 2022

Please distribute to all doctors and staff in your practice

1. **Be alert** to Japanese Encephalitis virus (JEV) infection as a possible diagnosis in patients presenting with symptoms such fever, headache, or new neurological signs. See: https://www.health.nsw.gov.au/Infectious/factsheets/Pages/japanese_encephalitis.aspx

2. **Offer** JE vaccine to patients recommended vaccination. **Eligible groups have been updated. Authorised Nurse Immunisers can now administer JE vaccine in NSW.** For eligibility criteria see below or visit: https://www.health.nsw.gov.au/JEvaccine.

3. **Advise** patients on the importance of routine mosquito bite prevention during the summer and autumn to help prevent JE and other mosquito-borne diseases, including Murray Valley Encephalitis, Kunjin, Ross River virus and Barmah Forest virus infections.

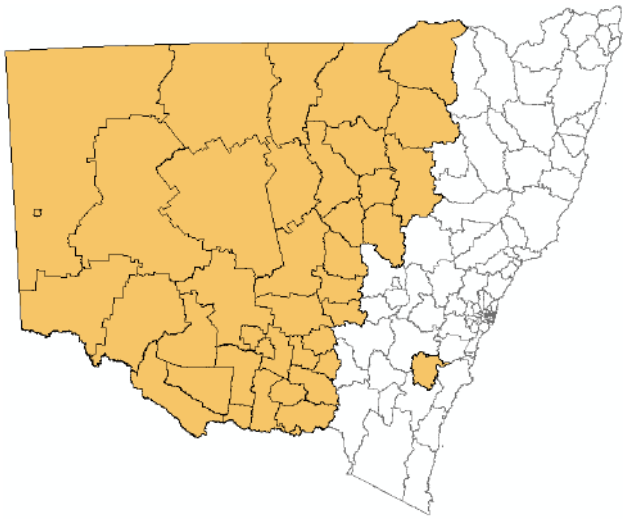
Japanese Encephalitis vaccine is now recommended for a broader group of people:

People aged 2 months or older who live or routinely work in any of the below Local Government Areas (Table 1) **AND**:

- Spend significant time outdoors (four hours per day), for unavoidable work, recreation, education, or other essential activities, **OR**
- Are living in temporary or flood damaged accommodation (e.g. camps, tents, dwellings exposed to the external environment) that place them at increased risk of exposure to mosquitoes, **OR**
- Are engaged in the prolonged outdoor recovery efforts (clean up) of stagnant waters following floods

Table 1: LGAs of high JEV concern

Albury	Hay
Balranald	Junee
Berrigan	Lachlan
Bland	Leeton
Bogan	Lockhart
Bourke	Moree Plains
Brewarrina	Murray River
Broken Hill	Murrumbidgee
Carrathool	Narrabri
Central Darling	Narrandera
Cobar	Narromine
Coolamon	Temora
Coonamble	Parkes
Dubbo Regional	Unincorporated Far West Area
Edward River	Wagga Wagga
Federation	Walgett
Forbes	Warren
Gilgandra	Warrumbungle
Goulburn Mulwaree	Weddin
Greater Hume	Wentworth
Griffith	



NSW Health also continues to **recommend and offer free** vaccination for people who live in any part of NSW and:

- work, live, or are visiting a:
  - piggery, including farm workers and their families (including children aged 2 months and older) living at the piggery, pig transport workers, veterinarians (including veterinary students and nurses) and others involved in the care of pigs.
  - pork abattoir or pork rendering plant.
- work directly with mosquitoes through their surveillance (field or laboratory based) or control and management, and indirectly through management of vertebrate mosquito-borne disease surveillance systems (e.g. sentinel animals) such as:
  - environmental health officers and workers (urban and remote)
  - entomologists

Japanese Encephalitis and Vaccination Update

GENERAL PRACTITIONERS and ABORIGINAL MEDICAL SERVICES

NSW GOVERNMENT Health

Please distribute to all doctors and staff in your practice

- all diagnostic and research laboratory workers who may be exposed to the virus, such as people working with JEV cultures or mosquitoes with the potential to transmit JEV; as per the Australian Immunisation Handbook.

How to order vaccine:
Vaccine doses can be ordered through the State Vaccine Centre (https://nsw.tollhealthcare.com/).

Practices administering vaccines to people who live/work in high-risk LGAs can order up to 100 doses of Imojev, or up to 15 doses of JEspect / Ixiaro (for immunocompromised people, pregnant people or very young children). Larger orders can be arranged (supply dependent) by contacting the local public health unit on **1300 066 055.**

- **Imojev:** people aged ≥9 months can receive Imojev. The dose is 0.5 mL given by subcutaneous injection.
- **JEspect / Ixiaro** is given by intramuscular injection. The primary dose needed depends on the age of the person: infants and children aged ≥2 months to <3 years should receive 2 doses, each of 0.25 mL, 28 days apart. Children aged ≥3 years and adults should receive 2 doses, each of 0.5 mL, 28 days apart

For more information see: Australian Immunisation Handbook.

Authorised nurse immunisers can now administer Japanese encephalitis vaccines – see: Authority for RNs and Midwives

Background
Between January-March 2022, 13 people acquired JE infection in NSW. Most presented with severe disease and two people died. This was the first ever local transmission of JEV in NSW.

Japanese encephalitis virus is transmitted to humans and other animals by the bite of infected mosquitoes. Most cases are asymptomatic, but 1 in 250 will develop a severe infection, and about 20-30% of severe infections are fatal.

Patients may develop fever, headache, myalgia, rash and diarrhoea. More severe infection is associated with acute encephalitis/meningoencephalitis. Neurological sequelae include focal deficits such as paresis, cranial nerve pathology and movement disorders. Seizures are common, particularly in children.

Patients often need to be admitted to hospital, and sometimes require high dependency or intensive care. Permanent neurological or psychiatric sequalae can occur in 30-50% of cases with encephalitis, the case fatality rate is 30%.

Japanese encephalitis prevention includes the following:

1. Preventing mosquito bites. This includes the use of mosquito repellents, flyscreens, bed-nets, vapour dispensing units (indoors) and mosquito coils (outdoors), wearing loose fitting, light colored and/or permethrin impregnated clothing, and tipping out and removing any water-holding containers where mosquitoes may breed.
2. Vaccination. There are 2 JEV vaccines registered for use: Imojev a live attenuated vaccine (single dose) and JEspect / Ixiaro an inactivated vaccine, preferred in those who are immunocompromised, pregnant or <9 months

For more information contact your local public health unit on 1300 066 055

Yours sincerely

Dr Kerry Chant AO PSM
Chief Health Officer and Deputy Secretary Population and Public Health
4 November 2022

NSW Ministry of Health
ABN 92 697 899 630
1 Reserve Road, ST LEONARDS NSW 2065
Locked Mail Bag 2030 ST LEONARDS NSW 1590
Tel. (02) 9391 9000 Fax. (02) 9391 9848
Website. www.health.nsw.gov.au

18 September 2024

Lilian Parker
Agricultural Land Use Planning
Department of Primary Industries - Agriculture
Via email: landuse.ag@dpi.nsw.gov.au

CC: Cameron Collins, Development Assessment Coordinator, Wagga Wagga City Council
Collins.Cameron@wagga.nsw.gov.au

Councillors, Wagga Wagga City Council
councillors@wagga.nsw.gov.au

Michael Gheorghiu, Tudor Planning and Design
michael@tudorpd.com

Dear Ms. Parker,

Re: Response to RFI for DA23/0598, Eringoarrah Pty Ltd, Proposed Live Processing Industry, Oura Station, 2052 Oura Road, Oura

Wagga Wagga Council received a Request for Further Information (RFI) from the Department of Primary Industries – Agriculture (DPI Ag), dated 14/02/24 and advising that the proposal would be enhanced by preparing a LUCRA. This report has been prepared to address The Applicants response to this request from DPI Ag.

DPI Ag also specifically requested, *"As the proposal states that the facility is for livestock that are "bred and raised at the existing farm (i.e. Eringoarrah)" it needs to be confirmed that other stock - ie "cattle, lambs and pigs" - will not be sought and transported from other farmers/properties (noting that Okeview Pastoral has other properties across the state and it is not clear that sheep and/or pigs are actually bred on Eringoarrah itself).*

In this case, DPI would support a small-scale facility processing livestock bred and raised on the existing farm Eringoarrah based on the following points:"

Oura Riverine Protection (ORP) also made the same request for a LUCRA and "an assessment of any biosecurity contamination and risks of the proposal on local agriculture".

We will address these three components (confirmation of sources of stock, LUCRA and biosecurity) separately in the following response.

DPI Request for Confirmation that stock other than Eringoarrah's will not be imported

With regard to this statement, *"DPI would support a small-scale facility processing livestock bred and raised on the existing farm Eringoarrah based on the following points:"*, and while it is not entirely clear, it would appear that Okeview Pastoral intend to bring cattle from other Okeview properties and so not meeting the terms of support DPI has stated.

It is stated by Okeview that sheep are bred on Eringoarrah and it is unclear what will be the future source of pigs for processing through the proposed abattoir.

The Applicants response to this specific requests remains unclear with somewhat inconsistent statements in the submitted documents and a lack of clarity as what the term "*finished*" means in this context, such as:

- LUCRA page 6, *"The proposal will allow the livestock that are bred, born, raised and/or finished at Eringoarrah to be processed at the same location"*
- LUCRA page 27, *"The EIS states that only animals produced, raised or finished on Eringoarrah will be processed at the facility"*

We also note the SJB letter in the section "Response to Matters" states, *"As set out in the DA, it is not proposed that stock from farms external to the proponent's business will be processed within the abattoir and the applicant is happy to accept a condition of consent to that extent."*

These statements remain unclear as to whether only livestock raised on the property Eringoarrah will be processed and, as such, is deficient.

It also needs noting that this ambiguity needs clarifying for important biosecurity planning (see relevant section following).

Land Use Conflict Risk Assessment Review

As background, it needs to be noted that all relevant material to make an accurate LUCRA assessment, including neighbouring development applications, their status, relevant ground water risks (including closest neighbouring bore) and feedback on deficiencies in the EIS were submitted to Wagga City Council by ORP and Tom Kelsall (closest neighbour). These were then provided to The Applicant. The LUCRA report states, *"A review of objections to the development received during the exhibition period of the Development Application process was completed"*. However, we note there remain a number of omissions, inaccuracies and inconsistencies in this LUCRA to the information provided.

As stated in our previous submissions, this development conflicts with approved land uses in the immediate vicinity. This includes the proposed farm tourism DA22/0458 on Broughton Brook and rural submission on the now separated properties Broughton Brook and River Run DA07/0581. Both of which are discussed in detail in the prior Oura Riverine Protection Inc. submission objecting to this proposal.

<u>Farm Tourism DA22/0458 on Broughton Brook</u>

We note that despite clear potential conflict to this already consented Development Application (DA), it is only referred to cursorily in the introduction of the LUCRA on page 9, under the heading *"2 Gather Information"*. No further assessment of this DA is made and, as such, the assessment is deficient.

Rural Subdivision on Broughton Brook and River Run DA07/0581

While also acknowledged as 6 x 200 hectare lots, 4 x 4 hectare lots and 1 x 7 hectare lot over both properties, only 2 lots have been assessed in the LUCRA, which is also deficient.

River Run property, as provided in previous submissions, retains the development consent for 2 x 200 hectare lots and 2 x 4 hectare lots. The LUCRA assessment on page 28 states, *"on the balance of probability, the consent for the subdivision has lapsed"* and *"No physical works appear to have commenced within the proposed Lots nor access provided to Oura Road."*. This is inaccurate and incorrect.

Lots 8 and 9 have been surveyed and registered with the Department of Lands, which is all that is required to prove commencement under planning regulation. Being 200 hectares, or greater, both of these lots have building rights. Lot 8's boundary is approximately only 800 meters from the proposed abattoir and power station development, which is also not acknowledged in the LUCRA. Further to this a tree lot has been constructed and planted on the south/west boundary of Lot 11, as a condition of consent. Access to Lots 9, 10 and 11 is provided at 1834 Oura Road, and direct access is provided to Lot 8 from the Oura Road at three locations. Building sites on all four lots will have conflict from loss of visual amenity, plus further factors for those lots closer to the site.

This planned and commenced development is part of long term business strategy to match with the growing demand for hobby farms in the area. As all sensible development should be - long term, well planned and secured with commencement. The neighbouring landholder should not be unfairly conflicted and suffer loss to this approved development that will provide considerable amenity for future owners.

As provided in previous submissions, the loss of amenity by the proposed abattoir and power station will naturally lead to a loss of value. Herron Todd White provided a valuers opinion that indicates a loss of value in the proposed rural submission of 30-40% on lots 10 and 11 and a loss of 10-20% for the larger lots of 8 and 9. What this valuation is basically saying is that the premium established given the amenity of the river views, character of the landscape and approved building rights on these lots will be lost and the land value will most likely to return to its previous value as farmland.

It is also noted that in SJB Planning's "Response to Submissions" stated that the valuation provided was *"high end"* (page 3), however no value was shown in our submissions, only the range of comparative loss of value due to The Applicants proposed abattoir and power station, so how could it be claimed as "high end" and the misleading implications which go with such claim?

Activities Impacting Surface Water

The LUCRA report makes the following statement:

"The proposed development is located on sloping land (5-12%) and is situated proximal to the Murrumbidgee River to the east and south and therefore the impacts to surface water must be carefully considered as there is potential for overland flow to mobilise contaminants from the effluent management area if the development is incorrectly sited or stormwater management is inadequate. Impacts to surface water can arise from movement of nutrients and potential contaminants from the lairage area, and waste treatment plant to the river from overland flows following heavy rain events."

The report acknowledges the existence of an un-consented feedlot and yet the assessment fails to include the feedlot and it's contamination risk. The feedlot has an area of 3.7 hectares (as stated in the LUCRA) and an 8% slope, which significantly exceeds the limits of best practice slope for feedlots

(Paradice report). The feedlot is immediately above the effluent irrigation area with run-off being directed to the dams north of the site, which also are not included in the assessment and are shown to overflow in storm events (Martens, Flood Assessment). Run-off from existing silage pits also flows into the dams, noting ensiling is a bacterial process (see attached 2, figures 3 and 4). Therefore contaminants can enter the dams from overland flooding through the abattoir building area, from the contour drain below the feedlot capturing untreated feedlot effluent and via the floodway from the silage pits. Martens flood maps FL18 and FL23 (attachment 3, figures 5 & 6) show these pathways for floodwater to storage capture in the dams to the north of the site and overflow to the flood plain below.

There are no photos showing the feedlot in the LUCRA report. Photos provided in other reports are out of date and do not show the existing central feed troughs with a covered tin roof that can be seen from distance.

This section of the LUCRA is inaccurate and therefore inadequate.

Activities Impacting Groundwater

As stated in the section above, surface water has the potential to be contaminated from the feedlot and the abattoir, as well as leaching from the silage pits, and enter the groundwater system either via overflow from the dams to the north or directly from the feedlot after flowing over the effluent irrigation area.

We refer the reader to McMahons scientific reports as part of ORP's previous submission discussing the local geology and reporting interflow in the soil profile, as well as the omitted groundwater bore provided in that submission and the submission from Tom Kelsall. We fail to understand how this registered bore has not be included in the original EIS, this current RFI or any associated reports, after providing all of the relevant information and specifically requesting its inclusion in the assessment.

The bore, 40WA416489, is currently used for stock water and will be the source of drinking, stock and garden water for the future residence of Lot 8 (as per the previous discussed approved DA). The bore has a recorded standing water level of 7 meters and is approximately 1,200m west-nor-west of the proposed abattoir and power station site, and closer to the area at risk from groundwater contaminated recharge. The location of the bore is shown on the attached Conceptual Site Map (see Attachment 2, figure 4), which was supplied to the applicant in previous submissions.

It is clear that the assessment of activities impacting groundwater is inaccurate and inadequate.

Activities Impacting Access, Transport and Traffic

The LUCRA report states:

"Access will be via an existing single-entry point located at 2056 Oura Road, Oura. The access point is located at the bottom of a hill from a two lane (one in each direction) rural road that has a 100km speed restriction. There are no dedicated turning lanes in either direction at the access point. Visible sight lines are in the vicinity of the of 200 - 250m in either direction."

We note that the visible sight lines quoted above are more accurate and inconsistent to The Applicants original DA traffic report that claims the line of sight to be 350m in both directions, which has not been updated in the Amended DA.

We refer the reader to ORP's previous submission (page 57) as to the uncertainty of the timing of the traffic survey (e.g. during holidays) nor details of the counts, as well as the serious dangers from to the lack of vision and no dedicated turning lanes. Further to that the major culvert and steep road drains to the west create additional danger.

This LUCRA assessment for activities impacting access, transport and traffic is deficient.

Visual Amenity Impacts

As discussed earlier in this response, the LUCRA does not adequately consider the neighbouring approved developments, including the visual impacts on these. In particularly the closest being registered Lot 8 about 800m to the west of the proposed site.

Also it does not take into consideration the combined visual impact from the existing un-consented feedlot and the glint currently given off from its roof visible for 3.5km, the proposed 11.7 meter high abattoir and the glint and glare from the 1.5 hectare solar array that tilts east west. These will be in view of all 4 lots in the neighbouring approved development to the west and 3 of the 5 safari huts for approved tourism development to the north.

The statement that the abattoir, power station and feedlot will only be visible for about 200m of the Oura Road is incorrect. The site is significant 8.2 hectares plus 3.7 hectare feedlot which totals just under 12 hectares. Consequently, and given its position up-slope, it will be highly visible for over 1.5km along the Oura Road, aerially and to neighbours. The claim that the tree lot planted along The Applicants western boundary will screen the site is inaccurate, as it is in the valley floor and so will only screen the view for about 200m of road directly in front of the proposed site.

The impact on visual amenity is inaccurate and therefore inadequate.

Activities Impacting Waste Management

The LUCRA correctly highlights the sensitive and vulnerable proposed location for an abattoir, power station and existing un-consented feedlot, stating:

"Waste management poses the greatest potential for land use conflict given the siting of the development close to the Murrumbidgee River."

While we have highlighted the risks and impacts from liquid waste management to surface runoff and groundwater in previous sections of this response, we will only address solids in this section.

The LUCRA report states with regard to waste biosolids (heads, bones, fat, hide, skin hocks), *"It is assumed that the transportation vehicle of the contractor will be refrigerated/enclosed to reduce odours during transport"* - how can this be assumed? This needs to be confirmed as well as made a condition of license/consent. Naturally this also needs to apply to solids separated by the rotary screening process of liquid waste streams.

With regard to *"manure from the lairage area and paunches will be collected and placed in unrefrigerated bins before being removed from site at regular intervals (likely daily). The report identifies that there will be approximately 1.5-2.2m3 of paunch material generated weekly."*. It is stated that this waste will not be refrigerated, and given it includes paunch contents as well as paunch manure and lairage manure, we remain concerned about odour generation. Especially as the frequency of removal is not specified. We believe this waste material should also be refrigerated in storage and transport, and the frequency of removal stated.

Further to this, *"off site"* and *"from site"* needs to be clarified as external to the property Eringoarrah / Oura Station and to a registered location for handling of such noxious materials. The above criteria should apply to any animals that die or are euthanised prior to slaughter as well.

The LUCRA report and EIS needs to include these matters.

Biosecurity

It is concerning to read the LUCRA report state, *"There is little discussion on biosecurity measures to be implemented at the proposed development, save for a small piece in the Operational Management Plan (Martens, 2023f)."* When biosecurity is a critical issue for agriculture generally, as well as locally and regionally for both health and economic reasons.

It needs to be mandatory that The Applicant includes a Biosecurity Plan, including a biosecurity risk assessment. Such a plan needs to include the following, which at this stage are still uncertain and unconfirmed (refer to comments in previous sections):

- If it is intended to to bring animals from other Okeview properties, a biosecurity plan needs to be developed identifying and assessing the risks and impacts from these livestock being imported to the Eringoarrah property

- That no animals will be brought onto the property from any property external to Okeview Pastoral Company's ownership. That statement in itself is important for biosecurity to the local area and region

- If The Applicant wishes to include sheep and pigs in the development application, whether it immediately intendeds to process such livestock or not, a biosecurity plan must be completed to protect against such risks. As identified in the LUCRA, pigs provide a significant risk to human health. It is not sufficient to simply say they are not intended to be run on the property or processed immediately, and therefore imply no biosecurity plan is required.

Further to this we suggest that DPI Ag request, as part of the LUCRA process, an animal welfare plan, if The Applicant wishes to truck cattle from their other properties as far away as 600km to Scone and include in such plan why this is permissible, while trucking cattle to an abattoir site in the Bomen Special Activation Precinct only about 20km away is considered unacceptable by The Applicant for animal welfare.

Consultation

For general awareness, we believe the readers should be informed that not all consultation statements seem to be accurate. ORP is aware of at least two neighbours listed as "supportive" who, in personal communication, have said that is not their position. ORP is also aware of two other neighbours listed as "informed" who have made it clear they are unsupportive of the proposal.

This would potentially change the list of neighbour positions as follows:

Supportive	2
Not Supportive	3
Informed	5
Unknown	0

With regard to the Oura Consultation meeting, this only happened at the request of the Oura Progress Association. We do not know how The Applicant arrived at the numbers of people supporting or objecting, and what we do know is that it was a very emotive meeting where many people loudly voiced their concerns.

At that meeting The Applicant agreed to include the feedlot in the survey area, which was then followed up with a letter from ORP to Okeview's Chief Operating Officer. The letter stated,

"it was important to hear you agree to extend the survey plan to include the "drought" feedlot area, the area below the Oura Station access road, as well as the land to the river. As was clearly expressed at the meeting, it is not acceptable to suggest the feedlot is not part of the project area when in reality it is located right next to the proposed abattoir. The feedlot must be included in the project area and the EIS for the cumulative impact of any contamination events, the co-mingling of any runoff from both sites, as well as the location of the waste water treatment ponds and treated effluent irrigation below the feedlot. Any EIS is required to assess all contamination risks and worst case scenarios."

The Applicant has not undertaken a survey of these areas as agreed and ORP believes the LUCRA needs to accurately reflect this. We also naturally question the quality of the consultation, if the position of some neighbours is inaccurate, giving a different overall perception of the level of support, and from the number of inaccuracies in this report differing from the information provided during consultation and submissions.

Conclusion

As the LUCRA report states, *"the receival* (sic) *of 61 objections indicates significant concern exists regarding the proposed development."*

It is vital that these concerns are addressed with adequate planning, risk assessment, design and location. DPI Ag has basically raised three areas to be addressed in the RFI:

1. Source of Livestock Confirmation
   "As the proposal states that the facility is for livestock that are "bred and raised at the existing farm (i.e. Eringoarrah)" it needs to be confirmed that other stock - ie "cattle, lambs and pigs" - will not be sought and transported from other farmers/properties"

2. LUCRA
   "The proposal would be enhanced by preparing a Land Use Conflict Risk Assessment"

3. Biosecurity (as a component of of LUCRA)
   Biosecurity Risk Assessment

ORP has reviewed the documentation and evidentially concludes that the DPI Ag RFI has not been adequately addressed and the LUCRA is inadequate for the reasons summarised below.

1. Source of Livestock Confirmation

DPI Ag has stated *"DPI would support a small-scale facility processing livestock bred and raised on the existing farm Eringoarrah based on the following points:"*

While it is not entirely clear, it appears Okeview intends to bring cattle from its other properties and so does not meet the terms of support given by DPI Ag, nor it's own claims of not transporting livestock for animal welfare reasons.

It is also unclear as to the future source and management of pigs to be processed through the proposed abattoir.

Clearly the LUCRA and other documentation does not answer nor meet DPI Ag's RFI

2. LUCRA

Key areas of the LUCRA are inaccurate, deficient and, ultimately, inadequate. These include:

Conflicting Land Use

- No assessment of neighbouring Farm Tourism consented DA.
- Partial and incorrect assessment of neighbouring Rural Subdivision consented DA.
- Insufficient measures to mitigate the impacts to these neighbouring consented DA's due to conflicting land use from the proposed development of an abattoir and power station, combined with the existing un-consented feedlot.

Activities Impacting Surface Water

- Non assessment of nearby feedlot infrastructure to the proposed site and associated contamination risk from co-mingling and cumulative impact of combined run off.
- Non assessment of dams to the north of site receiving untreated effluent from the feedlot and/or contaminated water from overland flooding through the abattoir and powers station buildings.
- Ignoring of the closest bore to the proposed site.

Activities Impacting Access, Transport and Traffic

- Reliance on the previously submitted traffic report in the original EIS which has insufficiently reported survey methodology and is factually incorrect in its assessment of road conditions for traffic and human safety.

Visual Amenity Impacts

- As per the section above, there are very real conflicting land uses that have not been accurately assessed. Such assessment therefore makes the visual amenity assessment deficient, given the existing feedlot, the 11.7 meter high building structure and 1.5 hectare solar array, all on 12 hectare site which will be in view for at least 3.5km.

Activities Impacting Waste Management

- Further to the issues with the surface water assessment, refrigeration of biosolids storage and transport has only been assumed in the LUCRA and not defined as a requirement.
- Non refrigeration of other solid waste of paunch contents and manure posses an odour risk.
- No specific plan for the frequency of the disposal of the above waste products is provided.

3. Biosecurity

The statement, *"There is little discussion on biosecurity measures to be implemented at the proposed development"*, is a serious issue.

There needs to be a full and thorough biosecurity plan that includes all classes of livestock proposed to processed through the abattoir, including the sources, transport and welfare of those livestock.

Recommendations

ORP is surprised at the level of inaccuracy in the LUCRA given the provision of accurate information in submissions and consultation, which is acknowledged as having been received and reviewed in the preparation of the LUCRA.

Further to this and, at times resulting from these inaccuracies, the LUCRA is inadequate in addressing the DPI Agriculture RFI and meeting base level standards for LUCRA and Biosecurity risk management.

We trust that DPI Agriculture and Wagga Wagga City Council, as well as their assessors, will require an accurate RFI response by the Applicant for a fair and transparent assessment of this Amended DA. As well as a LUCRA and Biosecurity Risk Management Plan that meets at least the minimum requirements for land use conflict risk assessment and to ensure biosecurity of the area and the region.

Yours sincerely,

Tom Kelsall
President, Oura Riverine Protection Inc.
E: tomkelsall@me.com (please cc: ourariverineprotection@gmail.com)

ATTACHMENT 1 – LOCALITY

Fig. 1: Location of site with respect to the Wagga Wagga City Centre (note: map extracted from proposed development EIS)

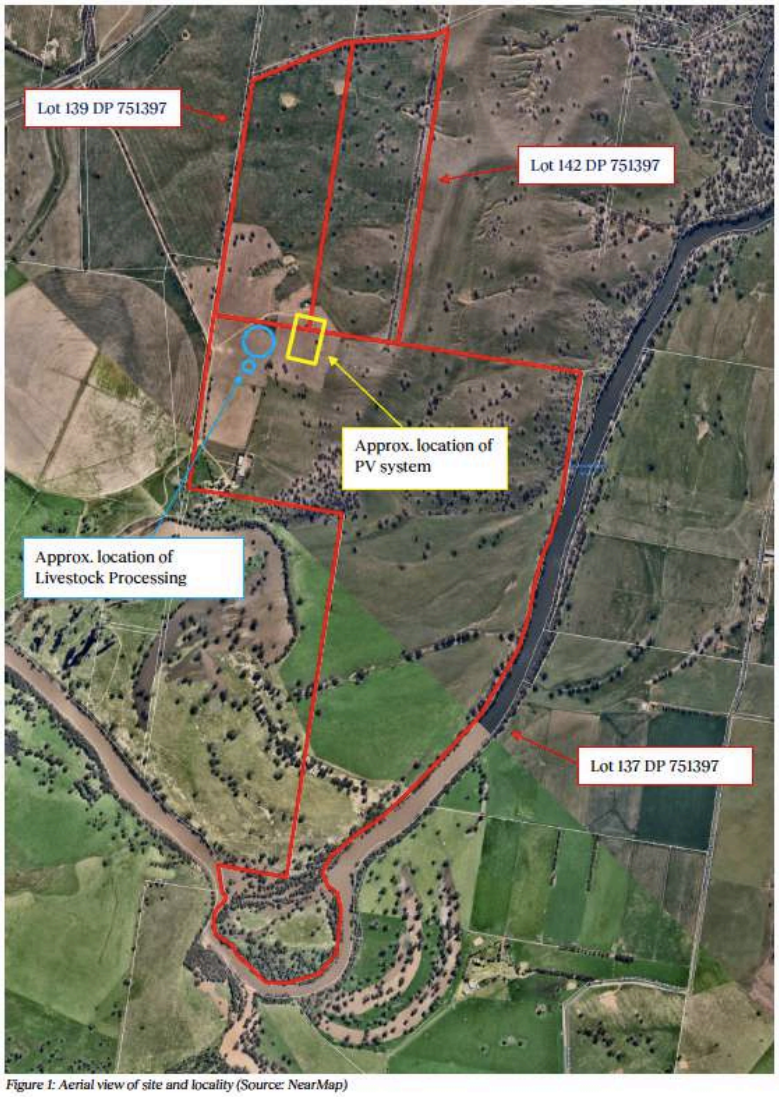


Figure 1: Aerial view of site and locality (Source: NearMap)

Fig. 2: Subject site (note: map extracted from proposed development EIS)

ATTACHMENT 2 – SITE SPECIFIC ATTRIBUTES

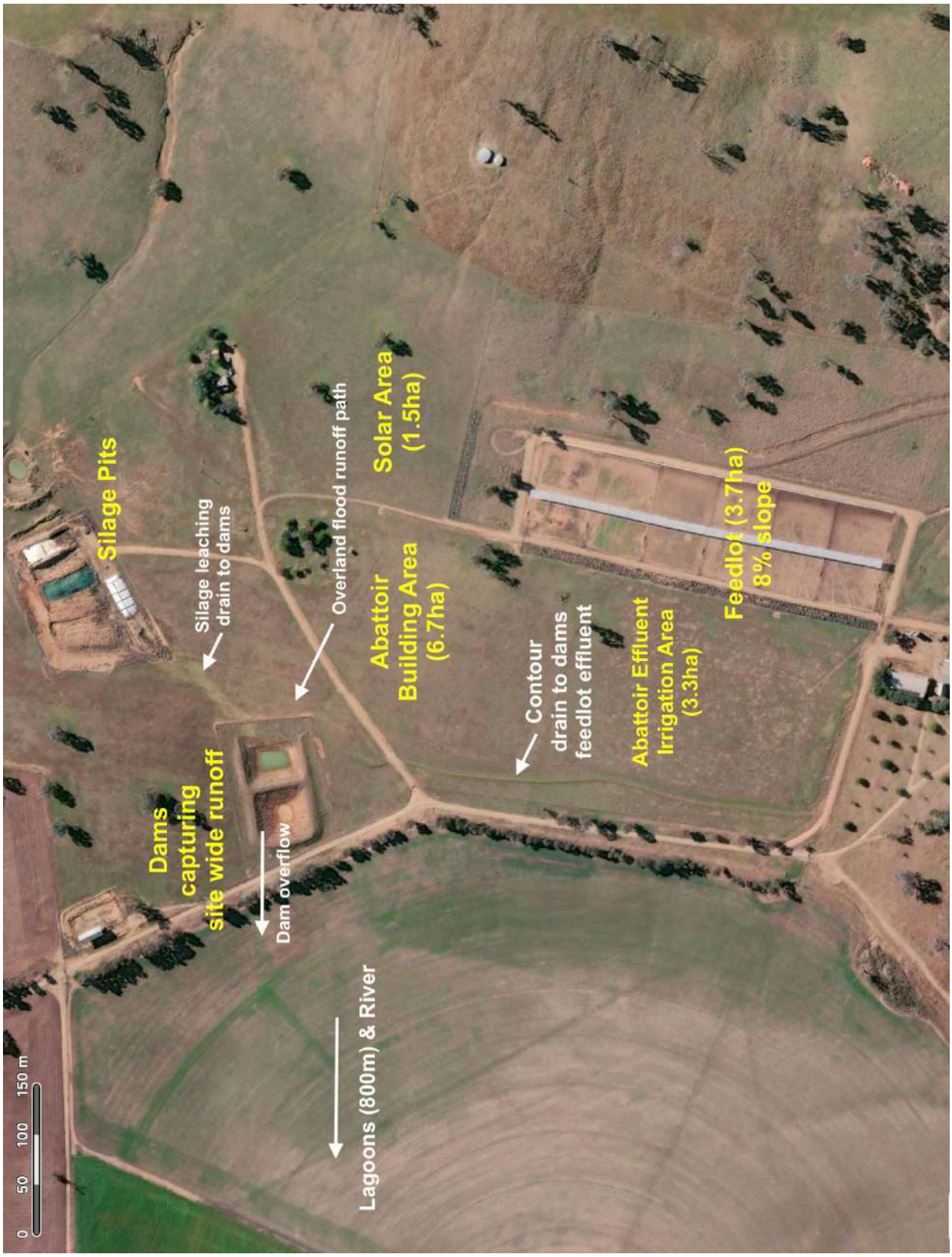


Fig. 3: Site wide runoff path and contamination sources

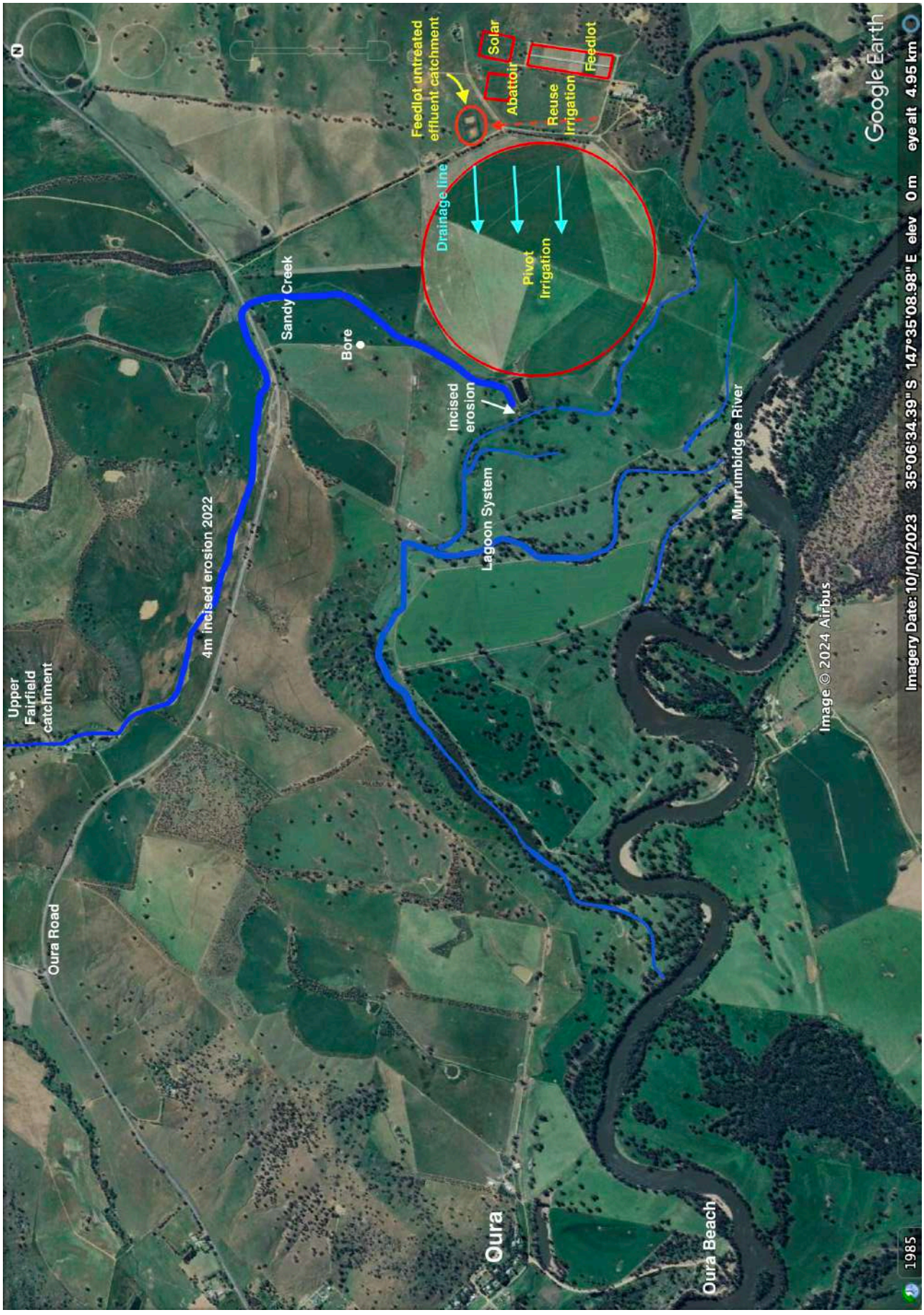


Fig. 4: Site Conceptual model of site in locality

ATTACHMENT 3 – FLOOD MAPS

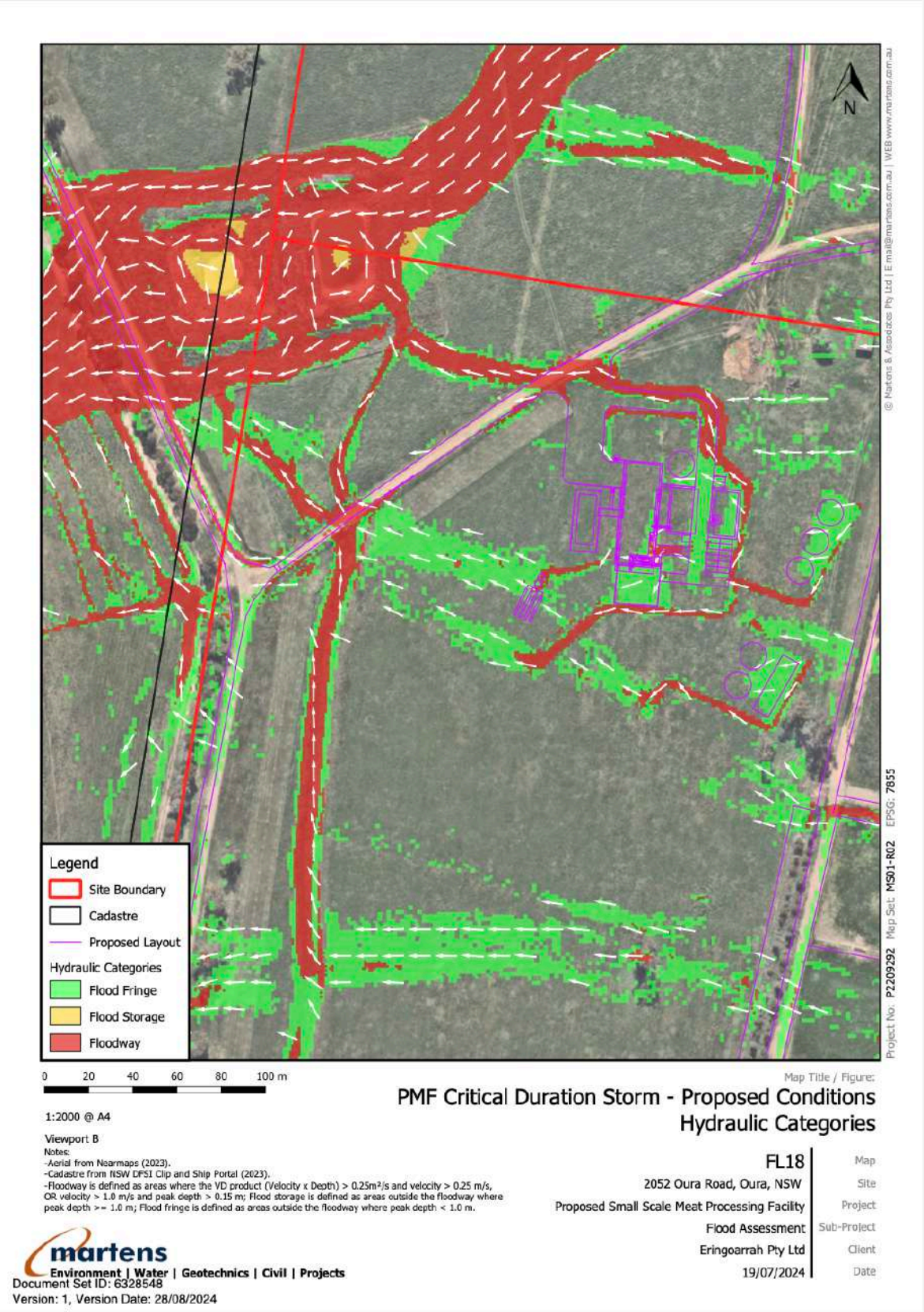


Fig. 5: PMF Critical Duration Storm - floodway over planned building area and to dams at north

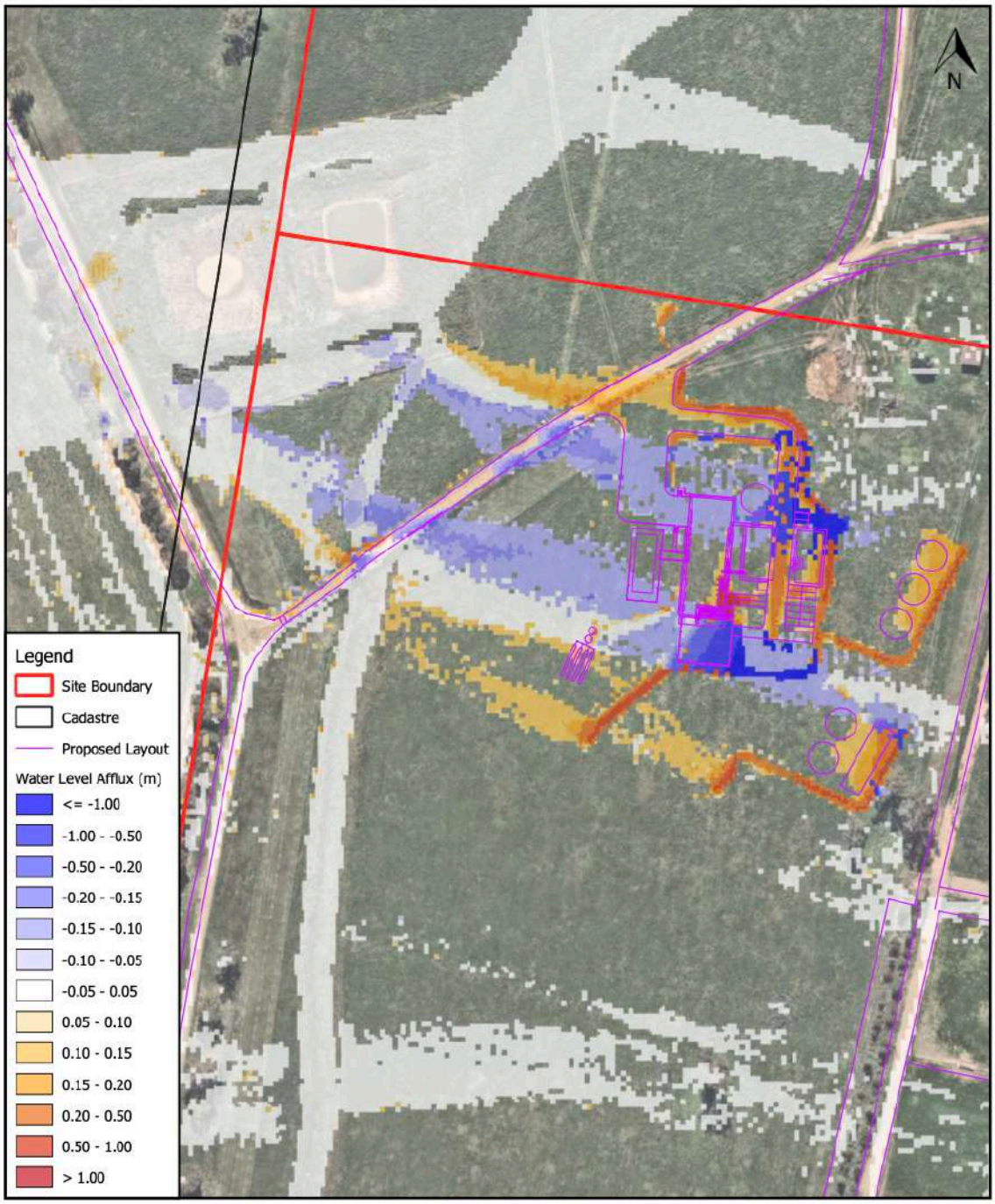


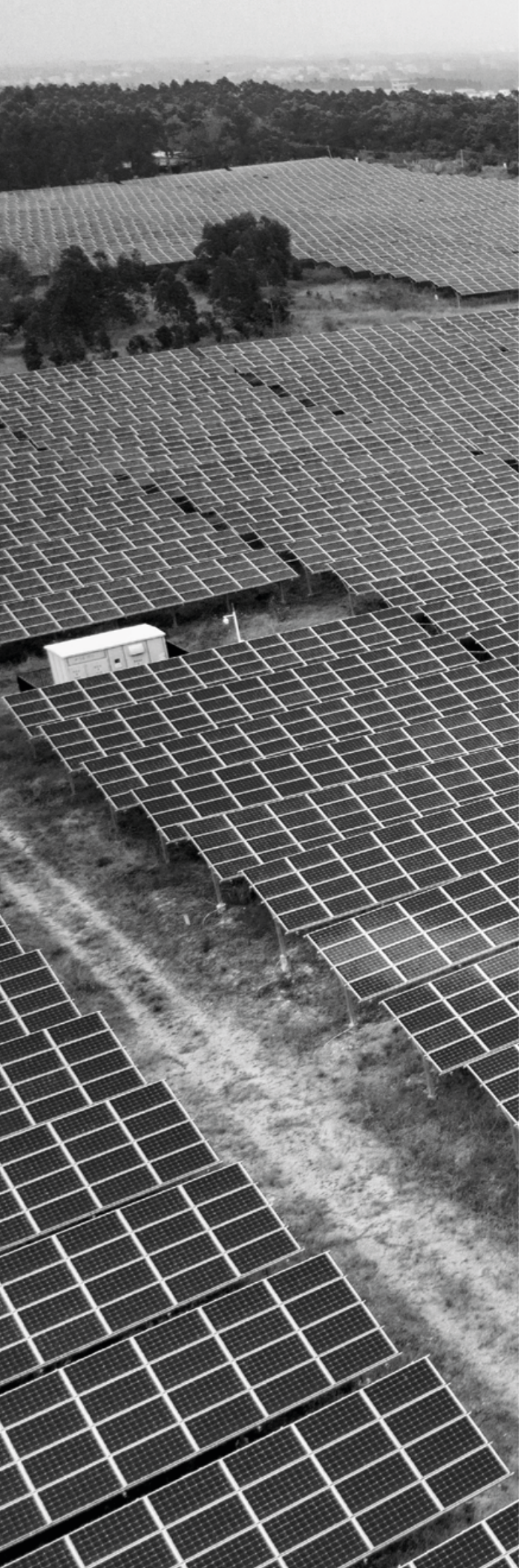
Fig 6: PMF Critical Duration Storm - water level over planned building area

FIRETRACE™ International

Halma

HIDDEN DANGER

Why solar farm fire risk could be greater than you think



Summary

The solar industry is potentially underestimating the risk of fire at solar farms.

Why? It's partly because there is a shortage of data on solar farm fires, and partly because research into the issue has given rise to suspicions that fires at solar farms have been under-reported.

This report will look at the solar fire data that is available and analyse what conclusions can be drawn from that data.

In addition, the report will look at:

- The factors that make a fire at a solar farm more likely
- The possible root causes of solar-related fires, and
- The PV components most likely to cause solar farm fires

Finally, the report will also explore what steps you can take to reduce the risk of solar farm fires.

What is certain is that solar farm fire risk is an issue that the solar industry needs to take more seriously. This is particularly the case when you consider how rapidly the global solar industry is expanding.

Data from the International Energy Agency (IEA) – which was published in the IEA Photovoltaic Power Systems Programme's 'Snapshot of Global PV Markets 2022' report – showed that the world's total cumulative installed PV capacity increased 23% in 2021 to 942GW.[1]

With the number of solar installations growing fast – amid concerns that instances of solar fires are being under-reported – now is the time for action to be taken to minimize solar farm fire risk.

1 https://iea-pvps.org/snapshot-reports/snapshot-2022/

How significant is solar fire risk?

There is a severe lack of data on the prevalence of solar farm fires.

Indeed, some studies have concluded that there is a high likelihood that instances of solar farm fires are under-reported.

A study by the UK's BRE National Solar Centre – which was entitled 'Fire and Solar PV Systems – Investigations and Evidence' and detailed an investigatigation into a total of 80 potential PV-related fire incidents – led to the finding that researchers "strongly suspect a degree of under-reporting, especially amongst solar farms and domestic thermal events that were resolved by a solar installer/ maintenance engineer."[2]

With regard to the data that is actually available, the US Department of Energy's Solar Energy Technologies Office has cited a study conducted by European testing and certification company TÜV Rheinland – entitled 'Assessing Fire Risks in Photovoltaic Systems and Developing Safety Concepts for Risk Minimization' – which found that, in approximately half of 430 cases of fire or heat damage in PV systems, the PV system itself was considered the "cause or probable cause."[3]

Meanwhile, the study carried out by the BRE National Solar Centre found that more than a quarter of fires involving solar systems were caused by the photovoltaics and those fires were all "serious fires", meaning fires that were "difficult to extinguish and spread beyond the area of origin."

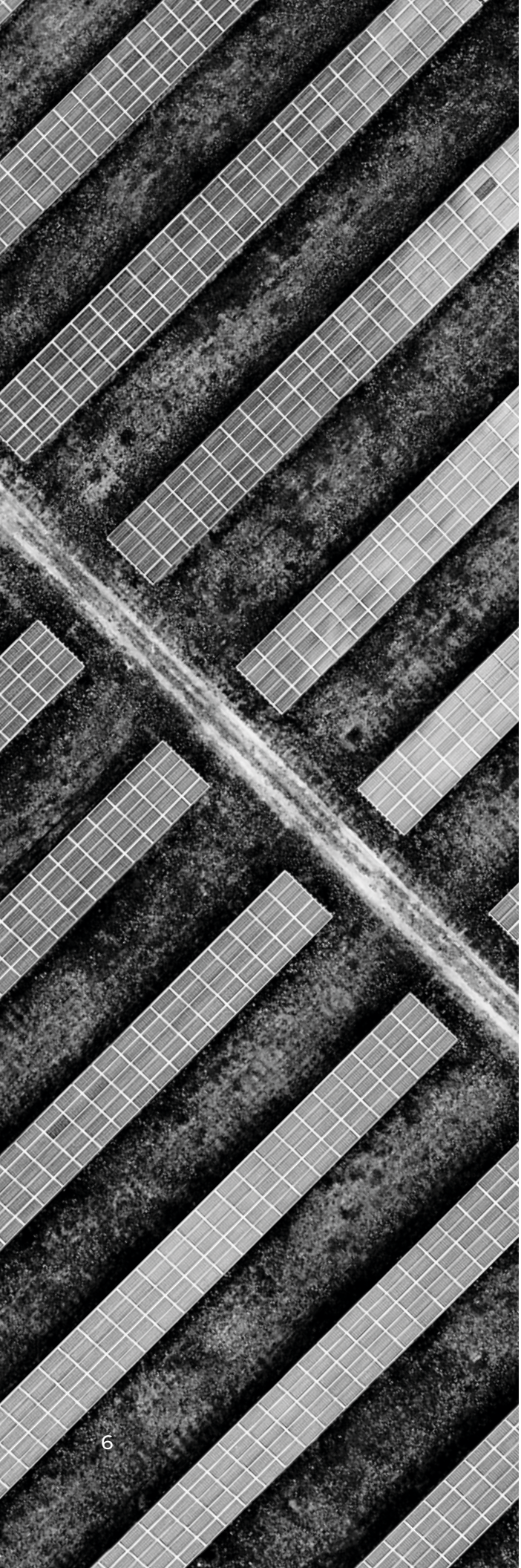
2 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786882/Fires_and_solar_PV_systems-Investigations_Evidence_Issue_2.9.pdf

3 https://www.energy.gov/sites/default/files/2018/10/f56/PV%20Fire%20Safety%20Fire%20Guideline_Translation_V04%2020180614_FINAL.pdf

However, as already indicated, the BRE National Solar Centre study did emphasize that the full extent of solar fire risk may have been concealed. Specifically, it highlighted how, in one instance during the course of the study, researchers were “denied access to one site by the insurance company’s loss adjuster.”

As a result, we cannot rule out the possibility that solar farm fire risk, and occurrences of solar farm fires, may be more prevalent than the available data suggests.

There is a high likelihood that instances of solar farm fires are under-reported.



What statistics are available?

Despite the challenges in obtaining data that provides a comprehensive picture of the extent of solar fires and the prevalence of solar fire risks, there are a number of studies that have attempted to gain an insight into the issue.

For example, one data set released by the US Fire Administration (USFA) found that instances of solar system fires more than doubled during the period 2015 to 2018.

The USFA reportedly does not track fires from solar installations, instead filing them under the 'other' category for causes. In the aforementioned instance, the USFA data was only made available following a specific request from an executive at a solar maintenance company.

The USFA data that was obtained showed that there were 56 solar system fires recorded in 2018, up from 25 in 2015.[4] A third of the fires that were recorded by USFA during the period 2015 to 2018 occurred in California, Arizona and Nevada.

However, while the number of fires recorded by the USFA more than doubled between 2015 and 2018, the number of solar installations in the US increased at a similar rate during the same period – from less than 30,000MWdc to more than 60,000MWdc, according to Solar Energy Industries Association research data – which suggests solar fire risk may not actually be increasing.[5]

Yet, in contrast, data from Australia indicates that the opposite is true – that is, solar fire risk is, in fact, increasing exponentially.

Statistics from the Australian PV Institute show that PV installations in the country increased from around 7.3GW in January 2018 to more than 20.7GW in December 2020.[6] However, while the increase in PV installations in Australia during the period was less than three-fold, data from Fire and Rescue New South Wales (NSW) showed that there was a six-fold increase in the number of solar fires attended by firefighters in the period 2018 to 2020, according to reports.[7] In 2020, Fire and Rescue (NSW) attended 139 solar fires, compared to 22 in 2018.

4 https://onedrive.live.com/?authkey=%21ADZAYZw3zBKJ%5F1k&id=C8BE25A716873030%216383&cid=C8BE25A716873030

5 https://www.seia.org/solar-industry-research-data

6 https://pv-map.apvi.org.au/analyses

7 https://www.smh.com.au/national/nsw/the-irony-s-not-lost-on-me-solar-panel-safety-device-led-to-500-per-cent-rise-in-rooftop-fires-20210129-p56xtp.html

What are the risk factors?

There are three possible root causes for solar farm fires, according to the BRE National Solar Study Report.

They are:

- an error in the system design
- a faulty product (a design or quality issue)
- poor installation practice

The report said DC isolators were found to present the greatest fire risk. Around 30 percent of the incidents recorded in the study were caused by DC isolator malfunctions.

A number of the incidents in question involved ingress of water into DC isolators, all with upward-facing cable glands, the BRE study said. The study also concluded that there was evidence of fires originating within DC isolators with "poor contact design" – that is, originally being designed for AC operation and being re-designated as DC-rated by the manufacturer – and with incorrect internal wiring.

The BRE report said there were three separate issues with DC isolators:

1. **Poorly designed or constructed products**
   Models originally designed for AC are "unlikely to be reliable over the life of a PV system."

2. **Incorrectly specified DC isolators**
   Isolators that are underrated for the current or voltage of the PV strings connected, for example.

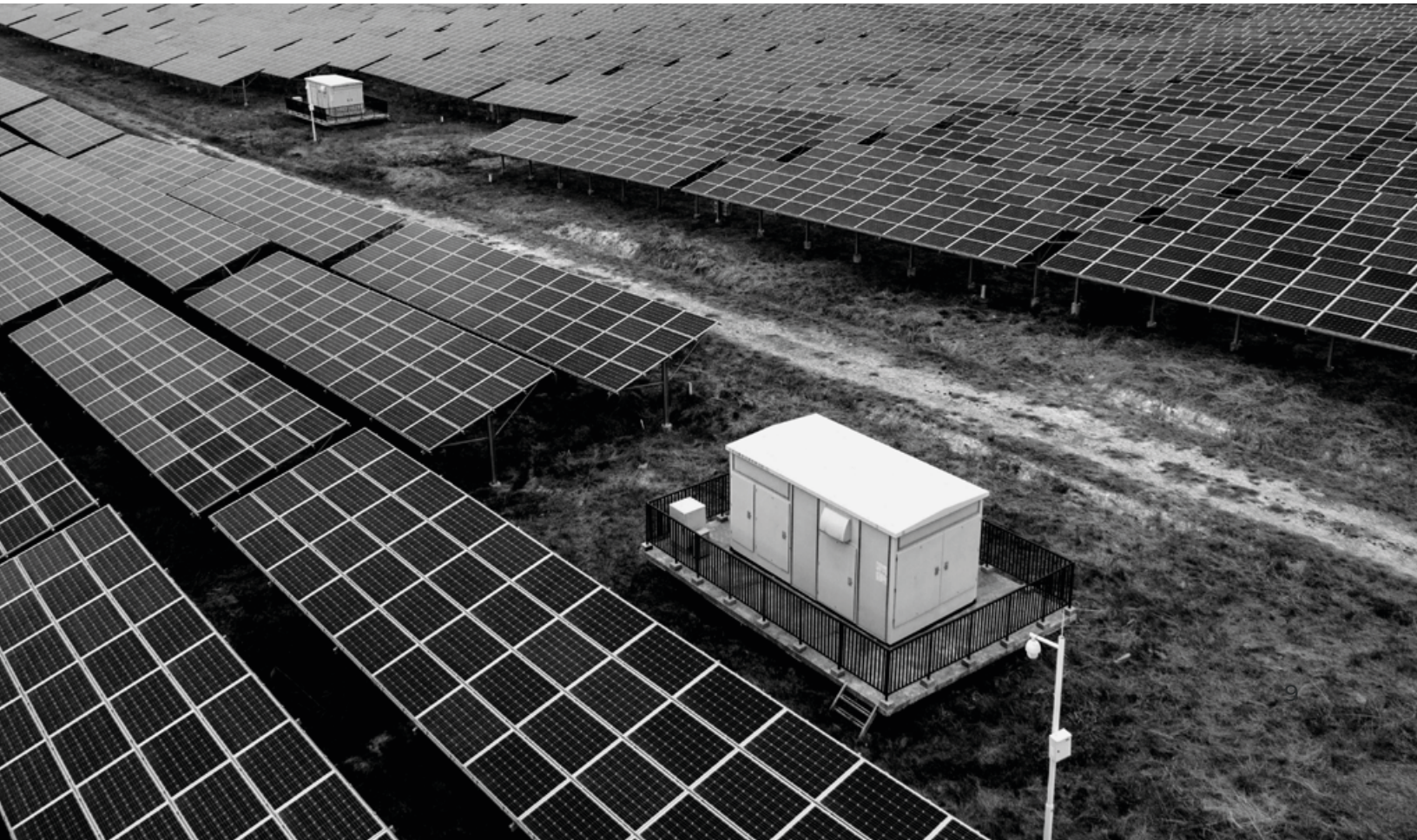
3. **Poor installation practice**
   The BRE report said this category accounted for the "majority of DC isolator failures leading to fires or thermal events." Poor installation frequently caused ingress of water into the isolator casing causing arcing.

Meanwhile, DC connectors are the second most likely PV component to cause a fire.

DC circuits connect the PV modules together, increasing the voltage in a similar way to connecting batteries in series. Parallel strings of PV modules increase the current. The DC circuits are fed back to the inverter, sometimes via a DC isolator.

The metal contacts of DC connectors tend to remain connected by frictional forces, even when the supporting plastic body has been burnt off, the BRE report said. Therefore, any DC connectors that have been subject to arcing should be suspected as a likely source of ignition.

DC isolators were found to present the greatest fire risk.



Inverters: How they cause fires

A number of fires start in inverters, which form the most complex part of a PV system and manage the power that flows through them. Though they have sensors and other safety features, there have been incidents of solar fires logged as initiating in an inverter, according to the BRE report.

The BRE has also highlighted how the use of "faulty inverters" has resulted in solar-related fires.[8] In 2020, there were reports of firefighters called to extinguish a fire in the central inverters of the Ullum photovolataic park – owned by energy company Genneia – in Argentina. In this incident, a number of inverters had caught fire, with firefighters taking an hour and a half to extinguish the blaze.[9]

Meanwhile, an article published by the Solar Power World website highlighted how "electrical abuse" was one of "three main abuse factors" that can send a battery into thermal runaway [meaning a situation where the heat generated within a battery exceeds the amount of heat that is dissipated to its surroundings]. The article added: "Electrical abuse happens during overcharging, undercharging or shorts from the inverter."[10]

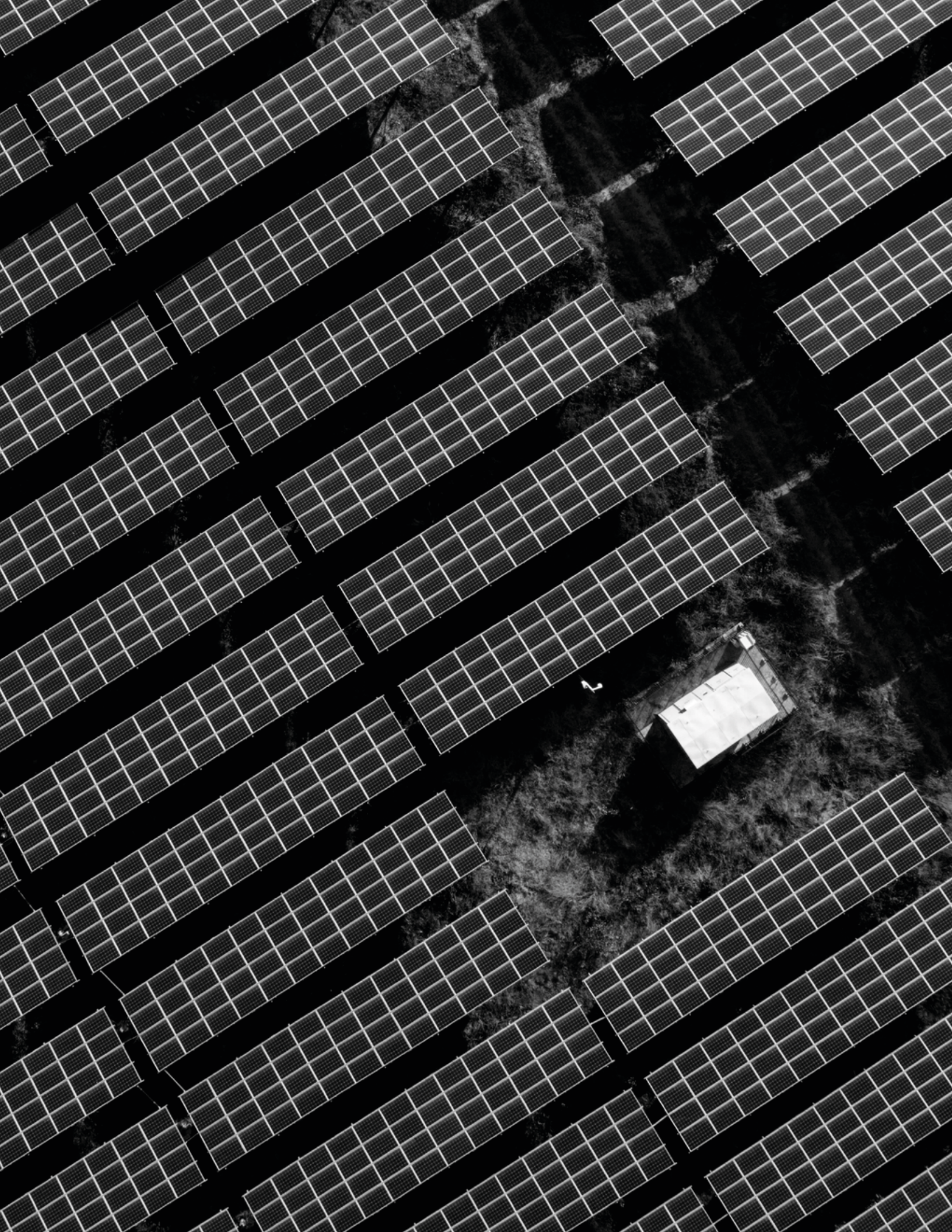
What causes fires in inverters? According to photovoltaic system distributor Solarity, inverters are combustible due to their polymer content.[11] Solarity has also highlighted how, during and after a solar fire, the PV system can potentially produce liquid, solid or smoke emissions and firefighters responding to the incident "could be exposed with dangerous levels of metals such as lead (c-Si) or cadmium and selenium."

8 https://www.bre.co.uk/page.jsp?id=3211

9 https://www.pv-magazine.com/2020/10/21/fire-accident-at-argentinian-solar-parks-central-inverters/

10 https://www.solarpowerworldonline.com/2020/02/just-how-concerned-should-the-solar-industry-be-about-battery-fires/

11 https://solarity.cz/blog/fire-hazards-and-mitigation-in-photovoltaic-systems/#



How can the risk of solar fires be reduced?

Even if quality assurance measures have been implemented for solar systems, it is difficult to completely eradicate the risk of fire.

The TÜV Rheinland study concluded that “despite quality assurance measures, overheating or electric arcs cannot be ruled out 100%.”

So what steps can be taken to minimise the risk of solar farm fires?

Recommendations made in the TÜV Rheinland study included:

1. **Ensure solar systems are regularly tested by independent third parties**
2. **Incorporate additional safety components everywhere possible**
3. **Create standardized quality assurance measures**
4. **Ensure defective or prematurely aged components are promptly replaced**

The report added that electric arc detectors can also reduce risks. However, it also said that it was vital that the electric arc detector remains fully functional over a very long period of time, if possible during the entire service life of the PV system, without itself causing any faults in the system. The report continued: “Protective measures such as an integrated self-test could be helpful here.”

In addition, an electric arc detector is “moreover useful only if it can be assumed to reliably detect electric arcs”, the TÜV Rheinland report concluded.

It added: “Electric arcs in modules produce different noise patterns than those in serial terminals. Different cable lengths greatly differ in their dampening of electric arc signatures. Interference from inverters, switching transients, or coupled radio signals can mask or overlay the noise coming from the electric arc. Only very robust detection algorithms tested on different systems can ensure real added utility here.”

Solar farm operators could also consider addressing the issue of fire risk by incorporating fire suppression systems, for example.

Conclusion

The risk of fires at solar farms is potentially being underestimated due to under-reporting and a lack of available data.

However, 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.

Hence, there is an urgent need for the solar industry to address the issue of fire risk, particularly with data showing that global cumulative installed PV capacity increased by around a quarter in 2021.

Studies have shown that there are three root causes for photovoltaic fires – they are: an error in the system design; a faulty product (a design or quality issue); or poor installation practice.

The photovoltaic component that presents the greatest fire risk are DC isolators, which cause around a third of solar fire incidents.

However, DC connectors and inverters can also pose significant fire risks.

It's difficult to completely eradicate the risk of fire at solar farms, but there are a number of key steps you can take to minimize the risk.

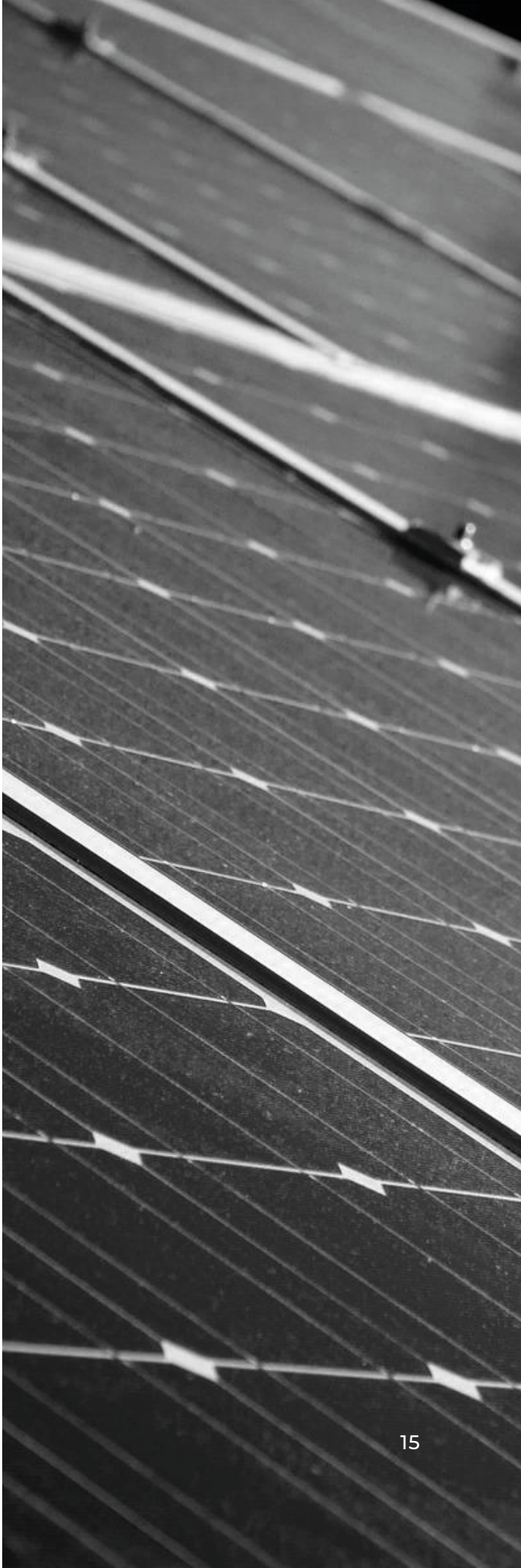
These steps include having solar systems regularly tested by independent third parties and incorporating additional safety components, such as fire suppression systems.

With the number of PV installations dramatically increasing around the world, taking these steps will be vital in order to reduce fire risk.

Would you like to talk about the risks in this report? How about your approach to fire risk in your portfolio?

Get in touch with the Firetrace team today.

www.firetrace.com/contact



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Shanghai, 201108,
China

Reasons for signing

See why other supporters are signing, why this petition is important to them, and share your reason for signing (this will mean a lot to the starter of the petition).

Deb Stevens
1 week ago

The Murrumbidgee River is the lifeblood of a huge tract of country. It must not be a drain for waste. Industrial development must not have any risk at all of waste entering the river system - even during one in one hundred year floods.

♡ 0 Report

Lesley Killalea
2 weeks ago

The area should remain for everyone and not just let the rich build what they want

♡ 0 Report

Stela Gallagher
2 weeks ago

We need protect and care for environment

♡ 0 Report

Tania Lewington
2 weeks ago

I care about maintaining the Oura Riverine environment.

♡ 0 Report

Greg Breust
2 weeks ago

We need to protect and consider our environment.

♡ 0 Report

David Payne
2 weeks ago

This is an absurd proposal. Protect our water and farmland.

♡ 0 Report

Thomas Mannion
3 weeks ago

Thomas Mannion

♡ 0 Report

Sylvia Martinez
3 weeks ago

this environmental vandalism for financial gain needs to stop

♡ 0 Report

Rob Dexter
3 weeks ago

Slaughterhouses should not exist anywhere!

♡ 0 Report

Norman Brennan
3 weeks ago

Healthy waterways, especially for drinking water, are becoming more and more scarce as badly regulated industrial waste is allowed to pollute them.

♡ 0 Report

Don Kirkpatrick
3 weeks ago

This is a seriously stupid idea given that water runs down hill and inevitably there will be a rainfall event that washes feedlot waste effluent straight into the Murrumbidgee river

♡ 0 Report

Mark McGrath
2 months ago

The proposed abattoir and power station will change the landscape forever and has the potential to damage the precious Murrumbidgee River system and surrounding underground water system. Once the damage is done it cannot be undone and the

♡ 0 Report

Julie Ryan
2 months ago

This will become an ecological disaster. Protect our rivers.

♡ 0 Report

Paula T
3 months ago

If it's not ok to shit & piss in our own home(s) drinking water & pools.... then it's certainly not ok to allow shit & piss in the waters of the environment!!! It is toxic & disgusting & should never be happening. And privately owned abattoirs are even

♡ 1 Report

james braddock
3 months ago

The development is totally inappropriate environmentally. Especially since large employment zones have been specifically set-up for this type of business.

♡ 0 Report

Maryrose Grabi
3 months ago

definitely not for abattoirs!!

♡ 1 Report

Kathleen
3 months ago

As a Wagga girl I am appalled by further damage to the river and its surrounding landscapes.

♡ 0 Report

Sean Basham
3 months ago

Truthfulness benevolence forbearance ❤️ 💛 🖤

♡ 0 Report

Peggy White
3 months ago

The risks are too high

♡ 0 Report

Mike Willson
4 months ago

Any Abattoir development has to be closed loop so that NO leakage occurs as potential pollution into the Murrumbidgee river.

♡ 0 Report

Kevin Morris
4 months ago

I believe in keeping the water table fresh and unpoluted by industrial runnoff and filth that will be created by a slaughter house.