From:	Emma Bowman		
То:	IPCN Enquiries Mailbox		
Subject:	Birriwa Solar submission		
Date:	Friday, 14 June 2024 4:04:14 PM		
Attachments:	Birriwa Solar IPC submission.docx		
	Central-West-Slopes-and-Plains-Snapshot.pdf		
	MWRC - Managing the impacts of SSD - Final.pdf		
	Mental health survey.pdf		
	Community-Impact-Survey Final-Report-2024.pdf		
	community-engagement-review-report-minister-climate-change-energy.pdf		

To whom it may concern,

Please accept my submission and associated documents to the Birriwa Solar IPC case.

Yours sincerely, Emma Bowman

Birriwa Solar IPC submission

The Birriwa Solar project has the potential to have enormous impacts on the local community and region due to a plethora of possible unintended consequences of turning rural agricultural land into an industrial area.

Central West Orana Renewable Energy Zone

ACEN Australia's Birriwa Solar project is one of over fifty projects operating, under construction and proposed within the CWO REZ boundary at this point; it is certain there are more projects early in the planning stages and developers continue to prospect for more potential land hosts. The CWO REZ declaration came as a shock to the vast majority of its inhabitants. Not unlike specific projects being proposed by developers now, community engagement regarding the REZ was lacklustre, or even non existent. Below are answers given to supplementary questions at the 2024 Budget Estimates hearings in the NSW Parliament evidencing the lack of community knowledge about the CWO REZ prior to its declaration.

(a)	In accordance with the Minister's statutory obligations under section 20(e) of the <i>Electricity Infrastructure Investment Act 2020</i> , the Central-West Orana Renewable Energy Zone (REZ) draft declaration was exhibited on the former Department of Planning, Industry and Environment's website for public consultation for 28 days from 17 September 2021 to 15 October 2021.
(b)	Six submissions were received from stakeholders during the draft consultation period. All submissions were in support of the exhibited draft (three from renewable energy developers, two from public authorities, and one from an organisation). No submissions were received from members of the general public, and no objections were received from any stakeholders.
(c)	Submissions were provided on the grounds that they would be confidential. Submissions will not be published.
(d)	Consistent with the Minister for Energy's statutory obligations under section 19(4)(b)(iii) of the <i>Electricity Infrastructure Investment Act 2020</i> , the declaration was made in consideration of the views of the local community in the REZ. This included through landowner meetings, direct engagement with local councils, mailouts, and establishment of a Central-West Orana REZ Regional Reference Group with local community representatives. The proposed scale and scope of the Central-West Orana REZ identified in the declaration had been publicly available since the NSW Government's submission on AEMO's Integrated System Plan in March 2018.
(e)	The former Department of Planning, Industry and Environment advised the Minister at the time that the declaration could be made consistent with statutory obligations under the <i>Electricity Infrastructure Investment Act 2020</i> , including that views of the local community in the REZ had been considered and that the draft had been published for 28 days on the Department's website.

Social license

It is important to note that over the course of two exhibition periods, the main EIS and amendment, there was not one submission in support of the Birriwa Solar project, but there were 130 objections. There was also not one community member willing to speak in favour of the project at the IPC meeting held in Dunedoo.

ACEN Australia employees were very quick to claim commercial confidence when asked how many agreements have been made with neighbouring landowners – does that suggest there are no agreements in place? I believe it is important the commissioners have this information made available to them to better understand the sentiment in the immediate vicinity of the project (no details need to be made known; just the number of neighbours prepared to sign an agreement with the proponent).

The below is an excerpt from the EnergyCo September 2022 project update. It states that an initiative under development by EnergyCo across the REZ's is "draft guidelines on orders prohibiting connection to the REZ network where community support has not been established". ACEN Australia's Birriwa Solar does not have community support so will it be permitted to connect to the REZ network?

Working with the community

EnergyCo is proactively investigating how we can manage cumulative impacts during the construction and operation of the REZ, as well as provide lasting benefits to the local communities which will host renewable energy infrastructure.

Initiatives under development by EnergyCo across the REZs include:

- NSW transmission guidelines which would provide a robust framework for the planning and development of new transmission infrastructure and provide certainty for landowners, communities and project proponents
- Draft guidelines on orders prohibiting connection to the REZ network where community support hasn't been established
- A regional energy strategy outlining community energy schemes and other initiatives
- Guidelines to ensure First Nations people are engaged and benefit from the REZ
- Opportunities to bring forward the delivery of community benefit sharing initiatives in advance of access fees being collected from generators.

In addition, EnergyCo is carrying out a range of studies which will inform how we coordinate impacts within the Central-West Orana REZ. We are seeking input from local councils, key stakeholders and subject matter experts to ensure the studies result in meaningful outcomes and recommendations. The findings will inform how we deliver workforce accommodation, road upgrades, workforce training, improved mobile connectivity and other key programs and initiatives. The studies are expected to be completed in late 2022 with the aim of coordinating project activities in the REZ to minimise cumulative impacts. We will notify the community once they are available to view.

The rollout of the "rapid transition to renewable energy" has brought the term "social license" in vogue; unfortunately, it seems to be a trendy phrase with no authentic meaning nor does it have any genuine gravity. Should a project be granted consent if the majority of the community affected does not support it, in fact, objects to it?

Agriculture

Whilst the Department clearly states that "the project would not significantly reduce the overall agricultural productivity of the region and the site could be returned to agricultural uses in the future", I believe there is evidence projects such as Birriwa Solar are already having detrimental impacts on the surrounding regions agricultural capacity. Personally, I have spent over 1500 hours

reading associated documents, researching projects, writing submissions, lobbying politicians, and educating myself and others on the potential impacts of renewable energy infrastructure projects. My partner and I, with the help of my retired but still very active parents, run a 2500 acre sheep, cattle and cropping enterprise; this is a full time job, often seven days a week. One thousand five hundred hours is equivalent to 187 eight hour days, which is more than half a year. In practise this means late boosters for animal health (and sometimes deaths as a result), livestock missing out on feed (losing weight gains and therefore money at markets), sheep and cattle not being checked as often (lack of early intervention for fly strike and worm burdens), fences not being repaired or replaced, ill prepared cropping paddocks, falling behind in accounting bookwork and livestock recording and generally making poor decisions due to stress and exhaustion. This will only be exacerbated the longer the district faces the pressure and uncertainty of the "rapid transition to renewable energy" and its associated infrastructure proposals.

The Department acknowledges that transforming land from its traditional use of agriculture to the industrial nature of a solar installation is a "loss" of agricultural land. However, the Department considers the amount of land lost to solar in the CWO REZ will result in a "negligible reduction in the overall productivity of the region." Whilst there is 2 million hectares of land within the CWO REZ boundary and the loss of nearly 16,000ha to solar projects accounts for approximately 1% of agricultural land, when you condense the area to a 30km radius of Birriwa (where there are many projects currently proposed, under construction and operating) the loss of agricultural productivity is much more intense.

30km radius of Birriwa = 282,700 hectares (including non agricultural land) Land lost to solar within 30km radius of Birriwa = nearly 11,000ha 11,000ha out of 282,700ha = 3.9%

The Central West Slopes and Plains is one of the most successful and productive regions in the state of NSW. To lose such a vast amount of valuable agricultural land will have major flow on effects to the rural towns and regional centres closest to the cluster of land being converted to infrastructure installations (the current calculations are only for projects far enough along in the planning process – not those still being prospected). Current primary production enterprises are running at capacity just to make ends meet due to increases in input costs and decreases in output revenue. I do not believe the land that will be left producing crops and livestock can cover the potential loss of land to solar projects and will threaten Australian farmers' ability to continue feeding our population and the economic benefits agriculture provides to the country through exports. These calculations do not cater for the loss of land due to wind installations or transmission lines.

Attached documents:

1. The Department of Primary Industries Agriculture Industry Snapshot for Planning August 2020

Impacts on businesses that rely on agriculture

The vast majority of rural businesses rely heavily on the agricultural industry for income - from farm merchandise businesses, stock and station agents, veterinary clinics, mechanics and steel supplies to the local supermarket, gift shop, bakery and cafes. The loss of families and agricultural businesses from the affected area will have enormous negative flow on effects on rural and regional towns.

Bushfire risk

The Department notes that "the site is not located on bushfire prone land" and that it "considers that the bushfire risks can be suitably controlled through the implementation of standard fire management procedures and recommendations made by FRNSW and RFS". There are huge parcels of land mapped "bushfire prone" that have not been subject to a large bushfire in the last century so I do not believe

that is a reason to suggest bushfire risk is not high. I also wonder what the Department considers "suitably controlled" in regard to bushfire risk? Is there an acceptable number of fires or amount of land for a fire to burn before bushfire risk is too high?

The Birriwa Solar Main Submissions Report states "the bushfire assessment determined the risk of bushfire on the project to be low through the implementation of recommended mitigation measures" and "it is noted the lack of fire activity directly on the development footprint and surrounds is as a result of agricultural management and that the project site itself is not a noted bushfire path". Depending on the season, and therefore fuel load, any land could be classified "bushfire prone" and therefore at high risk of bushfire/grassfire. The 1979 fire burnt on the project area and the Sir Ivan fire burnt within 7km. ACEN Australia suggesting that Sir Ivan was not an issue as "the area affected by the fire is not located within the study area and is greater than 5km away" shows a lack of understanding of bushfires, their severity and impact to the affected communities. Sir Ivan burnt over 55,000ha within three days, spanning approximately 50km. The Birriwa Solar project was spared simply because of fire fighting efforts and the wind direction on the day; a wind change is all it would have taken to burn the whole study area!

Following fires like the 1979 Birriwa fire and Sir Ivan there are thousands of injured livestock to be euthanised and buried or treated, uninjured livestock moved to areas with fodder or hand fed, fences and other farm infrastructure to be repaired and replaced and in the worst cases houses and necessary items to be found for those who have lost their homes. This major clean up effort is undertaken by family and community members, neighbours and friends, not RFS or FRNSW bureaucrats, DPHI or DCCEEW employees or IPC commissioners or staff. The fact that the consequences of any out of control fire impacts those in the local community is reason enough for local people to have enormous impact on the mitigation measures needed to protect their district. Local RFS volunteers and control centres and FRNSW members should be consulted.

With regard to the recommended capacity of a water tank on site - a 38mm fire fighting nozzle is capable of expelling 280L/minute meaning 50,000L of water would be used in under 3 hours. During most grass or bushfires there are numerous fire fighting trucks and trailers, often owned by private landowners used in an attempt to extinguish the fire in a timely manner for the obvious reasons of there being less damage caused. An average call out for RFS members and local landowners would see at least half a dozen vehicles/trucks attend – six 38mm nozzles would use 50,000L in under 30 minutes. It would be nice to think you could have a fire blacked out in that time but it is simply not reality. 50,000L is not enough water to adequately fight even the smallest of fires in rural NSW, and certainly not enough water to adequately protect a construction site or operational solar factory, 500 workers and an accommodation camp. RFS and FRNSW are already lacking resources to protect the current population in the district; I do not believe these agencies should be responsible for protecting any renewable energy development site, under construction or operating, or accommodation camp.

Environmental impacts

The Biodiversity Offset Scheme allows the devastation of habitat providing existing ecosystems are protected to equalize the destruction. It is my belief that mature trees should have to be replaced by other mature trees ie. prior to destroying one hectare of mature trees there should be one hectare of trees planted, and let mature to the same state as those being removed, not locking trees up that are already contributing to ecosystems.

My parents owned part of what is now proposed to be the Birriwa Solar project site during the 1990's. We planted trees on the block (seen on the below map circled in red) as shade and shelter for livestock and to help with salinity. According to ACEN Australia following the IPC meeting those trees will be destroyed to make way for solar panels. Is removing 30 year old trees environmentally friendly, or "green"?



Water sources

It is my understanding that the WAL's identified for use by ACEN Australia during construction of the Birriwa Solar project have not been secured by agreement with the owner of the licenses. Water is a finite and extremely important resource for agricultural districts. There are many stock and domestic bores within the Dunedoo and greater district, without which only a small number of primary producers would survive. There have been dry times when bores drop significantly or even dry up further up the valley due to lack of refilling rain. Dunedoo also relies on bore water for the town supply so the overuse of water sources could be devastating for this area.

Soil, erosion and sediment

The location of the proposed accommodation facility is, on in person inspection, obviously prone to erosion. It is my belief that any proposed construction works, and therefore disturbance, will cause irreversible damage to the area regardless of any mitigation measures.

The project area has a been assessed by the Department as having a high soil erosion hazard due to the dispersive soil. Landowners have worked hard for decades to control erosion and minimise sediment movement by constructing contour banks (in some cases in consultation with the NSW Soil Conservation Service) and moving to minimum till farming techniques amongst other things. The potential impacts to the area will be devastating when considering dams being filled in and contour banks being flattened to level the site for installation of solar panels. Landowners already neighbouring solar installations speak of their dams and contour banks being filled with sediment from the project sites due to erosion during construction.

The majority of the proposed project site is located on land where you would "bog a duck" during wet periods. ACEN Australia will have to create large laydown areas for parking and roads for heavy vehicles to make their way around the site if construction coincides with an above average rainfall period. There will be compaction from heavy vehicle movements so I am concerned how the site will be remediated following construction.

Surface water and runoff

There is the potential for major changes to the flow of water on and around the project site due to disturbance of land during construction, and increased run off and velocity due to the non porous surface of solar panels post construction. All of this water will traverse through one landowners' property (see map below) before making its way into the Talbragar River, and heading west to the Macquarie River. During large rain events a huge amount of water already runs through these creeks and watercourses; what will be the impact on runoff when the water is sheeting off solar panels rather than being able to soak into the whole soil area? Will the removal of current contour banks change the flow of water and create new drainage lines through neighbouring properties, and possibly even the Talbragar River? Will farmers be able to access their homes and properties during wet periods?

I believe the commissioners should make the effort to speak to landowners who have had experience with having a solar project installed adjacent to their property. There are stories of previously all weather access roads being cut, a woolshed being flooded and drainage lines being changed due to the redirection of water throughout construction.



Roads, transport and traffic

"The Department considers the project would not result in unacceptable impacts on the capacity, efficiency or safety of the road network." What is unacceptable? A school bus colliding with a heavy vehicle on what used to be a quiet local road? The cumulative impact of heavy vehicles and OSOM loads for the CWO REZ heading west on the Golden Highway from the Port of Newcastle impacting agricultural freight, both incoming and outgoing? Merriwa losing valuable parking space in the main street, near businesses that rely on through traffic for revenue? Landowners who walk stock across the transport route finding it impossible to find a gap or stop traffic to safely move their sheep and cattle to access feed and water?

Insurance impacts

Farmers and landowners around the country have long been raising concerns around possible insurance liability impacts for those forced to neighbour industrial renewable energy installations. Primary producers generally have a public liability insurance policy of \$20 million, some \$50 million. The projects some landowners are finding themselves neighbouring are worth hundreds of millions or billions of dollars. Farmers regularly face the risk of starting unintentional grass fires due to the machinery needed for farming operations (headers, slashers etc). Would a farmer who accidently causes damage to project related infrastructure find themselves liable for all damages, and therefore potentially be forced to sell their property to pay damages?

Visual amenity and noise

"The Department considers the project would have a limited impact on the visual landscape of the region as a whole." My property is within 10km of the project site and has fantastic views of the whole district. Considering the project area is mostly 40m closer to sea level I believe we will view a large proportion of the project, and being located to the west will be subject to glint and glare from the project. There are numerous properties closer to the project area that will look over the majority of the installation. Our area prides itself on our rural landscapes and will be irreparably damaged by projects such as the proposed Birriwa Solar factory. "Concerns about visual impacts were raised in the majority of public submissions, including a number of residences in proximity to the site."

Social impacts

57 objections to the original project from within 100km of the project site – most submissions to the project typically focussed on local impacts and matter related to the local community. I believe that is proof of the concern for our district with regard to the proposed project.

"The site is located in a sparsely populated rural area. There are 22 non-associated residences within 2km of the development footprint." I would not consider the Dunedoo/Birriwa/Leadville district sparsely populated; maybe when compared to Dubbo, or Sydney. Broken Hill, Bourke or Ivanhoe are areas I would describe as sparsely populated. This, again, shows a lack of understanding of the district by DPHI and the proponent.

Rural communities rely on volunteers to keep the towns and district thriving. The majority of community events are run by committees made up of generous locals willing to give their time for the benefit of their local region. Whilst funding is helpful to kick start and continue running events it is the volunteers these functions can not do without. Renewable energy developers appear keen to splash funding around, in what can only be construed as an attempt to buy local support, but, as mentioned previously, they are not providing boots on the ground labour to enable any such events to continue.

Attached documents:

1. Mid Western Regional Council – Managing the Impacts of State Significant Developments

2. CWO REZ Mental Health Survey

Sheep grazing

"The Department notes that ACEN intends to continue grazing concurrently with the operation of the solar farm." Interestingly, ACEN states in the EIS there is "potential for ongoing agricultural practices, such as sheep grazing" – that is not a very strong commitment from the developer. ACEN also states in the EIS that "the project will allow for the land to still be utilised for some agricultural practice even where developed, by utilising sheep for grazing which is estimated to achieve 50% of existing stocking rates for 50% of the year". During the site inspection I noted there were large numbers of sheep and cattle grazing on the project site, a big proportion on crop. 50% of the number of stock, 50% of the year is a big loss for agriculture on that land.

Homes powered

ACEN Australia claims the Birriwa Solar project will power approximately 260,000 average households. That calculation allows 2.29kW per home – is that when the sun is shining, or 24 hours a day, 7 days a week?

New South Wales experiences 4-5 hours peak sun hours per day in summer and 3-4 in winter. According to the Australian Energy Regulator in 2023, the average energy used per day by a household with four people is about 21.355 kWh which is equal to 0.89kW. Peak hours of use are 6-8.30am and 5-9pm; all hours outside the peak sun hours. Is renewable energy going to provide reliable and cost effective power to Australian residents?

Community engagement

When it comes to renewable energy infrastructure projects, including transmission lines, community engagement has been poorly executed to date. The use of the phrase community engagement suggests to me that companies, and Government, should be involving those affected by the proposed projects to achieve the best outcomes. I do not believe there has been one developer, or Government agency, who has sought to collaborate with, or involve community in decision making, rather used information sessions to inform community members of previously made plans. There is so much information that is not available to the public during the planning process, and while that may satisfy the guidelines, it does not foster transparency and therefore good relationships with those most affected by proposals.

The Australian Energy Infrastructure Commissioner, throughout the Community Engagement Review consultation, held over 75 meetings with representative stakeholders, landowners and community groups and received 250 online survey responses and over 500 written submissions. It found that 92% of respondents were dissatisfied with the extent to which project developers engaged the local community and 89% of respondents stated that the information they received from project developers was not relevant to the concerns that they raised.

The Community Impact Survey, conducted by Property Rights Australia and NREN, collecting 775 responses between Saturday 12th April and Friday 10th May 2024. An overwhelming 93% of respondents believe that the government has not acted in good faith rolling out renewable energy projects – nearly all feel that government departments have failed to conduct open and transparent consultations, and an even larger portion say their concerns have been completely ignored. 76% of respondents reported feeling pressured by energy companies to allow access to their private properties and a tiny 3% believe that the developers have acted with integrity.

The results from these two consultations highlight the issues within the renewable energy sector regarding community engagement!

Attached documents:

- 1. AEIC Community Engagement Review February 2024
- 2. Community Impact Survey Property Rights Australia and NREN April & May 2024

Warrumbungle Shire Council

The Assessment Report states that "the Department notes a solar farm would otherwise be a prohibited land use in the RU1 zone under a strict reading of the Warrumbungle LEP. However, based on a broader reading of the Warrumbungle LEP, and consideration of the objectives of the RU1 zone and other strategic documents for the region, the Department considers that there is no clear intention to prevent the development of a solar farm on the subject land."

I request, as a ratepayer of the Warrumbungle Shire Council, that DPHI and the IPC take a strict reading of the Warrumbungle LEP as I believe the document was intended.

ACEN Australia

I attended the IPC Birriwa Solar Site Inspection on Tuesday 4th June as an observer. I found myself underwhelmed by the Project Development Managers knowledge of the project.

The ACEN Australia employees representing the developer at the IPC public meeting held in Dunedoo on Wednesday 5th June were seen giggling when one community member was speaking about sheep being injured, and ultimately dying, following being caught in the mechanics whilst grazing under an existing solar installation.

There was a verbal agreement made with the previous Birriwa Solar Project Manager to retain the aforementioned planted trees on the property my parents owned throughout the 1990's. It seems this agreement was made only to appease a community member with no intention by ACEN staff to follow through. There is a long held tradition in rural Australia of handshake deals and your word being your bond – unfortunately renewable energy developers seem to disregard agreements without appropriate paperwork to validate any promises.

Department of Planning, Housing and Infrastructure

On 17th January 2024, I emailed a member of DPHI staff to request information regarding the LUCRA for Birriwa Solar and consequence rankings for potential impacts of the project. On 20th February, after requesting information from a different DPHI staff member about another renewable energy project (15th February) and not receiving any reply I forwarded both emails to DPHI's Executive Director, Energy, Resources and Industry to escalate the lack of response. A member of staff made one attempt to call me on March 8th, and I returned the call the following day with no further response. I emailed a different member of the DPHI Energy Assessment team on April 5th which resulted in another attempted phone call which I returned the next day with no response following. On May 13th I emailed the original member of staff I had contacted regarding the Birriwa Solar project and requested answers to my questions via email seeing as connecting via phone was proving difficult. It took another three emails until I finally received a response on the 31st May 2024. These were not complicated queries yet DPHI chose to ignore my requests for months – how many other queries have been ignored?

I would like it noted that the DPHI Assessment Report has been created in such a way as to prevent the public using the search function or copying and pasting sections of text to reference.

Inaccuracies and mistakes

The Birriwa Solar Bushfire Assessment states "there are no recorded fires on or near the proposed project site. In 2017, the Sir Ivan fires affected managed rural properties and forested crown lands, greater than 50km from the study area." This statement is completely inaccurate, rather deceptive and certainly not acceptable! I acknowledge that ACEN Australia recognises the 1979 fire, which burnt on the project area, in their response to submissions but seems to understate the Sir Ivan Fire purely because it did not burn on the project area.

As stated by Iwan Davies at the IPC meeting held in Dunedoo, DPHI made an error in the Assessment Report stating there is "8.9 million ha of land currently used for agricultural output in the CWO REZ". I wonder if there are other errors in the Assessment Report that have not yet been identified?

Recommended conditions of consent

Whilst I would like to reiterate that I do not believe the Birriwa Solar project should be approved the following are conditions required if consent is considered:

- any landowner within 50km of the project must be indemnified against insurance liability for any damage caused to the Birriwa Solar project
- management plans (ie. Emergency Management Plan, Bushfire Management Plan, Fire Management Plan, Emergency Response Plan) will be written in consultation with the local employees and/or volunteers of appropriate agencies/departments
- ACEN Australia must have neighbour agreements signed by 90% of direct project area neighbouring landowners signifying their acceptance of the project prior to consent being granted
- ACEN Australia must have a voluntary agreements with over 80% of landowners with a non associated residence within 2km of the project area prior to consent being granted
- intentionally planted tree blocks must be retained (see map above)
- proposed visual screening must be completely effective at the end of the construction period and be maintained/replaced by the proponent for the life of the project
- ACEN Australia will be liable for any stock losses or infrastructure damage caused by a fire
 originating at the project site regardless of the affected property insurance coverage status
- all operational staff will be trained Rural Fire Service volunteers and will be available to assist at any fire within the district (20km radius of project site)
- the project site, including accommodation camp, will be protected by two RFS category 1 equivalent fire trucks manned by ACEN Australia employees or contractors
- there will be an independently employed officer on site at all times during construction to monitor compliance of conditions of consent (ie. road use). Any breaches will result in the cessation of all construction works until investigated and rectified
- there must be an agreement in place regarding water sources, to be used for construction and operation, and for the accommodation camp, prior to consent
- water testing downstream of the project must be carried out monthly by an independent laboratory, both during construction and operation, to ensure no toxic material is being washed into waterways from the solar installation
- any erosion will be rectified at the expense of ACEN Australia

Conclusion

"The Department considers the project would not result in any significant impacts on the local community or the environment, and any residual impacts can be managed through the implementation of the recommended conditions." What constitutes significant, and to whom? Is it significant that one landowner will have all of the runoff from the Birriwa Solar factory traverse through their property? Is it significant that 22 non-associated residences are located within 2km from

the proposed installation without their consent? Is it significant that a quiet, rural locality will become a bustling construction zone for more than two years, and then turn into an industrial wasteland?

Concerned local landowners and community members have been raising many of the issues I have outlined above, and more, since members of the public first learned about the proposed Birriwa Solar project. The directly affected and broader community believe a lot of these issues have been glossed over, dismissed or inadequately addressed by the proponent and DPHI. The guidelines allow so many crucial details to be finalised post development consent, without community consideration or input – leaving the proponent with various options that members of the public do not get a chance to comment on and potential major impacts to the community unaddressed.

"On balance, the Department considers that the project is in the public interest.." I wonder if 'the public' is considered to be local and directly impacted communities or the public on the eastern side of the Blue Mountains? It seems that rural and regional NSW is bearing the brunt of impacts due to the "rapid transition to renewable energy" and benefitting the least.

As per the Warrumbungle Shire Council recommendation, I request that the determination of the Birriwa Solar project is deferred "until such time as the cumulative impacts of the more than 40 large scale wind, solar and transmission projects across and adjacent to the Central West Orana REZ are adequately identified and the environmental, social and economic costs are properly compensated".

I urge the Independent Planning Commissioners tasked with determining the Birriwa Solar project to NOT grant consent.

Yours Sincerely, Emma Bowman

Birriwa Solar IPC meeting speech 5.6.24

(Slide 1) Good afternoon chair, commissioners, ladies and gentlemen. I am a fifth generation farmer from Dunedoo and I am deeply concerned for the agricultural industry and rural and regional NSW, and Australia, with regard to the "rapid transition to renewable energy". My community, here in Dunedoo, is at the centre of the current proposals for the Central West Orana Renewable Energy Zone; Birriwa Solar project is just one such development.

(Slide 2) The people most affected by the "rapid transition to renewable energy" are those who have fed and clothed the population for generations. The connection to the livestock we run and the country we care for is in our blood. That is why turning rural landscapes into an industrial setting is unfathomable for so many of us. To hear proponents and DPHI project assessors deem the impacts to surrounding landowners and communities as "minor", "insignificant" or "negligible" is an insult to our way of life and the things we value most. Not only will our landscape be forever altered, the majority of these projects also pose an enormous threat to our personal safety, and that of our livestock, wildlife and environment.

(Slide 3) According to the Parliament of Australia "social license to operate has been defined as an ongoing acceptance of a project by the community and other important stakeholders." During the exhibition period of the Birriwa Solar EIS the Department received 89 unique submissions from the public, of which 85 objected to the project. The exhibition period for the amendment report elicited 45 submissions, all of which were objections. I believe that is enough evidence to suggest ACEN does not have social license for the Birriwa Solar project.

(Slide 4) The DPHI Assessment Report states that "the project would not significantly reduce the overall agricultural productivity of the region and the site could be returned to agricultural uses in the future." The Department has calculated a combined development footprint of proposed, approved and operational SSD solar projects within the Central West and Orana Region. The Department declares that "the loss of 15,837ha of agricultural land represents a tiny proportion (0.18%) of the 8.9 million hectares of land currently used for agriculture in the CWO REZ. It would result in a negligible reduction in the overall productivity of the region." This statement is not only inaccurate, but misleading, as the CWO REZ is made up of 2 million hectares making the actual percentage of agricultural land lost to solar within the CWO REZ boundary close to 1%. This figure does also not take into account agricultural land lost to transmission infrastructure, BESS projects and proposed wind installations giving a false view of the potential impacts to agriculture in the area.

(Slide 5) The development footprint for ACEN's Birriwa Solar is 1,197ha. Whilst there are some exceptions, this amount of land within the Central West Orana Region is capable of producing enough red meat - beef, lamb and/or mutton, to feed 1,300 Australians per day, based on the 100g average daily red meat intake. That's 474,500 Australian red meat intakes in a year produced from the land potentially being lost to the Birriwa Solar project. The same land is capable of growing enough wool to produce 27,500 pure wool jumpers each year; imagine how many socks or wool blend garments that would be. Over the whole CWO REZ that's more than 6 million average Australian daily red meat intakes or 360,000 pure wool jumpers lost per year. I do acknowledge the Department statement "that ACEN intends to continue grazing concurrently with the operation of the solar" project. I question how this will be possible given the EIS states that "farm dams may be filled in" if it "does not have adverse hydrology impacts" and there is a distinct lack of underground water in the study area?

(Slide 6) The Department of Primary Industries Agriculture Industry Snapshot for Planning August 2020 states "the Central West Slopes and Plains has the advantage of large areas of unfragmented

land that allow the achievement of economies of scale for broadacre agriculture including irrigation. This coupled with suitable soils and water supply, infrastructure as well as access to markets in Dubbo, Orange, Sydney, and Newcastle make the Sub Region one of the most successful and profitable in NSW." The same document also says "future land use planning must recognise the importance of agriculture to society and the economy and that the land and resources on which agriculture depend need to be protected and managed to enable continued use of the land for agriculture" and, "land use planning needs to recognise that it is not only agricultural land with excellent biophysical characteristics that needs to be retained for agricultural purposes, but also those key secondary supporting industries which may be located on lower quality agricultural land which are still potentially impacted by encroaching non-agricultural land uses."

(Slide 7) The same document declares there is a "need to protect land for its future productive capacity particularly where there is a combination of biophysical assets such as water, topography and soils. The Central West Slopes and Plains Sub Region supports high value agriculture now and will be important to sustain production of more specialised agricultural and horticultural enterprises into the future." I wonder what has changed in the four years since the NSW DPI Agricultural Landuse Planning Team released this publication?

(Slide 8) Could one of the major issues be the lack of understanding of agriculture and rural NSW by the DPHI staff who are assessing the proposed renewable energy infrastructure projects? Or, could it be that agreements signed by our State and Federal Governments regarding Net Zero completely overshadow and/or disregard the importance of agriculture?

(Slide 9) On the 11th February 2017 the Sir Ivan Bushfire started approximately 15km east of Dunedoo. Due to intense heat and wind the fire burnt over 50,000ha of mostly farmland, a length of approximately 50km, in the Dunedoo, Coolah and Cassilis districts, within three days; burning just 7kms from the project area. Homes and infrastructure, livestock, habitat and wildlife were ravaged, the scars of which are still visible today. Whilst there is no clear acknowledgment regarding firefighting limitations to date from the RFS bureaucrats, it is obvious to those of us who have been involved in previous firefighting efforts that areas with renewable energy infrastructure will be avoided by planes and helicopters, for operator safety, and ground crew access will be limited during bushfires that could well be a life and death situation not only for livestock and wildlife but for local residents. (Slide 10) How will we adequately protect ourselves, our homes, our livestock, our environment and our wildlife, and who will be held responsible for any losses incurred if protection measures are restricted by such infrastructure?

(Slide 11) The devastation and destruction left behind after catastrophic events such as the 1979 bushfire, which burnt on the project site and claimed one human life, or Sir Ivan is cleaned up by landowners and community members – the majority of whom are objecting to projects like Birriwa Solar. I believe it would be prudent for those assessing and determining the fate of such proposals to seriously consider that fact.

(Slide 12) The Assessment Report states that "the Department notes a solar farm would otherwise be a prohibited land use in the RU1 zone under a strict reading of the Warrumbungle LEP. However, based on a broader reading of the Warrumbungle LEP, and consideration of the objectives of the RU1 zone and other strategic documents for the region, the Department considers that there is no clear intention to prevent the development of a solar farm on the subject land." Is this statement suggesting that if I were granted a development application for a single storey house but took a 'broad reading' of the DA rather than a 'strict reading' it would be permissible to build a two storey house? Can the proponent also take a 'broad reading' of the conditions of consent for the project and therefore not be held accountable for any breaches?

I request, as a ratepayer of the Warrumbungle Shire Council, that DPHI and the IPC take a strict reading of the Warrumbungle LEP as I believe the document was intended.

(Slide 13) There are many more potentially monumental impacts of large scale renewable infrastructure projects like Birriwa Solar.

Impacts on roads, transport and traffic. Potential insurance liability impacts on agricultural businesses and premium increases for neighbours and the greater district.

(Slide 14) The excessive use of underground water and effects on surface water, sediment and erosion. (Slide 15) Visual amenity, noise and environmental impacts. Approximately 30 years ago I helped plant some of the trees within the project area. I do not believe it is acceptable to use the Biodiversity Offset Scheme to claim already existing ecosystems as suitable compensation for the destruction of others.

(Slide 16) Not unlike the CWO REZ, ACEN's Birriwa Solar project has been thrust upon the district without prior knowledge, community input or consent. Consultation within the renewable energy transition has been found lacking, as evidenced by the Australian Energy Infrastructure Commissioners Community Engagement Review and more recently the Property Rights Australia and NREN Community Impact Survey. Personally, I waited four and a half months for DPHI to respond to a query I had about this project, and I only received that reply through persistence and dogged determination on my part.

(Slide 17) Warren Buffet once said "someone is sitting in the shade today because someone planted a tree a long time ago." I believe this is very apt for three reasons. Firstly, trees do not grow overnight, therefore removing existing growth for the purpose of solar panels is fool hardy and not environmentally friendly. Secondly, rehabilitating the Birriwa Solar site back to livestock grazing will take decades; livestock need shade and shelter provided by mature trees. Lastly, I believe the "rapid transition to renewable energy" and its potential negative impacts on agriculture and rural and regional Australia is short sited and fraught with danger. I urge the commissioners to refuse consent to the Birriwa Solar project.



Agriculture Industry Snapshot for Planning

Central West Slopes and Plains Sub Region

The value of agricultural production in the Central West Slopes and Plains Sub Region (CWSP) (also known as the Orana region) was over \$1.77 billion from a range of livestock for meat and wool, cotton, broadacre crops and vegetables. Agriculture and agricultural product manufacturing employ the largest percentage of people across the Sub Region (ABS 2015/16).

The Central West Slopes and Plains has the advantage of large areas of unfragmented land that allow the achievement of economies of scale for broadacre agriculture including irrigation. This coupled with suitable soils and water supply, infrastructure as well as access to markets in Dubbo, Orange, Sydney, and Newcastle make the Sub Region one of the most successful and profitable in NSW.

While rural land in the Sub Region is mainly used for agriculture, the expansion of dispersed residential and lifestyle development has sterilised some areas and incrementally displaced farming activities, making it difficult for remaining producers to operate. Some farmers and value-adding industries need to deal with increased land use conflict and inflated land prices due to competing interests particularly around larger towns. Despite these challenges, the Sub Region has great potential to grow and continue to support the profitable agricultural sector that underpins the Sub Region's economy.

Purpose of this profile

To develop effective land use planning policy for agricultural industries it is important to understand their location, the reasons why they exist in that location, the opportunities they take advantage of and the challenges they face. This profile details the key agricultural industries in the Central West Slopes and Plains and their interactions with suppliers, processing facilities and markets.

Establishing the significance of agriculture allows its recognition and management in land use planning by Councils. By providing the evidence base for strategic planning, agricultural land and local agriculturally-based economies can be protected and supported in planning instruments.

The Central West Slopes and Plains agricultural industries operate in an environment of increasingly global competition and opportunities, external challenges and changing land use. This profile will inform local strategic planning for these key agricultural industries considering their linkages to infrastructure and secondary industries throughout and beyond the Sub Region. Land use planning is guided by the Central West and Orana Regional Plan 2036 (DPE, 2017). The Regional Plan has clear directions for the need to identify, protect and appropriately capitalise on agricultural industries, infrastructure and rural land.

Agriculture in the Central West Slopes and Plains Sub Region

Agriculture is a key industry for the Central West Slopes and Plains economically and for the scenic and environmental qualities of the rural lands where agriculture is undertaken. The area is particularly important for broadacre cropping, beef, sheep and wool, cotton, and dairy.

The Sub Region is 94,215 km² in area and incorporates land in the Lachlan and Macquarie river valleys: Parkes, Forbes, Weddin, Lachlan, Dubbo Regional, Warrumbungle, Gilgandra, Coonamble, Narromine, Warren and Bogan local government areas (LGA). The Sub Region is home to 105,176 people (ABS, 2016). The Sub Region makes a significant contribution to agricultural production in NSW, over \$1.77 billion in 2015-16, being highly productive for broadacre cropping (18.9% share of NSW, \$950m). The following table shows the Gross Value of Production (GVP) for the Sub Region.

Industry	Gross Value of Production (\$)	% share of CWSP total	Number of businesses	% share of NSW
Broadacre crops	\$950.2m	53.6%	2,242	18.9%
Beef	\$338.4m	19.1%	2,052	13.2%
Sheep meat	\$149.5m	8.4%	2 210	20.4%
Wool	\$191.7m	10.8%	2,319	20.3%
Dairy	\$33.9m	1.9%	69	5.7%
Vegetables	\$15.7m	0.9%	12	3.7%
All other agriculture	\$93.5m	5.3%		1.8%
Total	\$1,772.9m	100%		13.5%

Source: ABS 2015 - 16 (note: some businesses cover multiple industries)

August 2020

Employment

Agriculture employs over 5,640 people across the Central Slopes and Tablelands Sub Region (ABS, 2015/16). The biggest employer is cattle and grain farming (79.0%) followed by the dairy industry (1.6%). The LGAs with the highest agriculture employment are Dubbo Regional (17.4%) and Warrumbungle Shire (15.1%) These are people employed in the primary production of agriculture and do not include the vast workforce within the key secondary industries. It does not include employees that are hired on a seasonal basis that were not working in the Sub Region at the time of the ABS census. The Mid-Lachlan REDs notes that the agricultural sector accounts for 18% of all employment in the Parkes, Forbes and Lachlan Council areas. The industry did experience a decline of 2.3% between 2011 and 2016. However there has been an increase in the agricultural support industry sector indicating a higher skilled job sector.

Local government distribution

The following map shows the LGAs in the region and agricultural GVP. The biggest individual contribution is Lachlan followed by Forbes.





Agricultural highlights of the Central West Slopes and Plains Sub Region

The Central West Slopes and Plains has some of the most highly productive and sought-after agricultural land in NSW, suited to a wide variety of summer and winter broadacre cropping, and livestock production. Cotton is grown in large unfragmented areas with access to irrigation in the Macquarie Valley, with industry expansion accelerating in the Lachlan Valley. Beef production is the main livestock industry by GVP, with wool, dairy and sheep meat production also important. Livestock production is often integrated with cropping systems.

Industries located on alluvial soils are dairying in Dubbo and Forbes LGAs, and vegetables on alluvial areas and lower footslopes in the Lachlan and Forbes LGAs. Fruit and nut production is a localised industry, worth \$11.98m in 2015/16. Orange production (\$3.76m) is important in Forbes and Narromine. Forbes grows all fruit to the value of \$7.9m and is the main fruit growing area of the Sub Region. Turf is also an important industry in the Narromine and Dubbo areas, dependent on the alluvial soils and irrigation water from the Macquarie River.

This section highlights the prominent industries for the Central West Slopes and Plains.



Broadacre crops

Dryland cereal cropping (principally wheat and barley) are the highest value of agricultural produce in the Sub Region . Most grain is moved by bulk to ports for export although domestic grain is also used regionally and interstate. Lachlan Shire is the leader in wheat grain production, followed by Narromine, Weddin and Parkes. Lachlan also grows the most barley followed by Parkes and Forbes. Lachlan also has the most oat production in terms of GVP. Canola is the main oilseed crop grown in the Sub Region , with Weddin, Parkes and Forbes having the highest GVP values. Chickpea production is predominantly produced in the Coonamble, Warren and Narromine LGAs.

Hay is an important part of the Sub Region's agricultural production with the Forbes LGA having the highest GVP, followed by Dubbo Regional and Lachlan LGAs. More than half of hay production is lucerne hay, relying on the level alluvial floodplains of the Lachlan and Macquarie Rivers. Cereal and other crops also contribute to hay production in the Sub Region.

Industry requirements

Dryland cropping systems have developed based the unique physical combination of medium to high quality soils, relatively flat topography, warm climate and reliable rainfall over 400mm (RMCG, 2016). It is also facilitated by large holdings in a unfragmented landscape which accommodate the changes in technology and economies of scale necessary for profitable broadacre cropping enterprises. A wide range of secondary industries are required to support the inputs and outputs of broadacre crop production, such as machinery and irrigation equipment suppliers, mechanics, freight and logistics, trades, and rural suppliers, agronomic services, grain storage and marketing, milling, contract planting and harvesting.

Graincorp has grain storage infrastructure across the Sub Region. There are also grain related services such as traders, packers, freight and logistics, transporters, and processors are located across the Sub Region , including the smaller centres. Companies include Agrigrain at Narromine and Coonamble, Robinsons Grain Trading in Dubbo and Ooma Enterpises at Forbes. Seed breeding is carried out at Narromine for canola, corn and sorghum with local and interstate grower participation (Pioneer Hi –Bred Australia (https://www. pioneerseeds.com.au/).

Ben Furney Flour Mills based in Dubbo sources 90% of it grain from within 200 kilometres of the mill, employing 90 people (https://benfurney.com/). Bio-Oz Buckwheat Enterprises Pty Ltd is a small specialized flour mill and buckwheat product facility located in Parkes.(https://www.bio-oz.com.au/). Artisan Grains Australia is also a Forbes based specialised on farm grain and flour producer (https://www.artisangrainsaustralia.com/).Hoey Holdings Pty Ltd is a specialist animal feed facility based in Forbes employing 27 people.





Irrigated cotton is mainly grown in Narromine, Warren and Bogan LGAs, with dryland cotton grown in all other LGAs apart from Dubbo Regional Council. The Jemalong irrigation district at Forbes and Lachlan River catchment are more recent locations for cotton as varieties and technology improve (Acres of Opportunity 2018). Groundwater is an important water source for irrigation in the area. In the Macquarie valley this is used for both urban and rural water supplies. The main area of groundwater use is west of Narromine (RCMG 2016).

The first cotton crops were grown at Warren in 1967 with water from Burrendong Dam on the Macquarie River near Wellington. Cotton expanded as a crop in the 1980s and 1990s, and by 2000 much of the irrigated lands had been converted to cotton (in Narromine and Warren LGAs). The area of cotton fluctuates in response to irrigation allocations, or in the case of dryland cotton in response to rainfall events. A range of summer and winter cereals, pulses and oilseeds are grown under irrigation in rotation with cotton.

Private investment in cotton through land formation of irrigation fields, on-farm water storages and processing currently delivers the highest value commodity per megalitre of water per hectare. There is substantial investment in value-adding, secondary agricultural industries and infrastructure ancillary to cotton, highlighting the importance and significance of this farming system to the Sub Region .

Industry requirements

Cotton is a summer crop, requiring a reliable water supply. This may come from rainfall and/or adequate soil available moisture or irrigation water. While cotton can be grown in both dryland and irrigated situations the yield from irrigated cotton exceeds that of dryland cotton by at least 2.5 times. Cotton is known to achieve the highest yields in black self-mulching soil however it may grow in a wide range of soil types. The floodplain environment of the Central West Slopes and Plains has proven highly suited conditions for this high value crop.

The success of the cotton industry has created synergistic opportunities for ancillary industries and other agricultural enterprises such as machinery and irrigation equipment suppliers, mechanics, freight and logistics, and rural suppliers, agronomic services, cotton ginning, contract planting and harvesting businesses. Large tracts of unfragmented agricultural land free from conflicting land uses are required for cotton production.

A number of cotton gins are located in the region to support the cotton industry in the Narromine, Warren and Coonamble shires. These include:

- Namoi cotton at Trangie (Narromine LGA) which also accommodates a commodity packing site and warehousing site at Warren
- Queensland Cotton (Olam) Warren Cotton Gin
- Auscott Gins at Warren and Trangie

Some of these gins also provide cottonseed byproduct that is used as a livestock feed.

The Lachlan Valley is a developing area for cotton production, and there is potential for future ginning opportunities to be developed in the area.





Livestock production

Beef and lamb

Beef production is focused in all LGAs, particularly Warrumbungle, Gilgandra and Coonamble due to the ability for economies of scale, pasture growth and heavier soils. The Castlereagh REDS (2018) for Gilgandra and Warrumbungle Council areas notes that specialist sheep and beef enterprises has seen a move away from mixed cropping/livestock enterprises. There is less beef production in the Parkes and Weddin Council areas where sheep and cropping enterprises dominate. Sheep meat production value to the Sub Region is \$149m (ABS, 2015/16).

Dubbo produced the highest value of sheep meat with the other LGAs in the region also contributing on a high level except for Narromine. This may also be due to the Fletchers International Exports being located in Dubbo. It is the largest lamb abattoir in the southern hemisphere with another plant located in WA. They combined process 4.5million head per year and employ 700 in Dubbo. The level of sheep meat production has increased over the years from the Sub Region, while beef has remained stable.

The supply of finished beef cattle from farms or feedlots and sheep meat underpin a critical mass of primary product to support the value adding supply chain for surrounding meat processors and transport companies. Supporting livestock production through planning is essential as livestock production systems are complementary to broadacre cropping and combined make up a significant proportion of the total farm area. The number of beef and sheep feedlots in the region are increasing for finishing animals especially in drought or as an alternative method of animal management. The 2017-2020 drought has resulted in permanent arrangements with often small farm operations establishing feedlot systems based on sheep production (Sheep Central 2020). Beef feedlots are a feature of the area, taking advantage of the availability of grain sources nearby.

Industry requirements

Cattle and sheep for meat production ranges over a wide variety of land types, with slopes less than 20 degrees and rainfall generally above 500mm (RCMG, 2016). Some enterprises also combine with cropping systems, particularly sheep. Livestock grazing production also requires large areas of unconstrained land with opportunity for producers to increase scale without risk of land use conflict. Holding sizes need to reflect the ability for beef enterprises to return a gross margin that can cover associated costs and deliver a sustainable income. Pasturebased cattle, sheep and wool production needs access to suitable water supply, and a range of infrastructure for livestock handling, husbandry, fodder production, storage and transport access. Typically, livestock are managed in a system of rotational grazing, with paddocks recuperating after grazing. Intensive animal industries require reliable water supply, transport access for stock and feed and areas of unfragmented rural land with large separation distances to sensitive receptors for odour and noise management.

Livestock industries are supported by ancillary industries and other agricultural enterprises such as meat processors, machinery and irrigation suppliers, mechanics, transport, rural suppliers, agronomic and veterinary services, livestock marketing agents and wool brokers.

The Central West Slopes and Plains is serviced by major saleyard facilities at Dubbo and Forbes which have weekly sales. The Dubbo Regional Livestock Markets are the biggest in NSW with 193,788 cattle yarded in 2018/19 (Meat and Livestock Australia 2019). 1.47 million sheep were sold in 2017/18. The Dubbo saleyards also contribute \$75.6 million in total annual output and supports 320 full time equivalent positions according to economic modelling by the AEC Group (https://www.dubbo. nsw.gov.au/Livestock/student-info). Forbes Central West Livestock Exchange yarded 65,974 head of cattle in 2018-9. The facility also trades sheep, lamb and pigs. (http://www.forbeslx. com.au/).

Cattle processors are also located outside the Sub Region at Cowra. Australian Pet Brands processes livestock for pet food in Dubbo and employs 140 full time staff. Meat product manufacturing and allied industries employs a significant number of people in Dubbo.



Wool is produced in all LGAs, with the Lachlan and Dubbo Regional Council having the highest gross value of production. Overall wool production has declined since 1992 but plateaued in 2016. The Central West Slopes and Plains contributed \$191m in wool in 2015/16. Wool is also often part of mixed farming operations that also support cropping, as well as meat production. There are more opportunities with newer sheep breeds offering 'dual purpose' wool and meat, which is also a way of adapting to changing markets and climatic conditions.

Industry requirements

Wool growing is a specialised industry that has a specific set of biophysical (land and climate), labour, management and animal husbandry requirements to meet market specifications. Finer wool enterprises take advantage of lighter soil types at higher elevations, and rainfall areas to produce a premium product particularly to the east of the Sub Region and adjoining the Central Tablelands Sub Region. Each wool-producing district has ancillary industries including wool brokers and shearing contractors.

Woolerina is a small specialist merino textile and manufacturing company based in Forbes, producing high quality Merino clothes and accessories. (https://www.woolerina.com.au/).



Vegetables

Lachlan, Dubbo Regional and Forbes Councils dominate in the gross value of vegetable production, mainly melons and pumpkins. Dubbo Regional Council also produces sweet corn, cauliflower, cabbages and carrots mainly based on the Bell and Macquarie alluvial areas.

Industry requirements

Vegetable production is reliant on irrigation and tends to be located on farms close to the rivers comprising medium to very high capability land, on slopes less than 10 degrees (RCMG, 2016). Wade (2005) notes the favourable climate especially for warm season vegetables in the Sub Region is also important. The Sub Region also offers opportunities for vegetable cropping to take advantage of the suitable lands along rivers and the future access to markets.

The Sub Region also contains some specialised related industries such as Narromine Transplants. This 61 hectare nursery is one of the largest containerized tree, fruit and nut seedling growers in Australia. It has the capacity to supply up to 18 million tree seedlings annually. it employs about 14 people. (https://transplants.com.au/). Enza Zaden Pty Ltd Australia has a (research station based in Narromine undertaking breeding programs for onion, cauliflower, broccoli, lettuce and pumpkin. The seed is sold domestically and internationally. The advantage of Narromine is that 2 generations of crop can be grown per year shortening the breeding time. It employs about 30 people. (https://www.enzazaden.com/this-is-enza-zaden/enza-zadenworldwide/AU?country=AU)



Dairying is important in the Central West Slopes and Plains, generating \$33,770,505m GVP in 2016. The Forbes LGA generates about half of this with other council areas including Dubbo, Lachlan, and Parkes also contributing over \$2m GVP. There are other small-scale dairying activities that take place in all LGAs. Moxey's Dairy is a 5,500 head housed system in the Forbes LGA, owned by Australia Milk Holdings, employing up to 250 people. The Little Big Dairy, located at Rawsonville between Dubbo and Narromine on the Macquarie River, is both a dairy farm that milks 800 Holsteins but also is a small-scale manufacturer of the milk on site producing various types of single source milk and cream. The milk is sold both locally and as far as Sydney. The family owned operation continues to explore new ways to offer milk products and extend their market. They employ 30 people in their operations.

Industry requirements

The dairy profile of the Central West Region (2012) identifies the following locational requirements that related to Forbes Council as :

- moderate to high soil fertility found on alluvial plains
- water from subsurface or river sources within 5km
- reliable power
- access to high quality feed and grain sourced locally
- ready access to the Sydney Market through road infrastructure.
- properties that allow the management of environmental/ amenity impacts.

These factors can also be extended to other council areas on the Macquarie River system. The Little Big Dairy in Dubbo also processes its milk on site for distribution in the local area and region (and beyond) that provides an alternative to sending raw milk directly to processing in Sydney. For example, the Blue Sky cheese factory in Mendooran uses milk from the Little Big Dairy in Dubbo.





Central West Slopes and Plains Sub Region assets for agriculture

The Central West Slopes and Plains has ideal growing conditions with evenly distributed rainfall combined with suitable soils, excellent land capability, and access to water resources for irrigation enabling highly productive farms to prosper. The Central West Slopes and Plains has a history of primary production with established farming systems, services, labour supply, infrastructure and practiced farm operators. The Central West Slopes and Plains also has a geographical advantage given its proximity to Newcastle and Sydney and access to Brisbane; traversed by major national road and rail routes (DPIE, 2017).

Farming in the Central West Slopes and Plains provides benefits and opportunities for both producers and urban populations. By sustaining agriculture near regional cities such as Dubbo there are farming advantages such as market differentiation and alternative income streams, access to labour, processors and materials, and opportunities to produce higher value commodities which benefit from market proximity (reduced food miles and spoilage). There are some areas where non-agricultural land uses such as lifestyle subdivision and housing affect farming enterprises, however in most cases Councils support the development of intensive and extensive farming systems through planning instruments.

There are consistent trends across the Sub Region that have implications for development of land use plans and promoting investment in agriculture:

- Farms are increasing in size, both in terms of the physical size and value of operations. This is observed across both broadacre and more intensive enterprises.
- Most value of production is generated by the medium to large farm businesses. While more numerous, smaller farm businesses contribute a smaller proportion of overall commodity value.

Competitive strengths include:

- The scale, diversity and productivity of agricultural lands.
- Water supply provided by the Macquarie, Bogan, Castlereagh and Lachlan rivers, Burrendong Dam on the Macquarie River and Wyangala Dam on the Lachlan River.
- Potential for a range of crops and livestock production systems.
- Good road transport networks with the Newell, Golden, Mitchell, Oxley, Mid-Western and Castlereagh highways providing the main access in and out of the Central West Slopes and Plains, linking with the Hunter Valley, Sydney and Brisbane.
- The existing rail network extending through Dubbo, Narromine and Parkes linking with Sydney and Newcastle is used to export grain from the Sub Region to international markets.
- The currently project to construct the Inland Rail (Melbourne-Brisbane) Project will improve freight efficiency to both Melbourne and Brisbane ports. There are opportunities identified to increase the options for freight in this Sub Region that will have agricultural advantages.
- The Parkes Special Activation Precinct is also a NSW Government led project that seeks to create jobs associated with the existing and new opportunities that the inland rail project will bring in Parkes. Part of this will include the access of the agricultural sector to freight operations and new markets.

7



Supporting industries and infrastructure

The Central West Slopes and Plains has a comprehensive range of support services and infrastructure, processors, transport and logistics, professional services and farm supplies in the larger centres. Before agricultural produce makes it to market, there are inputs such as fertiliser, fuel, technical support services such as agronomists, vets and mechanics, processing facilities, transport and infrastructure, etc. There is also substantial movement of produce within the Sub Region supplying grain to intensive animal producers and moving livestock to processing plants. The interactions of these agricultural industries with their secondary industries is a critical consideration in planning for agricultural land uses.



The climate changes from a warm temperate to hot dry climate from the east to west (Andrews, 2016). Rawson (2016) noted the marked gradation in annual average rainfall from approximately 700-750mm in the east to less than 450mm to the west and north west. It was also noted the reliance of the western lands on river flows from the east especially for irrigation water. Dubbo has an annual average rainfall of about 570mm with a relatively even distribution apart from a slight summer increase. Areas to the north such as Coonamble have more of a summer increase while Grenfell in the south has a slight winter dominance. In summer, average temperatures are warm (26-28°C) and winters mild (12-14°C). Average maximum temperatures in summer are hot, up to 34°C in the west and in winter, average minimum 4-6°C (OEH, 2014). Frosts occur across the plains in winter while in summer, hot days (over 35°C) can number over 50 west of Nyngan.

The Bureau of Meteorology summarises the climate for the Sub Region over the last 30 years (Central West Slopes and Plains Regional Weather and Climate Guide):

- annual rainfall has been relatively stable
- dry years have occurred 11 times and wet years have occurred seven times
- rainfall has decreased in the autumn and spring months
- summer rainfall has been reliable; autumn has been unreliable
- dry years have occurred 11 times and wet years have occurred seven times
- the autumn break typically occurred by the start of June around Gilgandra, Dubbo and Nyngan, not until later in June around Forbes, and late June to early July around Condobolin in the southwest
- spring frosts have been more common and have been occurring later
- there have been more hot days, with more consecutive days above 38 °C.



Landscape features

Rawson (2016) outlines the five landscape units that make up the Central West area, being the Western plains, Floodplain, Northern slopes, Southern slopes and Lachlan plains. More information on these landscape units is provided in Appendix 1.

Irrigation - Macquarie Valley

The Macquarie River is the dominant water supply in the region, Burrendong Dam is the major dam located upstream of Wellington, with the river flowing through Dubbo, Narromine and Warren before it forms the effluent stream area of the Macquarie Marshes. There are 7 private off-river water schemes in the Macquarie System:

- Narromine
- Trangie-Nevertire
- Tenandra
- Buddah Lake
- Marthaguy
- Nevertire
- Greenhide.

Together these irrigation schemes account for approximately 40% of all the licensed irrigation entitlements in the catchment. The largest of the irrigation areas are Narromine and Trangie-Nevertire, both established in 1970 following completion of Burrendong Dam. The Narromine scheme covers 120km² and services 90 properties via 350km of channel. The Trangie-Nevertire scheme covers 102km² and services 66 farms via 250km of channel (Green et al, 2011)

Smaller tributaries such as the Bell, Little and Talbragar rivers also support areas of irrigation. Groundwater is also an important water source for irrigation in the area. In the Macquarie Valley this is used to support both urban and rural water supplies. The main area of groundwater use is west of Narromine (RCMG 2016).

Irrigation - Lachlan Valley

The Lachlan River is regulated by the Wyangala Dam located upstream of Cowra. The Jemalong Irrigation district located at Forbes delivers about 35,000Ml of water per year to 100 entities for irrigation over 96,000ha of farming land (Jemalong Irrigation). The opportunities for greater water security on the Lachlan River has recently been announced with the raising of the Wyangala Dam wall that will increase the capacity of the dam by 53% (Water NSW, 2019).



Challenges for agriculture in the Central West Slopes and Plains Sub Region and planning levers

Challenges for agriculture are connected to climate change, reliable telecommunications technology, commodity prices and in some areas, land use conflict and 'right to farm'. Development unrelated to agriculture such as housing creates land use conflict where expectations of amenity are not met, in turn placing pressure on producers to adjust their normal practices. This competition for land has a real potential in the Sub Region for dislocation and transfer of agriculture (particularly intensive agriculture) to other areas.

Agricultural land is a finite resource, even in the Central West Slopes and Plains where decades of land fragmentation has created undersized rural holdings which are mostly used for lifestyle purposes. This gradual process has displaced intensive industries such as dairies, piggeries and orchards, and affected broadacre cropping and livestock grazing in more contested areas.

This section highlights some of the challenges faced and planning solutions.



Historic land use planning

Historic planning policy has not strategically valued and protected rural land in many areas, instead regarding it as 'urban land in waiting' (Houston, 2005). The absence of dedicated planning policy for agriculture has resulted in local environmental plans (LEPs) that do not support agriculture in practice. Agriculture has spatial, biophysical and production criteria that can be similar to industrial development, especially intensive industries. However, in LEPs industrial zones are in dedicated areas with development controls managing incompatible development. In contrast, rural planning provisions often allow incompatible development and subdivision that affect farm amalgamations, expansion or intensification plans and ultimately restrict a farmer's ability to make a living.

Planning solution

Future land use planning must recognise the importance of agriculture to society and the economy and that the land and resources on which agriculture depend need to be protected and managed to enable continued use of the land for agriculture.

The challenges can lead to the following adverse impacts for agriculture if they continue to occur:

- Inflated land prices prevent farm expansion as residential land values are in a different market to agricultural land values.
- **Differing expectations**: Complaints are made to authorities from neighbouring residents about legal farming activities such as traffic movements, dust, noise, odour etc., resulting in adjustments being required to operations.
- Loss of critical mass: Urban encroachment gradually results in the loss of farmland and supporting services (a critical mass required for commercial viability), requiring farmers to source further afield.
- **Uncertainty**: land use conflict and the variable impacts on farming makes it difficult to plan for future investment in the industry. Pressures of encroaching development often result in farmers either selling land for non-rural uses or continuing to farm with the issue of land use conflict.

9



Statutory land use decision making

The time and cost involved in the development approval process can constrain the capacity of agricultural industries to quickly respond to market forces. Intensive agricultural land uses often require extensive site and impact assessments from specialist consultants and state agencies, while perceived environmental impacts on neighbouring properties can raise concerns in a community about the potential impacts of the land use.

Planning solution

Clear development controls which specify requirements for intensive agricultural development, and non-agricultural developments near existing agricultural land uses, are integral to minimising community concerns and avoiding unnecessary cost and delays. Consistent requirements for information to support development applications can also streamline the application process for proponents and assist consent authorities to manage community expectations. It is important for both the agricultural industry and the community that the development approval process results in well managed agricultural land uses in the right location to enable the continued use of the land for agricultural production for the benefit of the wider community.



Land use conflict

The land use zones that apply to land on which agriculture occurs often permit a wide range of other land uses that are unrelated to agriculture. For example, with population growth and change, there will be pressure to use rural land on the edge of urban areas to accommodate residential development and other urban land uses. Competition for rural land on which agriculture can occur can lead to increased land prices and uncertainty for agricultural industries and investors. This often results in dislocation and transfer of agriculture to other areas, sometimes at great personal cost to producers and their industry.

Planning solution

Planning controls which limit the range of permissible non-agricultural land uses in rural zones can prevent the encroachment of urban land uses on agricultural industries. Planning controls which require adequate buffer distances between land uses can also mitigate potential impacts on and from agricultural land uses. With land use conflict being largely driven by the divergence in knowledge, expectations and activities of rural neighbours, particularly between new residents and traditional rural landholders, collaboration and networking becomes critically important to addressing changing social landscapes (Askland et al 2019). Council help facilitate this education process. Clear and robust strategic planning policy and land use strategies are important to guide future urban growth to locations where it will not have adverse impacts on agriculture. Land fragmentation

Rural zoned land for agriculture (Primary Production -RU1, Rural landscape - RU2 and Rural Small Holdings -RU4 zones) make up approximately 93% of the Central West Slopes and Tablelands Sub Region.

Analysis of the rural zoned land in the Region found that:

- 13% is comprised of lots between 1 and 5 hectares in size
- 20% is between 5 and 20 hectares
- 12% is between 20 and 40 hectares
- 20% is between 40 and 100 hectares
- 35% is greater than 100 hectares in size.

Areas near urban settlements experience pressure for lifestyle subdivision, usually involving agricultural land. While there would appear to be ample land available, it is important that urban development does not compromise productive potential. As noted, adverse impacts on agriculture can occur where there is a high degree of land fragmentation. Undersized rural lot sizes result in increased land prices as competition from nonagricultural land uses arise. Small rural lot sizes limit the ability of new agricultural enterprises to achieve required buffer distances or expand their operations. Expansion of agricultural operations in a fragmented rural landscape often means significant investment to purchase additional land. When additional land is not available for expansion producers usually increase productivity via intensification of operations, a process which can increase the potential impacts on nearby non-agricultural land uses or require significant investment to mitigate potential impacts.

Planning solution

Planning policy which sets an appropriate minimum lot size for a dwelling house and prevents the further subdivision of rural land, except where there is a demonstrated agricultural need, can prevent the adverse impacts of land fragmentation. Councils can also limit the amount of fragmentation for dwelling houses in highly productive rural areas.



All agricultural industries have a critical level of production which ensures the economic viability of the enterprise. Where secondary industries rely on a minimum volume of agricultural product to remain viable it is imperative for the industry in that Sub Region to maintain that critical mass for the benefit of all agricultural industries. This is important for the agricultural industries as well as the related supply chain, including ancillary services, infrastructure, markets, processing facilities and related industries.

Planning solution

When land use planning decisions have the potential to affect one aspect of the agricultural supply chain it has the potential to threaten the entire industry in a locality. Land use planning needs to recognise that it is not only agricultural land with excellent biophysical characteristics that needs to be retained for agricultural purposes, but also those key secondary supporting industries which may be located on lower quality agricultural land which are still potentially impacted by encroaching non-agricultural land uses.



Climate Change

The Central West Slopes and Plains is expected to experience an increase in all temperature variables (average, maximum and minimum) by 2030. Summer temperatures are projected to increase by 0.7°C in 2030 and 2.1°C by 2070. Minimum temperatures are projected to increase by 0.7°C by 2030 and 2.1°C by 2070. Changes in cold nights are important in the maintenance of natural ecosystems ad agricultural/horticultural industries.

The number of hot days (over 35°C) is projected to increase on the western plains by another 10-20 days by 2030 and 30-40 by 2070 with increases most pronounced in spring and summer. Minimum temperatures are projected to increase across the Sub Region. Prolonged periods of hot days increase the incidence of illness and death amongst vulnerable people and adversely affect ecosystems.

Rainfall is projected to decrease over spring by 2030 but is expected to increase in autumn by 2070. Across the Central West Slopes and Plains winter rainfall is expected to decrease by 2030. Climate models indicate both wetter and drier scenarios for annual rainfall with the range of change -12% to +11% by 2030 and -10% to +22%.

Drought conditions directly affect dryland crops and reduce water availability for irrigation. The Central West Slopes and Plains will also experience an increase in the accumulation of the number of day degrees (a measure of heat accumulation throughout a growing season). Higher temperatures will extend the length of the growing season. However, warmer temperatures also accelerate the rate of crop development and could potentially shorten the time to maturity, reduce water use efficiencies resulting in reduced yields.

The impacts of climate change highlight the need to protect land for its future productive capacity particularly where there is a combination of biophysical assets such as water, topography and soils. The Central West Slopes and Plains Sub Region supports high value agriculture now and will be important to sustain production of more specialised agricultural and horticultural enterprises into the future. Farm adaptation options are already being developed with industry development such the Grains Research and Development work on farming systems (Crimp and Howden 2019), and the cotton industry (Cotton Research and Development Corporation, 2020). A critical concern to irrigated agriculture is securing water for production in terms of quality, quantity and delivery.

Biosecurity

Rural land in the Sub Region is exposed to pests and diseases that could threaten agriculture, the environment and community safety. Biosecurity hazards are managed by the NSW Government through Local Land Services. The distribution, abundance and management of insects, pathogens and weeds is also being affected by climate change. The likelihood that tropical or semi-tropical pests will spread southward in Australia, or become established after an incursion, increases with climate warming. Stressed plant systems (crops) may become more vulnerable to insect and disease outbreaks as the efficacy of current control measures are altered.

The combination of urban areas, open farmland, forested areas and water sources results in serious pests such as foxes, wild dogs, pigs, cats, rabbits and goats. Numerous pest plants are already in the landscape and have a large impact on remnant vegetation and rural land. Land fragmentation resulting in small lot sizes in some areas means it is more difficult for an agricultural producer to control the activities occurring within the necessary biosecurity buffer. Biosecurity resilience will depend on operational factors and this can result in increased costs for the producer.

Social licence

A social license to operate refers to the perceptions of local stakeholders that an industry that operates in a given area or region is socially acceptable or legitimate.

It is important for agricultural industries to maintain a 'social licence' for their operations. The agriculture industry's right to farm agricultural land and retain access to water needs to be balanced with responsible, ethical land and livestock management and adherence to best practice operations to minimise potential environmental impacts. Producers can help to protect their 'social licence' through open communication and education and positive contributions to their communities. Connecting with local markets and demonstrating low food miles and the importance of local food security can assist in maintaining a 'social licence' for agriculture. Further detail can be found in the <u>NSW Government Right to Farm Policy</u>.

Changing markets and economic conditions

Agriculture is vulnerable to changes in markets and economic conditions. Long lead times for crop production and the need for extensive capital and infrastructure investment to change commodity or farming systems means agricultural land uses are not capable of quickly adapting to changing markets and economic conditions. Due to Australia's presence in global agricultural markets, farmers in are often 'price takers' which can have significant adverse impacts on smaller operations.



Opportunities for agriculture in the Central West Slopes and Plains Sub Region and planning levers

The Central West Slopes and Plains' agricultural industries are recognised as one of the key industries in the Central Orana Regional Economic Development Strategy (State of NSW, Department of Premier and Cabinet 2018). The competitive advantages of the Central West Slopes and Plains are topography, fertile soils, access to irrigation water, areas of unconstrained land and systems in place for efficient production of high-quality crops and livestock. Other opportunities are for research to increase innovation and technology with producers through the Trangie Agricultural Research Centre and Charles Sturt University. The creation of a logistics cluster at Parkes and improved road access, growth in value adding and manufacturing, improved energy, water and telecommunications infrastructure are identified as opportunities for the Sub Region.

The diversified economy based on agriculture has benefits for Central West Slopes and Plains' urban and rural communities. Urban areas benefit from agriculture through ecosystem services, employment, scenic values, 'green space', value-adding (processing, renewables), education, research and food provenance. Agriculture supports a supply chain that generates substantial productivity and employment across local, sub regional and national scales.

This section identifies the practical land use planning approaches and opportunities for agriculture in the Sub Region and some planning considerations to help implement them.



Increased scale and intensification

Productivity growth is central to the performance and international competitiveness of Australia's agricultural sector. Producers can increase scale through expanding operations onto additional land and intensifying. Commercially viable intensive agricultural operations in the Central West Slopes and Plains include horticulture, poultry, pigs and livestock lot feeding. Most intensive agricultural operations need to establish infrastructure requiring significant capital investment. To secure this capital and see a return on the investment, businesses need certainty that production will be unencumbered by land use planning changes for a minimum of approximately 25 years.

Further growth of intensive animal and plant production is feasible in the Central West Slopes and Plains, such as poultry, piggeries and cattle feedlots, as well as a range of horticultural crops in outdoor and controlled environment glasshouses. Recent enhancements in the design, management and operation of intensive agricultural enterprises has resulted in productivity improvements and achievement of food safety, animal health, animal welfare and environmental sustainability standards.

Planning levers to support intensification

- a. Certainty in strategic planning policy and land use planning controls for intensive agricultural operations and neighbouring land can provide the appropriate investment environment for industry expansion.
- Rural land use strategy development is key to understanding the needs of various agricultural industries and investigating opportunities and mechanisms to support intensive agricultural industries through LEP controls.
- c. LEP zones and provisions should be applied over intensive agricultural precincts; with land use tables structured to permit intensive agriculture and related industries while prohibiting incompatible land uses such as residential accommodation, tourist and visitor accommodation, commercial, heavy industrial and recreational activities etc.
- d. Minimum lot sizes should be large enough to limit fragmentation of agricultural land, incorporate industry requirements, enable expansion of existing agricultural industries and provide for adequate buffers to incompatible land uses.

Food security

The need for fresh food to be available locally for the health of the community is a key opportunity for the Central West Slopes and Plains. There are marketing opportunities for food producers to leverage the benefits of local food production to differentiate their product in the market. Population and markets in NSW and beyond are expected to continue growing by 2050, and the expected population of the broader Sub Region and nearby regions will increase and sustain demand for local food and fibre. Global markets will also continue to demand Australian produce. In combination these factors will lead to a higher value of agricultural production in the Sub Region.

Planning levers to increase food security

- a. Strategic planning for rural land must ensure productive land is identified and protective mechanisms provided through the planning framework to enable provision for expansion of urban farms for intensive production, food security and education purposes.
- b. Councils should zone agricultural land for primary production and only permit agriculture and a narrow range of supporting land uses in that zone.
- c. Some forms of horticulture may be a suitable permissible use in a range of zones, with opportunities for associated agri-tourism and roadside stalls.
- d. Minimum lot sizes should be large enough to limit fragmentation of agricultural land, incorporate industry requirements, enable expansion of existing agricultural industries and provide for adequate buffers to incompatible land uses.





Access to transport links to Sydney and Newcastle and favourable biophysical assets of rainfall, water, productive soils and farming infrastructure means that the Central West Slopes and Plains is well positioned to capitalise on growing community interest in food provenance and agri-tourism. The Central West and Orana Regional Plan 2036 and Central Orana and Western Plains Regional Economic Development Strategies all identify the need for diversification and expansion of agricultural commodities to include agri-tourism, boutique and artisan produce, and value adding.

Agri-tourism in the form of low-key farm stays and bed and breakfast establishments can provide an alternative income stream of agricultural producers while also educating the community about the activities that occur on farm. These ancillary land uses should not compromise the agricultural production being undertaken on the land and agricultural production should be the primary land use. The Sub Region provides an opportunity to promote NSW's 'clean and green' production to the world through the high levels of tourism by the Sub Region.

Planning levers for diversification and value adding

- a. Farmers markets ('markets' as defined by the Standard Instrument LEP) should be permissible and encouraged by councils in appropriate urban and open space zones.
- b. Agri-tourism (farm stays, bed and breakfast accommodation) should be associated with and complement the continued agricultural production on the land.
- c. Agri-tourism should be directed away from intensive agricultural operations or precincts.

Non-planning levers for diversification and value adding

- d. Intensive agricultural production precincts and businesses may be used for education of the community and tourists around how food supply chains work.
- e. Roadside stalls, artisan food and drink industries and cellar door premises all offer opportunities to promote NSW's clean green image to the international tourism market.
- f. Farmers markets could prioritise locally grown or made produce to support local growers.



Planning toolkit

Best practice land use planning for agriculture includes recognition of the industry as a significant contributor economically, environmentally and culturally, providing recognition and management through all levels of the planning framework. Dedicated land use zones, provisions and minimum lot sizes are available to Councils and can effectively support primary production even in contested areas. This section highlights the parts of the planning system to facilitate this.



Local strategic planning statement

A local strategic planning statement (LSPS) identifies the vision and trends for agriculture in an LGA and sets out the direction for agricultural land uses for the next 20 years. It is important that agriculture, the land it depends upon and the infrastructure and other secondary industries which interact with agricultural land uses are considered at this initial strategic planning stage. The LSPS should explain the economic contribution that agriculture makes to the local economy and reflect the community's expectations for the provision of food and fibre locally. Further information can be found in the following DPI guideline Local Strategic Planning Statements – Agricultural Planning Advice for Councils.

Local land use strategy

The Central West and Orana Regional Plan 2036 sets out the framework and expectations for preparation of local land use strategies in the Sub Region. The agricultural component of a land use strategy should identify the agricultural industries in the LGA, land on which they are located and the essential infrastructure and secondary industries. A land use strategy is also an effective tool in communicating to the community the scale and importance of agriculture in the LGA economically, physically and socially. It is an important step in identifying where agricultural land should be protected from incompatible land uses.

A rural land use strategy will identify the linkages primary industries have with secondary industries, infrastructure and other components of the production chain to establish a holistic picture of relationships and dependencies. The strategy will also clarify the relationship of rural land with residential development and specify the circumstances in which additional fragmentation and residential development may or may not be appropriate. The strategy will also assess the policy framework including existing LEP provisions and make recommendations to retire and/or remove redundant provisions concerning rural subdivision and non-strategic residential development.

Local environmental plan

A LEP allows councils to tailor planning controls to address the issues facing agricultural industries in their LGAs. The LEP is informed by the rural land use strategy. The following are mechanisms that can result in positive outcomes for agriculture:

Land use zones: the RU1 Primary Production or RU4 Primary Production Small Lots zones are the most appropriate zones to apply to land which is currently used for agriculture and/or is suited to future agricultural land uses.

Land use zone objectives and tables: The use of specific zones for agricultural land allows the zone objectives to be specific for agricultural land uses and require other permissible land uses to be compatible with agriculture.

Limiting permissible land uses: LEPs can reduce the potential for land use conflict by restricting the range of permissible land uses where incompatible with agriculture. This is executed by careful construction of land use tables for the rural zones. Councils should review the permissible land uses in rural zones applied to agricultural land or where agricultural industries are located to prevent inappropriate land uses and limit potential for land use conflict. Land use tables for rural zones should be 'closed' to enable more control over the range of specific land uses.

Minimum lot sizes: The minimum lot size specified in an LEP for rural land needs to be of a scale to prevent fragmentation into lots which cannot support the locally typical agricultural land uses. Generally larger minimum lot sizes facilitate the establishment of larger and more appropriate buffer distance between potentially conflicting land uses. Larger lot sizes also enable expansion or diversification of the agricultural activities without the need to purchase additional land which can be an economically prohibitive option for farm expansion. While it can often be difficult to execute, the breaking of the nexus between minimum lot size and dwellings is a way to prevent new settlement on rural land, and a positive advance in promoting agriculture and preventing future rural land use conflict.



Development control plans and other approaches

Development control plans

A development control plan (DCP) for rural zones should include practical guidance for agricultural land uses. A DCP can specify buffer distances to be applied to all land uses, both agricultural and non-agricultural, to ensure that new land uses do not increase the potential for land use conflict with existing neighbouring properties. Guidance on appropriate buffer distances is provided in the Department's <u>Buffer Zones</u> to Reduce Land Use Conflict with Agriculture - An Interim <u>Guideline.</u>

Novel approaches

In some cases, councils may need to apply both planning approaches and non-planning advocacy to achieve positive outcomes for agriculture. For example, under the current legislative framework, councils can:

- Seek a locality mapped as state significant agricultural land with restrictions on fragmentation and development for non-agricultural purposes.
- Set up a rural industry liaison committee to establish links between council and farmers and provide a forum for discussion of the issues facing agriculture in the LGA.
- Propose a highly contested area as a special planning precinct with planning provisions to protect from incompatible land uses.

Industry can provide advocacy through active involvement in land use planning decision making and strategic planning to raise the profile of agriculture. The land use planning system is only one mechanism available to reduce the potential for land use conflict. Agricultural industries can decrease the potential for land use conflict by adopting industry best practice operations which at best eliminate or reduce the impact of their operations on neighbouring landowners.

Similarly, clear communication with neighbouring properties and an education program targeting sensitive neighbours can help increase understanding of the reasons for some agricultural practices and prevent nuisance complaints.



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Appendix 1

Landscape units of the Central West Slopes and Plains and climate change impact and adaptation (from Rawson, 2016)

Local landscape unit	LGA	Geology and soils	Vegetation	Agricultural use	Climate change and adaptation
Western Plains	Bogan (west) Lachlan (north)	Eastern edge of Cobar Peneplain with fragile red soils, sodicity.	Semi-arid shrubby woodlands, grassy woodland and grasslands.	Sheep and cattle grazing with improved and unimproved pastures, opportunistic cropping.	Hottest and driest area of region. Projections to highest temperatures and rainfall deficits. Maintain water and shade for stock.
Floodplain	Bogan (east), Coonamble, Warren, Narromine, Gilgandra (far western section)	Alluvial plain of Bogan, Macquarie and Castlereagh rivers. Some sodic soil areas west of Collie. Duplex soils at Marra Creek.	Floodplains and swamps of the Macquarie Marshes, and other river reaches. Semi- arid grassy woodlands and shrubby woodlands, grassy woodlands and grasslands.	Contains area of highly productive cropping and grazing lands, including cereal and cotton production.	Northern area has a subtropical climate that will shift towards summer dominance. Need to consider groundcover management. Southern two thirds of the area require revegetation and shade considerations for higher temperatures.
Northern Slopes	Warrumbungle, Gilgandra northern part of Dubbo Regional Council area (above Wellington)	Rolling hills, ridges, and slopes with minor flood plains of the Castlereagh and Talbragar rivers. More productive soils on volcanic and alluvial area, with sandy soils in the Castlereagh valley.	Dry sclerophyll forests with good representation in reserves and on private lands.	Contains areas of highly productive cropping mainly cereals on flatter lands. Grazing areas also important.	Shift to summer/autumn rainfall with more intense storms in summer and higher temperatures. Enhanced fire risk.
Southern Slopes	Northern part of Lachlan and Parkes, southern part of Narromine and Dubbo Regional Councils.	Bogan, Bell and Macquarie rivers with more confined flood plains. Variety of geological zones including Cowra trough and Molong rises, with volcanic and metasedimentary rocks supporting a variety of soils. Sodic soils between Tullamore and Peak Hill are prone to surface sealing and erosion.	Dry sclerophyll forest and semi-arid shrubby woodlands in the western areas, Grassy woodland and grasslands. Heavily cleared in areas.	Grain fed beef cattle, sheep and wheat enterprises.	Increasing temperatures, seasonality shifts will see the already hot and relatively dry western third of the landscape will become more marginal for agricultural production especially for cropping. Water and shad will be increasingly important for stock.
Lachlan Plains	Weddin, Forbes and Lachlan	Lachlan River and its tributaries support a wide range of productive areas with clay based soils. Ephemeral lakes in the area.	Extensively cleared areas of dry sclerophyll forest and semi-arid shrubby woodland to the west. Remnants on hard rock ridges and in national parks.	Lachlan system supports a wide range of cropping especially wheat and barley and some vegetables. Canola and lupins also grown in Weddin area. Grazing also common in area, with a major dairying enterprise, and Merino studs. Cotton is an emerging industy in Lachlan Shire.	High temperatures and a shift form a slight winter dominance in rainfall to a slight summer/ autumn dominance will impact winter cropping. Soil moisture will be an issue. Grazing stock will need more shade protection and access to water.

Appendix 2

Further details on Central West Slopes and Plains Sub Region major agricultural industries

Distribution of broadacre cropping production by LGA

LGA	Gross value of production (\$m)	% share of CWSP broadacre cropping
Bogan	\$82.9m	8.7%
Coonamble	\$84.3m	8.9%
Dubbo Regional	\$29.7m	3.1%
Forbes	\$86.5m	9.1%
Gilgandra	\$66.6m	7.0%
Lachlan	\$152.8m	16.1%
Narromine	\$125.7m	13.2%
Parkes	\$99.0m	10.4%
Warren	\$87.9m	9.2%
Warrumbungle Shire	\$45.9m	4.8%
Weddin	\$88.9m	9.4%
Total	\$950.2m	100%

Distribution of beef production by LGA

LGA	Gross value of production (\$m)	% share of CWSP beef
Bogan	\$23.9m	7.1%
Coonamble	\$44.3m	13.1%
Dubbo Regional	\$40.7m	12.0%
Forbes	\$33.9m	10.0%
Gilgandra	\$16.2m	4.8%
Lachlan	\$30.9m	9.1%
Narromine	\$16.2m	4.8%
Parkes	\$9.6m	2.9%
Warren	\$27.0m	8.0%
Warrumbungle Shire	\$88.5m	26.2%
Weddin	\$7.2m	2.1%
Total	\$338.4m	100%

Distribution of sheep and lamb meat production by LGA

LGA	Gross value of production (\$m)	% share of CWSP sheep/lamb
Bogan	\$12.9m	8.7%
Coonamble	\$9.5m	6.4%
Dubbo Regional	\$23.8m	15.9%
Forbes	\$12.9m	8.6%
Gilgandra	\$9.5m	6.4%
Lachlan	\$20.6m	13.8%
Narromine	\$8.3m	5.5%
Parkes	\$15.4m	10.3%
Warren	\$10.8m	7.2%
Warrumbungle Shire	\$13.3m	8.9%
Weddin	\$12.5m	8.4%
Total	\$149.5m	100%

Distribution of wool production by LGA

LGA	Gross value of production (\$m)	% share of CWSP wool
Bogan	\$15.7m	8.2%
Coonamble	\$11.8m	6.1%
Dubbo Regional	\$31.7m	16.5%
Forbes	\$17.1m	8.9%
Gilgandra	\$11.9m	6.2%
Lachlan	\$25.5m	13.3%
Narromine	\$11.0m	5.7%
Parkes	\$19.1m	9.9%
Warren	\$13.4m	7.0%
Warrumbungle Shire	\$18.6m	9.7%
Weddin	\$16.0m	8.3%
Total	\$191.7m	100%

Distribution of dairy production by LGA

LGA	Gross value of production (\$m)	% share of CT hay
Coonamble	\$0.9m	2.8%
Dubbo Regional	\$7.3m	21.5%
Forbes	\$18.0m	53.2%
Gilgandra	\$1.3m	3.9%
Lachlan	\$2.4m	7.2%
Narromine	\$0.4m	1.1%
Parkes	\$2.2m	6.4%
Warren	\$0.5m	1.5%
Warrumbungle Shire	\$0.3m	0.9%
Weddin	\$0.5m	1.6%
Total	\$33.9m	100%

Distribution of vegetable production by LGA

LGA	Gross value of production (\$m)	% share of CT dairy
Dubbo Regional	\$1.5m	9.6%
Forbes	\$0.8m	5.0%
Lachlan	\$12.6m	80.4%
Parkes	\$0.7m	4.5%
Warren	\$0.0m	0.0%
Weddin	\$0.0m	0.1%
Total	\$15.7m	100%



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For further information please contact us via email: landuse.ag@dpi.nsw.gov.au or visit our website: Primary Industries www.dpi.nsw.gov.au/agriculture/lup

Community Engagement Review

Report to the Minister for Climate Change and Energy



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Letter of transmittal

The Hon Chris Bowen MP Minister for Climate Change and Energy Parliament House Canberra ACT 2600

Dear Minister

I am pleased to provide the enclosed report to you regarding the Community Engagement Review. The report details the Review's observations and recommendations for your consideration.

In undertaking this Review, we sought and received written submissions from a wide range of stakeholders, conducted a comprehensive survey, and held a significant number of stakeholder group roundtable meetings and individual interviews.

The Review identified a number of pragmatic recommendations to materially improve community engagement effectiveness and outcomes.

Most recommendations will require a collaborative approach between the Commonwealth and states and territories to implement successfully.

However, most of the jurisdictions have commenced or launched programs and initiatives that are well aligned with one or more of the Review recommendations. I therefore expect this positive alignment will help facilitate strong collaboration and the ability to successfully progress the recommendations in a timely manner. The recommendations, when implemented or completed, are designed to achieve ongoing excellence in community engagement and, more broadly, excellence in the execution of the energy transition. To do this properly, leaders will need to focus on:

- **People** motivate developers to be on top of their game, led by experienced, respected quality engagement staff and management.
- **Places** identify and promote selection of the best sites and corridors for locating projects going forward.
- Process implement efficient and timely approval processes to reduce the amount of engagement required of community members, as well as mobilise and accelerate projects in the pipeline.
- **Projects** select only those projects that have all the key ingredients to be successful that will materially contribute to the energy transition.

In implementing the various Review recommendations, it will be helpful not to lose sight of the above framework to keep focussed.

The Review has been very fortunate to have had such strong interest from the myriad of stakeholders across Australia that this Review encompasses.

We are extremely grateful to all of the stakeholders that met with us, provided submissions and/or completed the Review's 'HaveYourSay' survey. I deeply appreciate their willingness to openly convey views on the important issues examined by this Review.

I would also like to acknowledge and record my sincere thanks to the management and staff of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) – in particular, the Secretariat team, who provided tireless support, dedication and professionalism throughout the Review.

Lastly, I would like to recognise the Office of the Australian Energy Infrastructure Commissioner (AEIC), who have continued their excellent service to the community, industry and government while I have been focussed on this Review.

In closing, I trust this Review and resulting report will be a valuable input in your considerations for immediate actions that can be implemented now to address the live issues we observed, along with longer term initiatives that should commence their journey in parallel.

Thank you for inviting me to lead this important Review. I look forward to your feedback on the report and discussing the report with you.

Sincerely

Andrew Dyer

Lead Reviewer

18 December 2023

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Overview

Background to the Review

Australia's electricity supply system is undergoing a significant transition from traditional coal-fired thermal generation to new-build renewable energy generation.

To make this change, a significant amount of new renewable generation capacity needs to be built and connected to the transmission grid. Much of the required transmission grid also needs to be built to open up new transmission corridors for the new generation capacity to be connected to the grid and the electricity generated to then be transmitted to users.

Many of our remaining coal-fired generation assets are approaching end of life. These assets are becoming less reliable and more costly to maintain, and depend on the ongoing availability and cost of coal. They will not be replaced.

Therefore, to ensure the security of our future electricity supply, the current coal generation capacity needs to be replaced. Renewable energy generation is expected to play a large role in our future electricity supply.

The Australian Government has committed to increasing the proportion of electricity that is produced from renewable energy sources to 82% by 2030. To put this in perspective, in 2022, 32% of Australia's electricity was generated from renewable sources.

At the same time, Australia needs to 'decarbonise' to meet the challenges of climate change and has committed to a target of net-zero carbon emissions by 2050.

The energy transition required to achieve these targets presents both challenges and opportunities for regional Australia. By its very nature, renewable energy generation from wind and solar requires a highly decentralised portfolio of generation assets and accompanying transmission lines, compared to our centralised coal generation portfolio. Many communities will therefore be impacted in some way – from the prospecting and development phases of generation and transmission projects, through to the construction phase, and to when the assets have been commissioned and are in operation.

However, many communities will also benefit greatly from being part of this massive transition as the associated investment and economic opportunities materialise.

The transition cannot succeed without community participation and effective engagement over a long and sustained period of time. This review examines a range of issues to be resolved, and provides pragmatic and implementable recommendations to address known and anticipated challenges facing communities across the country.

If adopted and implemented, the recommendations in this report will go a long way to materially improve community engagement and maximise positive outcomes for communities along the journey ahead.

Process for the Review

The Minister for Climate Change and Energy, the Hon Chris Bowen MP, announced the Community Engagement Review (the Review) on 4 July 2023. The Review has been led by Mr Andrew Dyer, supported by the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

The Terms of Reference for the Review can be found in Appendix A.

The Review process included the following:

- an online, public survey
- the ability to make a written submission to the Review
- roundtable meetings held with an extensive representation of key stakeholder groups
- interview meetings held with individuals.

The Review held over 75 meetings throughout Australia, with more than 700 participants in attendance.

- The Review received:
 - over 500 submissions
 - over 250 survey responses.

The majority of survey responses were received from landholders and community members living in close proximity to renewable energy infrastructure and new transmission infrastructure.

Approximately 20% of respondents currently host, or expect to host, renewable energy infrastructure.

Approximately 63% of respondents currently live within 5 km from an operating or proposed renewable energy or transmission infrastructure.

The relevant survey results are depicted in Image 1 on page 4.

Landholders and community members responded to these questions in the Review's HaveYourSay surveys.

Do you currently, or are you expecting to, host renewable energy infrastructure on your property?



What is the approximate distance of your home to operating or proposed renewable energy or transmission infrastructure?



Image 1. Most landholders and community members who participated in the survey were not project hosts. However, they lived within 5 km of a proposed or operating project.

The Review Report was submitted to the Minister for consideration in December 2023.

Recommendations of the Review

This section documents the Review's recommendations, including observations from the consultation process and considerations for implementation. The recommendations are categorised into the following themes:

- **Theme 1.** Improve community engagement by motivating developers to achieve best practice and only selecting reputable developers for new project developments.
- **Theme 2.** Reduce and eliminate unnecessary community engagement by selecting the best project sites, and avoiding poor and inappropriate sites.
- **Theme 3.** Reduce and minimise the need for elongated community engagement by re-engineering planning and environmental assessment and approval processes.
- **Theme 4.** Reduce unresolved and lengthy complaints by ensuring best practice complaint handling, backed up with a new, relevant ombudsman scheme in each state.
- **Theme 5.** Improve community understanding of the need for the transition, including what is to be deployed in their region as well as where, when and why. Ensure appropriate governance is in place to manage the broader impacts of the transition as well as oversight of projects of national significance.
- **Theme 6.** Improve acceptance of the transition changes and impacts by engaging the community to identify opportunities and enable sustainable benefit sharing. These opportunities include local economic development in conjunction with numerous other opportunities that will benefit the broader community.

The following pages detail each recommendation, supporting observations and findings and implementation considerations.

A reference to *the Minister*, is a reference to the Minister for Climate Change and Energy.

A reference to *the jurisdictions*, is a reference to states and territories and, where applicable, the Commonwealth.

A reference to a *developer*, is a reference to a project prospector, project developer and/or project operator. That is, a reference to organisations that are involved in one or more of the life cycle stages of large-scale renewable energy generation, large-scale storage and new, long-distance transmission projects.

A *participant* is a person or group that participated in one or more of the Review's consultation activities, such as a roundtable, the survey, or made a submission.

Theme 1 – Developer performance and selection

Recommendations

The Review makes two key recommendations to improve engagement – by motivating developers to consistently deliver acceptable community engagement in the performance of their role, and by only selecting reputable developers who achieve these performance expectations for new projects.

Recommendation 1. The Minister to initiate a process to appoint a suitably qualified and experienced independent body or person to design, develop, implement and operate a developer rating scheme. The scheme would rate developers/operators of projects within the scope of this review. The scheme's design should be undertaken in consultation with the Commonwealth, state and territory governments, along with peak bodies for local governments, industry, First Nations peoples and representative community groups.

The scheme should provide transparent, periodic ratings of developer engagement performance and capability. It should also be designed in such a way to motivate ongoing continuous improvement by the developers.

To expedite its launch, it is suggested that the scheme operate on a voluntary scheme basis, where developers can opt in or out at any time. The scheme would be open to developers and operators throughout Australia.

Recommendation 2. The Commonwealth, States and Territories to continue their deployment of programs to better plan and control development of new generation and transmission projects, whereby a developer is required to bid or apply to be selected to then prospect and develop a particular project at a particular site or location.

The Commonwealth and the Australian Energy Infrastructure Commissioner (AEIC) to work with the jurisdictions to support the successful implementation of these programs, promote best practices across the jurisdictions and align federal programs and reforms, such as the Capacity Investment Scheme (CIS) and Rewiring the Nation (RTN), to further motivate adoption of these programs by developers and other project stakeholders.

Observations

In the HaveYourSay survey, the Review asked landholders and community members about their experience of engagement on renewable energy projects.



Image 2. Survey results indicate that landholders and community members were generally dissatisfied with the engagement that they received from project developers.

Poor engagement practices experienced by landholders and community members have led to a material distrust of project developers and, particularly, developers of new, long-distance transmission projects and prospective electricity generation projects along the proposed routes. There does not appear to be any formal scheme to rate or assess developers regarding their track record and capability in community engagement.

Further to the above, for many developers, the skills, experience and knowledge of engagement personnel and management are below community expectations, as are their supporting processes, collateral and the overall governance of the developer's engagement function. This ongoing situation limits the number of developers that are able to lead the energy transition and develop long-term, effective relationships with landholders, neighbours and the broader community. The community has been and remains quite vocal in their dissatisfaction with developer engagement to date through both traditional channels and extensive use of social media.

Land use planning frameworks, that clearly delineate areas that are ideal for energy infrastructure development, versus areas that are (or should be) prohibited, could be more transparent and may also need review and updating in some jurisdictions. Development of projects in or near potentially inappropriate or marginal locations typically take years to obtain final approvals, and many are either still in the pipeline seeking such approvals or have languished.

The potential for new transmission lines and associated corridors has unleashed a plethora of wind and solar farm developers, descending on the planned routes to attempt to sign up nearby landholders with exclusive contracts over their land.

As a result, there are far more potential renewable generation projects being pursued by developers than the proposed transmission lines may actually accommodate, which can unnecessarily create uncertainty, anxiety and consultation fatigue. These scenarios can also lead to vigorous opposition to the proposed transmission lines, based largely on perception of the amount of generation it may enable, rather than the actual facts.

Landholders and the community have expressed concerns about the complexity of determining the payment and compensation amount for hosting transmission assets. While a potential host for a wind or solar farm is usually presented with the potential revenues in the first meeting with a developer, a potential transmission host may have to wait years before an amount is determined and an offer is made. Even then, it can be quite difficult to understand what payments will be received by the transmission host and when.

The typical perception in regional Australia is that landholders can earn significantly more revenue from hosting a wind or solar farm, compared to hosting an equivalent amount of transmission assets.

Entrepreneurial generation project developers are signing up landholders that have contiguous land parcels along a proposed transmission corridor. This could result in the generation project developer holding, effectively, control of a very large length of land along the transmission corridor easement. It may then impact negotiations to secure the easement, particularly if the proposed transmission route impacts the proposed generation project.

Generation developers can also leverage this, in effect, market power to secure much better terms and outcomes for the generation project and the associated landholders.

The recently launched Queensland Renewable Energy Landholder Toolkit¹ provides over 120 questions that landholders should ask prospective developers before deciding to continue discussions with the developer. The Toolkit's list of questions to ask is an extremely valuable set of insightful questions and a terrific resource for landholders. However, it begs the question of whether some of this due diligence could be undertaken more centrally rather than place this burden on each and every landholder.

Many Review participants were concerned about the quality of community engagement undertaken by developers and were eager to see developer capability enhanced.

The Review heard from some participants about a lack of trust in project developers, including government-owned corporations.

'The proponents simply cannot be trusted to tell the truth.'2

Local councils observed that greater consistency in engagement practices by developers would improve community confidence.³

Many participants advocated for an approach that enabled developers to be held accountable if performance fell below the expected standard.

[']Proponents don't do the work because they are not required to do the work. There is no imperative or consequence to not doing it.^{'4}

Some participants advocated for the establishment of a code of conduct or minimum standards.

'We would like a national, enforceable code to ensure that transmission infrastructure has enforceable guidelines.'⁵

Other participants suggested an incentive-based approach.

[']Providing incentive-based arrangements may be more likely to motivate companies to go 'above and beyond.^{'6}

Some developers expressed frustration about the wider negative impact that poor quality community engagement has on the reputation of the industry.⁷ They were supportive of a scheme that would enable communities to identify capable and quality developers and build community confidence with developers who are effective in engagement and have a culture of integrity and professionalism.⁸

There was acknowledgement by Review participants that industry and government are already taking steps to address these issues. For example, there was encouraging support and acknowledgement for the recent inaugural Land Agent skill development program, sponsored and developed by TasNetworks and the Tasmanian Government in June 2023. The Energy Charter has now replicated the program, which was recently held in Melbourne and intended to be held around Australia going forward.

First Nations peoples that participated in the Review, including the First Nations Clean Energy and Emissions Reduction Advisory Committee, stated that there is a need for cultural change within the sector.⁹ They emphasised that developers should ensure that their employees and contractors have completed appropriate cultural awareness training prior to going on site.¹⁰ This is also reflected in the feedback received by the Review from the First Nations Clean Energy Strategy.¹¹

Also, First Nations peoples, including the First Nations Clean Energy and Emissions Reduction Advisory Committee, emphasised the need for early, constructive engagement to establish long-lasting relationships with project developers and operators, commencing at the prospecting stage, and throughout the life of new infrastructure.¹² They described feeling that their interests were dwarfed by those of the majority township during consultation and that developers did not place sufficient emphasis on the interests of First Nations people.¹³

The Review also heard from a wide range of participants, particularly community groups and landholders, about consultation fatigue. Fatigue can arise because of multiple developers investigating potential projects within the same area. It also can arise from very long project timelines due to the extensive amount of time it can take to conduct, complete and submit environmental and planning assessments for approval. Both of these scenarios may require ongoing involvement and engagement with the community – particularly if there is a change in project circumstances, such as a change in project scope or transmission line route or rating.

As stated earlier, a proposed development of new transmission infrastructure opens up new geography with the potential for new grid connections. Developers often compete to acquire exclusive land access to investigate projects in proximity to the proposed route. Landholders in most jurisdictions stated that they had been approached by multiple developers – all seeking to gain access to their land to investigate a potential project.¹⁴

The number of developers prospecting within a defined area can give the local community the perception that they will be inundated with large-scale wind, solar and storage projects. It can also place a significant burden on landholders and surrounding community members to engage with many more prospective projects than will actually be developed and built.¹⁵

Many participants expressed the desire to see greater controls over project development with a view to reducing the consultation burden from projects that are unlikely to progress.

'We expect that many approved projects will never see the light of day. Why put the community through that?'¹⁶

Implementation

Recommendation 1

Renewable energy generation and transmission developers, and the industry more broadly, could materially benefit from some form of independent rating scheme to provide transparency on developer performance, track record and capability, particularly in relation to community engagement. The rating and the rating process also could become a significant motivational tool for the developer's management to further improve the developer's performance and their rating score.

Developer ratings could be used by jurisdictions as a part of their selection criteria and/or as a prerequisite for granting authority to a developer to prospect or develop a particular site or project.

To be eligible for an acceptable rating score to achieve and maintain/improve their rating, a developer would be assessed against a published set of criteria. The assessment criteria would be developed in consultation with key stakeholders including governments, industry and community peak bodies.

Developers with a current and acceptable rating may have access to a wide range of federal and state programs.

For example, emerging programs such as the NSW Electricity Infrastructure Roadmap Tenders, the Victorian Transmission Investment Framework (VTIF), Queensland's Renewable Energy Zone (REZ) Management Plan, along with equivalent programs being developed in other jurisdictions, could include the requirement for bidders to hold an acceptable developer rating score, either as a criterion for selection or as a requirement for eligibility. Key considerations for designing and implementing Recommendation 1 include:

- A rating scheme for developers may be best managed and provided at a national level. Views expressed to the Review by industry and government representatives gave the impression that industry and governments are supportive of a transparent rating scheme, but would prefer a single, national scheme rather than having to manage and maintain multiple ratings schemes across all state and territory jurisdictions.
- There would need to be an upfront effort to enable developers to apply for an initial rating, and to be assessed in a timely manner.
- The scheme could be either mandatory or voluntary. There is merit for the rating scheme to be a voluntary scheme for developers to establish the scheme and gain a critical mass of participants.
- Scheme participants would include developers of new generation and storage projects, owner-operators of generation and storage projects along with developers and operators of new transmission projects.
- Consideration should also be given to including construction companies that can have a significant presence and role with community engagement, along with consultants and contracting firms that are heavily engaged with communities and landholders in their roles.
- To establish the scheme in a timely manner and build critical mass, it may be preferable that the Commonwealth provide initial funding to establish the scheme, then move to a user pays model on a cost recovery basis once the scheme is well established.

Recommendation 2

The Review observed strong support across the board for programs that have controls to select developers to prospect and develop specified projects in a specific area (such as within a REZ). This is very much the case when it comes to offshore wind farm development controls.

Most jurisdictions are considering or implementing programs that give appropriate controls to the jurisdiction to select developers for designated onshore projects and locations, rather than the open-access developer prospecting model that has been in place for the last two or more decades.

For example, the recently passed *Hydrogen and Renewable Energy Act* 2023 in South Australia would introduce a competitive tender process for feasibility licenses. The licenses are to be issued over pastoral (or other government-owned) land that has been declared after a consultive process involving government agencies, native title holders and other impacted stakeholders.

For privately owned land, developers would need to negotiate a commercial agreement with landholders to secure the land. Landholders could well benefit from limiting their discussions to only developers that have an acceptable rating score.

The overall development process would include the following licenses:

- Renewable energy feasibility licence/permit Enables exploration for renewable energy, including construction of monitoring equipment.
- **Renewable energy infrastructure licence** Permits construction, operation, decommissioning and rehabilitation of renewable energy infrastructure.
- **Renewable energy research licence** Permits construction, operation, decommissioning and rehabilitation of renewable energy infrastructure for the purpose of researching the capabilities of a technology, system or process.

As discussed in the first recommendation, jurisdictions ideally should be able to select developers for projects that can clearly demonstrate their capabilities and approach to community engagement, as well as other essential criteria. These capabilities would include demonstrating the effectiveness of the developer's management systems, governance, skills and training of engagement staff, and the ability of senior management and the board to obtain feedback from key stakeholders in the community. It would also include demonstrating their ability to act on material feedback and resolve issues as and when required.

Jurisdictions should also consider in their selection criteria a weighting towards developers that have an appropriate organisational culture that supports the ability to work effectively with communities and landholders. It is essential that developers demonstrate their capability for best practice engagement with First Nations peoples.

Additionally, developers should demonstrate an ability to work with diverse local communities. About half (49%) of the landholder and community members that completed the Review's online survey considered that information they had received about a project or projects in their area was not culturally appropriate.

The Commonwealth has numerous ways of supporting jurisdictions in implementing programs that allow them to select developers for appropriate projects at an appropriate location. For example, the Commonwealth could align programs such as the CIS, RTN, Clean Energy Finance Corporation (CEFC) project financing, and power purchase agreements (PPAs) with Federal entities, along with other mechanisms – potentially providing a suite of additional benefits and opportunities to the developer by participating in the program.

Again, the selection criteria for these programs could include a consideration or requirement that the developer holds and maintains an appropriate community engagement rating score (see Recommendation One).

The Commonwealth can also provide best practice advice and support to jurisdictions through the AEIC and other relevant market bodies and agencies.

Key considerations for implementing Recommendation 2 include:

- The Review was delighted to observe that most, if not all, jurisdictions have commenced, launched or started developing programs that align site selection, project selection and the selection of a quality developer. Done properly and well, these programs will pave the way for a quality portfolio of projects with effective engagement by those projects across Australia.
- The AEIC should meet with each state and territory to further understand the status of programs discussed in this recommendation.
- From these discussions, the AEIC may assist jurisdictions with advice and guidance including program design and ensuring the program will motivate developers to consistently deliver effective community engagement.
- DCCEEW, working with the AEIC, AEMO, CEFC and other federal agencies, can develop a list of programs and benefits that could be made available to projects or developers that have been selected by a jurisdictional program and, preferably, hold an appropriate community engagement rating (see Recommendation One).
- Progress reporting on these important programs could occur at ECMC.

Case study: Hydrogen and Renewable Energy Act 2023 (SA)

The South Australian Government has enacted the *Hydrogen and Renewable Energy Act 2023* (HRE Act). Pursuant to this legislation, the SA Government, after consultation with stakeholders, will identify government and privately owned land and state waters likely to be appropriate for hosting renewable energy projects.

The HRE Act will facilitate a straightforward, competitive, government-led approach to renewable energy development in the state. The HRE Act applies to both freehold and government-owned land, as well as state waters It should ensure community and investor certainty and clarity, along with consistently reliable performance across the social, environmental and safety aspects of the industry.

On freehold land, proponents will need to secure access to land through direct agreement with landowners, preserving current arrangements. A new competitive system will be introduced to confer access and licences for projects on pastoral land and state waters, enabling the government to responsibly assign access to some of the state's prospective areas for renewable energy development.

The declaration of these release areas will only occur after a consultative process involving government agencies, native title holders, and other impacted stakeholders. The declaration will enable a competitive tender process for feasibility licences over that land and waters, with applicants to compete based on transparent selection criteria.

This will ensure the state only hosts those projects wiling to embrace coexistence with current land uses and deliver community and environmental benefits through their projects.

Source: Department of Energy and Mining, South Australia 2023

Case study: NSW Electricity Infrastructure Roadmap Tenders

Managed by AEMO Services, eligible renewable generation projects located across NSW, which will be connecting to existing transmission and distribution infrastructure, may bid via a tender process to be selected to develop the project.

Projects seeking to connect to new network infrastructure in declared REZs, which require both a long-term energy service agreement (LTESA) and an access right, must bid for both products simultaneously in a single competitive tender round.

The merit criteria used to assess the quality of projects seeking an LTESA, an access right, or both products simultaneously are substantially the same.

The roadmap emphasises regional development and positive outcomes for local communities.

Consequently, the merit criteria consider a range of aspects, including community engagement, shared benefits, First Nations peoples participation, benefit sharing and broader regional economic development growth. These merit criteria are a significant component used to identify suitable projects to be shortlisted.

These important non-price matters are assessed first – before a shortlist of proposals is progressed to the financial value bid stage.

More information can be found at:

https://aemoservices.com.au/tenders/tender-round-4-generationinfrastructure

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Theme 2 – Selecting the best sites

Recommendations

The Review makes the following recommendation to improve community engagement through land use planning, optimal site selection and better transparency.

Recommendation 3. States and territories to support and expedite sourcing information that is necessary for contemporary land use planning. Mapping of this information will assist with better identification of highly preferred locations for new projects, as well as provide confirmation regarding 'no-go' or inappropriate zones. Planning authorities, developers and other stakeholders should carefully review this information and associated maps before commencing any prospecting or development activity at a site.

Information could be sourced from a diverse range of sources, including local and state governments, national parks, world heritage parks, First Nations peoples, peak agricultural associations and peak environment associations.

Observations

Relevant observations from the Review in support of these recommendations are discussed below.

- A poor site (or route) selection can quickly lead to community opposition to a project, causing delays and elongated project timelines. Throughout this period, communities may be in constant engagement with the project, from dealing with requests for land access surveys through to project update presentations. The time commitment alone to participate in engagement-related activities can be an enormous burden on community members and landholders. That, together with the anxiety surrounding the uncertainty of whether or not the project will proceed or when it will proceed, make for a poor engagement experience.
- There is a need for an integrated development plan for renewable energy generation and transmission infrastructure combined. Participants expressed interest in more transparent frameworks to identify the areas that are ideal for infrastructure development and those that should be avoided. Early identification of sites appropriate for development will

support developers to avoid marginal locations that may be subject to significant delays in the planning process.

- Review participants advocated for nationally consistent land use mapping to identify and address competing land use issues.¹⁷ Local councils sought visibility on how renewable infrastructure interacts with other overlays such as housing and national parks.¹⁸ Agricultural groups perceived the current development plan as sporadic and expressed concerns about the unintended consequences on food and fibre production.¹⁹ Some agricultural groups emphasised that there are a wide range of industries within the sector with varied land use needs and potential impacts.²⁰
- The First Nations Clean Energy and Emissions Reduction Advisory Committee advocated for greater resourcing being applied to land use planning to better identify areas that are not appropriate for development due to cultural heritage.²¹ They sought collaborative, transparent topdown planning processes and emphasised that government and developers should demonstrate a willingness to take on their views during specific project planning and approval process.²²
- The First Nations Clean Energy and Emissions Reduction Advisory Committee also emphasised the unique connection that First Nations people have to land, and they advocated for greater appreciation of the tangible and intangible impacts of development.²³ They expressed disappointment that their land rights are often perceived as a threat to a project rather than an opportunity.²⁴

Commonwealth, state and territory governments are taking steps to further develop their existing land use mapping programs and content. As an example, the Queensland Government is working with the Commonwealth's Regional Planning Initiative to develop three pilot bioregional plans so to better protect areas that matter for the environment and allow for faster development decisions through the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC).

Queensland Government have a well-established function to map land uses for the benefit of government, the private sector, research agencies and community groups.

Implementation

As this recommendation relates to work already underway in the jurisdictions, to progress this recommendation, the Review suggests the following next steps:

- The AEIC should meet with each jurisdiction, including the Commonwealth, to further understand the scope and status of programs in place (or being developed) consistent with this recommendation. Examples of current programs include Queensland's integrated planning and mapping service, the VTIF and the Commonwealth's Regional Planning Initiative (RPI).
- From these discussions, the AEIC may suggest approaches the Commonwealth and jurisdictions could take to build on the work already underway that would lead to fulfilling this recommendation. The AEIC could also share and advocate for best practice processes across the jurisdictions.
- One approach could be for the Commonwealth to establish a working group with representatives from each jurisdiction to take leadership of this recommendation and help ensure consistency in process and outcomes across the jurisdictions where appropriate.
- AEMO is well positioned to provide information that would lead to producing and updating an integrated generation and transmission plan. In addition to the current Integrated System Plan (ISP), this map and supporting information would include guidance on new transmission line capacity limitations, as well as preferred generation locations along the transmission lines (type and scale) – from a system operator's perspective. State and territory governments could provide this mapped information via a jurisdiction-based portal, contextualised for the jurisdiction, that includes other jurisdictionspecific information.
- Local governments should be consulted in the development and deployment of land use planning and mapping information programs and are likely to be an essential source of local on-the-ground knowledge.
- Transmission developers also have a key role in publishing up-todate online interactive maps. These maps should clearly display proposed transmission easements and the location of properties, houses, sheds, paddock boundaries, existing wind farm turbines, solar arrays, schools, airstrips – through to potentially sacred indigenous areas. Maps should also identify potential no-go areas that had not been previously picked up via the jurisdictional assessment process.

- The Commonwealth can support the jurisdictions in this essential activity by integrating any federal overlays with the relevant jurisdiction and, where practical, facilitating best practices and consistency in information and definitions. Further, the Commonwealth has established the RPI as part of the broader EPBC Act reform, providing an established vehicle to progress these matters.
- Project maps should be easily accessible and available online at no cost to users.
- Functionality should include the ability to look up a property address and view its proximity to a proposed project, be it a proposed wind turbine or solar array locations, or a proposed transmission line corridor.
- Maps could include interactive capability where appropriate, allowing a user to highlight an area of interest or concern and provide further details if necessary.

Case study: Regional Planning Initiative

The RPI is one component of the Australian Government's response to the review of the EPBC Act and is included as an action under the *Nature Positive Plan.* The RPI will develop landscape-scale and/or seascape-scale regional plans with discrete regulatory zones that prioritise restoring and conserving environment and heritage values and facilitate priority development in places with lower environment and heritage values.

Priority areas for consideration under the RPI will be locations experiencing development pressure, including those with high biodiversity values, with a focus on urban growth, renewable energy, and critical minerals.

Case study: Victorian Transmission Investment Framework

The Victorian Government has proposed to address competing land use issues through the VTIF, as detailed in the VTIF final design paper. The VTIF includes a Strategic Land Use Assessment (SLUA) that would identify the lowest impact, most acceptable areas within REZs – where transmission could be sited – and a Multi-Criteria Analysis (MCA). The MCA would determine how investment could be allocated across Victoria's REZs in a way that balances environmental, heritage and social values with the need to deliver affordable, clean and reliable electricity.

The SLUA includes two processes:

- a technical, geo-spatial mapping process, to quantitively assess siting options and multiple land use factors using a range of data layers.
- a social engagement process, to ensure that community and stakeholder values and feedback help to shape outcomes.

Importantly, engagement with the community would occur much earlier than it does in the current transmission planning process.

Victoria has derogated from the National Electricity Law to implement initiatives such as SLUA and MCA within recent transmission planning decisions associated with Victorian to New South Wales Interconnector West and the Western Renewables Link.

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Theme 3 – Reform environmental and planning approvals

Recommendations

The Review makes the following recommendation to improve community engagement through more effective, time-efficient processes for environmental planning and approvals.

Recommendation 4. To progress, complete and expedite the deployment of process reforms currently being contemplated by the jurisdictions, which will materially improve processes and help reduce the time needed to obtain planning and environmental approvals for projects.

This recommendation would integrate current work being undertaken by the Commonwealth on reforms to the EPBC Act regarding assessment and approvals processes.

Observations

The opportunity exists to materially improve project planning and environmental approval processes, particularly those that need to be expedited for significant, priority projects. Such processes should be designed to fairly include the community's perspective and input.

As per Recommendation 3, potential no-go zones and preferred zones for development are to be identified by jurisdictional planning authorities in consultation with environment authorities, local government, First Nations peoples, agriculture and farming associations, and experts – including peak bodies such the National Farmers Federation, Victorian Farmers Federation, NSW Farmers Association, Tasmanian Farmers and Graziers Association and Queensland Farmers Federation.

Identifying the appropriateness, or otherwise, of a proposed site will help eliminate projects being developed that are unlikely to gain approval – removing a substantial burden on the community, local government and the relevant planning authorities.

Participants expressed frustration with the time taken for a project to progress through the planning process.²⁵ The Review heard from both host landholders and project opponents who conveyed that uncertainty about whether a project would proceed – and/or when it would proceed – was

having a negative impact on their mental health.²⁶ Additionally, participants expressed frustration with the short timeframes available for them to engage in the actual approval process when compared with lengthy periods they were required to wait for proponent responses.²⁷

The following image sets out the high-level general planning and approvals process steps for renewable energy and high-voltage transmission infrastructure projects. This illustrates the numerous stages of development and consultation, which occur prior to project approval. The entire process can extend over several years.



- ¹ For renewable energy projects, the initial agreement is usually a licence agreement for land access with an option to lease the land for the life of the project. For transmission infrastructure projects, the initial agreement is usually limited to land access for the planning phase of the project.
- ² This phase includes land access to complete field surveys including cultural heritage surveys, environmental surveys and feasibility studies.
- ³ For renewable energy projects, this phase usually involves the exercise of the option to lease the land included in the initial agreement. For transmission infrastructure projects, this phases usually involves a separate agreement for easement acquisition.

Image 3. Landholders and community members expressed concern about the complexity and duration of their engagement in the planning process. They emphasised the time they invest to participate and the impact of prolonged uncertainty about the outcome of the process on their mental health.

Case study: Community concern and project delays from poor site selection

The Review heard from community members concerned about a proposed wind farm at a nearby ridge location. The project was initially prospected by an early-stage developer, subsequently selling the project to a large multi-national development and operations company.

The proposed project has now been in the planning and approvals process for several years, which has created ongoing uncertainty for the local community – including potential host landholders. Due to its ridge-top location, the community has expressed concerns about the inability to use existing roads and/or build a new road to transport equipment to the site. Concerns have also been raised about potential soil erosion, possible changes to hydrology flows and the transmission line connection to the main grid.

The project has faced significant community opposition during the planning process. Due to the substantial number of objections received, the project has now been referred to the state's Independent Planning Commission for consideration.

Implementation

The integration and use of strategic mapping in the site selection process will provide jurisdictions with the opportunity to clearly identify no-go zones, along with 'go' or 'more information required' zones. This should help jurisdictions considerably when justifying the most appropriate areas for development of large-scale renewable energy assets and new transmission infrastructure. Equally, it should clearly identify areas to avoid, such as areas of high agricultural, environmental and cultural values.

To initiate the actions and activities to give effect to this recommendation, AEIC should meet with the jurisdictions and relevant local governments to further understand the scope and status of process reform programs currently in place or under development. Consideration should be given to:

- opportunities to leverage the process reform work already underway across jurisdictions, including the Australian Government's RPI, various state and local government initiatives, and the reform of the EPBC Act currently in progress
- the evolution of contemporary mapping technology and how to utilise it to derive further process and timeline improvements to the planning and environmental approvals process
- an ongoing consultation program with key stakeholders, including environment, strategic, agriculture peak bodies and First Nations peoples with the view to examine ways to further reform, while maintaining appropriate levels of engagement with key stakeholders
- holding focus groups to gain detailed perspectives and insights on the current processes from various stakeholders, in particular from local government, community, landholders and First Nations peoples.

Similar to Recommendation 3, the Commonwealth to establish a working group, with representatives from each jurisdiction, to take leadership of this recommendation and help ensure consistency in process and outcomes across the jurisdictions where appropriate.
Theme 4 – Complaint management

Recommendations

The Review makes the following recommendation to improve community engagement through implementing effective external dispute resolution schemes.

Recommendation 5. State and, where applicable, territory governments to establish and implement a new ombudsman function focussed on handling complaints about the prospecting, development, construction, operation and decommissioning of renewable energy generation, large-scale storage and new transmission infrastructure.

The Commonwealth and the AEIC to provide advice and guidance, if requested, to support the jurisdictions in the design and implementation of this recommendation, as well as to provide a point of national coordination for systemic issues, best practice and cross-border matters.

Observations

Landholders and community members who responded to the Review's survey were generally dissatisfied with the way that developers handled complaints, including the timeliness of complaint handling, the information provided and the resolution of complaints.



Image 4. Survey results indicate that landholders and community members were generally dissatisfied with developer responses to their complaints.

The Review observed that, in addition to making a complaint directly to the project developer, many landholders and community members forwarded or re-stated their complaint to other forums.

These forums included state-based Energy and Water Ombudsmen, the AEIC, state and federal ministers, members of parliaments, local government and, in some instances, tribunals and courts. Some complainants also engaged lawyers to represent them in relation to their complaint.

Local governments advised that they are often the first point of contact for community members with questions, concerns and complaints about renewable energy projects.²⁸

However, local governments are not well equipped to handle complaints about these matters as they generally have limited visibility of the planning and approvals process, or resources to handle complaints. Local governments are also often left with the responsibility for compliance and handling compliance complaints. It would be fair to say that most local governments are not well resourced to fulfil this important role, and this was a systemic issue raised by the shires and councils that participated in the Review.

Local governments generally have no powers to settle a complaint that involves damages.

As a result of these various constraints, local governments may have little choice but to refer the complaint to the developer or to either an external dispute resolution forum or to the responsible planning authority.²⁹

The AEIC receives complaints from community members about large-scale wind, solar and energy storage facilities, as well as new transmission projects. Typically, the AEIC assists the complainant to confirm which organisation is the appropriate respondent to the complaint. The AEIC then collects the critical information required about the complaint from the complainant and refers the matter to the respondent (usually the developer). Importantly, the AEIC seeks and captures from the complainant what practical outcome the complainant is seeking to resolve the complaint. Respondents are required to advise the AEIC how they intend to handle the complaint and the AEIC may provide guidance to the respondent regarding their intended approach. If the complaint is not resolved through this process, the AEIC may escalate the complaint within the respondent's organisation, conciliate the matter or refer the matter to an external dispute resolution forum. The AEIC's complaint handling procedure and policy can be found at <u>www.aeic.gov.au</u>.

In some jurisdictions, Energy and Water Ombudsmen currently handle complaints related to the development of new transmission infrastructure. These complaints are usually related to land access disputes. However, the primary jurisdiction of these ombudsmen is energy and water retail and distribution related complaints, such as billing or tariff disputes, disconnections, reconnections and network outages. The inclusion of highvoltage transmission project complaints in current charters is usually limited to land access related matters. Complaints about renewable energy generation projects and large-scale storage projects are not currently within the scope of these ombudsmen.

Implementation

The primary options to consider for the proposed new ombudsman scope would include:

- expanding the jurisdiction of existing Energy and Water Ombudsmen to include community complaints about renewable energy generation, large-scale storage and new transmission projects
- establishing a new, dedicated ombudsman in each jurisdiction to handle the new scope
- expanding the State Ombudsman jurisdiction to handle the new scope
- expanding the role of the Commonwealth Ombudsman to handle some or all of the new scope on a national basis
- expanding a related industry ombudsman or commissioner to handle some or all of the new scope at a state or territory level, such as the GasFields Commission established by the Queensland Government.

Implementation of this recommendation would be consistent with the recent recommendation of the New South Wales Legislative Council Standing Committee on State Development. 'That the NSW Government consider the creation of an independent ombudsman to oversee consultation upon, and rollout of, renewable energy projects and transmission infrastructure in New South Wales and to receive and handle complaints about these processes.'³⁰

Implementation by expanding the role of existing ombudsman where possible, would be consistent with the recommendation of the Productivity Commission, being:

⁶Consideration should be given to subsuming new roles within existing ombudsmen rather than creating new bodies.³¹

In considering how best to implement this recommendation, the Review suggests that the jurisdiction of the external dispute resolution body should include:

- renewable energy generation, large-scale storage facilities (including pumped hydro energy storage) and new, high-voltage transmission projects throughout the life cycle of these projects, including planning and development, construction, operation, decommissioning and rehabilitation
- handling complaints from community members, host landholders and neighbours throughout the project lifecycle
- matters arising from private agreements, such as access agreements (transmission), licence agreements (generation/storage), hosting agreements (generation/storage) and option for easement agreements (transmission). The ombudsman's role would be primarily related to being a mediator or conciliator for disputes that arise from the agreement
- matters related to opposed entry (land access), compulsory easement or land acquisition, property damage and payment disputes
- sufficient powers to settle complaints up to a practical and reasonable financial threshold.

In addition, the Review suggests that:

- All developers should be required to become members of the relevant ombudsman scheme in the states they operate in.
- The developer should bear the cost of the services provided when a complaint is made.
- Consistent with Recommendation One, developers must have easily accessible complaint handling processes that conform to the Australian Standard.
- The ombudsman could entertain reducing fees to those developers that hold an acceptable developer engagement rating (see Recommendation One).
- The ombudsman should maintain a record of complaint data and provide public annual reports on complaint data and resolutions.
- The ombudsman should have the ability to track and compile information on systemic issues, and work with the AEIC and other ombudsmen to identify proactive solutions to the issue.

It will be essential for these schemes to appoint appropriate personnel with the necessary domain knowledge, skills and experience into key roles. They should have the ability to conduct site visits and work proactively with key stakeholder groups such as emergency services, local governments, agricultural associations, First Nations peoples, community groups, members of parliaments, industry and government.

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Theme 5 – Messaging and governance

Recommendations

The Review makes the following recommendations to improve engagementrelated transition communications programs and whole-of-government involvement in management of the energy transition and governance of the nationally significant transition projects.

Recommendation 6. The Minister to initiate a process for the development and execution of a communications program that provides local communities with a clear narrative about the pragmatic reasons for the energy transition.

The narrative should include articulating why there is an urgent need for new renewable energy and transmission infrastructure in their locality. It should also provide details of the likely proposed developments, such as location, type and scale of generation and storage projects, as well as proposed transmission routes and voltage rating (e.g. such as a 500kV transmission line).

The design of the communications program should include engagement with local community groups, local governments, local members of parliaments, First Nations peoples and other local stakeholders, where renewable energy infrastructure is being deployed.

Recommendation 7. The Commonwealth to work with state and territory governments to review and/or implement appropriate oversight governance arrangements that should be in place for transition projects of national significance.

The Commonwealth to work with state and territory governments to ensure appropriate governance and leadership arrangements exist, nationally and in each jurisdiction, to provide a cross-discipline, whole-ofgovernment approach to deliver the infrastructure and resources required to support the energy transition.

Observations

The Review heard from participants about the need for a national overarching narrative about the energy transition.

'There is not currently an overarching national narrative that gives households and communities the ability to see themselves as part of the energy transformation and to understand the critical need for transmission for energy security and climate action.'³²

One participant compared this to information campaigns that have previously been developed for efficient water use, cancer awareness and drink driving.³³

Various participants told the Review about the need for trusted sources of information for communities.

[']There have been ad-hoc attempts to fill the information gap with industry factsheets, state inquiries, and more. However, as of yet, not enough has been done to ensure communities have a trusted, reliable source of clear information about the transition to renewables.' ³⁴

Participants also emphasised that communication should occur in both directions. Government should ensure communities are actively engaged in shaping and benefiting from the energy transition.

'Communities need support in the form of education and information so that they can actively participate in shaping and benefitting from the energy transformation happening in their region.'³⁵

The Review heard from some state governments that they are aware of the need for a government-led narrative about the energy transition and are working to establish a coordinating body and 'one-stop shop' for information about energy infrastructure.³⁶

Local government said that they would like better education on the energy transition to better inform their communities and other levels of government with insight into local industry and economic development opportunities.³⁷

The Review heard from advocacy groups that better resourcing of local government and community organisations would improve community engagement and empower communities to make the most of the opportunities that may arise from the transition.³⁸

The First Nations Clean Energy and Emissions Reduction Advisory Committee spoke about the importance of free, prior and informed consent throughout the energy transition.³⁹ They emphasised the need for First Nations people to have an equal stake in development negotiations through land rights that provide them with more control over the projects that occur on their land.⁴⁰

The Review heard from landholders and community members that there is a lack of clarity about the plan for the transition. Landholders felt persecuted by community opposition to projects and 'hung out to dry' by government.⁴¹ They told the Review that they would have benefitted from government engaging with the local community about the project and the energy transition.⁴²

Participants were especially concerned about the cumulative impacts for regions that would host large numbers of projects.

Implementation

Recommendation 6

The Review suggests that consideration be given to the following:

- Messaging is required in addition to the current narrative about international, national and state targets related to the penetration of renewable energy and also levels of emissions.
- The narrative should include information about why there is an urgent need for new renewable energy and transmission infrastructure in their locality. The information should also provide details of the likely proposed developments, such as the location for the project, the type (e.g. wind, solar, transmission etc.), the scale of generation and storage projects, and proposed corridors for transmission routes and voltage rating (e.g. 500kV transmission line).
- The information should also include messaging about the practical and pragmatic reasons for the energy transition, the limited time available to achieve these significant changes, and the benefits of the energy transition from a regional community perspective.
- Community members including landholders, farmers, residents and First Nations peoples – as well as local governments, local members of parliaments, and local facilities (emergency services, schools, sporting facilities etc.) would likely benefit from being informed on these topics, with up-to-date information about what is planned for their locality.
- Such information will likely ease local anxieties, often driven by misinformation, and allow community members to have confidence that the plan is manageable and the end result will make a material contribution to the transition outcome.
- There should be communications targeted at the local area (e.g. REZ), as well as communications at state, territory and national levels.

- The mediums of communication could include:
 - local, regional and state media (print, radio, television)
 - advertising (as above)
 - information centres strategically located in appropriate localities
 - webinars
 - briefings to local community groups, local councils, local business community and chamber of commerce, local chapters of the farming and agriculture associations, schools, First Nations peoples and local emergency responders.
- Much of the local energy transition plan information could be provided and sourced from the relevant state body (such as VicGrid in Victoria, Powerlink in Queensland etc). AEMO may be able to assist the state bodies by providing a further breakdown of the ISP to the state, and REZ level including details of the type, location and scale of expected/required generation and storage assets – together with details of existing generation and grid assets.
- The Review also suggests consideration of appointing an eminent, respected and independent spokesperson to engage the nation and be the ongoing champion of the energy transition – a role not dissimilar to the one fulfilled by Sir John Monash as the leader, spokesperson and champion of Victoria's massive energy transition in the 1920s.
- States may also consider the value and impact in establishing a similar role to the above at the State level.

Recommendation 7

Project oversight governance

A state government executive should be appointed to establish and lead an oversight advisory committee (or equivalent) to help oversee and provide advice to the major, nationally significant transmission projects being implemented in the state (or across multiple jurisdictions).

- An example is the Joint Oversight Committee for the Western Renewables Link (WRL) and VNI-West transmission projects in Victoria. This joint advisory committee comprises the Secretary of the Victorian Department of Energy, Environment and Climate Action (Chair), the CEO of VicGrid, the AEIC, the executive general manager of networks at AEMO and the executive project managers for WRL (AusNet) and VNI-West (Transmission Company Victoria).
- Other examples include the Rewiring the Nation Advisory Committee and Marinus Link Ownership Group.

Whole-of-government governance

Appropriate governance arrangements should be established in each jurisdiction that provide a cross-discipline, whole-of-government approach to preparing for and executing the energy transition.

The structure may vary by jurisdiction, but it should encompass the ability to oversee essential issues to solve, including source/port to project transportation, contractor accommodation, human resources and skill development.

Jurisdictions should consider appointing a senior executive (e.g. at the Secretary or Deputy Secretary level) to lead and oversee the whole-ofgovernment plan to enable and facilitate the transition. This should ideally be via an appropriate committee or taskforce with members who can execute on their part of the plan.

Some state governments have commenced various arrangements to tackle this significant component of the transition. For example, in NSW EnergyCo and NSW Transport have entered into a memorandum of understanding related to addressing the significant road infrastructure challenges in some REZ areas, in particular, Central-West Orana. Queensland has put in place the institutional architecture and governance to support a coordinated energy transformation. An energy transformation interdepartmental committee has also been established with senior representation at the Director-General level to oversee the implementation of the Queensland Energy and Jobs Plan, and to address emerging issues related to the energy transformation. Sub-committees have also been established to address matters at an operational level and share information across agencies.

The Queensland Government has also established new advisory bodies under the *Energy (Renewable Transformation and Jobs) Bill 2023.* They are:

- the Queensland Energy System Advisory Board
- the Energy Industry Council
- the Queensland Renewable Energy Jobs Advocate.

Establishing a coordinated, cross-jurisdictional approach to oversee and communicate on key issues surrounding the energy transition will support communities to better understand and engage with overall transition occurring in their locality.

Participants identified a range of potential impacts to local communities due to the energy transition, that will need careful management – while also presenting local business and employment opportunities.

Potential impacts/opportunities include:

- Roads and bridges the predicted high volume of oversize, overmass (OSOM) vehicles necessitates either road widening or additional overtaking lanes (such as pullouts). There will also be a need for bridge repairs and maintenance, along with road service upgrades and repairs and sealing of gravel roads.⁴³
- Maintenance of capital assets local governments expressed concern about the ongoing cost of maintaining upgraded infrastructure into the future, stating that the standard Local Planning Authority payment of 1.5% of project capital spend to fund road enhancement and restoration works would not be adequate funding.⁴⁴
- **Transport volumes** during the Review's roundtable with Muswellbrook Shire (NSW), the Shire indicated that it had forecasted that there would be an average of 10 OSOM truck loads every evening for the next 10 years on the Golden Highway to Dubbo.⁴⁵
- Housing the large influx of contractor staff on renewable energy and transmission projects can quickly deplete accommodation for low socio-economic tenants. The influx is also likely to result in substantial increases to housing prices and property rents, which often leads to lower income households being priced out of the market.⁴⁶
- Water resource depletion development projects often require substantial amounts of water and ready access to water supplies. This can pose a significant challenge for local water authorities, especially in regions where the climate (and/or current storage levels) requires strict conservative water management.⁴⁷
- Waste development projects produce large amounts of waste, typically packaging waste during construction. Collection and disposal of project construction waste needs to be well handled on site and may have impacts due to the sheer volume of waste. This will likely place enormous pressure on waste management services provided by local governments.⁴⁸
- Skilled resources development projects, particularly during construction, will drive up demand for skilled resources. Many regional areas do not have large local businesses with the capacity to take on this type of work.⁴⁹ Without a secure pipeline of opportunities, local businesses may not have the ability to take the forward risks to grow and meet the energy transition demand.⁵⁰ Short-term demand also puts pressure on other local industries competing for the same workforce and on long-term local customers who are unable to obtain service.⁵¹

Participants were especially concerned about the cumulative impacts on regions that would host a portfolio of projects, including non-energy related projects.

Case study: Managing overlapping infrastructure projects

A wind farm developer had started construction activities, including shipping turbine components from overseas and positioning special equipment at the site to assemble the turbines. As part of the development approval, a transport management plan had been developed with an approved route to deliver the turbine components from the port to the project site located inland.

However, when scheduling the traffic movements to transport the turbine blades, the developer had not identified that a major highway upgrade project was also taking place along a large section of the approved route, and that night-time roadworks along the highway would not allow the planned traffic movements to go ahead. As a result, delivery of the turbine blades was delayed for months as more than 350 turbine blades were stranded at the busy port while negotiations took place between the wind farm developer and the road operator to facilitate the traffic movements.

While the turbines blades were eventually transported to the project site, the delay resulted in a bottleneck in construction activities, which ultimately impeded the completion of the project by almost a year.

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Theme 6 – Coordinated economic development and community benefits

Recommendations

The Review makes the following recommendations to improve community engagement through better coordination of opportunities for local benefits and economic development.

Recommendation 8. The Commonwealth to work with jurisdictions to ensure appropriate arrangements exist at state, territory and national levels to provide a cross-discipline, whole-of-government approach to identify, cultivate and generate tangible economic and investment attraction opportunities for regional businesses, including First Nations peoples and their enterprises.

Recommendation 9. States, territories and local governments to encourage local community groups to proactively identify opportunities for the broader community's benefit, as well as to take ownership of sound opportunities to secure support and funding.

When selecting a developer as part of a state-run bidding contest, weighting could be given to developers that have already established relationships with local government and/or community groups, and that have included details and their commitment to an agreed benefit-sharing program if successful in their bid.

Observations

Landholders and community members who responded to the Review's survey generally did not believe that local communities would benefit from large-scale renewable energy and transmission projects.

In the HaveYourSay survey, the Review asked community members whether they believed the local community would benefit from large-scale renewable energy projects.



Image 5. Survey results indicated that most landholder and community participants did not believe that local communities would benefit from renewable energy projects.

The Review heard from many participants who were eager for the energy transition to leave a positive, lasting legacy for regional communities. However, participants were concerned that without a holistic plan, communities would be left worse off after the development activity concluded.⁵² One participant told the Review:

'When going into consultation we should not be asking how to get social acceptance right, we should be asking how to get regional development right.'⁵³

The First Nations Clean Energy and Emissions Reduction Advisory Committee expressed concern about energy poverty and regional and remote community reliance on underfunded, inadequate local energy systems.⁵⁴ This is also reflected in the feedback received as part of the First Nations Clean Energy Strategy.⁵⁵

Other regional communities also expressed concern about energy security and described managing unplanned power outages as a challenge for local emergency services, business and community members.⁵⁶ There is a real desire, need and opportunity for the energy transition to deliver lasting benefits to First Nations peoples and regional and rural Australians through improved access to reliable and affordable electricity.

> 'Benefit sharing is a term used to describe different approaches and mechanisms that aim to distribute the financial and other benefits of a project between the applicant and the impacted community through mutually agreed opportunities.

In the context of large-scale renewable energy projects, arrangements with landholders, councils and local communities provide opportunities for community members to directly share in the benefits from the location of the project and for the applicant to enhance social licence for its project.⁵⁷

While many developers establish benefit-sharing programs as part of their community engagement activities, the Review observed that there is a much greater set of opportunities for communities and local businesses as a consequence of the energy transition and what is required across the board to make it all happen.

Some participants were concerned that the benefits currently available to communities were not sufficient:

'Community benefits are inconsequential considering the size and value of the projects.'⁵⁸

The Review heard from participants who were eager to see a range of wider benefits realised in their region, including:

- improved regional and local infrastructure carefully understanding what improvements and changes are required to infrastructure ahead of the need for the energy transition
- improved regional and local electricity networks leveraging the investment and presence of electricity transmission and distribution businesses in the region because of the energy transition
- new business and economic development opportunities including professional services, skilled contractor services, expanded TAFE and other vocational education offerings and facilities, a range of services provided by First Nations enterprises, and manufacturing and assembly opportunities
- expanded accommodation and housing including opportunities to build new, integrated housing for project contractors that is then re-purposed as long-term housing for eligible occupants, including First Nations peoples.
- environmental benefits including opportunities to preserve and even expand areas such as parklands and national parks (as recently evidenced at the Goyder South wind farm project in South Australia), and opportunities to further protect flora and fauna
- new agricultural innovation opportunities such as co-location of new energy infrastructure with primary production areas to support new, innovative agricultural production (for example, the Sundrop Farms operation in Port Augusta, South Australia).

Opportunities for First Nations peoples

First Nations participants, including the First Nations Clean Energy and Emissions Reduction Advisory Committee, emphasised the importance of the transition providing opportunities to train and employ First Nations people, especially giving opportunities to young people through initiatives such as scholarships and mentoring programs.⁵⁹ Participants were also enthusiastic about opportunities to access the economic opportunities provided by the transition by exploring partnerships with industry where First Nations peoples may host infrastructure on their land.⁶⁰

There are many opportunities for industry and government to partner with First Nations peoples in the delivery of the energy transition, including:

- early engagement of First Nations peoples representatives to advise on site selection and/or narrowing of transmission route options, while providing First Nations peoples with access to land that may otherwise be inaccessible to them
- partnering with First Nations peoples to develop projects on land over which they have land rights
- employment opportunities for First Nations peoples who can facilitate better industry engagement through delivery of cultural awareness training for developers, consultants and contractors, and development and delivery of reconciliation action plans
- employment opportunities for First Nations peoples who can provide expertise for cultural heritage assessments, cultural values assessments, cultural heritage management plans, contract services (e.g. easement clearance and maintenance), advice on Native Title and other land rights, and engaging Aboriginal Liaison Officers
- employment opportunities for First Nations peoples with expertise in engineering, commercial management and project management as well as apprenticeship and training opportunities across a range of trades – particularly electrical trades
- partnering with government and industry to identify and develop solutions to the impacts of the energy transition which provide lasting benefits to First Nations communities, such as initiatives to provide housing for contractors that is then repurposed for First Nations communities.

Implementation

Recommendation 8

In determining how best to implement this recommendation, the Review suggests that consideration be given to:

- establishing a leadership committee within state and territory governments to focus on the social and economic development and investment attraction opportunities arising, or anticipated to arise, from the energy transition
- engaging and supporting local government and regional development organisations so that they can be actively involved in identifying and pursuing opportunities
- identifying opportunities to accelerate local solutions to adverse impacts by leveraging existing capabilities and skills. The Review identified a range of local capabilities that could be potentially scaled up to meet energy supply chain needs (e.g. wind turbine tower manufacturing in Victoria, steel fabrication for transmission towers in South Australia, and composite materials expertise and blade design and manufacture in Victoria)
- seeking new opportunities that can shift manufacturing and assembly from offshore to onshore, particularly those items that could be problematic in transporting from port to project
- identifying and supporting 'regions of excellence' that are well positioned to play a major role in the energy transition – from TAFE skilled worker training and certification programs through to major manufacturing and supply chain logistics centres. Examples could include Dubbo (NSW), Port Augusta (SA), Portland (VIC), Toowomba (QLD), Gladstone (QLD), Townsville (QLD), Tamworth & New England (NSW), Albury/Wodonga/Wangaratta (VIC)
- setting relevant key performance indicators for regions, states and territories, and nationally and tracking progress.

Recommendation 9

State governments may consider inviting developers to include details of their proposed benefit-sharing program when bidding for a project in a tender process. The developer should provide evidence of support for the proposed program from local government and/or the community groups who would be involved and/or benefit if the program were to proceed.

The merits of the developer's benefit-sharing proposal could then be taken into consideration when assessing the developer and their tender proposal.

Local governments are ideally placed to lead activities to identify local and regional opportunities arising from the energy transition. Some local governments may choose to form an alliance with other jurisdictions in their region to pool limited resources and provide a one-stop-shop for investors and businesses to work with.

Below are some relevant case studies.

Case study: SuperGrid Telecommunications Program

The SuperGrid Telecommunications Program is a joint initiative between Powerlink and their subsidiary Queensland Capacity Network (QCN) to improve access to high-speed internet and mobile phone coverage to regional areas hosting transmission infrastructure.

Many Queenslanders in regional and remote areas have limited access to high-speed internet and mobile phone services. They often rely on satellite or copper connections, which can be slow, unreliable and expensive. This can affect their ability to access telehealth, online learning, emergency information, banking, e-commerce and other digital services.

The SuperGrid Telecommunications Program will use Powerlink's transmission towers, and the fibre optic cable they carry, to boost telecommunications services for communities in REZs and across the footprint of Queensland's SuperGrid.

Local engagement by QCN will provide an opportunity for communities to directly input their feedback on mobile phone black-spot areas that should be prioritised as well as areas with poor internet connectivity.⁶¹

For many communities, a locally administered community benefit fund enables members to have an active say in the types of benefits that their community receives. The Clean Energy Council's publication *A Guide to Benefit Sharing Options for Renewable Energy Projects* provides an overview of these types of arrangements.⁶² A recent example of large-scale community benefit-sharing is the community benefit funding for the Central-West Orana REZ.

Case study: Community benefit funding for the Central-West Orana REZ

Communities in the Central-West Orana REZ will receive \$128 million over the next four years to deliver community projects and employment opportunities.⁶³ The funding will ensure that benefits flow to communities before the construction of new transmission and renewable generation projects starts in late 2024.

The fund will be administered by EnergyCo. Upfront funding will come from the Transmission Acceleration Fund and, after 2028, funding will be through access fees paid by generators connecting to new transmission lines in the REZ.

The NSW Government will work closely with local councils, community and First Nations organisations, renewable energy companies and others to identify and fund community priorities and long-term legacy programs in the region. Projects could include public infrastructure upgrades, housing and accommodation, training and employment programs, health and education programs, support for energy efficiency and local rooftop solar, and initiatives for First Nations people. Some communities are eager to take a more active role in the development of local large-scale renewable energy infrastructure. Locally owned or locally led developments provide these communities with greater control over the development and the benefits that flow into their community.

Case study: Community-led renewable energy projects

Some participants advocated for more community-led renewable energy projects. Where communities are eager to take a more active role in the energy transition, these projects have the capacity to empower local communities. There are a number of established community-led renewable energy projects in Australia, including Hepburn Energy (wind) and the Goulburn Solar Farm.⁶⁴

There are also several guides available on the development of communityled projects. The Local Power Plan is the output of a community co-design process to develop a national plan to unlock the benefits of community energy and accelerate community energy in Australia.⁶⁵ The NSW Government has published a how-to guide for community-owned renewable energy.⁶⁶

These are all examples of ways to enhance social licence for new renewable energy and transmission initiatives through benefit-sharing.

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Other current transmission matters

In addition to the above recommendations of the Review, some recent issues have arisen related to transmission development and engagement. They are noted here for further discussion and action.

Powers of transmission network service providers

Transmission network service providers (TNSPs) are granted certain powers to assist them to operate and maintain the high-voltage transmission grid. The powers usually require the TNSP to hold a transmission licence in each state that it operates.

Powers include the right to access a host landholder's property for certain purposes and rights to compulsorily acquire, and create an easement on, a host or non-host landholder's property. Purposes include accessing existing transmission lines for maintenance, operations and emergency response. The TNSP may also need to acquire a small easement to accommodate a minor augmentation to the grid.

When developing new transmission projects, some TNSPs are relying on these powers to gain access to land for the purposes of surveys and assessments and, subsequently, to acquire land and easements.

The Review considers that land access to privately held land and compulsory easement acquisition for new greenfield developments are best achieved via a negotiated commercial agreement with the landholder. Only in exceptional circumstances should TNSP operating powers be utilised for development purposes. State and territory governments may wish to consider the following suggestions to distinguish between the functions of new transmission infrastructure development versus transmission infrastructure operation and maintenance:

- Governments could create a separate transmission *development* license that provides powers, with the appropriate protocols and protections for landholders, specifically for the development of new transmission infrastructure.
 - Transmission development license may be held by a non-TNSP entity or company for the purposes of transmission development activities only.
 - TNSPs would be issued with a transmission development license and use that license for development projects.
- Regardless of the current or future licensing arrangements for transmission development, the Review strongly suggests that transmission companies should not use force to access land for development purposes. If a landholder refuses entry to a transmission developer (or their agent), an appropriate legal process should be then followed to resolve land access disputes.

Land access protocols

If not already in place, each jurisdiction should have an appropriate land access protocol that is transparent, available online and used by TNSPs and transmission developers when accessing private land for legitimate purposes.

Examples include Powerlink's land access protocol (developed in 2014) and Victoria's Code of Practice (launched in 2023 by the Essential Services Commission).

Protocols need to be fair and reasonable to the landholder and respect the dynamic environments of primary producers.

All TNSP and transmission developer access should be governed by the protocol. Breaches and disputes should be handled by the appropriate forum designated in the protocol.

Easement routes and negotiations

When acquiring an easement for a transmission line from a private landholder, transmission developers typically make a commercial offer to the landholder – with the objective of reaching a negotiated agreement. In some jurisdictions, this may also start the compulsory acquisition process under the relevant legislation.

However, the landholder may not be aware that the proposed transmission line route through the property may not be negotiable, only the commercial terms for the specified easement and related impacts.

Jurisdictions may wish to consider implementing a process that provides a specified period (e.g. 3–6 months) prior to making an offer where the transmission developer must provide a genuine opportunity for the landholder to review the proposed transmission route and raise any issues that may materially impact the landholder's property, operations or residence. The developer should also visit the property to inspect these issues on the ground.

Following these discussions and negotiations on the proposed route, the transmission developer should make best efforts to resolve material issues raised by the landholder and then prepare its offer incorporating any route revisions.

Agreements

The are several agreements to be negotiated between a transmission developer and the landholder. These may include access agreements, option for easement agreements, professional services fee agreements and acquisition of easement agreements.

To ensure that the agreements are fair, balanced and encompass all that needs to be dealt with by the particular agreement, the use of a standard and/or endorsed template would be beneficial to all parties.

Jurisdictions may wish to consider:

- a process whereby an agreement template is approved by the state or territory government
- that the relevant law society or institute provides and maintains the set of agreement templates
- that the state or territory prepares and issues its own template agreements (NSW Government has recently issued a draft template for consultation).

In any event, landholders should be given the opportunity to negotiate terms and conditions of any agreements presented to them and have them properly considered in an appropriate timeframe.

Correspondence and collateral

Transmission developers rely heavily on correspondence and collateral to conduct the development activity. There is certainly scope for improvements in the content.

Jurisdictions may wish to consider:

- encouraging review of correspondence at senior levels of the transmission company to ensure that correspondence is written in a manner that considers the recipient's perspective
- issuing directly any collateral related to state-wide topics, such as bushfire matters (e.g. the Victorian Government has issued such a document in early 2023), compensation and payments for hosting a transmission line and rules and guidelines for what activities can and cannot be done under the transmission lines
- approving any correspondence and collateral related to compulsory acquisition of easements, land, and land access.

Additional resources

AEIC Annual Report to the Federal Parliament, 2022

https://www.aeic.gov.au/publications/2022-annual-report

See, in particular, Appendix A, sections 1–4 that are most relevant to this Review.

A Guide to Benefit Sharing Options for Renewable Energy Projects, Clean Energy Council

https://www.cleanenergycouncil.org.au/advocacy-initiatives/communityengagement/benefit-sharing-for-renewable-energy-projects

Aboriginal and Torres Strait Islander Best Practice Principles for Clean Energy Projects, First Nations Clean Energy Network

https://www.firstnationscleanenergy.org.au/network_guides

Best Practice Charter for Renewable Energy Developments, Clean Energy Council

https://www.cleanenergycouncil.org.au/advocacy-initiatives/communityengagement/best-practice-charter

Better Practice Social Licence Guideline, The Energy Charter

https://www.theenergycharter.com.au/better-practice-social-licence-guideline/

Clean Energy Negotiations Guide for First Nations, First Nations Clean Energy Network

https://www.firstnationscleanenergy.org.au/network_guides

Community Engagement Guidelines for Building Powerlines for Renewable Energy Developments, Clean Energy Council

https://www.cleanenergycouncil.org.au/advocacy-initiatives/communityengagement/community-engagement-guidelines-for-building-powerlines-forrenewable-energy-developments

Community Engagement Guidelines for the Australian Wind Industry, Clean Energy Council

https://assets.cleanenergycouncil.org.au/documents/advocacy-initiatives/communityengagement/wind-community-engagement-guidelines.pdf

Considerations for Landholders before entering into Commercial Agreements, AEIC

https://www.aeic.gov.au/publications/considerations-landholders-enteringcommercial-agreements

Considerations for Offshore Wind Industry on Community Engagement, AEIC

https://www.aeic.gov.au/publications/considerations-offshore-wind-industrycommunity-engagement

First Nations Clean Energy Strategy, DCCEEW

https://www.energy.gov.au/energy-and-climate-change-ministerial-council/workinggroups/first-nations-engagement-working-group/first-nations-clean-energy-strategy

Queensland Renewable Energy Landholder Toolkit, Queensland Farmers Federation

https://www.qff.org.au/projects/renewable-energy-landholder-toolkit/

Renewable Energy Landholder Guide, NSW Farmers Association

https://www.nswfarmers.org.au/NSWFA/Content/IndustryPolicy/Resource/Renewable_ e_Energy_Landholder_Guide.aspx

The Local Power Plan, Dr Helen Haines MP

https://www.localpowerplan.com/

Appendix A – Terms of reference of the Review

Scope of the Review

- 1. The Review will consider community attitudes towards renewable energy infrastructure and provide advice on the best way to maximise community engagement and benefit in planning, developing and operating renewable energy infrastructure.
- 2. In conducting the review, the AEIC should have regard to the following:
- a. Perceived or actual environmental impacts
 - b. Perceived or actual impacts on agricultural land, including:
 - i. Emergency management, including fire and biosecurity risks
 - ii. Increases in landholder insurance premiums
 - iii. Tourism impacts and other aesthetic and cultural considerations.
 - c. Perceived or actual impacts on Indigenous heritage and land rights
 - d. Community engagement and benefit sharing including financial, local infrastructure, knowledge sharing, and any other types of benefit.
- 3. The AEIC can advise on how to maximise community engagement within the existing regulatory and legislative frameworks, including the National Electricity Law, the National Energy Objectives and the Regulatory Investment Test for Transmission.
- 4. The AEIC may also provide recommendations to the existing regulatory frameworks that would better enable community engagement in all stages of planning and development.
- 5. The AEIC may assess current relevant government, and industry, policies and reforms, and suggest changes that improve community support for the necessary and rapid expansion of clean energy generation, while:
 - a. Preserving and expanding Australia's unique flora, fauna and fragile ecosystems;

- b. Supporting agriculture and other land uses, including innovative colocation approaches;
- c. Respecting First Nations people and ensuring they have opportunities to benefit from the transition
- d. Delivering community benefits in consultation with communities including any financial benefits, local employment opportunities and skills development
- e. Supporting regional development.

Process for the Review

The Review will be led by the Australian Energy Infrastructure Commissioner, Mr Andrew Dyer.

Secretariat support will be provided by the Department of Climate Change, Energy, the Environment and Water.

The report and government response to recommendations will be made publicly available.

Engagement and consultation to inform the review should include:

- Publication of a discussion paper seeking public submissions
- Regional and rural roundtables including community, worker, First Nations, environmental organisations, farmer and industry participation to discuss key issues
- Some of these roundtables should be held in Renewable Energy Zone communities.

The Review will collaborate with relevant energy market bodies, government agencies, and draw on relevant experts that are undertaking related work such as:

- Energy market bodies including the Australian Energy Market Operator (AEMO), the Australian Energy Market Commission, and the Australian Energy Regulator
- State Government electricity and planning agencies such as NSW Energy Co and Vic Grid
- Non-government organisations and community groups involved in, or impacted by, the renewable energy transition
- Industry
- Relevant experts including the CSIRO and academics.

Where appropriate, the Review should seek to leverage existing groups and consultation processes to mitigate duplication. For example, the Review should seek to leverage consultation underway to develop a First Nations Clean Energy Strategy and work being undertaken by CSIRO on enhancing community support.

The final report will be delivered to the Minister for Climate Change and Energy by the end of 2023.

Final Report to the Minister for Climate Change and Energy
Appendix B – Glossary

Access agreement	A land access arrangement is a written agreement between a landholder and a renewable energy developer confirming the terms and conditions for conducting prospecting activities on a particular area of land.			
Benefit-sharing	A term used to describe different approaches and mechanisms that aim to distribute the financial and other benefits of a project between the applicant and the impacted community through mutually agreed opportunities. ⁶⁷			
Community	A group of people living in the same place or having a particular characteristic in common (Oxford Languages)			
Compensation	Something, typically money, awarded to someone in recognition of loss, suffering, or injury (Oxford Languages).			
Compulsory acquisition	All levels of government (including state-owned corporations) can acquire privately owned land for a public purpose. They can acquire:			
	all or part of a property			
	• interest in a property, including easements for power lines, sewer or water.			
Crown land	Crown land is land owned by the state government or the Australian Government.			
Developer	A developer is a person or a company that buys land and uses the land, subdivides the land, erects building/s on the land, carries out other works, including demolishing a building or work. In the course of this report renewable energy developer refers to developers of large-scale solar farms and onshore wind facilities.			

Development	The process of converting land to a new purpose by constructing buildings or making use of its resources (Oxford Languages).			
Firming	Maintaining the output from a variable, intermittent power source, such as wind or solar, for a committed period of time ⁶⁸ . Firming technologies include pumped hydroelectricity, batteries and gas generators.			
First Nations land rights	First Nations peoples' rights and interests in land. This includes around 50% of Australia's land mass.			
Freehold land	Permanent and absolute tenure of land or property with freedom to dispose of it at will (Oxford Languages).			
Generator	An electricity generator is a machine that generates electricity from fossil fuels, nuclear power plants, hydro power plants (excluding pumped storage), geothermal systems, solar panels, biofuels, wind, etc. ⁶⁹			
Green hydrogen	Green hydrogen is defined as hydrogen produced by splitting water into hydrogen and oxygen using renewable electricity. ⁷⁰			
Landholder	A person who owns land, especially one who either makes their living from it or rents it out to others (Oxford Languages).			
	In some circumstances this may include a person who occupies or holds another interest in land e.g. in NSW easement acquisition requires negotiation with all interest holders, such as other easement holders, tenants etc.			

Large-scale development	In Victoria, large-scale solar projects are defined as greater than 1 MW in contrast to Queensland's definition of greater than 5 MW. NSW defines large-scale solar energy projects based on capital expenditure of over AUD \$30 million, rather than power generation capacity. ⁷¹			
Large-scale generation certificate (LGC)	Under the Renewable Energy Target, LGCs are created in the online Renewable Energy Certificate Registry by renewable energy power stations. One LGC is equivalent to 1 MW per hour of eligible renewable electricity generated above the power station's baseline.			
Long-Term Energy Service Agreement (LTESA)	LTESAs are options contracts and are a central element of the NSW Electricity Infrastructure Roadmap and will offer an option to access price guarantees for eligible generation, long duration storage and firming projects, structured as a series of derivative options over the design life of the asset. ⁷²			
National Electricity Law (NEL)	The NEL is the schedule to the <i>National Electricity</i> (<i>South Australia</i>) <i>Act 1996</i> which establishes the governance and enforcement framework and key obligations surrounding the national electricity market and the regulation of access to electricity networks. The NEL is supported by further regulations and the National Electricity Rules (NER).			
	The Northern Territory has also applied the NEL with a number of variations to cater to local requirements. ⁷³			
National Electricity Market (NEM)	The NEM is a wholesale market through which generators and retailers trade electricity in Australia. It interconnects the 6 eastern and southern states and territories, and delivers around 80% of all electricity consumption in Australia. Western Australia and the Northern Territory are not connected to the NEM. ⁷⁴			

National Electricity Rules (NER)	The NER determine how companies can operate and participate in the competitive generation and retail sectors. The NER also govern the economic regulation of electricity transmission and distribution networks. ⁷⁵		
Native title	Native title is the name Australian law gives to the traditional ownership of land and waters that have always belonged to Aboriginal people according to their traditions, laws and customs. The Commonwealth <i>Native Title Act 1993</i> sets out how native title rights are to be recognised and protected. ⁷⁶		
Neighbour agreement	Neighbour agreements provide a commercial arrangement between the renewable energy project developer and neighbours that recognises the possible impacts of the project on the neighbours. ⁷⁷		
Net zero	Net zero refers to a state in which the greenhouse gases going into the atmosphere are balanced by removal out of the atmosphere.		
	The term net zero is important because – for CO2 at least – this is the state at which global warming stops. The Paris Agreement underlines the need for net zero. It requires states to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century. ⁷⁸		
Opposed land access	A situation where the landholder opposes access arrangements. This may occur with regard to new transmission line access arrangements.		
Photovoltaic (PV) system	Solar photovoltaic (PV) systems generate electricity from sunlight. Solar PV cells that capture sunlight are placed in panels, which are in turn placed in arrays, to deliver solar power to homes and businesses. ⁷⁹		

Power Purchase Agreement (PPA)	A PPA is an agreement between an independent power generator (or vendor) and a purchaser (often called the 'off-taker') for the sale and supply of energy. They can be used for the supply of any type of energy, but in more recent times they have often been used for the supply of renewable energy such as through solar panels or wind generators (Cambridge Dictionary Online).			
Project	Development or construction of a renewable energy or transmission project or asset.			
Proponent	Proponent is used interchangeably with development throughout the report			
Prospective developer	An early-stage renewable energy developer. These developers may approach land holders, arrange land access agreements and or lease arrangements, before selling on the project to another (often more established) developer.			
Renewable energy infrastructure	Infrastructure that is necessary for assessing the feasibility of generating renewable energy from a renewable energy resource; or has the primary purpose of exploiting a renewable energy resource. ⁸⁰ Examples include solar and wind facilities and may also include storage and firming infrastructure such as pumped hydro or batteries.			
Renewable Energy Zone	REZs are the equivalent of modern-day power stations. They combine:			
(REZ)	 new renewable energy infrastructure, including generators (such as solar and wind facilities) storage (such as batteries and pumped hydro) high-voltage transmission infrastructure.⁸¹ 			
Social licence	The social licence to operate is a concept that reflects community support for the operations of an organisation or development. It is generally considered that social support from community is critical for the long-term sustainability of a development. ⁸²			

Small-scale technology certificates (STCs)	A STC is equal to 1 megawatt hour of renewable electricity either generated or displaced by eligible small- scale renewable energy systems such as solar PV, wind and hydro and solar water heaters and air source heat pumps. STCs create a financial incentive to install small- scale renewable energy systems by reducing upfront installation costs. ⁸³
Transmission Acceleration Fund	A \$1.2 billion fund from the 2022-23 NSW Budget designed to fast-track critical energy infrastructure over the next 10 years. The Transmission Acceleration Fund will fast-track the REZs needed to replace existing power stations as they close by funding the development stages of transmission and other infrastructure.
Transmission developer	A specialised developer with capability to develop a transmission project.
Transmission infrastructure	The transmission network largely consists of high- voltage cables and towers to support them, as well as transformers. This infrastructure moved electricity from where it's generated to an electrical substation. ⁸⁴
Transmission Network Service Provider (TNSP)	TNSPs are network businesses that build, maintain, plan and operate the network transmission networks in the national electricity market. TNSPs are licenced and strictly regulated.
Energy transition	Energy transition refers to the global energy sector's shift from fossil-based systems of energy production and consumption — including oil, natural gas and coal — to renewable energy sources like wind and solar, as well as lithium-ion batteries. ⁸⁵

Endnotes

- ¹ Queensland Farmer's Federation, Queensland Renewable Energy Landholder Toolkit, June 2023
- ² Submission 526.
- ³ Australian Local Government Association Roundtable, 3 October 2023.
- ⁴ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 10 October 2023.
- ⁵ National Farmers Federation Roundtable, 6 October 2023.
- ⁶ Submission 141.
- ⁷ Clean Energy Council Roundtable, 31 August 2023.
- ⁸ Clean Energy Council Roundtable, 31 August 2023.
- ⁹ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023; Helena Stanley Meeting, 20 September 2023.
- ¹⁰ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023; Helena Stanley Meeting, 20 September 2023.
- ¹¹ DCCEEW, <u>First Nations Clean Energy Strategy: Interim Feedback Report from</u> <u>Engagement to Date</u>, 2023, p 6, accessed 12 December 2023.
- ¹² First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ¹³ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ¹⁴ Wangaratta Landholder and Community Roundtable, 27 September 2023.
- ¹⁵ Local Government Roundtable (Wangaratta), 27 September 2023.
- ¹⁶ Local Government Roundtable (Wangaratta), 27 September 2023.
- ¹⁷ National Farmers Federation Roundtable, 6 October 2023; Queensland Farmers Federation Roundtable, 9 October 2023.
- ¹⁸ Linda Scott Interview, President, Australian Local Government Association, 4 September 2023.
- ¹⁹ National Farmers Federation Roundtable, 6 October 2023.
- ²⁰ National Farmers Federation Roundtable, 6 October 2023.

- ²¹ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ²² First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ²³ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ²⁴ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ²⁵ Winterbourne Windfarm Hosts Roundtable, 21 September 2023; Hills of Gold Preservation Inc Roundtable, 21 September 2023; Wangaratta Landholder and Community Roundtable, 27 September 2023; Voice of Walcha Meeting Minutes, 22 September 2023.
- ²⁶ Winterbourne Windfarm Hosts Roundtable, 21 September 2023; Voice of Walcha Meeting Minutes, 22 September 2023; Hills of Gold Preservation Inc Roundtable, 21 September 2023.
- ²⁷ Hills Of Gold Preservation Inc Roundtable, 21 September 2023.
- ²⁸ La Trobe City Council Interview, 13 September 2023; Local Government Roundtable (Wangaratta), 27 September 2023.
- ²⁹ New England Local Government Roundtable, 5 October 2023; La Trobe City Council Meeting, 13 September 2023; Local Government Roundtable (Wangaratta), 27 September 2023; Dubbo Regional Council Meeting, 20 September 2023.
- ³⁰ New South Wales Legislative Council Standing Committee on State Development, <u>Report 51: Feasibility of undergrounding the transmission</u> <u>infrastructure for renewable energy projects</u>, Parliament of New South Wales, 2023, p x, accessed 12 December 2023.
- ³¹ Productivity Commission, Access to Justice Arrangements: Productivity Commission Inquiry Report, '<u>Volume 1</u>', 2014, p 336, accessed 12 December 2023.
- ³² Submission 141.
- ³³ Submission 86.
- ³⁴ Submission 141.
- ³⁵ Submission 141.
- ³⁶ Western Australia Government Roundtable, 5 October 2023.

- ³⁷ Local Government Association of Queensland Meeting, 10 October 2023; New England Local Government Roundtable, 5 October 2023; Local Government Roundtable (Wangaratta), 27 September 2023.
- ³⁸ Environment Organisations Roundtable, 28 September 2023; New England Local Government Roundtable, 5 October 2023.
- ³⁹ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023; First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 6 December 2023.
- ⁴⁰ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ⁴¹ Winterbourne Windfarm Hosts Roundtable, 21 September 2023.
- ⁴² Winterbourne Windfarm Hosts Roundtable, 21 September 2023.
- ⁴³ Environmental Organisations Roundtable, 28 September 2023; New England Local Government Roundtable, 5 October 2023; Muswellbrook Shire Council Meeting, 19 September 2023.
- ⁴⁴ Muswellbrook Shire Council Meeting, 19 September 2023.
- ⁴⁵ Muswellbrook Shire Council Meeting, 19 September 2023.
- ⁴⁶ Hills of Gold Preservation Inc Roundtable, 21 September 2023; Local Government Association of Queensland Meeting, 10 October 2023; Australian Local Government Association Roundtable, 3 October 2023.
- ⁴⁷ Australian Local Government Association Roundtable, 3 October 2023; Local Government Roundtable (Wangaratta), 27 September 2023.
- ⁴⁸ Australian Local Government Association Roundtable, 3 October 2023; Local Government Roundtable (Wangaratta), 27 September 2023.
- ⁴⁹ Australian Local Government Association Roundtable, 3 October 2023; Local Government Association of Queensland Meeting, 10 October 2023.
- ⁵⁰ Economic Development Roundtable (Wangaratta), 27 September 2023.
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- ⁵² Local Government Association of Queensland Meeting, 10 October 2023; New England Local Government Roundtable, 5 October 2023; Muswellbrook Shire Council Meeting, 19 September 2023; Australian Local Government Association Roundtable, 3 October 2023.
- ⁵³ Environmental Organisations Roundtable, 28 September 2023.

- ⁵⁴ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023.
- ⁵⁵ DCCEEW, <u>First Nations Clean Energy Strategy: Interim Feedback Report from</u> <u>Engagement to Date</u>, 2023, pp 13 – 14.
- ⁵⁶ Economic Development Roundtable (Wangaratta), 27 September 2023.
- ⁵⁷ NSW Department of Planning and Environment, <u>Draft Benefit Sharing Guideline</u>, 2023, p 7.
- ⁵⁸ Submission 102.
- ⁵⁹ First Nations Clean Energy and Emissions Reduction Advisory Committee Meeting, 14 November 2023; Helena Stanley Meeting, 20 September 2023.
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- ⁶² T Lane and Dr J Hicks, <u>A Guide to Benefit Sharing Options for Renewable</u> <u>Energy Projects</u>, Clean Energy Council, 2019, accessed 12 December 2023.
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- ⁶⁵ Dr Helen Haines, <u>The Local Power Plan</u>, 2020.
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- ⁶⁹ OECD Data, 'Electricity Generation', n.d., accessed 12 December 2023.
- ⁷⁰ A Chugh and E Taibi, <u>What is Green Hydrogen and why do we need it? An expert explains</u>, World Economic Forum, 21 December 2021, accessed 12 December 2023.

- ⁷¹ Madeline Taylor, <u>Planning the Energy Transition: A Comparative Examination of Large-Scale Solar Energy Siting on Agricultural Land in Australia</u>, 2022, 18(2):70-86, accessed 12 December 2023.
- ⁷² NSW Department of Planning, Industry and Environment, <u>Long-Term Energy</u> <u>Service Agreement Design: Consultation Paper</u>, 2021, p vii, accessed 12 December 2023.
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- ⁷⁴ DCCEEW, <u>National Electricity Market</u>, updated 3 December 2023, accessed 12 December 2023.
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- ⁷⁷ AEIC, <u>Neighbour Matters</u>, Commonwealth of Australia, n.d., accessed 13 December 2023.
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- ⁷⁹ Your Home, <u>Photovoltaic systems</u>, Australian Government, n.d., accessed 13 December 2023.
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- ⁸³ Clean Energy Regulator, <u>Small-scale technology certificates</u>, Australian Government 14 February 2022, accessed 13 December 2023.
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COMMUNITY IMPACT SURVEY APRIL – MAY 2024

Executive Summary

Feedback from the community impact survey was collected between Saturday 12 April and Friday 10 May 2024, with 775 responses collected during this period.

The community impact survey generated multiple findings. The themes and sub-themes are presented in order of priority and noted as follows:

- Environmental damage: (1) destructive impacts on native flora and fauna, and (2) the value of the environment to rural and regional communities is being ignored.
- Renewable energy infrastructure: (1) lack of consideration for alternative infrastructure options,
 (2) doubts regarding the benefits and long-term reliability of renewables as a baseload power option, (3) energy mix not being fully considered, and (4) renewable energy projects will not deliver energy security.
- **Community division:** (1) negative impacts on rural communities being ignored and undervalued by government and energy corporations, (2) impacts are borne by rural and regional communities, and (3) social cohesion in rural communities is being fractured by government and energy companies.
- Lack of trust in government and political parties: (1) no consideration from government on the negative economic impact in the regions such as tourism and a decline in property values, (2) government behaviour considered deceptive, (3) major political parties are not listening to rural communities, (4) renewable energy projects are being rushed through without regard to community concerns, (5) very limited trust in government, and (6) renewables driven by political ideology.
- Damage to the food production system: (1) loss of agricultural land.
- Health and social implications: (1) unknown mental health and social impacts on rural communities, and (2) health and social implications are not being adequately considered.
- **Community consultation:** (1) lack of transparency in community consultation processes, and (2) rural community concerns are being ignored.
- **Climate change agenda:** (1) energy transition driven by climate ideology, and (2) international climate policy agendas are driving energy policy in Australia.
- Corporate greed: (1) perception of corporate greed over community liveability and cohesion.

1) Background to Survey on Community Impacts from Renewable Energy Infrastructure

The ongoing construction of renewable energy infrastructure has significantly affected rural and regional Australians¹. The impacts on these communities have largely been overlooked by both the government and corporations, who advocate for a 100% renewable energy policy as essential for Australia's future energy needs. This oversight has resulted in several issues; community division, the loss of freehold land, a preference for developing renewable energy projects outside urban areas (often avoiding government-owned land), and a lack of transparent and open community consultation.

The rapid expansion of renewable energy infrastructure has prompted the formation of over 120 community action groups across Australia. These groups' concerns are often ignored by the mainstream media, which promotes the narrative that renewable energy infrastructure must be built regardless of its impacts on the quality of life in rural communities. The prevailing message is to "create rural and regional economic activity while preserving the environment," exemplified by initiatives like renewable energy zones².

Additionally, there seems to be a lack of consideration and even hostility towards individuals and organisations raising critical questions, such as:

- Why have renewable energy infrastructure projects been rushed?
- Why has a balanced mix of energy sources not been fully considered?
- What does genuine community consultation look like?
- Why do rural and regional communities feel their concerns are being ignored, and why are current consultation processes perceived as superficial or insincere?

2) About Property Rights Australia

Property Rights Australia (PRA) was formed in 2003 to protect the property rights of those unfairly targeted by the Vegetation Management Act 1999. We are a non-profit organisation of primary producers and small business people mostly from rural and regional Queensland who are concerned about the continuing encroachment on the rights of private property owners in the development, introduction and administration of policies and legislation relating to the management of land, water, and other resources. Set up in South West Queensland, PRA's membership now extends across most states and multiple major rural industries, PRA is not affiliated to any political party.

¹ For the purposes of this survey, 'Renewable energy infrastructure' includes high voltage transmission, wind and solar farms, battery energy storage systems and pumped hydro.

² Examples: Queensland government: <u>https://www.energyandclimate.qld.gov.au/energy/energy-jobs-plan?gad_source=1&gclid=EAIaIQobChMI9o-</u>

<u>s_dGGhgMVe6VmAh2qkAfNEAAYAyAAEgLBFPD_BwE</u>, New South Wales government: <u>https://www.energyco.nsw.gov.au/renewable-energy-zones</u>

3) About the National Rational Energy Network

The National Rational Energy Network (NREN) is a grassroots national movement networked across hundreds of communities all adversely impacted by the Australian government's reckless rollout of unreliable, costly, and environmentally damaging wind turbines (land and offshore), grid solar systems, pumped hydro projects, and high-voltage transmission lines. Formed in August 2023, it connects over 120 rural and regional community groups from North Queensland to Tasmania, across to South Australia and Western Australia. It continues to expand, gaining support from concerned Australians, politicians, conservationists, and communities all devoted to safeguarding our country, coastline, oceans, and rivers from the detrimental effects of the current Australian Government's rushed and reckless energy laws, policies, and projects.

4) Survey Demographics

3.1) Respondent Age

Age range	Responses	<mark>%</mark> 1	
18-24	5		
25-34	25	3	
35-44	66	9 18	
45-54	142		
55-64	242	31.5	
65 or over	288	37.5	
	768	100	

Table 1. Age

Note: 7 individuals did not provide a response.

3.2) Occupations and Postcodes





3350 2036 3579 2281 2159 2400 2358 2350 2582 3698 4753 4741 3287 3364 4600 4580 2720 3387 4756 2315 4625 2844 4702 4621 3272 ²⁶⁵⁰ 2866 2850 3691**4** 4740 2630 3273 51 4670 4615 2800 2580 4757 2843 2354 2340 4605 5374 4674 2365 4850 2820 2324 2852 5373 4413 3477 2290 4650 2329 4750 3283 3276 4754 4655 4870 2656



3.3) Respondent Location - State and Territory

Table 2. Location – State and Territory

State of Territory	Responses	%
Queensland (QLD)	293	38.5
New South Wales (NSW)	285	37.5
Victoria (VIC)	154	20
Tasmania (TAS)	0	0
South Australia (SA)	26	3
Western Australia (WA)	6	0.8
Northern Territory (NT)	0	0
Australian Capital Territory (ACT)	2	0.2
	764	100

Note: 11 individuals did not provide their location.

3.4) Number of family members

The average number of family members per household in the survey was 2.

5) Survey Items 1 to 8: National picture

The following data relates to the national survey responses. Rural community perceptions of government, departments, and energy companies' behaviour suggest the following³:

- Governments have been perceived to have been acting deceptively and not fully considered the impacts on rural families, communities, or the environment;
- Departments have not been open and transparent regarding their consultation processes or acted effectively on community concerns; and

³ Appendix 1 provides response data and percentages on a national level.

 Energy companies have been perceived as acting dishonestly and have applied pressure to access properties.

Statement 1. Governments have acted in good faith regarding the implementation of renewable energy projects

Number of responses = 708





Statement 3. Government departments have listened to and acted on concerns regarding renewable energy projects

Number of responses = 708



Statement 4. Energy companies have applied pressure to access private properties

Number of responses = 708





Number of responses = 708



Statement 6. Governments have fully considered the impacts on families regarding renewable energy projects

Number of responses = 707



Statement 7. Governments have fully considered the impacts on rural communities regarding renewable energy projects

Number of responses = 707



Statement 8. Governments have fully considered the environmental impacts of renewable energy projects

Number of responses = 707



6) Survey Items 1 to 8: State by State breakdown

The States with the highest response rates were QLD, NSW, and VIC respectively⁴. The following response data for Statements 1 through 8 are broken down at the State level.

Statement 1. Governments have acted in good faith regarding the implementation of renewable energy projects

Number of responses: QLD = 261 NSW = 261 VIC = 145



⁴ Appendix 2 provides response data and percentages on a State level for QLD, NSW, and VIC.

Statement 2. Government departments have undertaken open and transparent consultation

Number of responses: QLD = 260 NSW = 260 VIC = 145



Statement 3. Government departments have listened to and acted on concerns regarding renewable energy projects

Number of responses: QLD = 261 NSW = 259 VIC = 146



Statement 4. Energy companies have applied pressure to access private properties

Number of responses: QLD = 260 NSW = 260 VIC = 146



Statement 5. Energy companies have acted in good faith

Number of responses: QLD = 260 NSW = 260 VIC = 145



Statement 6. Governments have fully considered the impacts on families regarding renewable energy projects

Number of responses: QLD = 260 NSW = 259 VIC = 146



Statement 7. Governments have fully considered the impacts on rural communities regarding renewable energy projects

Number of responses: QLD = 260 NSW = 259 VIC = 146



Statement 8. Governments have fully considered the environmental impacts of renewable energy projects

Number of responses: QLD = 259 NSW = 260 VIC = 146

	AGREEMENT	UNSURE	DISAGREEMENT
0.0% -			
10.0%	4.0% 4.0% 4.0%	2.0% 1.0% 2.0%	
20.0%			
30.0%			
40.0%			
50.0%			
60.0%			
70.0%			
80.0%			
90.0%			
.00.0%			94.0% 95.0% 94.0%

7) Survey Items 9 and 10: National picture

Over 50% of respondents indicated they perceived renewable energy infrastructure projects are contributing to higher electricity prices within their local communities⁵. Respondents also indicated they perceived renewable energy infrastructure projects are contributing to cost of living pressures.

Statement 9. Renewable energy infrastructure projects are contributing to higher electricity prices in your local community

Number of responses = 699





Number of responses = 701



⁵ Appendix 3 provides response data and percentages on a national level.

8) Survey Items 9 and 10: State by State breakdown

The following response data for Statements 9 and 10 are broken down at the State level⁶.

Statement 9. Renewable energy infrastructure projects are contributing to higher electricity prices in your local community

Number of responses: QLD = 259 NSW = 253 VIC = 145



Statement 10. Renewable energy infrastructure projects are contributing to cost of living pressures in your local community

Number of responses: QLD = 259 NSW = 255 VIC = 145



9) Health and Social Implications

The responses noted in Table 3 suggest that there have been both social and mental health impacts because of the implementation of renewable energy projects⁷.

However, a more comprehensive analysis of social and mental health impacts of renewable energy infrastructure projects would clarify the findings in the survey.

⁶ Appendix 4 provides response data and percentages on a State level for QLD, NSW, and VIC.

⁷ Appendix 5 provides response data and percentages on a national level.

Question 1. Do you have trouble staying focused on the present moment?

Number of responses: 678



Question 2. During work hours, do you have a hard time staying focused and concentrating on the task-at-hand?

Number of responses: 676



Question 3. Do you feel like withdrawing from family, friends, and isolating yourself?

Number of responses: 678



Question 4. Do you feel irritable, annoyed, or angry over trivial issues?

Number of responses: 676



10) Survey Themes

Survey respondents cited several themes and sub-themes relating to renewable energy projects. The themes and sub-themes are presented in order of priority.

Table 4. Themes and Sub-theme	s
-------------------------------	---

Theme and Sub-Theme Description
1. Environmental damage:
Destruction of native flora and fauna.
 The value of the environment to rural and regional communities is being ignored.
2. Renewable energy infrastructure:
Lack of consideration for alternative energy infrastructure options.
• Scepticism regarding the benefits and long-term reliability of renewables as a baseload power option.
 Alternative energy mix including nuclear not being considered.
 Renewable energy projects will not deliver energy security.
3. Community division:
 Negative impacts on rural communities being ignored and undervalued.
 The transition to renewable energy infrastructure is being borne solely by rural and regional
communities.
 Social cohesion in rural communities is being fractured by government and energy companies.
4. Lack of trust in government and political parties:
 No consideration from government on the negative economic impact in the regions such as tourism
and a decline in property values.
Government behaviour was considered deceptive.
 Major political parties are not listening to rural communities.
 Renewable energy projects are being rushed through without regard to community concerns.
Very limited trust in government.
Renewables driven by political ideology.
5. Damage to food production systems:
Loss of agricultural land.
6. Health and social implications:
Unknown mental health and social impacts on rural communities.
Health and social implications are not being adequately considered.
7. Community consultation:
Lack of transparency in community consultation processes.
Rural community concerns are being ignored.
8. Climate change agenda
Energy transition driven by climate ideology.
International climate policy agendas are driving energy policy in Australia.
9. Corporate greed:
 Perception of corporate greed over community liveability and cohesion.

11) Respondent Feedback

Respondents were asked to provide commentary regarding their views of renewable energy projects with more than 60% of respondents providing additional feedback. While Table 4 provides key themes and sub-themes, the comments noted below provide specific view of their concerns.

My concern is not that government is not listening. My concern is that they know the damage they are doing to the environment, communities and families but disregard them, as they are hell bent literally on following another foreign agenda.

The potential impacts of renewable energy infrastructure on the agricultural industry and rural and regional Australia have not been adequately or thoughtfully considered. The "rapid transition to renewable energy" is a rushed, unplanned, and unrealistic ambition all brought about by the Net Zero policy which, it seems, will be followed through at any cost! Projects, even in the early planning stages, are causing enormous unrest and devastation in once cohesive communities in rural Australia. The divide and conquer tactic is used by developers, and government organisations alike, to sign landowners up for wind, solar and transmission infrastructure projects.

12) Conclusions

The survey results highlight a deep-seated scepticism and dissatisfaction among rural and regional Australians concerning the implementation and impact of renewable energy projects. An overwhelming 93% of respondents believe that governments have not acted in good faith regarding the implementation of these projects. Similarly, 94% feel that government departments have failed to conduct open and transparent consultations, while 95% assert that their concerns have not been adequately addressed. This dissatisfaction is compounded by the perception of coercive tactics used by energy companies, with 76% of respondents reporting pressure to access private properties and only 3% believing that these companies have acted in good faith.

Respondents expressed strong cynicism about the benefits of renewable energy as a baseload power option. They criticised the government's handling of the transition process, describing it as rushed and lacking genuine community consultation. The environmental and social impacts of these projects are significant concerns. A vast majority, 94%, doubt that the government has fully considered the environmental impacts of renewable energy projects, while 95% believe that the impacts on families and rural communities have been overlooked.

The survey also reveals the perceived economic repercussions of renewable energy projects, with 80% of respondents believing these projects contribute to higher electricity prices, and 78% reporting that these developments are adding to the cost of living pressures. Additionally, many respondents reported adverse health and social effects, such as difficulties in focusing, feelings of isolation, and increased irritability, with 73% of respondents feeling emotional over trivial issues. Investigations

should be undertaken to further quantify the potential link between the rollout of renewable energy infrastructure and the health and social implications on rural people.

Overall, the results underscore the need for a more transparent, inclusive, and considerate approach to transitioning to a clean energy future. The clear distrust in both government and renewable energy companies indicates a significant gap in communication and engagement with rural Australians. To build trust and ensure a successful energy transition, it is crucial to address these communities' concerns genuinely and thoroughly. Energy policy development should strive to balance environmental goals with the socio-economic well-being of all affected populations, ensuring that the transition to a cleaner energy future does not come at the expense of rural livelihoods and environments.

Appendix 1



Statement 1. Governments have acted in good faith regarding the implementation of renewable energy projects

Statement 2. Government departments have undertaken open and transparent consultation

Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
18	9	16	89	575	707
(3%)	(1.5%)	(2%)	(12.5%)	(81%)	(100%)



Statement 3. Government departments have listened to and acted on concerns regarding renewable energy projects



Statement 4. Energy companies have applied pressure to access private properties

Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
378	160	105	27	38	708
(53%)	(23%)	(15%)	(4%)	(5%)	(100%)



Statement 5. Energy companies have acted in good faith

Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
12	10	41	136	509	708
(2%)	(1%)	(6%)	(19%)	(72%)	(100%)



Statement 6. Governments have fully considered the impacts on families regarding renewable energy projects

Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
20	10	3	64	610	707
(3%)	(1.5%)	(0.5%)	(9%)	(86%)	(100%)



Statement 7. Governments have fully considered the impacts on rural communities regarding renewa	ble energy
projects	



Statement 8. Governments have fully considered the environmental impacts of renewable energy projects

Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
21	7	11	52	616	707
(3%)	(1%)	(2%)	(7%)	(87%)	(100%)



Appendix 2

Statement 1. QLD, NSW, and VIC – Governments have acted in good faith regarding the implementation of renewable energy projects

State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	9	4	7	39	202	261
	(3.5%)	(2%)	(2.5%)	(15%)	(77%)	(100%)
NSW	8	6	4	25	217	261
	(3%)	(2.5%)	(2%)	(9.5%)	(83%)	(100%)
VIC	4	3	3	7	128	145
	(3%)	(2%)	(2%)	(5%)	(88%)	(100%)



Statement 2. QLD, NSW, and VIC – Government departments have undertaken open and transparent consultation

State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	8	4	10	37	201	260
	(3%)	(1.5%)	(4%)	(14%)	(77.5%)	(100%)
NSW	7	3	4	33	213	260
	(2.5%)	(1%)	(1.5%)	(13%)	(82%)	(100%)
VIC	3	2	2	9	129	145
	(2%)	(1.5%)	(1.5%)	(6%)	(89%)	(100%)



renewable	energy projects					
State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	6	3	4	50	198	261
	(2.5%)	(1%)	(1.5%)	(19%)	(76%)	(100%)
NSW	8	4	1	38	208	259
	(3%)	(1.5%)	(0.5%)	(15%)	(80%)	(100%)
VIC	2	2	3	9	130	146
	(1.5%)	(1.5%)	(2%)	(6%)	(89%)	(100%)

Statement 3. QLD, NSW, and VIC – Government departments have listened to and acted on concerns regarding renewable energy projects



Statement 4. QLD, NSW, and VIC - Energy companies have applied pressure to access private properties

State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	129	62	41	9	19	260
	(49.5%)	(24%)	(16%)	(3.5%)	(7%)	(100%)
NSW	135	55	44	9	15	260
	(52%)	(21%)	(17.5%)	(3.5%)	(6%)	(100%)
VIC	92	31	13	8	2	146
	(63%)	(21%)	(9%)	(5.5%)	(1.5%)	(100%)



State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	8	4	1	38	209	260
	(3%)	(1.5%)	(0.5%)	(15%)	(80%)	(100%)
NSW	6	4	14	43	193	260
	(2%)	(1.5%)	(5%)	(17%)	(74.5%)	(100%)
VIC	1	3	4	13	124	145
	(0.5%)	(2%)	(3%)	(9%)	(85.5%)	(100%)

Statement 5. QLD, NSW, and VIC - Energy companies have acted in good faith



Statement 6. QLD, NSW, and VIC – Governments have fully considered the impacts on families regarding renewable energy projects

State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	8	4	1	38	209	260
	(3%)	(1.5%)	(0.5%)	(15%)	(80%)	(100%)
NSW	3	4	1	17	230	259
	(1.5%)	(2%)	(0.5%)	(7%)	(89%)	(100%)
VIC	5	2	1	4	134	146
	(3.5%)	(1.5%)	(0.5%)	(3%)	(91.5%)	(100%)



• •	•					
State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	9	3	1	36	211	260
	(3.5%)	(1%)	(0.5%)	(14%)	(81%)	(100%)
NSW	7	5	2	11	234	259
	(3%)	(2%)	(0.5%)	(4%)	(90.5%)	(100%)
VIC	4	1	2	5	134	146
	(2.5%)	(0.5%)	(1.5%)	(3.5%)	(92%)	(100%)

Statement 7. QLD, NSW, and VIC – Governments have fully considered the impacts on rural communities regarding renewable energy projects



Statement 8. QLD, NSW, and VIC – Governments have fully considered the environmental impacts of renewable energy projects

State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	8	3	4	26	218	259
	(3%)	(1%)	(2%)	(10%)	(84%)	(100%)
NSW	9	2	3	10	236	260
	(3.5%)	(0.5%)	(1%)	(4%)	(91%)	(100%)
VIC	4	2	3	10	127	146
	(2.5%)	(1.5%)	(2%)	(7%)	(87%)	(100%)



Appendix 3

Statement 9. Renewable energy infrastructure projects are contributing to higher electricity prices in your local community

-					
Strongly	Aaree	Unsure	Disagree	Strongly	Totals
A				Discourses	
Agree				Disagree	
397	160	78	20	44	699
001	100	10	20		000
(57%)	(23%)	(11%)	(3%)	(6%)	(100%)
(0.70)	(-0/0)	(,0)	(0,0)	(370)	(100/0)



Statement 10. Renewable energy infrastructure projects are contributing to cost of living pressures in your local community

Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
388	161	91	21	40	701
(55%)	(23%)	(13%)	(3%)	(6%)	(100%)


Appendix 4

Statement 9. QLD, NSW, and VIC – Renewable energy infrastructure projects are contributing to higher electricity prices in your local community

State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	129	69	34	10	17	259
	(50%)	(26.5%)	(13%)	(4%)	(6.5%)	(100%)
NSW	150	55	26	5	17	253
	(59%)	(22%)	(10%)	(2%)	(7%)	(100%)
VIC	89	30	14	2	10	145
	(61%)	(20.5%)	(10%)	(1.5%)	(7%)	(100%)



Statement 10. QLD, NSW, and VIC – Renewable energy infrastructure projects are contributing to cost of living pressures in your local community

State	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	Totals
QLD	129	63	45	6	16	259
	(50%)	(24.5%)	(17.5%)	(2%)	(6%)	(100%)
NSW	146	59	27	8	15	255
	(57%)	(23%)	(11%)	(3%)	(6%)	(100%)
VIC	87	30	14	5	9	145
	(60%)	(21%)	(10%)	(3%)	(6%)	(100%)



Appendix 5

Never	Sometimes	Often	Almost Always	Totals	
258	292	95	33	678	
(38%)	(43%)	(14%)	(5%)	(100%)	

Question 1. Do you have trouble staying focused on the present moment?



Question 2. During work hours, do you have a hard time staying focused and concentrating on the task-at-hand?

Never	Sometimes	Often	Almost Always	Totals
273	293	87	23	676
(40.5%)	(43%)	(13%)	(3.5%)	(100%)



Never	Sometimes	Often	Almost Always	Totals
280	273	91	34	678
(41.5%)	(40%)	(13.5%)	(5%)	(100%)



Question 4. Do you feel irritable, annoyed, or angry over trivial issues?

Never	Sometimes	Often	Almost Always	Totals
184	347	110	35	676
(27%)	(51.5%)	(16.5%)	(5%)	(100%)





ANSWER CHOICES	RESPONSES	
2357	0.00%	0
2381	1.00%	1
2800	0.00%	0
2827	0.00%	0
2830	0.00%	0
2843	26.00% 2	6
2844	46.00% 4	6
2850	3.00%	3
2852	12.00% 1	2
Other (please specify)	12.00% 1	2
TOTAL	10	0

#	OTHER (PLEASE SPECIFY)	DATE
1	2343	3/1/2024 8:19 PM
2	2866	2/29/2024 10:03 AM
3	2866	2/29/2024 8:21 AM
4	2866	2/28/2024 11:37 PM
5	2329	2/28/2024 10:50 PM
6	2866	2/28/2024 9:58 PM
7	2329	2/28/2024 10:47 AM
8	2395	2/25/2024 8:35 AM
9	2820	2/24/2024 6:11 PM
10	2866	2/24/2024 4:33 PM

	CWO R	EZ Mental Health Survey	SurveyMonkey
11	2	2329	2/24/2024 7:39 AM
12	2	2395	2/23/2024 8:59 PM

Q2 What age category are you in?



ANSWER CHOICES	RESPONSES	
Under 18	1.00%	1
18-29	8.00%	8
30-39	17.00%	17
40-49	16.00%	16
50-59	23.00%	23
60-69	19.00%	19
70-79	16.00%	16
Over 80	0.00%	0
TOTAL		100

Q3 Are you male or female?



ANSWER CHOICES	RESPONSES	
Male	29.00%	29
Female	71.00%	71
TOTAL		100

Q4 Do you have an existing, diagnosed mental health condition?



15
85
100

Q5 Have you been impacted by the CWO REZ?



ANSWER CHOICES	RESPONSES	
Yes	85.00%	85
No	15.00%	15
TOTAL		100

6/20

Q6 If yes, choose all that best describe how you have been affected by the CWO REZ.



ANSWER CHOICES	RESPONSES	
Are you experiencing strained relationships with family and/or friends and neighbours?	74.70%	62
Have you been affected by a renewable energy project?	80.72%	67
Is your land being or likely to be compulsorily acquired?	24.10%	20
Is a member of your family going through compulsory acquisition?	20.48%	17
Have you experienced bullying for your opinions on the CWO REZ and its projects?	45.78%	38
Total Respondents: 83		

Q7 Select the symptoms you have been experiencing since the CWO REZ was declared (choose all that apply).





CWO REZ Mental Health Survey

ANSWER CHOICES	RESPONSES	
Anxiety	79.52%	66
Low mood	57.83%	48
Sleeplessness	68.67%	57
Apathy	13.25%	11
Lack of interest and motivation	27.71%	23
Increased stress	81.93%	68
Trouble getting out of bed	12.05%	10
Increased isolation	31.33%	26
Social media use more than normal	32.53%	27
Unexplained body aches & pains	19.28%	16
Digestive issues	9.64%	8
Unexplained chest pain	9.64%	8
Shortness of breath	4.82%	4
OCD behaviours	7.23%	6
Anger outbursts	43.37%	36
Increased alcohol intake	25.30%	21
Increased drug taking	2.41%	2
Substance abuse	1.20%	1
Gambling	1.20%	1
Dysregulated eating	9.64%	8
Food restriction	0.00%	0
Increased violence in the home	1.20%	1
Self harm	0.00%	0
Suicidal tendencies	3.61%	3
Thoughts of harming others	4.82%	4
Total Respondents: 83		

Q8 Do you normally seek professional help when your mental health mood is not ok?



ANSWER CHOICES	RESPONSES	
Yes	30.43%	28
No	69.57%	64
TOTAL		92

Q9 Have you been able to seek help from a professional health care provider for the issues you are experiencing as a result of the CWO REZ?



ANSWER CHOICES	RESPONSES	
Yes	16.28%	14
No	83.72%	72
TOTAL		86

Q10 When was the last time you sought professional help for a mental health issue you experienced?



ANSWER CHOICES	RESPONSES	
1-6 months	13.68%	13
6-12 months	7.37%	7
1-5 years	10.53%	10
5-10 years	7.37%	7
More than 10 years	10.53%	10
Never	50.53%	48
TOTAL		95

Q11 If there was mental health community support available to you would you access it?



ANSWER CHOICES	RESPONSES	
Yes	71.91%	64
No	28.09%	25
TOTAL		89

Q12 What would help your mental health the most? Please choose all that apply.



CWO REZ Mental Health Survey

ANSWER CHOICES	RESPONSES	
Community group support meetings	32.95%	29
Massage	28.41%	25
One on one counselling sessions	40.91%	36
Yoga/Pilates	26.14%	23
Psychologist	27.27%	24
Talk therapist	13.64%	12
Acupuncturist	7.95%	7
Herbal therapist	10.23%	9
Spiritual retreats	9.09%	8
Kinesiologist	7.95%	7
Dietician	6.82%	6
Meditation	17.05%	15
Group therapy	4.55%	4
Personal trainer	15.91%	14
Gym membership	13.64%	12
Other (please specify)	31.82%	28
Total Respondents: 88		

#	OTHER (PLEASE SPECIFY)	DATE
1	the right to farm without all the REZ bs	3/1/2024 10:17 PM
2	leave us alone, put wind solar transmisson in Sydney	3/1/2024 10:17 PM
3	Not having to live near horrible wind turbines	3/1/2024 10:03 PM
4	GET RID OF THE CWOREZ. We do not want wind & solar FACTORIES on our precious FARMLAND. It is uneconomical and will not provide the power needed for heavy industry.	3/1/2024 10:15 AM
5	Get rid of costly, inefficient renewable energy in our pristine agricultural farming area of Dunedoo. We grow food & fibre & should not be expected to "grow" power for the cities who waste it anyway.	2/29/2024 9:50 PM
6	Get rid of the REZ	2/29/2024 12:31 PM
7	Stop the renewable madness	2/29/2024 1:40 AM
8	truth about renewables and carbon costs in manufacture/build	2/28/2024 10:47 AM
9	The REZ being stopped.	2/28/2024 7:03 AM
10	Sheep work	2/27/2024 4:33 PM
11	Remove CWO REZ from my life	2/27/2024 8:59 AM
12	no rez	2/26/2024 6:56 PM
13	No more CWOREZ. No more windfarms or solar farms	2/26/2024 11:02 AM
14	Stress causes low immune response to current community diseases	2/25/2024 7:35 PM
15	REZ to go away	2/25/2024 11:38 AM
16	If the rez was stopped	2/24/2024 8:04 PM
17	CWOREZ be paused and Energyco rectify the mess they have made as it is not possible to do what they say they are going to do.	2/24/2024 6:58 PM

CWO REZ Mental Health Survey

SurveyMonkey

18	No REZ	2/24/2024 2:20 PM
19	CWO REZ going away and leaving us alone	2/24/2024 12:31 PM
20	We are being surrounded by & being forced by the government to attempt to engage & negotiate with 100% profit driven psychopathic multinational renewable energy corporations. We require a mandatory setback requirement of 6km from turbines to people's homes, where corporations can only build within this 6km if they can negotiate a fair commercial agreement with those neighbours. This would significantly reduce several years of uncertainty for the future on the land & our multigenerational properties. At the moment there is no mandatory setback requirement. Therefore turbines are proposed as close as 1km to houses, on ridgelines towering over them up to e.g 3/4km into the air., as corporations want to maximise profit opportunity, and the leave it up to the NSW State Govt to make a call at the very end of the assessment process (several years) to make a call that the turbines are too close & should be deleted from the plan. Even when the NSW Govt makes that call the corporations will be kicking & screaming for them not to be deleted until the final final call is made. This has devastating implications for our mental health. Problem is, a mental health service is not going to help change the outcome of development.	2/24/2024 10:23 AM
21	The CWO REZ and everything that came with it to be abandoned. Better alternatives sought by Government.	2/24/2024 7:28 AM
22	Not to have transmission lines on my property, mot to have solar & wind farms built in my area.	2/24/2024 4:49 AM
23	Stop wrecking our homes, land and communities. Put these projects where the people want themSydney.	2/23/2024 10:17 PM
24	Cworez to leave us alone	2/23/2024 8:22 PM
25	No rez in my hometown	2/23/2024 7:55 PM
26	Don't put them in the area full stop	2/23/2024 7:08 PM
27	REZ to go away	2/23/2024 6:51 PM
28	Not having my farm wrecked by neighbors' giant wind monsters	2/23/2024 6:50 PM



Q13 Right now, what best describes your mental health?

ANSWER CHOICES	RESPONSES	
Self aware and calm, coping well & positive outlook	28.87%	28
Irritable or impatient, overwhelmed, low energy levels, worried or nervous	32.99%	32
Angry, tired, irritated & frustrated with others, feeling hopeless	36.08%	35
Isolated from others, aggressive & out of control, depressed, highly anxious	2.06%	2
TOTAL		97

Q14 Do you know where to go to get mental health help if you felt you needed it?



ANSWER CHOICES	RESPONSES	
Yes	64.95%	63
No	35.05%	34
TOTAL		97

Q15 Are you concerned about the mental health of family members, friends and/or community members?



ANSWER CHOICES	RESPONSES	
Yes	83.84%	83
No	16.16%	16
TOTAL		99

Managing the impacts of State Significant Development

Final Report November 2023

Prepared for Mid-Western Regional Council





Proudly funded by



This report has been prepared for Mid-Western Regional Council and has been funded by the NSW Government's Regional NSW – Business Case and Strategy Development Fund. This fund supports strategies and initiatives that will strengthen community infrastructure, regional prosperity, and planning for future projects.

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Mid-Western Regional Council (MWRC) commissioned PwC to assess the impacts of additional population on services, infrastructure and housing as a result of State Significant Development (SSD) projects in the Mid-Western Region Local Government Area (MWR LGA). The headline findings are outlined below.

Growth impacts

- As of October 2023, 25 SSD projects as well as EnergyCo's transmission lines have been identified for development in and around the MWR. Together, these projects have a peak workforce requirement of 7,010 workers in 2026.
- Accounting for workers who may bring spouses and families, the total additional population would be higher, peaking at 9,906 additional persons in 2026. This is a 40% increase in population in three years.
- ~5,000 of the additional population are assumed to be in temporary worker accommodation (TWA) arrangements. The remainder need to be housed in the MWR. This translates to a need for up to 1,515 additional dwellings in 2026. By comparison, MWRC has processed 1630 housing approvals in past 10 years (163 a year). The rental market is currently tight with only 74 properties vacant across the LGA as of October 2023.

Service/infrastructure impacts

Growth will exacerbate existing constraints including:

- Water needs from TWAs and additional residential housing may demand, on average, up to an additional 708 ML per year in 2026. TWAs may generate, on average, up to 456 ML of wastewater per year in 2026 (assuming ~5,000 people are housed in TWAs). The MWRC does not have the operational capacity to service this demand.
- Up to **7,428 additional tonnes of waste** is forecast to be produced in the peak construction year (2026) from additional residential housing and temporary worker accommodation.
- Increased demand on local road networks could increase average road maintenance costs by ~55%, rising to \$13,270 per km from \$8,539. The majority of this additional traffic demand would be generated by non-rate paying persons, creating a funding gap for maintenance.
- Up to an additional 5,085 ED presentations could be expected in 2026, a 35% increase and would necessitate a doubling of the current emergency department capacity at Mudgee Hospital if this activity were to be met within the Mid-Western Region.
- Up to an **additional 25 classrooms may be required** across primary and secondary schools at the peak construction period in 2026 due to workers who may bring families and children.



Collaboration opportunities

- Collaboration around these challenges could seed new industries for the region, in water and waste and the development of enhanced waste water recycling capability to provide sustainable source water for construction and industry. There are additional circular economy opportunities including exploring a potential upgrade of existing recycling facilities to become a regional construction waste processing hub.
- Beyond the Central-West Orana Renewable Energy Zone (CWO REZ) boundary, there are six adjacent projects which **need to be incorporated into infrastructure planning and coordination** to manage impacts on communities. These are not currently being considered by Energy Co.

MWRC has sought analysis to understand the impacts of additional population on services, infrastructure and housing as a result of major projects in the region

Background and context

A number of state significant developments (SSD) are currently planned within and around the Mid-Western Regional Local Government Area (MWR LGA). The majority of these SSDs are related to the Central-West Orana Renewable Energy Zone (CWO REZ) and are central to the NSW Government's net zero transition to deliver clean, reliable and affordable energy for NSW.

This current and planned investment across a range of major projects in the MWR LGA will create significant opportunities for the region including, but not limited to, continuous demand for workers over the next decade. However, while the CWO REZ will deliver a range of benefits to NSW as a whole, the construction and delivery of these projects will create significant demand for workers over the next decade with flow-on impacts to housing, services and utilities in and around the MWR LGA.

Careful planning and proactive management is critical to ensure that this influx of investment leads to the best possible outcome for both the region and the NSW at large. NSW Energy Co has initiated a series of working groups as the basis for coordinated planning and action to mitigate negative impacts to regional communities. This report is intended to promote alignment amongst state and local government and provide the basis for further collaborative planning and risk mitigation. It should be seen as a starting point for informing appropriate state and local agencies to align growth planning for services, manage community impacts across the delivery phases and to determine need for additional analysis.

Purpose, scope and limitations of the report

This report provides a **point-in-time analysis** based on the best data available to assess cumulative impacts of additional population on services, infrastructure and housing as a result of major projects within and immediately surrounding the MWR LGA.

The analysis has three primary objectives:

- 1. To estimate the likely number of workers expected across the both construction and operational phase of planned major projects in the region and **determine the subsequent temporary and permanent increase to population within the MWR LGA**.
- 2. To determine the impact of this additional population on housing, infrastructure and services, including water, sewage, healthcare, schooling, childcare and emergency services.
- 3. To outline strategies and potential investments required to mitigate the identified short-term impacts on housing, infrastructure and services as well as identify a series of longer-term economic development opportunities or legacy projects.

Note: The analysis in this report is limited by available data. All findings are based on information received up to October 2023 and therefore may not reflect an up-to-date view of planned projects in and surrounding the region. The analysis in this report are directly underpinned by the outputs from the worker and population estimates. Worker and population estimates are reliant on several core assumptions around workforce composition and project timing and include: (a) 98% of the required workforce will come from outside of the MWR LGA, (b) of the total workforce required, 16% are assumed to be family households and 6% are assumed to be couple households meaning they will bring spouses and/or children, (c) peak construction workforce requirements are currently forecast for 2026 as indicated by project proponents.

Information provided by project proponents indicate a peak workforce need of 7,010 in 2026 with between 6,115 and 6,500 likely to come from outside of the MWR LGA

As of August 2023, 25 SSD projects as well as EnergyCo's transmission lines have been identified for development in and around the MWR LGA. Based on information provided by project proponents and MWRC, these projects could generate demand for up to 7,010 workers at the peak delivery period in 2026. This estimate assumes that 98% of the workforce for **new renewable projects** will come from outside the MWR LGA (core scenario).¹ This assumption reflects the low unemployment rate in the region (<2% unemployed).

Results: Peak workforce demand, core scenario



Figure 1: Non vs. non-local workforce, applying a 98% non-local workforce assumptions

Key: Non-local Local

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Source: MWRC, Census 2021, PwC

PwC 1. Note, the results presented in the body of this report include two mining related projects (Moolarben Coal and Bodwens Silver). As 98% local vs. 2 % non-local ratio has been applied to these projects to accurately reflect current industry employment concentrations for the region. This assumption is detailed in Appendix A.

Taking into account the likelihood that some workers may bring spouses and families, the total estimated additional population as a result of SSD projects in and around the MWR LGA will peak at 9,906 in 2026 comprising of 66% workers and 34% spouses and family

Of the total non-local workers required for the identified SSD projects, the modelling assumes that **78%** will be single person households, **16%** will be family households and **6%** will be couple households, resulting in further additional population in the region. These assumptions are grounded in comparative analysis of similar regions that have a high reliance on external workfroce.

Results: Total additional population, highlighting additional population generated by spouses and families¹



Figure 2: Composition of total additional population to 2041, core scenario

¹Non-local couples are defined as workers and their spouse. Non-local family units consist of workers, their spouse and children (and comprising 1.9 children as per the regional NSW average).

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PwC

While temporary, population increases of this magnitude will place increased demand and pressure on services, infrastructure and housing across the board

Service impacts have been assessed by determining the change in per capita service provision as a result of increased population to establish. This analysis is based on averages across the region. Housing and infrastructure impacts are based on the current level of operational capacity (e.g. sewage treatment capacity, provision of zoned land) as advised by MWRC.

Impact analysis summary

Service Area	Current state	Demand impact	Impact ¹	Detail
Housing	 74 vacant properties across the LGA² 1,630 housing approvals in past 10 years (163 a year) 	 Up to 1,493 additional dwellings in peak construction (2026) 2023-2041 median of 519 additional dwellings 	>75% increase	Pages 32-34
Childcare	 11 childcare centres with 720 approved childcare places 0.35 childcare places per child (inner regional NSW average) 	 Up to 59 additional childcare places in peak construction period (2026) 2023-2041 median of new childcare places is 7 	<25% increase	Pages 35 -36
Schools (Primary	 9 primary schools with 2294 students enrolled³ 16:1 average student to teacher ratio 	 Up to 26 additional primary school classes (751 students) in peak construction period (2026) 2023-2041 average of 4 additional primary school classes 	>25% <50% increase	
and Secondary)	 4 secondary schools with 1852 students enrolled³ 11:1 average student to teacher ratio 	 Up to 30 additional secondary school classes (751 students) in peak construction period (2026) 2023-2041 average of 4 additional secondary school classes 	>25% <50% increase	Pages 37-38
GPs	 GPs within the LGA work 12.25 to 15.75 FTE Current GP to patient ratio of 1:1,168 	 Up to 8 additional dedicated GP FTE in peak construction period (2026) 2023-2041 median of 1 additional dedicated GP FTE 	>50% increase	Pages 39-40
Hospitals	 Mudgee Health Services has 8 ED bay spaces 2 nurses per shift and 1 additional nurse for peak period (10:30-19:00) 14,583 total presentations in 2022 	 Up to an additional 8 ED bays and 7 nurses may be required in peak construction period (2026) ⁴ Up to an additional 5,085 ED presentations could be expected in 2026 	>75% increase	Pages 41- 42

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PwC 1. Impact is calculated at peak demand 2. As at October 2023, As at October 2023, sourced from MWRC. 3.Count is for number of schools with 20 or more students only. Based on consultations, an assumption has been made that there is current capacity for ana additional ~150 primary and secondary students. 4. Based on available data the old (2006) MoH methodology for projecting ED treatment spaces was utilised. This method could overestimate bays required.

9

Water supply and sewage systems will require significant upgrades to service the SSD workforce, whilst other services such as waste and roads may be able to adapt easier

Impact analysis summary

Service Area	Current rate of service	Service response	Impact ¹	Detail
Ambulance	 11,186 responses in 2022 for Mudgee- Lithgow SA3 1 paramedic for 330 residents (145 paramedics) Mudgee – Lithgow (SA3) 	 Up to 30 additional paramedics in peak construction period (2026) 2023-2041 median of 4 additional paramedics Up to 803 additional responses in peak construction period (2026)² 	<25% increase	Pages 43-44
Water	 Current water supply systems across the LGA are at capacity and intended to grow with baseline population 	 Any additional growth in the region will require additional works Distribution infrastructure will need to be upgraded in consideration of surge capacity 	Forecasted to exceed current capacity	Page 47
Sewage	 Mudgee and Gulgong STPs have remaining capacity for the baseline (DPE) population growth with consideration to planned upgrades. 	 Up to 5000 additional residents may be housed in dwellings in peak construction period (2026) 2023-2041 median of ~1,000 additional residents 	Forecasted to exceed current capacity	Page 48
Waste	 In 2022-23, Mudgee Waste Facility collected a net waste total of 33,951 tonnes of waste Under baseline population projections (i.e. no additional demand generated by SSDs), the LGA has 40 years of solid waste land fill capacity 	 Up to 7,428 additional tonnes of waste is forecast to be produced in peak construction year (2026) from the residential and worker population. Between 2023 and 2041, an average of 2,007 additional tonnes of waste will be produced across from the residential and worker population. 	<25% increase	Page 49
Roads	 2,460 km of local road network \$ 8,539 average maintenance cost per km of road in 2021-2022 	 Comparing FY22 to FY26, the maintenance cost increases by \$4,731 (to \$13,270) per km of road 	>25% <50% increase	Page 50
Police	 Consultation with the Orana-Mid Western Police Distric policing service around traffic incidents, potential incide entirety of the LGA. 	t revealed a number of factors that may increase demand for nts occurring at TWAs and resource management across the	N/A	Page 45-46

Mid-Western Regional Council - Managing the Impacts of State Significant Development PwC 1. Impact is calculated at peak demand

A series of recommendations have been developed to mitigate the impacts for each service sector

Action item	Recommendation
Housing	 Establish an accommodation coordination team that manages and monitors housing stock and room availability. Develop a campaign to promote and educate residents around infill medium-density development (including secondary dwellings) to encourage an increase in this housing typology coming to market. Financial incentives available to landowners should be included as part of the campaign. Boost number of planning staff within the Council to accelerate speed of development approval process in line with increased demand. Formalise requirements for proponents to provide temporary worker accommodation in appropriate locations. Explore opportunities for sharing, re-use and/or repurposing of TWAs between projects and/or for legacy uses. Review current staging and servicing of zoned land in the Mudgee and Gulgong Urban Release Strategy - including master planning of growth areas to assist in bringing land to market in a more timely manner and agility to respond potential peak accommodation requirements. Build essential worker housing as part of master planned areas. Explore policies to incentivise major master planned housing developments, including opportunities to fast track approvals.
Water	 Investigate the feasibility and funding options to upgrade the Mudgee and Gulgong Sewage Treatment Plants to provide waste water recycling capability for construction use and other ongoing uses post construction phase. Review current water distribution infrastructure phasing and timing to align with accelerated release of land as required. Work with NSW Government/energy project proponents to establish a clear requirement for all construction and TWA sites to provide on-site water supply systems (incl. source water independent of council allocation). Work with NSW Government to audit existing water allocations and identify unused or underutilized allocations for potential transfer and/or sharing arrangements Explore options to increase in water licenses/allocations for MWRC.
Sewage	 Determine a clear framework that requires energy project proponents to have onsite sewage processing in TWAs, including processes to manage sledge. Explore options for Mudgee and Gulgong STP expansion including temporary expansion; proponent built; servicing in neighbouring LGAs.
Waste	 Improve communication channels with proponents around roles and responsibilities for waste collection and processing at TWAs. Establish a regulatory framework setting benchmarks/quotas on REZ material and construction waste and TWA waste collection. (e.g. min % recyclables, construction clean fill reuse rules). Consult with neighbouring councils to ensure regulatory framework is consistent around landfill obligations for TWAs/project sites. Conduct a business case/costings on value-add opportunities for Council to upgrade recycling capabilities to improve recycling scope, capacity and quality.
Childcare	 Examine the feasibility of MWRC acting as a developer for a new childcare/multi-purpose centre in Gulgong following the build and lease model in Mudgee. Conduct an audit of childcare service providers' opening hours capability and expansion potential to cater for extended working hours of construction/REZ workers. Develop a platform for centralised communication of current childcare place availability in the region and ongoing demand monitoring. Advocate for developers/energy proponents to build-in childcare capacity to new developments/TWAs.
Schools	 Identify under-utilised assets and classrooms, including detailed audit of capacity on a school-by-school basis Advocate for the provision of additional temporary classrooms in peak construction years as required. Partner with local schools to develop a teacher retention strategy around non-monetary incentives focused on mentoring and community engagement

The actions and recommendations also identify longer-term opportunities and legacy projects with many of these focused around utilities infrastructure

Action item	Recommendation
Hospitals	 Conduct an audit on medical equipment available within the region and advocate for a CT scan in Mudgee Hospital. Work with NSW Health to explore potential 'virtual hospital' models, utilising telehealth to address and manage demand for low triage and GP activity. NSW Government to work with SSD project proponents to establish protocols for helicopter access to worker/project sites. Investigate contingencies to medical transfers to Dubbo Base Hospital. E.g. shell space at Mudgee Base Hospital, additional bed/staffing requirements. Explore requirements to mandate that TWAs to provide onsite medical services. NSW Health to work with project proponents to communicate clear protocols for emergency responses.
Primary Health Care	 Set minimum health care staffing requirements for TWA (e.g. prescribing nurses on-site, access to telehealth for all workers). Advocate for permanent placement of GP/GPs in Gulgong Collaboration between developers, project proponents and local pharmacies around medical supplies and ability to fill scripts. Development and promotion of telehealth models of care in region, including development of virtual care facility.
Ambulance	 Liaise with local NSW Ambulance to communicate the road/traffic implications of the REZ projects. Engage with SSD proponents to establish requirements/expectations for access to paramedics/ambulances on TWA sites. Investigate options for temporary service delivery and increase paramedic provision during peak construction (such as temporary ambulance stations)
Police	 Facilitate educational workshops for SSD proponents around risk minimisation for TWAs including road safety concerns. Communicate preference with energy proponents to establish 'dry'/alcohol-fee TWA sites.
Local roads	 SSD proponents and developers to build temporary/'park and ride' car parks on private land. Education campaign aimed at residents, businesses community groups and energy proponents around traffic flow changes and associated safety protocols during peak construction years. Consideration of additional funding options/special grant application to fund asset road maintenance program.
Performance tracking	 Resource capability to monitor the region's population growth on a monthly basis. Collaboration with NSW Government to audit existing water allocations to identify underutilised allocations for potential transfer/sharing arrangements. Traffic modelling and ongoing traffic count Review parking capacity and controls in peak years. Improved centralised communication around current childcare placements in region. Ongoing monitoring of school enrolments and capacity. Monitoring of ED presentations and bed usage at Mudgee Hospital. Audit of current clinics on capacity to absorb additional GPs, and identification of potential sites for additional GP clinics. Monitor average incident rates – ambulance and police. Scenario modelling of current ambulance/police vehicle fleet/staffing capacity.

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MWRC has sought analysis to understand the impacts of additional population on services, infrastructure and housing as a result of major projects in the region

Background and context

The development of Renewable Energy Zones (REZ) is central to the NSW's governments vision to modernise the State's electricity system to deliver clean, reliable and affordable energy across NSW. Moderisation of the electricity system may also enable new industries, revive traditional industries with new sustainable fuels, and open diverse, high-quality job opportunities across our regional communities.

The State's first REZ is located in Central-West Orana region. Occupying approximately 20,000 square kms, the REZ overlaps with a significant proportion of the Mid-Western Regional Local Government Area (MWR LGA). As at September 2023, the REZ is hoped to contribute:

36 Projects identified by council in or surrounding the MWR LGA* **\$10 Billion** expected in private investment to the REZ region by 2030

~7000 additional construction and operation jobs supported at its peak*

This current and planned investment across a range of major projects in the MWR LGA (including those in the CWO REZ) will create significant opportunities for the region including, but not limited to, continuous demand for workers over the next decade. At the same time, this investment will take place in an already highly pressurised environment of service delivery, with acute housing and worker shortages currently being felt across regional NSW.

Careful planning and proactive management is critical to ensure that this influx of investment leads to the best possible outcome for both the region and the NSW at large.

* 36 Projects represents all projects identified by the MWRC that are in the LGA or surrounding as at October 2023. ~7000 jobs is conditional on select projects used in this report occurring as currently scheduled. These project are explicitly outlined in appendix A.

Purpose, scope and limitations of analysis

This report provides a **point-in-time analysis** based on the best data available to assess cumulative impacts of additional population on services, infrastructure and housing as a result of major projects within and immediately surrounding the MWR LGA.

The analysis has three primary objectives:

- 1. To estimate the likely number of workers expected across the both construction and operational phase of planned major projects in the region and determine the subsequent temporary and permanent increase to population within the MWR LGA.
- 2. To determine the impact of this additional population on housing, infrastructure and services, including water, sewage, healthcare, schooling, childcare and emergency services.
- 3. To outline strategies and potential investments required to mitigate the identified short-term impacts on housing, infrastructure and services as well as identify a series of longer-term economic development opportunities and legacy projects.

This report is intended to promote alignment amongst state and local government and provide the basis for further collaborative planning and risk mitigation. It should be seen as a starting point for informing appropriate state and local agencies to align growth planning for services, manage community impacts across the delivery phases and to determine need for additional analysis.

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A three-staged approach was used to develop this report, drawing on data and consultation from MWRC and NSW government agencies

Scope and approach of this report



- An adjustable, point in time, estimate of the likely number of workers expected across the both construction and operational phase of planned SSDs in the region
- Will enable the ability to determine the subsequent temporary and permanent increase to population within the MWR LGA
- Provides the basis for determining potential increased demand on the region's housing stock, services and infrastructure

Determine the impact of this additional population on housing, infrastructure and services/utilities, including water, sewage, healthcare, schooling, childcare and emergency services.

- Impacts are based on change in service provision ratios and/or operational capacities of council operated infrastructure.
- Outline strategies and potential investments required to mitigate the identified short-term impacts on housing, infrastructure and services
- Identify a series of longer-term economic development opportunities and legacy projects.

Limitations

The analysis in this report is limited by available data and provides a points in time analysis. All findings are based on information received up to October 2023 and therefore may not reflect an up-to-date view of planned projects in and surrounding the MWR LGA. The analysis in this report are directly underpinned by the outputs from the worker and population estimates. Worker and population estimates are reliant on several core assumptions around workforce composition and project timing and include: (a) 98% of the required workforce will come from outside of the MWR LGA, (b) of the total workforce required, 16% are assumed to be family households and 6% are assumed to be couple households meaning they will bring spouses and/or children, (c) peak construction workforce requirements are currently forecast for 2026 as indicated by project proponents. In practice, start dates might be delayed and construction timelines extended due to supply chain constraints or access to finance, for example. The reliability of the estimates in this report are expected to increase as further and more detailed information becomes available to council.

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Six steps were undertaken to estimate the likely additional population as a result of State Significant Development (SSD) projects in and surrounding the MWR LGA

The diagram below outlines the key steps used to estimate the required workforce needed to construct and operate SSD projects in the region and determine the subsequent increase in permanent and temporary population. The population estimates generated through this approach have been used as the basis for assessing impact on housing, infrastructure and services in the MWR LGA in Chapter 4. Further detail on the assumptions and results in each step are provided in subsequent pages.

Outline of approach



Key data sources for these estimates include: the 2023 Mudgee and Gulgong Urban Release Strategy (URS), SSD project information provided by MWRC, DPE Common Planning Assumptions and ABS Census data

Current common planning assumptions estimate that the MWR LGA will grow to from 25,713 persons in 2021 to 30,155 persons by 2041 (an increase of 4,442)

Step 1: Confirming baseline population growth and demographic characteristics

Baseline population growth

- Consistent with the 2023 Mudgee and Gulgong Urban Release Strategy (URS), NSW DPE population projections are used as the baseline population projections for the MWR LGA.
- Additional temporary and permanent population from SSDs is not already counted in this DPE baseline projection.
- Over the period 2021 to 2041, the MWR LGA is projected to grow by 4,442 people (0.8 per cent per year).

Figure 3. Population projections to 2041: MWR LGA



Mid-Western Regional Council - Managing the Impacts of State Significant Development Source: ABS 2021 PwC

Key demographic characteristics

- The MWR LGA has a similar demographic gender spilt compared to the State, with 50.3% male and 49.7% of being female.
- The LGA has a slightly older existing population when compared to the overall State and with a lower proportion of population in primary working age (25-54).

Figure 4. Age and gender distribution of workers in MWR LGA



- The household size in MWR has remained consistent over the past decade and on par with the regional NSW average of 2.4.
- The proportion of family households within the LGA has increased since 2011 by 11%, accounting for 67% of total households in 2021. Other households, which includes visitor households and other non-classifiable households, has decreased by 18% since 2011.

Table 1. Household Size (2001-2011)

Area	2021	Change 2011-2021
MWR LGA	2.4	0%

Table 2. Household types (2011-2021)

	MWR LGA			
Household Type	2021	Growth since 2011		
Family	67%	11%		
Lone Person	23%	8%		
Group household	2%	6%		
Other household	7%	-18%		
Total	100%	7%		

25 SSD projects plus EnergyCo's transmission lines have been included as in-scope for this analysis – collectively these projects will generate demand for up to ~7,010 workers over the peak delivery period

Steps 2 and 3: Confirming scope of employment generating projects and associated worker requirements

As of October 2023, a total of 36 SSD projects plus EnergyCo's transmission lines have been slated for development in and around MWR LGA. A total of 25 of these have been included as 'in-scope' for the purpose of this analysis. Projects included in-scope were based on several criteria including whether the project is: (1) located (entirely or partially) within the MWR LGA; (2) within or approximately 40 minutes drive of Mudgee or Gulgong, (3) closer to Mudgee or Gulgong than any other significant centre or town in the region. The projects identified at this point in time vary in maturity. In-scope projects, a maturity assessment and greater detail of these projects can be seen in Appendix A.

Figure 5. SSDs within and surrounding the MWR LGA



Mid-Western Regional Council - Managing the Impacts of State Significant Development

The majority or workers are likely to come from outside the MWR LGA and some workers may bring spouses and families, generating additional population beyond worker requirements

Steps 4 and 5: worker and population assumptions



*Note, mining projects are assumed to have 95% local vs. 5% non-local as current information states they are utilising their existing workforce. This may change with future mining projects.

Given the limitations of a point-in-time analysis, two types of sensitivity tests have been developed to account for the uncertainty around project timing and completion

Step 6: sensitivity testing

Sensitivity Test 1: project/worker volume

There are currently 36 known projects within and surrounding the MWR LGA. The results presented in the next chapter have assumed 25 of these projects will be constructed and become operational directly impacting the LGA as described in page 13.

A sensitivity test has been developed to account for the possibility of some of these 25 identified projects not commencing. This has been presented as a **'reduced' scenario**. This has been based on high level assessment of the following for each project (with further detail provided at Appendix B):

- Company specific factors (incl. company structure, experience and size)
- Project specific factors (incl. planning status and approval)
- Stakeholder feedback

Additionally, a sensitivity test that includes all 36 known projects has been run to illustrate the impacts of additional projects and/or a higher worker requirements on the results presented in this report. This has been presented as a '**plus' scenario**. Results are provided at page 26.

The model that has been developed to estimate the likely population impacts has been developed in a way that allows MWRC to add additional projects and information as it arises. As additional projects become known—and as the status of current known projects evolve—council will have the ability to update the estimates by inputting this new information, with worker and population estimates updated accordingly.¹

1. Note, currently the model considers each worker unique to each project. Appendix B provides some preliminary estimates to account for worker mobility which could be informed with greater access to data in the future.

Sensitivity Test 2: project timing

Under The Energy Corporation of NSW' (EnergyCo's) NSW Network Infrastructure Strategy, the "deliver now" stage will see the completion of the NSW Central West Orana REZ transmission line, a key piece of enabling infrastructure for other renewable energy projects within the region.

The Network Infrastructure Strategy proposes that the transmission lines under the "deliver now," for the Central-West Orana will be completed by 2027/2028. To provide a variation of timing of projects, the modelling explores an additional scenario where the completion of this line is delayed by 2 years. Accordingly, all renewable projects in the model are assumed to also delay by 2 years. This scenario is reflected indicatively in the figure below with results provided for the core scenario on page 25 and 26. Note that mining projects and other projects that do not rely on the transmission line are not subject to this variation.

Additionally, a hypothetical smoothed scenario has been run where projects' construction time lengths have been increased by 50%, and randomly selected projects have been delayed so that there is limited cross over in construction phase of like projects. This has been presented as a 'smoothed' scenario. Results are provided at page 25.

Figure 6. Indicative timing scenarios



Results indicate a peak workforce of 7,010 in 2026 with between 6,115 and 6,500 likely to come from outside of the MWR LGA when considered across a range of scenarios

Building on the assumptions outlined on page 19, the charts below show the construction and operational worker requirement based on information provided by project proponents and MWRC. Three scenarios are presented, with each scenario applying a different ratio of local vs. non-local workforce sourcing for **new renewable projects**. The results presented on the following pages and throughout this report relate to the core scenario which assumes that 98% of the workforce requirement will be non-local for **new renewable projects**.¹ This assumption reflects the low unemployment rate in the region (<2% unemployed).

Results: Peak workforce demand

Core Scenario The following results apply this scenario.

Figure 7: Local vs. non-local workforce, applying a 98% non-local



Figure 8: Local vs. non-local workforce , applying a 95% non-local



Key: Non-local Local

Figure 9: Local vs. non-local workforce, applying a 90% non-local



Source: MWRC, Census 2021, PwC

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PwC 1. Note, the results presented in the body of this report include two mining related projects (Moolarben Coal and Bodwens Silver). A 98% local vs. 2 % local ratio has been applied to these projects to accurately reflect current industry employment concentrations for the region. This assumption is detailed in Appendix A.

The construction workforce is estimated to peak in 2025 at 6,823 workers. The operational workforce will stabilise around CY 2028 providing ~ 660 going jobs, and ~ 430 renewable jobs on an ongoing basis.

Breaking down the total worker composition by construction workers and ongoing operational workers highlights a peak construction workforce of 6,823 in Q4 2025. The operational workforce will stabilise by Q3 2030 at around 660 jobs before peaking in 2037 at 735 jobs. Bodwens Silver Mine will contribute around 220 of these ongoing jobs with the remaining ~430 in the renewables sector. This trend is reflective of the greater longevity and decreased intensity of labour required to operate renewables.

Results: Total workers, by construction or operational work

Figure 10: Composition of total workforce required to 2041, core scenario



PwC

Taking into account the likelihood that some workers bring spouses and families, the total estimated additional population as a result of major projects in and around the MWR LGA will peak at 9,906 in 2026 comprising of 66% workers, and 34% spouses and family

As outlined on page 19, the modelling used to determine the total population increase assumes that some workers will bring their families and spouses to the region. Of the total non-local workers required for in-scope projects, the modelling assumes that **78%** will be single person households, **16%** will be family households and **6%** will be couple households. Non-local couples are defined as workers and their spouse. Non-local family units consist of workers, their spouse and children (and comprising 1.9 children as per the regional NSW average). With these considerations and assumptions, the total additional population could peak up to ~9,900 in 2026.

Results: Total additional population, highlighting additional population generated by spouses and families



Figure 11: Composition of total additional population to 2041, core scenario

With the possibility of families moving to the region, there is the potential for a peak of an additional 1,976 childcare and school aged children to be located within the MWR LGA in 2026

For the purposes of the impact assessment, in particular for schools and childcare facilities, the regional NSW demographic profile has been overlayed over the family unit projections to develop an example demographic profile of the potential additional youth population as a result of worker families moving to the region. This example shows the potential growth in different age bands. It is important to note that this example does not allow for any change in relative growth rates between and within these age bands over this period.

Results: Additional childcare and school aged children



This comprises:

The youth population peaks in 2026 at 1,976.

474 babies and preschoolers

751 primary schoolers

751 secondary schoolers



Figure 13. Projection of Peak Children Age Structure (2026), core scenario

■ Babies and pre-schoolers (0 to 4) ■ Primary schoolers (5 to 11)

Secondary schoolers (12 to 18)

Source: MWRC, Census 2021, PwC

Source: MWRC, Census 2021, PwC

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2000

1500

1000

500

A delayed scenario pushes the workforce peak back to 2027, with assumed flow on population impacts also pushing out to this period. Likewise, a 'smoothed' scenario spreads peak workforce over a \sim 4 year period (2025 - 2029)

Source: MWRC, Census 2021, PwC

Results: project timing sensitivity

Figure 14: Worker requirements – 'current', 'delayed' and 'smoothed' scenarios 8000 7.010 7000 6,094 6000 5,659 5000 4000 Construction of 3000 Energyco "Secure Now" and associated projects 2000 1000 0 2023 2024 2025 2026 2027 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2029 2030 2031 2028 --- Delayed ——— Smoothed Current

The chart to the left illustrates three timing scenarios of the total workforce requirements outlined in the preceding pages.

The **current scenario** assumes all projects in the MWR LGA and surrounding projects are constructed and delivered on time leading to a jump in the REZ workforce to 3,869 and 6,721 by the end of 2024, 2025 respectively.

The **delayed scenario** involves delaying the REZ projects that are due to be delivered in 2024-2027 and shifts them 2 years into the future, shifting the peak to 2027. The 'Deliver Now' transmission lines from EnergyCo construction timeline has been extended by 2 years, and the 'Secure Now' transmission line (2032-2034) remains on schedule, assuming there is some efficiencies gained from constructing the first ('Deliver Now') transmission lines. This timeline amendment results in minimal change to the peak workforce.

A hypothetical **smoothed scenario**, which aims to minimise like projects (e.g. solar, wind) that have the same start time, both reduces the peak to 5,659 and results in 5 years (2024-2028) where the workforce is above 2750 workers.

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PwC Note: Additional sensitivity analysis that speculate worker mobility is included in appendix B (see pages 75-76).

A 20% increase project and worker requirements would push peak workforce to almost 8,500, while a reduction in projects based on a high-level viability assessment could result in \sim 150 less workers at peak

Results: project / worker volume sensitivity





The chart to the left indicates the results of a sensitivity test to estimate the impacts on worker requirements in light of a reduced and increased number of projects proceeding when compared to in-scope projects under the core scenario. These scenarios are:

- Current: in-scope projects as outlined on page 18.
- **Reduced**: only select projects that are associated with EnergyCo and/or assessed as highly likely to proceed (see appendix A for further detail on projects not included in this scenario).
- Plus: all identified projects included.

Considering the reduced estimate, additional workers required would peak in **Q1 2026 at 6,851**. On the other hand, the plus estimate sees a peak of **8,496 total workers in the same quarter** (Q1 2026).

In the medium term, from 2037, as a result of longer term operational jobs there would be:

- ~ 790 operational workers required under the plus scenario
- ~ 700 operational workers would be required under the reduced scenario

This compares to the current scenario which estimates ~ 735 operational jobs on an ongoing basis.

Contents

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The impact analysis provides a high level assessment of the impact that increased population will have on services, housing and infrastructure with intention of aligning growth planning and mitigation across levels of government

Purpose of Impact Analysis

This analysis quantifies, at a high level, the impact that the additional surge in worker population will have on:

- demand for housing
- demand for social and other services provided by local and/or state government, and
- operational and/or maintenance impacts on council operated infrastructure assets including sewage, water, waste management and local roads

The impact analysis is intended to promote alignment amongst state and local government and provide the basis for further collaborative planning and risk mitigation. It should be seen as a starting point for informing appropriate state and local agencies to align growth planning for services, manage community impacts across the delivery phases and to determine need for additional analysis.

Interpreting the results of the impact analysis

The impact analysis is directly underpinned by the outputs from the worker and population estimates outlined in the preceding chapter. The worker and population estimates are reliant on several core assumptions around workforce composition and project timing and workforce need:

- 98% of the required workforce will come from outside of the MWR LGA
- Of the total workforce, 16% will be family households and 6% will be couple households meaning they will bring spouses and/or children.
- Peak construction workforce is 2026, reflecting the project timing and worker needs as communicated by proponents.

The starting point for understanding the impacts on housing, services and infrastructure has largely been determined by either:

- Determining the current ratios of service provision relative to the current population (e.g. number of GPs per 1,000 people), and/or
- Understanding the current level of operational capacity (e.g. sewage treatment capacity).

In determining impacts on rates of service provision the approach has broadly covered the following three steps:

- 1. Determine the current ratio of service provision
- 2. Establish the service gap resulting from increased population and economic migration
- 3. Size of the response needed over the next 20 years to meet the service gap

Note: Importantly, this analysis does not consider whether the current rates of service provision are adequate. That is, it takes current levels of service as a given and the impact is determined by the investment or service response required to return to current service levels, rather than an optimal service level.

A standardised framework has been developed to assess impacts of increased population on housing, services and utilities, however differing approaches have been used to benchmark current 'supply'

Impact Analysis Framework





Availability of housing underpins the ability for the LGA to ultimately attract and retain the workforce. As a direct flow on, childcare, hospital and ambulance services are likely to experience service pressures.

The summary results of the impact analysis below is directly underpinned by the outputs from the worker and population forecasts, which estimate a peak of ~9,900 additional persons (incl. workers, families and spouses) in 2026.

Service Area		Current state		Demand impact	>	Impact ¹	>	Factors impacting ability to meet demand	Detail
Housing	•	74 vacant properties across the LGA ² 1,630 housing approvals in past 10 years (163 a year)	•	Up to 1,493 additional dwellings in peak construction (2026) 2023-2041 median of 519 additional dwellings		>75% increase		 Availability of zoned land Rate and speed of zoning, approvals and servicing Ability to provide mixed and varied dwelling types Ability to preserve local short-term lease / rental market for visitor economy 	⊃ages 32-34
Childcare	•	11 childcare centres with 720 approved childcare places 0.35 childcare places per child (inner regional NSW average)	•	Up to 59 additional childcare places in peak construction period (2026) 2023-2041 median of new childcare places is 7		<25% increase		 Qualified workforce (currently experiencing national shortage) Buildings/land to house certified childcare centres Approval processes for additional childcare services The depth/breadth of childcare service provider market in the region Available and suitable housing for childcare workers to live 	⊃ages 35 -36
Schools (Primary and Secondary)	•	9 primary schools with 2294 students enrolled ³ 16:1 average student to teacher ratio	•	Up to 26 additional primary school classes (751 students) in peak construction period (2026) 2023-2041 average of 4 additional primary school classes		>25% <50% increase		 The MySchools data indicates that schools in the MWR LGA have a lower teacher to student ratio compared to the maximum allowable. This suggests that there may be existing capacity within the school system to absorb the additional demand generated by children of warker families. This additional compared to the maximum allowable. 	Pages
Ĥ	•	4 secondary schools with 1852 students enrolled ³ 11:1 average student to teacher ratio	•	Up to 30 additional secondary school classes (751 students) in peak construction period (2026) 2023-2041 average of 4 additional secondary school classes		>25% <50% increase		 Worker families. This additional capacity, however, is dependent on physical space in existing classrooms Supply of additional new classrooms Supply / ability to attract additional teachers to the MWR LGA Available and suitable housing for teachers to live 	37-38
General Practitioner (GP)	•	GPs within the LGA work 12.25 to 15.75 full time equivalent (FTE) Current GP to patient ratio of 1:1,168	•	Up to 8 additional dedicated GP FTE in peak construction period (2026) 2023-2041 median of 1 additional dedicated GP FTE		>50% increase		 Supply / ability to attract additional GPs to the MWR LGA Increased utilisation of alternative healthcare delivery models, such as telehealth, to offset peak demand Available and suitable housing for GPs to live Prescribing nurses and access to prescription medication 	⊃ages 39-40
Hospitals	•	Mudgee Health Services has 8 emergency department (ED) bay spaces 2 nurses per shift and 1 additional nurse for peak period (10:30-19:00) 14,583 total presentations in 2022	•	Up to an additional 8 ED bays and 7 nurses may be required in peak construction period (2026) ⁴ Up to an additional 5,085 ED presentations could be expected in 2026		>75% increase		 Ability to better use current ED layout and setup Triaging and transferring of patients between rural hospitals Ambulance direct deliveries to other hospitals based on patient needs i.e. Dubbo Base Hospital Increased utilisation of alternative healthcare delivery models, such as telehealth, for lesser triage category presentations 	⊃ages 41- 42

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PwC 1. Impact is calculated at peak demand 2. As at October 2023, sourced from MWRC. 3. Count is for number of schools with 20 or more students only. Based on consultations, an assumption has been made that there is current capacity for ana additional ~150 primary and secondary students. 4. Based on available data the old (2006) MoH methodology for projecting ED treatment spaces was utilised. This method could overestimate bays required.

Water supply and sewage systems will require significant upgrades to service the SSD workforce, whilst other services such as waste and roads may be able to adapt easier

The summary results of the impact analysis below is directly underpinned by the outputs from the worker and population forecasts, which estimate a peak of ~9,900 additional persons (incl. workers, families and spouses) in 2026.

Service Area	Current rate of service	Service response	Impact ¹	Factors impacting ability to meet demand	Detail
Ambulance	 11,186 responses in 2022 for Mudgee- Lithgow SA3 1 paramedic for 330 residents (145 paramedics) Mudgee – Lithgow (SA3) 	 Up to 30 additional paramedics in peak construction period (2026) 2023-2041 median of 4 additional paramedics Up to 803 additional responses in peak construction period (2026) ² 	<25% increase	 The incoming worker profile is assumed to be a younger and healthier cohort, however an increased risk of traffic vehicle accidents may cause and increase in responses Proximity of ambulance services to major construction sites Supply / ability to attract additional paramedics Supply of ambulance vehicles 	Pages 43-44
Water	 Current water supply systems across the LGA are at capacity and intended to grow with baseline population 	 Any additional growth in the region will require additional works Distribution infrastructure will need to be upgraded in consideration of surge capacity 	Forecasted to exceed current capacity	 Water licenses are at near-full allocation Ability to access and viability of ground water reserves 	Page 47
Sewage	 Mudgee and Gulgong STPs have remaining capacity for the baseline (DPE) population growth with consideration to planned upgrades. 	 Up to 5000 additional residents may be housed in dwellings in peak construction period (2026) 2023-2041 median of ~1,000 additional residents 	Forecasted to exceed current capacity	 Current processing facility is at capacity and would require expansion Ability to distribute population across regional centres within the LGA 	Page 48
Waste	 In 2022-23, Mudgee Waste Facility collected a net waste total of 33,951 tonnes of waste Under baseline population projections (i.e. no additional demand generated by SSDs), the LGA has 40 years of solid waste land fill capacity 	 Up to 7,428 additional tonnes of waste is forecast to be produced in peak construction year (2026) from the residential and worker population. Between 2023 and 2041, an average of 2,007 additional tonnes of waste will be produced across from the residential and worker population. 	<25% increase	 There is limited capacity for existing waste facilities to absorb construction waste, and other waste types generated over the construction phase of SSDs necessitating a need for proponent to source arrangements on a project-by project basis. 	Page 49
Roads	 2,460 km of local road network \$ 8,539 average maintenance cost per km of road in 2021-2022 	 Comparing FY22 to FY26, the maintenance cost increases by \$4,731 (to \$13,270) per km of road 	>25% <50% increase	 Availability of equipment, workforce and budget to upkeep roads from increased heavy freight and equipment 	Page 50
Police	 Consultation with the Orana-Mid Westerr that may increase demand for policing se incidents occurring at TWAs and resource 	Police District revealed a number of factors rvice around traffic incidents, potential e management across the entirety of the LGA.	N/A	Active management of police resourcesPrevention and education activities	Page 45- 46

The MWR LGA rental and housing markets are characterised by extremely low vacancy rates and growing house prices

Assessing Current State

- The housing market in the MWR LGA has historically been tight with a <1% vacancy rate. Only 68 rental properties were available as at the end of 2022 across the LGA.
- Changes to overarching macroeconomic conditions have seen an easing of this tightness in 2023. As at September 2023, 75 properties in Mudgee and 5 properties in Gulgong were available—nonetheless this still reflects a vacancy rate close to 1%.
- Overall the tight rental market reflects, in part, an increased prevalence of short-term rental market listings (i.e. Airbnb listings). As at October 2023, there are 266 Airbnb listings within the LGA, 244 of which are located in Mudgee.¹
- The low vacancy rate has also impacted the affordability of rentals. Currently, the median rent for houses in the LGA is \$510 per week.



Figure 16: Mid-Western Regional Vacancy Rates (houses), 2020-2022

Source: URS (2023), Mid-Western Housing Delivery Plan, Domain Quarterly House Price report

Current Supply Pipeline

Figure 17 highlights the housing supply for baseline population growth in Mudgee (excluding SSDs), assuming lots are serviced and zoned in a timely manner. Given a buffer (5 years of demand), the Mudgee and Gulgong Urban Release Strategy finds that currently Mudgee has land supply to ensure:

- General residential land to around 2037. Demand will exceed supply by 130 lots in 2041.
- Large lot residential land to around 2041 (199 spare lots).
- Lifestyle block land to beyond 2041 (43 spare lots).

Figure 18 highlights the housing supply for baseline population growth in Gulgong (excluding SSDs), assuming lots are serviced and zoned in a timely manner. Given a buffer (5 years of demand), the URS finds that currently Gulgong has land supply to ensure:

- General residential land to beyond 2041 (419 spare lots).
- Large lot residential land to beyond 2041 (273 spare lots).
- Lifestyle block land to beyond 2041 (48 spare lots).





Source: Mudgee Gulgong Urban Release Strategy (2023)

Figure 18: Theoretical spare housing capacity by lot type to 2041, Gulgong²



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The current and planned supply of housing will likely be unable to accommodate a sharp increase to the local population of up to an additional ~1,500 dwellings at peak demand in 2026

Revised Implied Dwelling Demand

The housing needs of the incoming workforce associated with SSD projects in the MWR LGA are derived from a worker profile which allocates a worker as either a single, couple or family. Profiles are tied to housing type (i.e. market housing or temporary worker accommodation - TWA).¹ This method is depicted in the graphic below.



 These housing assumptions differ form the 2023 Mudgee and Gulgong Urban Release Strategy (URS) by providing housing based on a worker profile. The URS allocated residential housing based on composition of the nonlocal workforce. The URS states that 100% operational and 10% of the construction nonlocal workforce will be provided residential housing.

Demand for Residential Housing and TWA



Figure 19: Housing demand by characteristics per year

Based on the current rate of DA approvals and supply of land, the housing market in the MWR LGA may not be able to meet the rapid increase in demand for residential housing by 2026

Implications for MWR LGA

The figure below highlights additional residential dwellings required over and above baseline population projections. This is based on the assumption that all couple and/or family households moving to the region will not be provided accommodation in TWA—these figures may vary should the proportion of workers bring families and/or couples be higher or lower. From 2023 to 2041 the median additional dwellings required annually is **519**. In practice, the rate of supply will vary based on the housing market conditions, speed of approvals and supply of labour and materials. Additionally, the timing of the housing demand is dependent on projects proceeding on schedule and maintaining the expected completion date.

Figure 20: Additional residential housing demanded by SSD workforce (and dependents)



Assessing Current State



The current national median of childcare places per child is 0.38. The 2022 report, '*Childcare deserts* & oases: How accessible is childcare in Australia?', provides a best practice benchmark where a region is considered to have a critical shortage of early childhood education places if there is less than **0.33** childcare places per child.¹



In inner regional NSW (which covers Mudgee), the median childcare places per child is 0.35.¹ Outer regional NSW (where Mudgee Region – West and Mudgee Region – East are situated) has a lower childcare places per child of 0.24.¹

Regional Area (SA2) Chi





Using the minimum threshold of 0.33, both the inner regional and national childcare places per child are above this rate. For the purpose of this impact analysis, it is assumed that future supply of childcare services will aim to achieve either the inner or national rates. This assumption is made so additional childcare places will need to be created in order to facilitate any increase the relevant population (0-4 years).



Source: Hurley, P (2022), Childcare deserts & oases: How accessible is childcare in Australia?

In aggregate, the LGA has **720** approved childcare centre based places across **11 child care centres**.² As depicted in the graphic above, these places are concentrated in and around Mudgee. In recognition of this, the Commonwealth's Department of Education has identified Mudgee Region - West as a priority area for new early childhood education and care services under the Community Child Care Fund limited supply grant program.³

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The increased demand driven by the influx of workers and their families, may require up to 59 additional childcare places in 2026 on top of baseline population projections

Demand for Childcare services





 Currently, there is limited capacity for childcare services in the LGA outside of Mudgee. Any additional children requiring childcare will necessitate extra places to be created.

There are two expected peaks which align with the initial construction boom (2026) and second boom associated with "Secure Now" transition line (2034). Up to an additional **474 babies and preschoolers** will be in the region in **2026**, and up to an additional **152 babies and pre**schoolers will be in the region in **2034**.

 Demand for childcare services will vary significantly depending on actual workers attracted. Above existing population projections and outside of the two peaks (2026 and 2034), the yearly long run average is **102 additional children and babies**.

Implications for MWR LGA



Figure 23: Additional childcare places required to reach geographical medians

Figure 23 highlights the number of additional childcare places needed to maintain either the inner regional or national median childcare ratio. **One childcare place represents access to 3 days of care a week.** Aligned to NSW state averages, it is assumed that 32.6% of additional babies and preschoolers may need care.¹ Under these assumptions:



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1. Child Care Subsidy data report - December quarter 2022 - NSW average families using Centre based day care

Schools in Mid-Western Region are below maximum student to teacher ratio indicating there may be spare capacity within the school system to absorb additional demand

Assessing Current State



NSW Treasury guidelines recommend that there are **23 students per teacher** in NSW **primary schools** and **20 students per teacher** in NSW **secondary schools**.¹ Any additional students per teacher is considered to be overcrowding and warrants scope for additional classroom capacity.



Based on My Schools teacher and student data, primary and secondary schools in the MWR LGA have a current student to teacher ratio of 16:1 and 11:1 respectively. This suggests that there may be additional capacity within the existing school network to absorb additional students. Using NSW Treasury's guidelines, primary school classes could have up to an additional 7 students per classroom. Similarly, secondary school classes could have up to an additional 9 students per classroom. In practice, the main constraint to this additional capacity is physical classroom space. Due to the limited availability of data pertaining to physical classroom size, this impact analysis assumes that classrooms currently have spare capacity in line with the analysis above. There is the potential for this additional capacity to be leveraged through to newly constructed classrooms.²

1. NSW Treasury (2018), Cost-Benefit Analysis Framework for School Investment, p.6 2. These calculations assume that all classes are homogenous (i.e. no distinction between science labs, workshops and classrooms) and are based on a ratio of 1 teacher per class. In practice, this assumption better reflects primary schools where classrooms have a dedicated teacher rather than secondary schools where teachers are allocated based on discipline. Moreover, the analysis assumes capacity is distributed evenly across schools, where in practice some schools maybe at capacity and others not.

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Total	7 ²	3,721	268	13.9
Catholic	2	1,192	77.9	15.3
Secondary	2	1,006	93.8	10.7
Primary	3	1,523	96.3	15.8
School Type	Number of Schools ²	Student Enrolment	Teacher FTE	Student to Teacher Ratio

Source: My Schools Data (2022)

2. Note, schools geographically located below Mudgee Town Centre have been removed from this count as it is assumed that due to the fact that the majority of SSDs are located closest to Gulgong and Mudgee these catchments will receive the vast majority of additional school aged children.

The potential increase in school age children moving to the region will see a need to expand the number of available classroom during the peak construction period

Demand for Primary and Secondary Schools

Figure 25: Additional primary and secondary schoolers due to SSDs



Estimated primary and secondary schoolers are based on regional NSW demographics.¹ Families with children in final years of schooling are less likely to move relative to families with children in earlier years of school.² As a result, the estimates to the left likely overestimate the amount of secondary school students that will come to the LGA.

There are two expected peaks which align with the initial construction boom (2026) and second boom associated with "Secure Now" (2034). At its peak, in 2026 there could be an additional 751 primary and 751 secondary goers over and above existing population projections.

Demand for schooling will vary significantly depending on actual families attracted. Above existing population projections and outside of the two peaks (2026 and 2034), there could be an additional ~70 primary and secondary goers annually (ongoing need).

Implications for MWR



Figure 26: Additional classrooms required due to SSDs

The figure to the left highlights the additional number of primary and secondary classrooms that may be needed. Based from consultation with the local school system, it is assumed that the system is currently not at capacity. From these consultation a conservative estimate is made that on average the schools system has 10% additional capacity across all classes. This has been applied to the modelling by assuming that there is additional capacity for ~ 150 primary and 150 secondary school students in the current MWR school system.³



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Source: ABS Census 2021, My Schools, PwC analysis

1. ABS Census 2021 2. Mobility of students in NSW government schools, 2016 NSW Government 3. It is important to note that this is average additional capacity. For example, it is recognised that Mudgee Public is currently at capacity whilst St Mathew's has additional capacity on the margin.

The MWR LGA is currently at capacity for GP services, however increased use of alternative service delivery methods, such as telehealth, may provide additional capacity

Assessing Current State



For inner regional NSW (includes Mudgee) and outer regional NSW (includes Gulgong and remainder of the MWRC LGA) the average number of patients per GP is **915** and **1,489** respectively.

Area (ratio)	Patients per GP			
Mudgee (As at 2021)			1168	
Mudgee ("Optimal")		756		
Source: National Health Workforce data (20	021), ABS census (2021)	l Re NS	nner egional W (915)	Outer Regional NSW (1,489)

Given that the current patient to GP ratio for the MWR LGA sits within the inner and outer regional NSW averages, for the purpose of this impact analysis, it is assumed that GP services within the LGA are at capacity. This assumption is made so that any increase in demand will require additional GPs so that the current ratio is maintained. Further, analysis undertaken by MWRC suggests that to meet current demand for GP services based on the existing population an optimal rate of service provision would be 756 patients per GP¹.

Regional NSW (both inner and outer) experience greater barriers to accessing a GP compared to urban and metropolitan areas

There is a city/country divide in being able to access GPs. As at 2021, in Sydney the ratio of doctors to patients is 1:300. In comparison, outer regional NSW has an average patient per GP ratio of 1,489. Inner regional NSW has a comparatively stronger average of 1 GP per 915 patients.

MWR LGA currently experiences comparable GP to patient ratios as regional NSW

- Currently, the MWR LGA has a GP to patient ratio of 1:1,168 which falls within NSW's inner and outer regional averages. GPs within the LGA work 12.25 to 15.75 FTE.²
- Mid-Western Regional Council's 2022 *Health Services Proposal*, provides an "optimal" staffing number for GPs. This optimal staffing includes an additional **10 GPs in Mudgee** and **2 GPs in Gulgong**. This addition reflects the amount of GPs required to enable wait times for apppointments to be reduced to a 48 hour turn around period. In consideration of this "optimal" staffing, as at 2021, the MWR would have a GP to patient ratio of **1:756**.
- It is important to note that there are a number of local GPs currently in a pre-retirement phase with several expected to retire in 2024/25.

MWR is at capacity for the provision of GPs services. However, emerging patterns in how patients access GPs may generate additional capacity through enhanced flexibility in service delivery.

• NSW, as a whole, experienced a **35% increase in the use of telehealth appointments** to access GP services from 2020-21 to 2021-22.² This may translate into MWR residents accessing geographically diverse GPs via telehealth.



Demand for GPs



Implications for MWR

Figure 28: Additional GPs required



Mid-Western Regional Council - Managing the Impacts of State Significant Development PwC Source: National Health Workforce data (2021), PWC It is assumed that the additional population are as likely to use GPs services within the LGA as the existing population. Therefore any addition to the population will require more GPs to maintain the current GP to patient ratio.

There are two expected peaks which align with the initial construction boom (2026) and second boom associated with EnergyCo's "Secure Now" (2034). An additional population of **9,906 individuals** will be in the region in **2026**, and an additional population of **3,176 individuals** will be in the region in **2034**.

 Demand for GPs services will vary significantly according to total additional population. The long-run annual additional median population is ~ 1,200 throughout the forecast period (2023-2041).

The figure to the left highlights the number of additional GPs that may be needed to maintain either the current or optimal GP to patient ratio. These projections assume that the additional population are as likely to access local MWR GPs as current residents. Under this assumption:



Historically, Mudgee Health Services has been able to adapt to growing demand. Limited physical space for the ED to expand may restrict its ability to facilitate a substantial increase to the population.

Assessing Current State

MWR LGA has one major hospital, Mudgee Health Services. The hospital underwent a \$70.7 million redevelopment which was completed in 2020. The hospital provides 31 beds for palliative care, emergency department (ED), paediatrics and birthing, as well as a range of additional services. The secondary medical centre, Gulgong Multi Purpose Service, also has emergency and inpatient facilities, though are limited in their capabilities.¹ This impact assessment focuses on additional demand on ED activity as it is expected that this will be the activity stream that will likely see the sharpest increase.

The number of emergency department (ED) presentations have increased from 2,567 in Jan-Apr 2017 to 3,647 in 2023 Apr-Jun. This absolute increase is consistent across the Western Health District ².Presentation rates per 1,000 population have grown at a greater rate for MWR compared to the WNSWLHD— from roughly 461 presentations per 1,000 people in 2017 to 569 presentations per 1,000 people in 2022 (~23% increase).³

Figure 29: Number of ED presentations by quarter, Mudgee Health Services and Western NSW Health District, 2018-2023



Mid-Western Regional Council - Managing the Impacts of State Significant Development

Currently, Mudgee Health Services has 8 total ED bay spaces accompanied by 2 registered nurses for each shift (morning, midday and night) and an additional nurse working peak period 10:30-19:00.

ED performance is benchmarked against time to be seen and quality targets. As highlighted in figures below, despite the recent increase in Mudgee's ED activity, **the ED infrastructure has handled the increased demand relatively well**. Timely access to treatment has remained constant with~70% of patients starting treatment on time and only a limited drop off in the quality of service provided has been seen in spite of increased demand.

Whilst the hospital has historically been able to adapt to meet demand, consultations have highlighted the potential future constraint of physical space. Currently, the hospital is looking at how to better use the existing ED spaces, including the interview room, to improve efficiency. However, there is no available additional spaces that could be used if the ED is to increase in size. A further increase in presentations could impede the ability to maintain current levels of service provision and quality.

Figure 30: Percentage of patients start treatment on time for Mudgee Health Services and Western Health district, 2018 to 2023

Figure 31: Overall how would you rate the care you received while in ED? (For Mudgee Health Services, 2018 and 2022)



PWC 1. The medical centre provides: 24-hour emergency care, Inpatient beds including general medicine, rehabilitation and palliative care, aged care facilities and medical imaging services. A 2014 upgrade to the MPS, namely provided four new sub-acute beds. 2. Australian Institute of Health and Welfare (2022), 3. The Western Health district increased from 632 to 696 presentations per 1000 population between 2018 and 2022.



A surge in population will have flow on effect to the region's hospital system, increasing emergency presentations and placing increased demand on existing bed and staffing capacity

Impact of external workforce on ED presentations

The rate of ED presentation differs based on age. Data shows the highest rates of ED presentation are for the 0-4 and 75+ year age groups ¹.

Given that the likely age of the incoming population will be a lower risk cohort (the median age of construction workers nationally is 38), the future demand, from the additional population, has been 'risk-adjusted' to highlight the higher rate of presentations by 0-4 year olds but relative constant rate by the remaining population.²

Limitations

Due to limited availability of ED data, this impact analysis utilises a superseded NSW Ministry of Health (MoH) methodology for projecting ED treatment spaces. As a result, the forecasted ED bays should be seen as an indictive estimate.

It is important to note the practical impact of triaging and transferring of patients between rural hospitals. Given the proximity of Mudgee to other major hospitals (e.g. Dubbo Base Hospital), patients may initially present in Mudgee but then may be transferred to other hospitals to receive treatment. In practice this could lessen the direct demand on MWR's health system.

Demand for Hospital care

Figure 32: Total Additional ED presentations, 2023 to 2041



Implications for MWR

Figure 33: Additional Beds and Nurses required



In aggregate, ED presentations for the hospital have varied from **11,902 to 14,583 between 2019-22**. It is important to note that this is not a unique per person count. This means that the same individual can present to ED multiple times over the course of a year and each individual presentation is counted.

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Source: PwC

There are two expected peaks which align with the initial construction boom (2026) and second boom associated with "Secure Now" (2034). Up to an additional **5,085 ED presentations** could be expected in **2026**, and an up to **an additional 1,630 ED** presentations in **2034**.

The figure to the left highlights additional nurses and ED bays that may be required over and above baseline population projections. This figure is derived by using NSW MoH methodology . It should be noted that this method applies differing number of presentations to trigger the need for an additional bay. As a result, some years require no additional beds as this trigger is not met.



Mid-Western Regional Council - Managing the Impacts of State Significant Development

PwC 1. Public Health Information Development Unit (PHIDU). Age-related rates of Emergency Department presentation. Adelaide: PHIDU, Torrens University Australia, March 2023. 2. An annual ED presentations per 1,000 persons by age group of 525 for the 0-4 yr old population. The remaining population has a rate of 280 annual ED presentations per 1,000 persons.

The increased workers in the region may place upward pressure on existing ambulance services during the peak of workforce demand

Assessing Current State



In inner regional NSW (which covers Mudgee), the average ratio of ambulance paramedics to population is **1:470**.¹ Outer regional NSW (where Mudgee Region – West and Mudgee Region – East lie) has a paramedics to population of **1:267**.¹ Mudgee – Lithgow sits within these two averages with **1 paramedic for 330** residents.



1.NSW ambulance data is reported at an SA3 level. For consistency of data information is presented at this level rather than LGA

The current ratio of paramedics to population for Mudgee – Lithgow (SA3) is within the bounds of inner and outer regional averages. Accordingly, it is assumed that this current ratio is an appropriate benchmark to be maintained given population growth. Therefore, to avoid future supply shortfalls, additional paramedics at the ratio of 1 paramedic to 330 residents will be required to facilitate any increase in the population.

The ability for paramedics to effectively service the community is dependent on their ability to respond to emergency calls in a timely manner. In addition, it is noted that some ambulance staff staffed to region may not live locally and may result in limitations on local road knowledge which in turn could impeded response times. Any increase in population and corresponding paramedics requires additional ambulance vehicles to ensure the community can be efficiently serviced. The NSW ambulance vehicles to NSW paramedic ratio is 0.305.²

Figure 34: Number of Ambulance Responses for Mudgee-Lithgow and NSW, 2018-2023



Source: Bureau of Health Information

The number of responses has been steadily increasing for both NSW and Mudgee-Lithgow from 2018. In the first quarter of 2023 (Jan-March), Mudgee-Lithgow reported **2,894 responses**, an 11% (288 responses) increase from the same quarter in 2022. The median **responses per 1,000 population per annum for Mudgee-Lithgow SA3 is 212**. This is higher than the NSW average of 156 per 1,000 population per annum.

Given that the SA3 rate is significantly higher than the NSW average and that the incoming population will be relatively young and fit, future additional demand will be 'risk-adjusted' to reflect the potential lower incidents of call outs.

While the construction workforce represents a younger demographic than the region, the size and scale of the population increase will require additional paramedics and vehicle fleet to maintain the current state

Impact of external workforce on paramedics

A core determinant in the rate of utilisation of emergency ambulances is age. For example, studies using demonstrated Ambulance Victoria data show an significant increase in utilisation by patients aged 65+ years with 60-64 year olds twice as likely to utilise ambulances as 35-39 year olds. ¹

Further, consultation with proponents has highlighted the increased importance of workplace health and safety in constructions sites. As highlighted in figure 33, the **incident rate per 1,000 employees for the construction industry is 16.9**, less than that of agriculture or manufacturing, for example.

Figure 33: Rate of serious injury claims per 1,000 employees industry, 2020-21²



Given that the likely age of the incoming population will be a lower risk cohort (the median age of construction workers nationally is 38) and increased safety of the construction industry, this impact analysis assumes that on average the additional population will utilise ambulances at a lower rate than the existing residents of Mudgee-Lithgow. Therefore, future demand, from the additional population, has been 'riskadjusted' to reflect the potential lower incidents of call outs.

Demand for Ambulance Services

Figure 35: Additional responses by workforce and dependants



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Applying a risk adjusted ratio, additional responses by paramedics are likely to spike in **2026** with up to **803 additional responses**. For reference, Mudgee- Lithgow SA3 saw **11,186 responses** in 2022 alone.

Demand for Paramedics and Ambulance Vehicles

Figure 36: Additional paramedic and ambulance vehicles



The figure to the left highlights additional paramedics and ambulance vehicles that may be required over and above baseline population projections. This figure is derived from population ratios whilst demand for additional responses is derived from riskadjusted growth rates. As a result, estimates for paramedics and vehicles represent a 'worst-case scenario' and may be overstated.



Mid-Western Regional Council - Managing the Impacts of State Significant Development

PwC 1. Increasing utilisation of emergency ambulances, as a result of the younger age group moving to the area discounted rate of 81 responses per 1,000 population per annum has been applied to the additional population2. Australian workers' compensation statistics 2020-2021, ABS Census 2021

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The increased presence of workers moving into the region for major project delivery will place upward pressure on existing police services across multiple fronts

Assessing Current State

Mid-Western Regional LGA is situated within the Orana-Mid Western Police District (PD). As of 2021-22, the Orana-Mid Western PD had 238 police officers and 26 administrative staff. Mudgee and Dubbo Police Stations are the two 24-hour police stations in the region, meaning they are safeguarded by a First Response Agreement's minimum response level and are required to be staffed at all times. Other stations within the PD are staffed on a needs basis, with officers often on call to respond to incidents and on rotation across the PD according to service need.

Figure 37: Rate and number of crimes in MWR LGA, 2019-2022¹



81% 80% 18:00 16:00 14:00 16:14 16:02 12:00 13:59 10:00 2018-19 2019-20 2020-21 Regional NSW average response times for urgen Orana Mid Western PD urgent calls answered in benchmark time _ _ _ Orana Mid Western PD average response times for urgent calls

Figure 38: Response time for Orana Mid Western PD, 2018-19 to 2020-21²

The total number of crimes committed in the MWR LGA has steadily decreased since 2020 to 1,962 in 2022. This 28% decrease in crimes committed since 2020 is also reflected in the relative crime rate that has also decreased to **773 crimes committed per 10,000 population in 2022.**

Responding to crime comprises just one of the many roles and responsibilities of the Police District. Other activities include monitoring and promoting road safety, maintaining social order, performing and coordinating emergency responses and other general community related services and activities. Therefore, decreased rates of crime does not necessarily correlate with lower levels of resource demand.

Orana-Mid Western PD response times have improved between 2019-20 and 2020-21, dropping below the Western PD average of **14 minutes and 33 seconds**. As of 2020-21 **82% of urgent calls are answered in benchmark time (under 12 minutes).** With the numbers of workers coming to the region as the construction period peaks, increased pressure will be placed on maintaining this ongoing improvement in response times, especially as resources are likely to come from within the Orana-Mid Western PD as opposed to additional staffing requirements.

Mid-Western Regional Council - Managing the Impacts of State Significant Development

The increased presence of workers moving into the region presents multiple challenges to police service delivery including responding to increased traffic and TWA related incidents

Impact of external workforce on police service delivery

Consultation with the Orana-Mid Western Police District revealed a number of factors that may impact demand for policing services:

- Increase in volume of cars and trucks on major roads into the region: With a surge in freight and people traveling into the region along the two major entry/exit points the Golden Highway and Great Western Highway, there is an expectation of an increased number of traffic incidents that police will need to respond to on these major roads. With large volumes of heavy industrial freight coming from the Port of Newcastle, this will likely affect road conditions at various points while DIDO workers will be travelling early morning/late afternoon, increasing risk of traffic/crashes.
- This expected increase comes on top of an already high incident rate. TfNSW crash data for the period 2018-2022 shows there were 348 casualty crashes across the Mid-Western Regional Council area resulting in 450 casualties. When fatal and serious injury crashes are combined in the period 2018-2022, Mid-Western had 124 casualties in the LGA.

- Animal strikes are a real risk in country areas, especially with the high potential for livestock, native animals such as kangaroos, wombats, emus, and feral animals such as pigs and deer to enter the roadway. According to data compiled by NRMA Insurance for NSW in 2019, Mudgee was in the top five worst areas for animal strikes (also included was Dubbo, Armidale, Goulburn and Muswellbrook).
- **Management of Temporary Worker Accommodaiton:** Police may need to liaise with project proponents to manage the risk of potential incidents occurring at workers camps. Stakeholder consultation highlighted potential increases in drunk and disorderly behaviour, assaults and mental health related incidents as potential increased risk at workers accommodation.
- Managing resources across the LGA: With a significant pipeline of major projects, the pressure of managing the confluence of demand across multiple project sites/workers camps will place pressure on existing resource capability.

Figure 40: Number of fatal and serious injury crashes across select regional LGAs, 2018-2022¹



Source: Transport for NSW (2023), Road users by local government area of crash

Figure 39: Number of traffic incidents in the MWR LGA, 2017-2022



Source: Transport for NSW (2023), Road users by local government area of crash

Mid-Western Regional Council - Managing the Impacts of State Significant Development PwC

Additional population from SSDs will trigger the need for MWR to develop additional water supply systems sooner than expected

MWRC has distinct roles and responsibilities as it relates to the provision of potable (and/or other water) for personal use and consumption between additional **residential housing** and **TWAs**. It is assumed that council will be responsible for the provision of and the major infrastructure needed to supply water for personal use and consumption for additional residential housing. For the purposes of this analysis it has been assumed that responsibility for supply of water for personal use and consumption at TWAs will rest with proponents, though acknowledging a need to work with council.

Residential Housing

- MWRC has 3 water supply systems that include distribution systems and three water treatment plants. These are:
 - 1. Mudgee that sources raw water from the Cudgegong River and Burrundulla bore field
 - 2. Gulgong that sources raw water from Cudgegong River, and
 - 3. Rylstone that sources water from the Council owned Rylstone dam.
- Water systems are currently at capacity for baseline population growth.
- The systems, in particular the distribution systems required to service approved lots, will require additional works to increase capacity in response to any additional residential population. The geographical location of lots is critical in the ability of MWRC to supply lots.
- It is important to note, water systems need to be upgraded to accommodate surge capacity rather than average water usage.

Figure 41: Total additional demand for residential lots and associated residential population (above baseline), 2023 to 2041



Mid-Western Regional Council - Managing the Impacts of State Significant Development

PwC 1. Consultations with council indicated that on average 250 L of water would be used per person per day in TWAs. This figure includes TWAs with laundries and commercial kitchens.

TWA



For the purposes of this analysis TWAs will need to rely on trading water licenses or access groundwater reservoirs to provide water for personal use.

- · TWAs are assumed to source water for personal use independent of council.
- Consultations with council have highlighted that river water licensees (Cudgegong River) are near full allocation. As a result, TWAs will be required to either acquire water licenses on the secondary market or acquire groundwater licenses.
- Groundwater has been largely untested. The viability of groundwater as a stable source of raw water has not been tested. This additional testing would be at the cost of the proponent.

Total demand should refer to potential peak or surge water usage. In the absence of this data, an indicative estimate has been developed in consultation with council so that **the range of average** water usage per person per month for a TWA is 7609 L^1



Figure 42: Total demand for water by TWA, 2023 to 2041

Existing capacity of the MWR's sewage treatment plants (STP) may be insufficient to cope with short-term demand increases generated by SSDs

MWRC has distinct roles and responsibilities in the provision of wastewater treatment, facilities, and reticulation for additional **residential housing** and TWAs. It is assumed that council will be responsible for wastewater treatment capacity and reticulation to site for additional residential housing. For the purposes of this analysis it has been assumed that TWAs will be responsible for their own wastewater treatment capacity and/or their ability to cart waste to treatment facilities. This analysis only focuses on domestic production. It is assumed **an average of 200–300L of wastewater is produced per person per day for both additional residential housing and TWAs.**¹

Residential Housing

Additional residential housing is assumed to be concentrated around Mudgee and Gulgong. Both centres have a sewage treatment plant (STP):

- 1. **Mudgee** designed to service an estimated residential population of 14,000 and a non-residential of 2,000.
- 2. Gulgong designed to service an estimated population of 4,450.

Given baseline population growth, Mudgee STP is projected to exceed its capacity by 2036. Gulgong will have spare capacity beyond 2041.

- With a current population of 11,680, Mugdee STP has a current spare capacity of ~2300 people.
- Gulgong will have addition capacity for ~ 1000 additional people even by 2041

Figure 43: Wastewater production and total population for residential dwellings¹



- Wastewater production in Figure 43 is derived from housing demand as presented on slide
 33. At a peak in 2026, up to ~ 4,900 additional individuals may reside in residential dwellings.
- Combined, Mudgee and Gulgong TWPs have capacity for an additional ~3,300 people. Assuming that an additional total population of ~5000 live in residential housing in 2026 based on demand model projections, currently there is not sufficient capacity.
- Outside of this peak, ~ 1000 additional individuals may live in residential housing producing

~75 ML per year of wastewater.

TWA

TWAs will need to rely on developing their own wastewater treatment capacity and/or carting waste to appropriate facilities.

- Given that TWAs will predominately be located significant distances from urban centres in the LGA, they will not be able to connect to existing and expanding sewage systems.
- Mudgee STP does have the capability to receive and treat waste. Currently, has approval to receive 20KL of sewage waste for processing, however, this allocation is already at capacity. Additional capacity would require upgrades and modifications

Figure 44: Wastewater production and total population for TWAs¹



- Wastewater production in Figure 44 is derived from TWA demand as presented on slide 33. At a peak in 2026, up to ~ 5,000 additional individuals may reside in TWAs.
- Additional wastewater produced by TWAs may produce, on average, up to 459 ML per year in 2026 with an upper range of 551ML and lower of 367 ML.
- Wastewater production by TWAs will vary significantly aligned to the construction schedule. For example, demand by TWAs drops from 459ML in 2026 to 18ML in 2027 as a majority of construction will be completed.


02

Additional waste from projected residential dwellings and TWA requirements will place pressure on existing waste management facilities during the peak

Assessing Current State

Figure 45: Type of solid waste collected by Mudgee Waste Facility, 2022-23



- In 2022-23, Mudgee Waste Facility (the only landfill facility in the LGA) collected a net waste total of 33,951 tonnes of waste. On current baseline population projections (i.e. no additional demand generated by SSDs), the region has 40 years of solid waste land fill capacity based on existing and new supply that will come into market. MWRC has curb side collection in Mudgee, Gulgong, Kandos and Rylstone while more rural parts of the LGA have service centres for waste collection.
 - A new landfill cell is under construction and is expected to be live in 2024 with additional life cycle capacity to 2031-32 based on existing population projections. With additional SSD workforce in the region, the effective life of this new landfill cell will be reduced and additional resources and trucks may be needed to meet increased demand for waste collection.

Measuring increased demand due to State Significant Development (SSD)

Figure 46: Average additional solid waste (tonnes) produced by additional residential and TWA residents 2023-41²



With further uplift in market housing and TWA required to meet the demand of the state significant development, there will be additional demand generated for solid waste collection in the MWR LGA. This is captured in the above graph, which sees 2024-2026 as the peak years aligning with the surge in construction workers on the SSD.

The key assumptions here are:

- Additional population in residential households will peak in 2026 at ~ 4,900 individuals
- Average waste per additional residential household member is 1 tonne annually.
- Average waste per additional TWA worker is 0.5 tonnes annually.
- **Construction waste has not been included** on the assumption that this will be resolved by SSD proponents as part of their project plans.



A surge in population during the peak construction years may place increased demand on local road use and freight flow – driving up road asset maintenance costs

Assessing Current State

- With a surge in population and workforce tied to SSD in the LGA, there can be an expectation that traffic growth and road use will increase commensurate with the rate of population growth year-on-year (pictured below).
- Mid-Western Regional Council manages and maintains 2,460 km of local road network.
- In 2021-22, Mid-Western Regional Council spent \$21,007,000 to maintain road assets to a 'satisfactory standard' for road users. ² This equates to an asset maintenance cost of \$8,539 per kilometre of road.

Figure 47: Rate of additional population growth attributable to SSD projects



Measuring increased demand due to State Significant Development (SSD)

- In applying the population growth rate as a proxy for increased road usage, the additional SSD-related costs are calculated in the graph below by multiplying by the per kilometre road maintenance cost.
- Like other service delivery areas, the greatest jump comes in the peak construction years of 2025-2027 whereby the workforce surges. There is again a smaller peak in the period 2033-2035 as the second wave of SSD flows through to increased worker movement and freight flows. An escalation rate of 3 per cent per annum is applied.
- Additional road maintenance costs may be incurred due to the heavy flow of freight and capital equipment into the region during construction years.



Figure 48: Capital cost of road maintenance attributable to SSD population growth

Mid-Western Regional Council - Managing the Impacts of State Significant Development

PWC 1. TfNSW (2022), Guide for Estimating the Problem Cost, p.38; 2. Mid-Western Regional Council (2022), Annual Financial Statements, p.124

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02 Project context and approach

03 Demand analysis

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05 Strategy

06 Appendix

With clear impacts to services, housing and infrastructure a range of mitigating strategies have been developed to inform ongoing planning and management of community impacts

Purpose

This section outlines recommendations to help address and/or mitigate the impacts on services, housing and infrastructure due to a rapid increase in population from SSD projects occurring in the region.

In addition, opportunities for collaboration and legacy projects are identified where investment helps to both mitigate impacts and seed new industries for the region. These are particularly focused on water security and waste and circular economy opportunities.

Recommendations are aligned to service areas and the levers available to government stakeholders. The intent of these recommendations are to inform ongoing collaborative planning with relevant government and non-government stakeholders. They should be seen as a starting point for informing appropriate state and local agencies to align growth planning for services, manage community impacts across the delivery phases and to determine need for additional analysis. For each recommendation the relevant stakeholders who may need to be engaged in the delivery of the recommendation have been listed.

How the recommendations were developed

The recommendations on the following pages are based on an understanding of the nature of increased demand on services and the levers available to address this increased demand. They have been developed in consultation with MWRC. Three main steps were used to develop the recommendations:

1. Confirm key gaps and pinch points

This involved reviewing the magnitude and direction of impact and the key drivers of supply and demand for each service area; mapping gaps by service area and operational capability; and confirming the response required to maintain current service provision.

2. Identified levers

This involved identifying key stakeholders and the levers available as well as an understanding of the factors impacting the ability to meet demand (for example resources such as land, staff, regulatory requirements, etc.). Examples of levers include regulatory control, financial incentives, information and guidance, monitoring and evaluation, direct service provision, direct capital investment.

3. Identification of mitigation and/or response measures

This involved workshopping potential measures to soften the impacts of prolonged increase in demand by service area (for example through demand management, resourcing sharing, staging and provision of information to improve decision-making) as well as identifying potential capital and/or operating responses that may be needed to meet potential increases in demand.

The recommendations are summarised on the following pages.

Service Area	Category	Recommendation	Key Stakeholders	Rationale
	Governance	 Establish an accommodation coordination team that manages and monitors housing stock and room availability. Develop a campaign to promote and educate residents around infill medium-density development (including secondary dwellings) to encourage an increase in this housing typology coming to market. Financial incentives available to landowners should be included as part of the campaign. Explore policies to incentivise major master planned housing developments, including opportunities to fast track approvals. 	Mid-Western Regional Council, Dubbo Regional Council, Warrumbungle Shire Council	Provide more accommodation options across the region within existing and new-to-market housing stock.
Housing	People and skills	 Boost number of planning staff within the Council to accelerate speed of development approval process in line with potential increased development application activity associated with need for increased housing. 	Mid-Western Regional Council, NSW DPE	Improve the speed of the planning process, reducing the time spent between DA application and build.
	Land use	 Formalise requirements for proponents to provide temporary worker accommodation in appropriate locations. Explore opportunities for sharing, re-use and/or repurposing of TWAs between projects and/or for legacy uses. Review current staging and servicing of zoned land in the Mudgee and Gulgong Urban Release Strategy, including master planning of growth areas to assist in bringing land to market in a more timely manner and agility to respond potential peak accommodation requirements. Build essential worker housing as part of master planned areas. 	Mid-Western Regional Council, REZ project proponents, EnergyCo, land developers, NSW DPE	Establishing clear frameworks for temporary worker accommodation and maximise sustainability of worker accommodation. Master planned land to get to market faster than fragmented land ownership.
	Infrastructure	 Investigate the feasibility and funding options to upgrade the Mudgee STP to provide waste water recycling capability for construction use and other ongoing uses post construction phase. 	Mid-Western Regional Council, REZ Energy proponents, EnergyCo	Maximise the sustainability of REZ projects and unlock circular economy opportunities for the MWR LGA.
Water	Land use	 Review current water distribution infrastructure phasing and timing to align with accelerated release of land as required. 	Mid-Western Regional Council, landholders, water agencies	Ensure land release is synced with staged upgrade of water distribution infrastructure.
	Governance	 Work with NSW Government/energy project proponents to establish a clear requirement for all construction and TWA sites to provide on-site water supply systems (incl. source water independent of council allocation). Work with NSW Government to audit existing water allocations and identify unused or underutilized allocations for potential transfer and/or sharing arrangements. Explore options to increase in water licenses/allocations for MWRC to provide water. 	Mid-Western Regional Council, NSW DPE, EnergyCo, SSD proponents	Clear line of responsibility / accountability for energy project proponents to deliver water to worker accommodation camps.

Mid-Western Regional Council - Managing the Impacts of State Significant Development

Service Area	Category	Recommendation	Key Stakeholders	Rationale
\langle	Governance	 Determine a clear framework that requires energy project proponents to have onsite sewage processing in TWAs, including processes to manage sledge. 	SSD proponents, EnergyCo, Mid-Western Regional Council	Ensure functionality of the TWAs as local council sewage system does not have the capacity to absorb TWAs demand increase.
Sewage	Infrastructure	 Explore options for Mudgee and Gulgong STP expansion including temporary expansion; proponent built; servicing in neighbouring LGAs. 	Mid-Western Regional Council, SSD proponents, EnergyCo	Determine the best pathway to accommodate increase in sewage demand.
	Governance	 Improve communication channels with proponents around roles and responsibilities for waste collection and processing at TWAs. 	Mid-Western Regional Council, SSD proponents, EnergyCo, waste operators/sub-contractors.	Avoid operational issues that have arisen at landfill/waste processing sites.
Waste	Regulation	 Establish a regulatory framework setting benchmarks/quotas on REZ material and construction waste and TWA waste collection (e.g. min % recyclables, construction clean fill reuse rules, etc.). Consult with neighbouring councils to ensure regulatory framework is consistent around landfill obligations for TWAs/project sites. 	Mid-Western Regional Council, EnergyCo, neighbouring councils, SSD proponents	Reduce solid waste and single-use materials throughout construction, bolstering project sustainability and local character. Build collaboration with neighbouring councils to support sustainable delivery of the REZ.
	Infrastructure	 Conduct a business case/costings on value-add opportunities for Council to upgrade recycling capabilities to improve recycling scope, capacity and quality. 	Mid-Western Regional Council, waste operators/sub-contractors, EnergyCo	Build a stronger circular economy and unlock new opportunities for value-add industry in the local economy.

Service Area	Category	Recommendation	Key Stakeholders	Rationale
	Infrastructure	 Examine the feasibility of MWRC acting as a developer for a new childcare/multi-purpose centre in Gulgong following the build and lease model in Mudgee. 	Mid-Western Regional Council, childcare operators	Meet additional demand for childcare outside of Mudgee and in close proximity to project sites. Build in flexibility for additional uses post construction phase.
Childcare	Services	 Conduct an audit of childcare service providers' opening hours and expansion potential to cater for extended working hours of construction/REZ workers. Develop a platform for centralised communication of current childcare place availability in the region and ongoing demand monitoring. 	Mid-Western Regional Council, childcare operators, SSD proponents	Cater for additional demand generated by 12-hour shift workers on REZ development.
	Land use	 Advocate for developers/energy proponents to build-in childcare capacity to new developments/TWAs. 	Mid-Western Regional Council, SSD proponents, land developers	Accommodate demand generated by families moving into the region.
	Infrastructure	 Identify under-utilised assets and classrooms, including detailed audit of capacity on a school-by-school basis Advocate for the provision of additional temporary classrooms in peak construction years as required. 	Mid-Western Regional Council, SINSW, local schools network, NSW Department of Education	Maximise existing infrastructure utility in the local schools network and cater for demand surge in peak construction years.
Schools	People and skills	 Partner with local schools to develop a teacher retention strategy around non-monetary incentives focused on mentoring and community engagement 	Mid-Western Regional Council, local schools network, NSW Department of Education, NSW Teachers Federation	Compliment NSW Government initiatives to retain teachers in the region long-term.

Service Area	Category	Recommendation	Key Stakeholders	Rationale
	Infrastructure	 Conduct an audit on medical equipment available within the region and advocate for a CT scan in Mudgee Hospital. Work with NSW Health to explore potential 'virtual hospital' models, utilising telehealth to address and manage demand for low triage and GP activity 	Mid-Western Regional Council, Western NSW LHD, NSW Health	Boost the breadth and quality of health services within the region (currently no CT scan/limited access to X-ray and MRIs in the LHD). Virtual care infrastructure can provide legacy use beyond construction.
Hospitals	Land use/services	 NSW Government to work with SSD project proponents to establish protocols for helicopter access to worker/project sites. 	Mid-Western Regional Council, SSD proponents, Western NSW LHD, Aviation Authorities	Ensure efficient medical access to project and workers sites given their remoteness within the LGA.
	Governance	 Investigate contingencies to medical transfers to Dubbo Base Hospital (e.g. shell space at Mudgee Base Hospital and additional bed/staffing requirements) Explore requirements to mandate that TWAs to provide onsite medical services. NSW Health to work with project proponents to communicate clear protocols for emergency responses 	Mid-Western Regional Council; NSW Health, Western NSW LHD	Large truck movements along major highway to Dubbo will have an impact on medical transfers. TWAs to have adequate health services accessible to workers.
	Governance / services	 Set minimum health care staffing requirements for TWA (e.g. prescribing nurses on-site, access to telehealth for all workers). 	Mid-Western Regional Council, SSD proponents, Western NSW LHD, NSW DPE	Adequate provisioning of health care at worker accommodation.
Primary Health Care	People and skills	Advocate for permanent placement of GP/GPs in Gulgong	Mid-Western Regional Council, NSW Health, GP advocacy groups	Currently, there is limited full time access to a GP in Gulgong and it is in close proximity to new REZ developments.
	Services	 Collaboration between developers, project proponents and local pharmacies around medical supplies and ability to fill scripts. Development and promotion of telehealth models of care in region, including development of virtual care facility. 	Mid-Western Regional Council, SSD proponents, local pharmacies, pharmacy advocacy bodies; NSW Health Western NSW LHD	Ensure local pharmacies can meet the demand that the TWAs will generate for medicines on top of fulfilling current state obligations. Delivery of efficient and accessible health care, especially to rural and remote areas of the LGA.

Service Area	Category	Recommendation	Primary advocate/s	Rationale
*	Governance	 Liaise with local NSW Ambulance to communicate the road/traffic implications of the REZ projects. Engage with SSD proponents to establish requirements/expectations for access to paramedics/ambulances on TWA sites. 	Mid-Western Regional Council, NSW Ambulance, SSD proponents, EnergyCo	Address information asymmetry with FIFO/DIDO paramedics to reduce response time blowout. Set clear expectations for TWAs around onsite paramedic/ambulance access.
Ambulance	Services	 Investigate options for temporary service delivery and increase paramedic provision during peak construction (such as temporary ambulance stations). 	Mid-Western Regional Council, NSW Ambulance, SSD proponents, EnergyCo	Account for surge in incident rate during the height of REZ construction window.
Police	Governance	 Facilitate educational workshops for SSD proponents around risk minimisation for TWAs including road safety concerns. Communicate preference with energy proponents to establish 'dry'/alcohol-fee TWA sites. 	Mid-Western Regional Council, NSW Police, SSD proponents	Raise awareness and encourage preventative behaviour adoption to avoid incident rates tied to crime, mental health and driver fatigue of workers residing in TWAs.
	Infrastructure	 Advocate for SSD proponents and developers to build temporary/'park and ride' car parks on private land. 	SSD proponents, Mid-Western Regional Council	Prevent existing car parks and on-street parking from being oversubscribed by surge in project workforce.
Local roads	Governance	Education campaign aimed at residents, businesses community groups and energy proponents around traffic flow changes and associated safety protocols during peak construction years.	Mid-Western Regional Council, EnergyCo, SSD proponents	Raise awareness and understanding around traffic changes/impacts during REZ construction.
	Infrastructure	 Seek additional funding options/special grant application to fund asset road maintenance program. 	Mid-Western Regional Council, TfNSW, local road crew operators, EnergyCo	Sufficiently fund the road asset maintenance program due to increase in traffic flow/freight capacity.

Ongoing monitoring framework

Consultation with key stakeholders highlighted the need for a series of 'performance tracking' strategies tied to establishing a monitoring framework to capture the ongoing SSD development impact on the Mid-Western Regional Council, and to see how measures introduced are going in minimising the specified impacts.

Service Area	Indicator	Measure
Housing	 Population growth DA applications Dwelling completions 	 NSW CPA population growth ABS population growth ABS Land parcel counts and new dwelling approvals ABS Building approvals – Number of dwelling units approved.
Water	TWA consumption per workerConsumption per residential house	Estimated water usage by TWAsEstimated increased water required by residential dwellings
Sewage	TWA generation per workerWaste water per residential house	Estimated increased sewage generation by TWA and residential dwellings
Waste	Waste processing capacity	 SSD project type generation per MW (e.g. solar, wind etc) Waste per residential house
Childcare	Number of available childcare places	 Estimated additional 0-5 y/o population Estimated demand for childcare places
Schools (Primary and Secondary)	Class sizeNumber of teachersStaff to student ratio	 Estimated additional 5-12 y/o population Estimated additional 12-18 y/o population SINSW 'Eagle eye' forecasts
Hospitals	ED beds to average annual ED presentationsCurrent staffing (Nurses)	 Number of ED presentations – AIHW/BH NSW data Change in average annual ED presentations (risk-adjusted)
GPs	Number of GPsGP to population ratio	Estimated increase in populationChange in number of GPs to population
Ambulance	Change in average ambulance call outs (risk-adjusted)	Ambulance response time and incident rate
Police	Change in incident rates – crimes, road incidents, domestic and family violence callouts	 Incident rate and response time statistics – BOCSAR/TfNSW
Local roads	 Traffic modelling and ongoing traffic count – private car and freight usage Parking capacity 	TfNSW Freight Data Hub/Traffic Volume Viewer

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A

Demand Analysis – Detailed Assumptions

Additional assumptions and limitations

Non-local Workforce inter-LGA commute vs DIDO/FIFO

The model does not distinguish between daily commuters from outside the LGA vs DIDO/FIFO workers. All additional people in the workforce (i.e. non-locals) are assumed to require additional housing, services and utilities. While this might lead to an overestimate of housing and other services required, the assumption will minimise the detrimental impacts on tourism caused by underestimates.

Ramping up of Workforce

This model does provide consideration to the gradual ramping up and down of the workforce. With respect to the specific project's peak construction workforce and construction duration, the peak construction workforce ramps up on a quarterly basis so that the overall trend line is indicative of a standard bell curve.

Construction of Transmission Lines

Energy Corporation of NSW (EnergyCo) will develop transition lines under three stages (deliver now, secure now and plan for the future). The required workforce is only publicly available for the first stage, deliver now. Workforce numbers have been estimated for the final two stages based on the ratio of network capacity added compared to the known workforce for deliver now. Timing of the final two stages is aligned to that proposed in the Network Infrastructure Strategy NSW.

Movement of families

It should be noted that if there are not sufficent existing services (e.g. schools, or for other factors) families might self-select not to move to the region as a family unit or even entirely. This model does not explicitly consider that situation.

Mobility of workers

This model considers each worker to be unique to the project. In practice this mean that there is no mobility of workers between like projects e.g. concreting, ditching between solar projects. As a result, the output of the model might overestimate the unique worker count.

Input data

Construction start dates and programs for the projects are subject to change. The model will need to continue to be developed and updated as new information becomes available as projects move closer to construction and delivery.

As of August 2023, 36 SSD projects have been identified for development in and around the MWR LGA

Project	Estimated Wor	kforce	Timeframe (targeted)		
	Construction	Operation	Construction	Operation	
Bowdens Silver Mine	320	228	2024 ,18 months	2026 to 2045	
Moolarben Coal	250	0	2025, 36 moths	2028, to 2038	
Ulan Coal	0	931	2021	2021, to 2035	
Mayfair Solar	150	2	2025, 12 months	2026 to 2046	
Narragamba Solar	400	10	2025, 36 months	2028 to 2053	
Wollar Solar Project	400	5	2023, 12-18 months	2024 to 2050	
Stubbo Solar Project	507	10	2024, 24 months	2026 to 2050	
Tallawang Solar Farm	430	27	2024, 34 months	TBD	
Birriwa Solar Farm	800	15	2024, 36 months	2027, to 2057	
Mavis Solar	150	5	2025, 12 months	2026 to 2065	
Barneys Reef Wind Farm	340	10	2024, 28 months	2026, to TBD	
Burrendong Wind Farm	250	15	2023, 30 months	TBD	
Piambong Wind Farm	400	15	2026, 30 months	2028, to 2058	
Orana Wind Farm	580	27	2026, TBD	2028, to TBD	
Liverpool Range Wind Farm	800	47	2024, 36 months	2027, to 2052	
BrightNight	300	15	2026, 15 months	2028 to 2058	
Bellambi Heights Battery	100	3	2024, 12-18 months	TBD	
Beryl Battery	40		2025, 12 months	2026 to 2051	

Project	Estimated Workforce		Timeframe (targeted)	Timeframe (targeted)	
	Construction	Operation	Construction	Operation	
Cobbora Solar Farm	700	8	2024, 36 months	2027, to TBD	
Dunedoo Solar Farm	125	3	2022, 12 months	2023, to 2053	
Dapper Solar Farm	350	20	2025, 18-24 months	2027, to 2057	
Wellington Solar Farm	200	3	2019, 48 months	2023, to 2053	
Wellington North Solar Farm	400	4	2023, 24 months	2025, to 2055	
Sandy Creek Solar Farm	700	15	2025, 24 months	2027, to 2057	
Goulburn River Solar Farm	350	10	2023, 36 months	2026, to 2061	
Pinecrest Solar*	175	7	2025, 18 months	2027, to TBC	
Merriwa Solar Farm*	500	20	TBC	ТВС	
Valley of the Winds	400	50	2023, 42 months	2027, to TBD	
Spicers Creek Wind Farm	250	12	TBD, 30 months	TBD, 30 years	
Uungula Wind Farm	262	12	2023, 36 months	ТВС	
Apsley battery*	50	TBC	TBC, 12 to 18 months	TBC, 30 years	
Orana Battery storage*	100-150	TBC	TBC, 12 to 18 months	ТВС	
Wellington South BESS*	100	30	2023, 12 to 18 months	2024, TBC	
Phoenix pumped hydro	500	50	2026, 50 months	2030, to 2080	
Central-West Orana REZ	1800	98	2024, 36 months	2027, to TBD	
Central-West Orana REZ (Secure Now)*	1250	49	2033, 12 months	2035 to TBD	
Related Projects to Secure Now**	1080	37	2032, 60 months	2037 to TBD	

Key: Included in current projections

Not included in current projections

*Worker numbers not currently available, estimated ustilising like project requirements.

**Related project to secure now refers to the mix of wind, solar and battery projects needed to meet the 1.5 GW increase in transmission line capacity. This estimate is derived from current projects and workforce requirements

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Project information and assumptions (within MWR LGA)

Project Type	Workforce Origin		Project	Estimated Workforce		Timeframe (targeted)		Likelihood to progress
	Local	Non-local		Construction	Operation	Construction	Operation	
Mining			Bowdens Silver Mine	320	228	2024 ,18 months	2026 to 2045	
X	98%	2%	Moolarben Coal	250	0	TBD	TBD, 2038	
			Ulan Coal	0	931	TBD	TBD, 2035	
Solar			Mayfair Solar	150	2	2025, 12 months	2026 to 2046	
x ^M u 2⊖3	2%	98%	Narragamba Solar	400	10	2025, 36 months	2028 to 2053	
2mrz			Wollar Solar Project	400	5	2023, 12-18 months	2024 to 2050	
			Stubbo Solar Project	507	10	2024, 24 months	2026 to 2050	
			Tallawang Solar Farm	430	27	TBD, 34 months	TBD	
			Birriwa Solar Farm	800	15	2024, 36 months	2027, to 2057	
			Mavis Solar	150	5	2025, 12 months	2026 to 2065	
Wind			Barneys Reef Wind Farm	340	10	2024, 28 months	2026, to TBD	
	2%	98%	Burrendong Wind Farm	250	15	TBD, 30 months	TBD	
			Piambong Wind Farm	400	15	2026, 30 months	2028, to 2058	
			Orana Wind Farm	580	27	2026, TBD	2028, to TBD	
			Liverpool Range Wind Farm	800	47	2024, 36 months	2027, to 2052	
Battery			BrightNight	300	15	2026, 15 months	2028 to 2058	
	2%	98%	Bellambi Heights Battery	100	TBD	TBD, 12-18 months	TBD	
			Beryl Battery	40	1	2025, 12 months	2026 to 2051	
Supply			Central-West Orana REZ	1500	98	2024, 36 months	2027, to TBD	
贯	2%	98%	Central-West Orana REZ - Secure Now	798	49	2033, 12 months	2035 to TBD	
			Related Projects to Secure Now*	1080	37	2032, 60 months	2037 to TBD	
						Highly likely to proceed	Likely to proceed	Blank= NSW EnergyCo project

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Project information and assumptions (surrounding MWR LGA)

Project Type	Workforce Origin		Project	Estimated Workfo	Estimated Workforce Timeframe (targete		imeframe (targeted) Distance to:			Likelihood to progress
	Local	Non-Local		Construction	Operation	Construction	Operation	Mudgee	Gulgong	
Solar			Cobbora Solar Farm	700	8	2024, 36 months	2027, to TBD	55 min	35 min	
ZOZ			Sandy Creek Solar Farm	700	15	2024, 24 months	2026, to 2061	1hr	40 min	
- mr			Dunedoo Solar Farm	125	3	2022, 12 months	2023, to 2053	>1hr	40 min	
			Dapper Solar Farm	350	20	2025, 18-24 months	2027, to 2057	1hr	40 min	
	2%	98%	Wellington North Solar Farm	400	4	2023, 24 months	2025, to 2055	1hr	45 min	
			Goulburn River Solar Farm	350	10	2023, 36 months	2026, to 2061	~1 hr	~ 1 hr	
			Pinecrest Solar*	175	7	2025, 18 months	2027, to TBC	~ 1 hr 20min	~2hr	
			Merriwa Solar Farm*	500	20	ТВС	TBC	~1hr	~1hr 30min	
Wind			Valley of the Winds	400	50	2023, 42 months	2027, to TBD	>1hr	45 min	
	2%	98%	Spicers Creek Wind Farm	250	12	TBD, 30 months	TBD, 30 years	50 min	35 min	
			Uungula Wind Farm	262	12	2023, 36 months	ТВС	~1hr 30min	~1 hr	
Battery			Apsley battery*	50	TBC	TBC, 12 to 18 months	TBC, 30 years	~1hr 10min	~1 hr	
	2%	98%	Orana Battery storage*	100-150	TBC	TBC, 12 to 18 months	TBC	1hr	50 min	
			Wellington South BESS*	100	30	2023, 12 to 18 months	2024, TBC	~1hr	~50 min	
Other	2%	98%	Phoenix pumped hydro	500	50	2026, 50 months	2030, to 2080	1hr	>1hr	
X										

Highly likely to proceed

Likely to proceed

Blank= NSW EnergyCo project

Estimating the proportion of workers that may bring families and/or spouses

To determine additional impacts on housing and services, it is necessary to estimate the proportion of non-local workers that are likely to bring family or spouses (i.e. couple and family households). The approach to this is documented in the slides following.

Comparative approach to deriving a family ratio

In order to derive an appropriate ratio to inform the family/couple/ single spilt of the additional population two approaches were utltised:

- 1. Persons usually resident in a dwelling
- 2. Social Family Status and Parental Indicator

The first method was compared against the second method to provide a level of quality assurance.

Ultimately the first method was used in the model as housing availability in the MWR LGA is the largest constraint in enabling a REZ workforce. For model 1, usual residents has been used to infer a preferred dwelling size.

The following slides provide additional detail that underpinned the ratio selection.



Method 1 – Persons usually resident in a dwelling

Filter raw 2021 census data

Variable Filters: INGP Indigenous i.e Non-Indigenous, NPRD Number of Persons Usually Resident in Dwellings i.e. people who usually reside in an occupied private dwelling

Location Filters: LGA: East Pilbara

Assumptions: To better reflect mobile workforce requirements, and distinguish from residential population, Indigenous status has been factored into the 'persons usually resident' filter.

Determine demographics of mobile workforce in East Pilbara.

Apply Usually Resident Assumptions

NPRD = one personVisitor NPRD = NotNPRD = two personsNPRD = three or more persons	Si	ngle	Couple	Family
applicable	NPRD = one person	Visitor NPRD = Not applicable	NPRD = two persons	NPRD = three or more persons



type in each geographic region

A sample of LGAs were identified based on their similarity to the MWR region (e.g. population, proximity to major cities, industry growth) to provide an indicative range of single/couple/family ratios using the 2nd method



Worker composition as at 2021	(utilising method 2)
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LGA	Single %	Couple%	Family%
	31%	25%	44%
	(1823)	(1444)	(2604)
	39%	23%	39%
2. Mount Isa (QLD)	(855)	(500)	(865)
	44%	21%	35%
3. Western Downs (עבט)	(1023)	(496)	(817)
	91%	3%	6%
4. East Pilbara (WA)	(4356)	(138)	(273)
	100%	0%	0%
	(808)	(0)	(0)
	93%	2%	5%
6. Leonora (VVA)	(639)	(13)	(35)
Average	66%	12%	22%

Given the baseline scenario (all projects occur as currently scheduled), there would be a range of 2,015 to 6,500 singles, 0 to 1,625 couples and 0 to 2,860 families, when single/couple/family ratios from comparable areas are applied

Total population impact on the MWR LGA, with lower and upper cases, as well as average of comparable areas, 2023-2042



Range of ratios — Average — Current

The additional population is the additional non-local workforce required plus any dependents that they bring i.e. spouses and or children. The maximum additional population occurs in 2024

- Under the current ratio the maximum additional population is 9906
- Under the average ratio the maximum additional population is 11,427
- Under the Gladstone ratio the maximum additional population is 16,419
- Under the Laverton ratio the maximum additional population is 6,500

Peak count of nonlocal workforce by work profile for baseline scenario¹

Ratio Applied (Singles%/Couples%/Family%)	Nonlocal Singles	Nonlocal Couples	Nonlocal Family
Gladstone (31/25/44)	2,015	1,625	2,860
Mount Isa (39/22/39)	2,537	1,390	2,537
Western Downs (44/21/35)	2,860	1,365	2,275
East Pilbara (91/3/6)	5,915	195	390
Laverton (100/0/0)	6,500	0	0
Leonora (93/2/5)	6,045	130	325
Average (66/12/22)	4,290	780	1,430
Selected Ratio (78/6/16) ²	5,070	390	1,040

1 Note the peak occurs in 2026 for all counts 2 Current is based on the previous method Appendix

B

Demand Analysis – Detailed Scenario Results

Under the sensitivity analysis there are 9 possible varying forecasts

Sensitivity Analysis Outcomes

Given the limitations of a point-in-time analysis, two types of sensitivity tests have been developed to account for the uncertainty around project timing and completion.

There are two key forms of sensitivity analysis applied to the model

- 1. Sensitivity Test 1: project/worker volume
- 2. Sensitivity Test 2: project timing

As depicted in the graphic to the right, 9 potential results are possible. Detailed results of these 9 scenarios are provided on the following page.

It should be noted that these scenarios are largely hypothetical as they are intended to test the sensitivity of the model. As more data becomes available these scenarios may change to more accurately reflect construction of the REZ.

Note, the two outputs on slides 72 to 74 are:

- **Total workers required:** Total local and non-local workers required to facilitate the construction and operation induced by identified SSDs.
- **Total additional population:** Additional population from nonlocal workers i.e. non-local singles, non-local couples and nonlocal family units.

Peak workforce and additional population under different scenarios

	Reduced	Current	Plus
Current	Workforce: 6,851 (2026)	Workforce: 7,010 (2026)	Workforce: 8,496 (2025)
timing	Population: 9,669 (2026)	Population: 9,906 (2026)	Population: 10,751 (2025)
2 year	Workforce: 5,967 (2027)	Workforce: 6,094 (2028)	Workforce: 7,264 (2028)
delay	Population: 8,589 (2027)	Population: 8,778 (2028)	Population: 9,178 (2028)
Smoothed	Workforce: 5,504 (2026)	Workforce: 5,659 (2026)	Workforce: 7,089 (2025)
	Population: 7,777 (2026)	Population: 8,009 (2026)	Population: 8,650 (2025)

Project volume and timing variations (within MWR LGA)

Project	Estimated Wor	kforce	Timeframe (Targeted)		Timeframe (Delayed)	Timeframe (Delayed))	Likelihood to progress
	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	
Bowdens Silver Mine	320	228	2024 ,18 months	2026 to 2045	No change	No change	No change	No change	
Moolarben Coal	250	0	TBD	TBD, 2038	No change	No change	No change	No change	
Mayfair Solar	150	2	2025, 12 months	2026 to 2046	2027, 12 months	2028 to 2048	2027, 22 months	2029 to 249	
Narragamba Solar	400	10	2025, 36 months	2028 to 2053	2027, 36 months	2030 to 2055	2026, 40 months	2029 to 2054	
Wollar Solar Project	400	5	2023, 12-18 months	2024 to 2050	No change	No change	2024, 20 months	2026 to 2052	
Stubbo Solar Project	507	10	2023, 24 months	2026 to 2050	No change	No change	2023, 32 months	2027 to 2051	
Tallawang Solar Farm	430	27	TBD, 34 months	TBD	2026, 34 months	2029 to TBD	No change	No change	
Birriwa Solar Farm	800	15	2024, 36 months	2027 to 2057	2026, 36 months	2029 to 2059	2025, 36 months	2028, to 2058	
Mavis Solar	150	5	2025, 12 months	2026 to 2065	2027, 12 months	2028 to 2067	2025, 18 months	2027 to 2068	
Barneys Reef Wind Farm	340	10	2024, 28 months	2026 to TBD	2026, 28 months	2028 to TBD	2024, 30 months	2026 to TBD	
Burrendong Wind Farm	250	15	TBD, 30 months	TBD	TBD, 30 months	TBD	No change	No change	
Piambong Wind Farm	400	15	2026, 30 months	2028 to 2058	2028, 30 months	2030 to 2060	2027, 30 months	2029 to 2058	
Orana Wind Farm	580	27	2026, TBD	2028 to TBD	2028, TBD	2030 to TBD	No change	No change	
Liverpool Range Wind Farm	800	47	2024, 36 months	2027 to 2052	2026, 36 months	2029 to 2055	No change	No change	
BrightNight	300	15	2026, 15 months	2028 to 2058	2028, 15 months	2030 to 2060	2027, 24 months	2029 to 2059	
Bellambi Heights Battery	100	TBD	TBD, 12-18 months	No change	No change	No change	No change	No change	
Beryl Battery	40	1	2025, 12 months	2026 to 2051	2027, 12 months	2028 to 2053	2025, 20 months	2027 to 2052	
Central-West Orana REZ	1500	98	2024, 36 months	2027 to TBD	2024, 60 months	2029 to TBD	No change	No change	
Central-West Orana REZ - Secure Now	798	49	2033, 12 months	2035 to TBD	2033, 12 months	2035 to TBD	No change	No change	

Highly likely to proceed Likely to proceed

Blank= NSW EnergyCo project

Project volume and timing variations (surrounding MWR LGA)

Project	Estimated Wor	kforce	Timeframe (Targeted)		Timeframe (Delayed + 2	Timeframe (Delayed +2 yrs)		Timeframe (Smoothed)		
	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation		
Cobbora Solar Farm	700	8	2024, 36 months	2027 to TBD	2026, 36 months	2029 to TBD	2025, 36 months	2028 to TBD		
Sandy Creek Solar Farm	700	15	2024, 24 months	2026 to 2061	2026, 24 months	2028 to 2063	2026, 24 months	2028 to 2063		
Dunedoo Solar Farm	125	3	2024, 12 months	2025 to 2055	2026, 12 months	2027 to 2057	2026, 18 months	2028 to 2058		
Dapper Solar Farm	350	20	2025, 18-24 months	2027 to 2057	2027, 18-24 months	2029 to 2059	2026, 24 months	2028 to 2058		
Goulburn River Solar Farm	350	10	2023, 24 months	2026 to 2061	2025, 36 months	2028 to 2063	No change	No change		
Valley of the Winds	400	50	2023, 42 months	2027 to TBD	2025, 42 months	2029 to TBD	2024, 42 months	2028 to TBD		
Spicers Creek Wind Farm	250	12	TBD, 30 months	TBD, 30 years	2027, 30 months	2030 to 2060	2026, 42 months	2030 to 2060		
Phoenix pumped hydro	500	50	2026, 50 months	2030 to 2080	2028, 50 months	2032 to 2082	2027, 50 months	2031 to 2081		

Highly likely to proceed Likely to proceed

Blank= NSW EnergyCo project

Total workforce and total additional population across scenarios

12000

Total additional population

Total workers

2041



Scenario: 2 Year Delay, Reduced





Scenario: 2 Year Delay, Current



Scenario: Smoothed, Current





Scenario: 2 Year Delay, Plus



Scenario: Smoothed, Plus



Peak workforce timing and magnitude vary based on the particular scenario.

The Current Timing, Plus produces the highest peak (2025, 10,751 additional population and 8,496 total workers). The Smoothed, Reduced produces the smallest peak (2026, 7,777 additional population and 5,504 total workers).

0

2023

The table below summaries the forecast data under the nine scenarios providing the maximum value for each calendar year. (1/2)

Scenario: Current timing, Reduce	d																			
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total workers required	403	3869	6759	6851	2537	1077	951	701	627	952	1686	2307	1896	1201	768	699	699	699	699	
Total additional population	602	5325	9618	9669	3466	1285	1097	724	613	1099	2195	3122	2509	1471	824	721	721	721	721	
Scenario: Current timing, Current																				th:
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	sult: s sc
Total workers required	403	3869	6854	7010	3243	1202	987	737	663	988	1722	2343	1932	1237	804	735	735	735	735	s ap ena
Total additional population	602	5325	9760	9906	4520	1472	1151	778	667	1152	2249	3176	2562	1524	878	775	775	775	775	ply rio
Scenario: Current timing, Plus																				
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total workers required	1731	6026	8496	8299	4245	2204	1989	1739	1665	1978	2745	3426	2969	1296	863	794	794	794	794	
Total additional population	1237	7199	10751	10483	4669	1621	1300	926	816	1283	2429	3446	2763	1612	966	863	863	863	863	
Scenario: Delay, Reduced																				
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total workers required	403	1710	1434	2309	5967	5933	3440	2182	1391	952	1686	2307	1896	1201	768	699	699	699	699	
Total additional population	602	2214	1569	3125	8589	8538	4815	2936	1754	1099	2195	3122	2509	1471	824	721	721	721	721	
Scenario: Delay, Current																				
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total workers required	403	1710	1434	2309	6062	6094	4146	2362	1427	988	1722	2343	1932	1237	804	735	735	735	735	
Total additional population	602	2214	1569	3125	8731	8778	5869	3205	1808	1152	2249	3176	2562	1524	878	775	775	775	775	
Scenario: Delay, Plus																				
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	
Total workers required	1697	3277	2947	4043	7232	7264	5148	3364	2429	1978	2712	3333	2922	1376	883	794	794	794	794	
Total additional population	1187	3146	2481	4367	9130	9178	6018	3353	1957	1283	2379	3307	2693	1732	996	863	863	863	863	

The table below summaries the forecast data under the nine scenarios providing the maximum value for each calendar year. (2/2)

Scenario: Smoothed, Reduced																			
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total workers required	225	2817	5108	5504	4803	2482	1149	701	627	952	1535	2158	2123	1615	882	699	699	699	699
Total additional population	336	3754	7152	7777	6850	3384	1393	724	613	1099	1969	2900	2848	2089	994	721	721	721	721
Scenario: Smoothed, Current																			
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total workers required	225	2817	5268	5659	5214	2963	1329	737	663	988	1571	2194	2159	1651	918	735	735	735	735
Total additional population	336	3754	7391	8009	7464	4102	1662	778	667	1152	2023	2954	2901	2143	1048	775	775	775	775
Scenario: Smoothed, Plus																			
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Total workers required	1544	4915	7089	6968	6216	3965	2331	1739	1665	1978	2594	3251	3196	1710	977	794	794	794	794
Total additional population	958	5539	8650	8495	7613	4251	1810	926	816	1283	2203	3184	3102	2231	1136	863	863	863	863

Currently, the model assumes each worker associated with a project's peak workforce is unique. In practice it is likely that a worker will be engaged on multiple projects. Sensitivity analysis has been undertaken to illustrate this scenario.

Substitution of workers between projects

Consultation with proponents has highlighted that workers may be able to move between projects given similar construction phases and requirements. For example, concreting for multiple solar projects. Further, consultation highlighted that individual proponents are likely to select for a non-exhaustive pool of subcontractors for construction of SSDs. For example, ACEN might use the same subcontractors, and hence workers, across their 4 projects. The figure to the right highlights the proponent landscape detailing which proponents are responsible for which projects.

Given this mobility, it is likely that the model in its' current state estimates the highest likely additional workforce. However, at this point in time, effective modelling of this worker mobility is limited by data availability. In light of this limitation, this model proposes 3 hypothetical sensitive analysis scenario to account for worker mobility:

- 1. 20% worker mobility: 20% of the total construction workers are assumed to move between multiple projects
- 2. 30% worker mobility: 30% of the total construction workers are assumed to move between multiple projects
- **3. 40% worker mobility:** 40% of the total construction workers are assumed to move between multiple projects

These scenario are illustrated on the following slide overleaf.

Proponent Landscape



1. There are 19 other proponents in total as at September 2023 Source: MWRC

Total workforce and total additional population across 20%/30%/40% project substitution rates



Total Additional Workforce for SSDs, baseline and 20%/30%/40% substitution between multiple projects during construction

Total Additional Population for SSDs, baseline and 20%/30%/40% substitution between multiple projects



Mid-Western Regional Council - Managing the Impacts of State Significant Development

Appendix



Impact Analysis – Sensitivity Testing

The table below summarises the peak impact values under the different timing and volume variations.

	Timing Variation	Results in report apply	Curr	ent		2 year Delay			Smoothed	
	Volume Variation	this scenario (current, current)	Reduced	Plus	Reduced	Current	Plus	Reduced	Current	Plus
sing	Total Residential Dwellings	1,493 - 2026	1,454 -2026 (-39) 🖊	1,614 – 2025 (121)	1,306 -2028 (-187) ↓	1,340 -2028 (-185) 🖊	1,468 -2028 (-25) ↓	1,154 - 2026 (-339) ↓	1,191 -2026 (-302) 🖊	1,314 - 2026 (-179) ↓
Hou	Total TWA	5,031 -2026	4,914 – 2026 (-117) ♥	5,452 – 2025 (421)	4,352 – 2028 (- 679) ♥	4,443 – 2028 (-588)♥	4,576 -2028 (-455)	3,949 – 2026 (-1,082) ♥	4,067 – 2026 (-964) ♥	4,379 – 2026 (-652) ♥
lcare	Total Children (0-4)	474 - 2026	460 – 2026 (-14) ♥	515 – 2025 (41)	411 – 2028 (-65) 🖊	420 – 2028 (-54) ♥	439 – 2028 (-33)	372 – 2026 (-102)	383 – 2026 (-91) ↓	414 – 2026 (-60)
Chilo	Number of Childcare Places	54 ¹ - 2026	53 -2026 (-1) 🖊	59 -2025 (5) 🕇	47 -2028 (-7) 🖊	48 -2028 (-6) 🖊	50 -2028 (-4) 🖊	42 -2026 (-12) 🖊	44 -2026 (-10) 🖊	47 -2026 (-7) 🖊
	Total Children (4-18)	1,502 – 2026	1,466 – 2026 (-36) ↓	1,630 – 2025 (128)	1,307 – 2028 (-195) ↓	1,331 – 2028 (-171) ↓	1,391 – 2028 (-111) ↓	1,179 – 2026 (-323) ♣	1,214 – 2026 (-288) ♥	1,311 – 2026 (-191) ↓
chools	Number of Additional Primary Classrooms	26 -2025/26	25 -2026 (-1) ♥	29 -2025 (3) 1	22 -2028 (-4) 🖊	22 -2028 (-4) 🖊	24 -2028 (-2)♥	19 -2026 (-7) 🖊	20 -2026 (-6) ↓	22 -2026 (-4) 🖊
S	Number of Additional Secondary Classrooms	30 - 2026	29 -2026 (-1) 🖊	33 -2025 (3) 🕇	25 -2028 (-5) 🖊	26 -2028 (-4) 🖊	27 -2028 (-3)	22 -2026 (-8) 🖊	23 -2026 (-7)	25 -2026 (-5) 🖊
GPs	Additional GPs (Current Ratio)	8 - 2026	8 -2025/26 (0)	9 -2025/26 (1)	7 -2027/28 (-1) ♣	8 -2027/28 (0)	8 -2027/28 (0) —	7 -2025/26 (-1) ↓	7 - 2025/26 (-1) ↓	7 -2025/26 (-1) ↓
-	Additional ED Presentations	5,085 -2026	4,963 – 2026 (-122) ↓	5,518 – 2025 (433) 1	4,408 – 2028 (-677) ↓	4,506 – 2028 (-579) ↓	4,711 – 2028 (-374) ↓	3,992 – 2026 (-1,093) ↓	4,111 – 2026 (-974) ↓	4,400 – 2026 (-685) ↓
lospita	Additional ED Bays	8 – 2025/26	8 -2025/26 (0)	8 -2025 (0)	7 -2027/8 (-1) 🖊	7 -2027/8 (-1) 🖊	7 -2027/8 (-1) 🖊	6 -2025/26 (-2) ♥	6 -2025/26 (-2) ♥	7 -2025/26 (-1) ♥
-	Additional Nurses	7 – 2025/26	7 -2025/26 (0)	7 -2025 (0)	6 -2027/28 (-1) ↓	6 -2027/28 (-1) ♥	6 -2027/28 (-1) ♥	5 -2025/26 (-2) ♥	6 -2025/26 (-1)♥	6 -2025/26 (-1) ↓
nce	Additional Responses	803 – 2026	784 – 2026 (-19) ↓	871 – 2025 (68) 1	696 – 2028 (-107) ↓	711 – 2028 (-92) ↓	744 – 2028 (-59) ↓	630 – 2026 (-173) ↓	649 – 2026 (-154) ↓	701 – 2026 (-102) ◀
mbula	Additional Paramedics	30 – 2026	29 -2025/26 (-1) ↓	33 -2025 (3) 1	26 -2027/8 (-4) ↓	27 -2027/8 (-3) ➡	28 -2027/8 (-2)↓	24 -2025/26 (-6) ♥	24 -2025/26 (-6) ➡	26 -2025/26 (-4) ♥
A	Additional Ambulance Vehicles	9 - 2026	8 -2025/26 (-1) 🖊	9 -2025 (0) 🕇	8 -2027/28 (-1) 	8 -2027/28 (-1) 🖊	9 -2028 (0) 🖊	7 -2025/26 (-2) 🖊	7 -2025/26 (-2) 🖊	7 -2025/26 (-2) 🖊

Mid-Western Regional Council - Managing the Impacts of State Significant Development PwC 1. Inner Regional Median

Under the sensitivity analysis the peak additional residential housing varies from 1,154 to 1,605 and total TWA varies from 3,949 to 5,265

Total Additional Residential Housing and TWA for various timing sensitivities

TWA Residential housing

Scenario: Current Timing, Reduced



Scenario: 2 Year Delay, Reduced





Scenario: 2 Year Delay, Current

Scenario: Current Timing, Current





Scenario: 2 Year Delay, Plus





Peak residential housing and TWA vary based on the particular scenario.

The Current Timing, Plus

produces the highest peak in 2025, with 5,265 individuals requiring TWAs, and 1,605 residential dwellings may be required. The Smoothed, Reduced produces the smallest peak in 2026 with 3,949 individuals requiring TWAs, and 1,154 residential dwellings may be required.

Under the sensitivity analysis, the peak additional children (aged 0 - 4 years) varies from 372 to 515, and may require up to 42 to 59 additional childcare places. OR

Total Additional Children (aged 0-4 years) for various timing sensitivities

Plus Current Reduced





Volume Number of Childcare Places¹ Sensitivity 0 15 30 45 60 Plus Current Reduced



2023

Delayed

600

500

400

300

200

100

0



Mid-Western Regional Council - Managing the Impacts of State Significant Development . Number of child care places reflect the number of places aligned to the inner regional average. More childcare places would be required to meet the national median PwC

2041

Volume

Sensitivity

Plus

Current

Reduced

0

15

The Plus volume variation produces the highest peak in 2025 with 515 additional children that may require up to 59 addition childcare places.

The Reduced variation peaks in 2026 with 460 additional children and up to 53 additional childcare places.

The Plus volume variation produces the highest peak in 2028 with 439 additional children that may require up to 50 addition childcare places.

The Current volume produces a peak also in 2028, with 420 additional children and up to 48 additional childcare places. The Reduced variation also peaks in 2028 with 411 additional children and up to 47 additional childcare places.

The Plus volume variation produces the highest peak in 2026 with 414 additional children that may require up to 47 addition childcare places.

The **Current** timing, current volume produces a peak also in 2026, with 383 additional children and up to 44 additional childcare places. The Reduced variation also peaks in 2026 with 372 additional children and up to 42 additional childcare places.



Number of Childcare Places¹

45

60

30

Under the sensitivity analysis, the peak additional children (aged 4 – 18 years) varies from 1,179 to 1,630, and may require up to 19 to 29 primary classes and 22 to 33 secondary classes.

Total Additional School Age Children (aged 5 - 18 years) for various timing sensitivities¹











1. Based on ABS data for regional NSW, the demographic spilt between primary schoolers and higher schoolers is 50/50. Therefore PwC if there are a total of 1000 additional school age children (5-18), 500 would be primary schoolers and 500 would be high schoolers 2. Assumes no current spare capacity





The Plus volume variation produces the highest peak in 2025 with 1,630 additional school age children who may require up to 29 primary and 33 secondary classrooms.

The **Reduced** variation peaks in 2026 with 1.466 additional school age children who may require up to 25 primary and 29 secondary classrooms.

The Plus volume variation produces the highest peak in 2028 with 1,397 additional school age children who may require up to 24 primary and 27 secondary classrooms.

The Reduced variation peaks in 2028 with 1,307 additional school age children who may require up to 22 primary and 25 secondary classrooms. Similarly, the Current variation peaks in 2028 with 1.336 students and up to 24 primary and 27 secondary classrooms.

The Plus volume variation produces the highest peak in 2025 with 1.311 additional school age children who may require up to 22 primary and 25 secondary classrooms.

The Reduced variation peaks in 2026 with 1,179 additional school age children who may require up to 19 primary and 22 secondary classrooms. Similarly, the Current variation peaks in 2026 with 1,214 students and up to 20 primary and 23 secondary classrooms.



Under the sensitivity analysis, the peak additional GPs vary from 7 to 8 when applying the current ratio, and 11 to 14 when applying the optimal ratio.

Total Additional population for various timing sensitivities







The Plus volume variation produces the highest peak with up to 9-14 additional GPs (current ratio – optimal ratio) in both 2025 and 2026.

The Reduced variation peaks in both 2025 and 2026 with up to 8 - 13 additional GPs (current ratio – optimal ratio). The **Current** project volume ratio provides the same additional GPs as the reduced variations (8-13).

Delayed





5

Additional GPs

10

15

Volume

Sensitivity

Plus

Current

Reduced

0

Smoothed



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1. Based on ABS data for regional NSW, the demographic spilt between primary schoolers and higher schoolers is 50/50. Therefore PwC if there are a total of 1000 additional school age children (5-18), 500 would be primary schoolers and 500 would be high schoolers 2. Assumes no current spare capacity

peak with up to 8-12 additional GPs (current ratio optimal ratio) in both 2027 and 2028. The **Reduced** variation peaks in both 2027 and 2028

The Plus volume variation produces the highest

with up to 7 - 11 additional GPs (current ratio - optimal ratio). The Current project volume ratio provides the same additional GPs as the plus variations (8-12).

The Plus volume variation produces the highest peak with up to 7 - 11 additional GPs (current ratio optimal ratio) in both 2025 and 2026.

The **Reduced** variation peaks in 2026 with up to 7 - 10 additional GPs (current ratio - optimal ratio). The Current project volume ratio provides the same additional GPs as the plus variations (7-11) but only in 2026.

Under the sensitivity analysis, the peak additional: presentations vary from 3,992 to 5,518, ED Bays vary from 6 to 8 and nurses vary from 3 to 4.

Total Additional ED Presentations, Bays and Nurses for various timing sensitivities

Plus Current Reduced



Delayed Timing – Presentations



Smoothed Timing – Presentations





Delay Timing – ED Bays



Smoothed Timing – ED Bays



Current Timing – Nurses



Delay Timing – Nurses



Smoothed Timing – Nurses



Peak Demand Under Current Timing

Presentations (YYYY)	ED Bays (YYYY)	Nurses (YYYY)
5,518 (2025)	8 (2025)	7 (2025)
5,085 (2026)	8 (2025/26)	7 (2025/26)
4,963 (2026)	8 (2025/26)	7 (2025/26)
	Presentations (YYYY) 5,518 (2025) 5,085 (2026) 4,963 (2026)	Presentations (YYYY) ED Bays (YYYY) 5,518 (2025) 8 (2025) 5,085 (2026) 8 (2025/26) 4,963 (2026) 8 (2025/26)

Peak Demand Under Delayed Timing

Volume variation	Presentations (YYYY)	ED Bays (YYYY)	Nurses (YYYY)
Plus	4,711 (2028)	7 (2027/28)	6 (2027/28)
Current	4,506 (2028)	7 (2027/28)	6 (2027/28)
Reduce	4,408 (2028)	7 (2027/28)	6 (2027/28)
	, ,		

Peak Demand Under Smoothed Timing

Volume variation	Presentations (YYYY)	ED Bays (YYYY)	Nurses (YYYY)
Plus	4,400 (2025)	7 (2025/26)	6 (2025/26)
Current	4,111 (2026)	6 (2025/26)	5 (2025/26)
Reduce	3,992 (2026)	6 (2025/26)	6 (2025/26)

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Under the sensitivity analysis, the peak additional: responses vary from 630 to 871, paramedics vary from 24 to 33 and ambulances vary from 7 to 9.

Total Additional Responses, Paramedics and Ambulance Vehicles for various timing sensitivities

Plus Current Reduced



Delayed Timing – Responses



Smoothed Timing – Responses





Delay Timing – Paramedics



Smoothed Timing – Paramedics



Current Timing – Ambulance Vehicles



Current Timing – Ambulance Vehicles



Current Timing – Ambulance Vehicles



Peak Demand Under Current Timing

Volume variation	Responses (YYYY)	Paramedics (YYYY)	Ambulances (YYYY)
Plus	871 (2025)	33 (2025)	9 (2025)
Current	803 (2026)	30 (2025/26)	9 (2025/26)
Reduce	784 (2026)	29 (2025/26)	8 (2025/26)

Peak Demand Under Delayed Timing

	Volume variation	Responses (YYYY)	Paramedics (YYYY)	Ambulances (YYYY)
	Plus	747 (2028)	28 (2028)	9 (2028)
-	Current	714 (2027)	27 (2027/28)	8 (2027/28)
-	Reduce	699 (2027)	26 (2027/28)	8 (2027/28)

Peak Demand Under Smoothed Timing

Volume variation	Responses (YYYY)	Paramedics (YYYY)	Ambulances (YYYY)
Plus	701 (2025)	26 (2025/26)	8 (2025/26)
Current	649 (2026)	24 (2026)	7 (2026)
Reduce	630 (2026)	24 (2026)	7 (2026)