

# Pioneer-Burdekin Stakeholder Reference Group

## Responses to member questions – July 2023 meeting

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### General

Question	Raised by SRG member representing	Response
What is the purpose of the community funds that may be offered and what does Queensland Hydro expect from the communities in return?	Eungella Community Development Association	<p>The intent of a community benefits fund is to provide meaningful contribution that strengthens the whole community and region by supporting a range of community-based initiatives, projects and events that benefit local communities. This could be in the form of sponsorships or partnerships, local infrastructure improvements, or education initiatives.</p> <p>Given the project is in its early stages, we are still establishing our approach to how we work with and support community organisations and initiatives. Discussions with Stakeholder Reference Group (SRG) and community are valuable as we develop our approach.</p>
Massey Creek is not noted on the map, please explain why not, as this is a valuable resource.	Save Eungella	Thank you for this feedback. Labels for waterways, such Massey Creek, Pla Creek and Quandong Creek, will be included where there is interaction with proposed reservoir sites.

Question	Raised by SRG member representing	Response
<p>The SRG were advised that a total of 937 hectares of land, across the three reservoirs, would be impacted. This is made up of 691 hectares of cleared land, 66 hectares of cropping land, and 55 hectares of residential and farm infrastructure.</p> <p>(I realise that this doesn't add up, so would like to clarify).</p>	<p>Save Eungella</p>	<p>Thank you for seeking this clarification, which has identified a clerical error in the minutes of SRG #1 meeting, where a figure of 870 not 807 hectares was included. This will be amended, and the minutes republished.</p> <p>The proposed project footprint based on the concept design is an estimated 937 hectares of land.</p> <p>Approximately 86% (807 hectares) of the land within the proposed project footprint is used for agriculture or is previously developed. This includes approximately 691 hectares of natural grazing, 66 hectares of irrigated cropping and 50 hectares of land mapped for residential and farm infrastructure.</p> <p>The remaining 14% is identified as vegetation - a mix of regrowth and high value remnant vegetation.</p>
<p>Could you please advise me on who will be the liable party/parties in the event of the following from drill sampling, construction and operation of the proposed hydro system: slumps, sink holes, damage to my property, contamination of my underground drinking water, damage to roads, compromised integrity to the range from drilling, dam failure that could inundate the Pioneer Valley and Mackay region.</p>	<p>Save Eungella</p>	<p>Geotechnical drilling is undertaken by experienced contractors with certifications in drilling operations. The drilling, which captures rock samples to inform engineering assessments, has a low risk of causing damage. This kind of exploratory drilling is commonly performed on civil construction projects.</p> <p>All permits required to perform the drilling are obtained, which vary depending on where drilling is to occur. Sites are rehabilitated after drilling is complete.</p> <p>In the unlikely event geotechnical drilling causes damage to the land or property, Queensland Hydro accepts that it is liable for its negligent acts and appropriate insurance coverage is obtained before any activity commences. Contractors performing works may also be liable for damage that arises and are similarly required to obtain appropriate insurance.</p> <p>We understand that you have also raised broader concerns about the project. The primary purpose of the geotechnical drilling is to inform engineering assessments as to the feasibility of the proposed project.</p>

Question	Raised by SRG member representing	Response
<p>Could Queensland Hydro have a landowners meeting prior to SRG meeting? Residents are finding out that they now have a road impacting their property by reading the minutes of the previous SRG meeting.</p> <p>(The community has continually asked that they be addressed as a group many times to prevent misinformation spreading. Minister Mick de Brenni gave his word at the very first meeting that this will happen going forward. This has only happened with constant push from the community).</p>	<p>Save Eungella</p>	<p>The Project is in the initial investigation phase and no decision has been made about the location of new roads. As the Project progresses, we will be working with working with the Mackay Regional Council, the Department of Transport and Main Roads and the local community to understand site access and any potential impacts the Project may have on existing transport routes, which include the Mackay-Eungella Road.</p> <p>Landowners who have property directly affected by the project each have a dedicated land advisor who is available to assist with questions as they arise. Alternatively, our project team is also available to speak to at our regular drop-in sessions, via email <a href="mailto:pioneer-burdekin@qldhydro.com">pioneer-burdekin@qldhydro.com</a> or phone 1800 875 099.</p> <p>We understand there are many aspects of the project to be considered and we are keen to ensure our landowners are well informed. We have surveyed our landowners to better understand forums and topics of interest and are tailoring our approach based on that feedback. We welcome suggestions for forums and are happy to seek interest in those from the landowners.</p>
<p>Property owners that are willing to consent to the sale of their property are offered in excess of 50 per cent of the market value also including commercial incentive allowances. This funding is derived from coal royalties and is set to end today 30 June 2023. Some owners have been offered \$1.8 million to \$2 million for small three acre properties.</p> <p>Are landowners that consent to the sale of their property free to speak out against the project and contribute to opposing groups or are they essentially gagged. I have heard this from numerous people in the community and would appreciate a transparent answer.</p>	<p>Save Eungella</p>	<p>Queensland Hydro supports landowners freely expressing their views and opinions. We actively encourage all community members to provide feedback on the project through a number of methods, including meetings and drop-in sessions. There are no agreements or legal documents in place that prevent impacted landowners from commenting on, or opposing the project or contributing to any community or advocacy groups.</p> <p>We are working closely with landowners to understand their specific circumstances. We want to achieve a positive financial outcome for all landowners in the impacted area. It is important to note that our current focus is working with impacted landowners to arrange access for project investigation works. Any acquisition discussions are at the request of the landowner, are entered into voluntarily and are based on their individual circumstances.</p>

## Site justification

Question	Raised by SRG member representing	Response
<p>Please provide an assessment of the alternative locations considered for a PHES in Queensland.</p> <p>We understand that there are other sites with lower biodiversity impacts than the Pioneer-Burdekin PHES. The only alternative site we have been informed about is the Tully River, which we understand has better engineering values than Pioneer-Burdekin PHES.</p> <p>Community members have told us there are alternative locations that are more suitable. However, we have seen no assessment of alternative locations to Pioneer-Burdekin PHES.</p>	Mackay Conservation Group	<p>Options assessed in the Queensland Hydro Study is a matter for the Queensland Government. We have advised the Department of Energy and Public Works of your interest in this area.</p> <p>The following information is available on the Queensland Hydro Study process - <a href="https://www.epw.qld.gov.au/data/assets/pdf_file/0024/17295/qld-hydro-study.pdf">https://www.epw.qld.gov.au/data/assets/pdf_file/0024/17295/qld-hydro-study.pdf</a></p> <p>To meet our goal of decarbonising Queensland's energy grid, a significant amount of large scale, long duration storage is required. While many Queensland sites have been considered in previous studies (based off the Australian National University and Australian Renewable Energy Agency's (ARENA) Project – An Atlas of Pumped Hydro Energy Storage) only a limited number of sites are suitable to efficiently meet the storage capacity and duration required by Queensland to facilitate a transition to renewable energy. The Borumba and Pioneer-Burdekin projects are stand-out locations for pumped hydro energy storage based on their topography, hydrology, geology and commerciality. As with any significant infrastructure project, it is challenging to identify locations that avoid impacts. Queensland Hydro is committed to working alongside communities and experts to better understand and manage potential environmental, social and community impacts.</p>
<p>When will we be able to see the Multi Criteria Analysis for the Queensland Hydro Study that supported the selection of Eungella as the site for a large PHES site? Request copy of the Multi Criteria Analysis (MCA) for the Site Selection, note on the agenda, especially as Minister Mick de Brenni promised it to this group. Ref:</p> <p>2. <a href="https://qldhydro.com.au/wp-content/uploads/2022/09/Pioneer-Burdekin-StakeholderReference-Group-Minutes-May-2023.pdf">https://qldhydro.com.au/wp-content/uploads/2022/09/Pioneer-Burdekin-StakeholderReference-Group-Minutes-May-2023.pdf</a> page 10</p>	Save Eungella	<p>The Borumba and Pioneer-Burdekin pumped hydro projects will help deliver a 90% reduction (on 2005 levels) in Queensland electricity emissions by 2035-36 under the Queensland Energy and Jobs Plan. The proposed Pioneer-Burdekin project offers Queensland leading energy storage and generation capacity, while avoiding inundation of national parks and world heritage areas. These factors are unparalleled by other sites. The proposed footprint would need to be 2-3 times bigger and across multiple locations, to deliver equivalent storage capacity elsewhere in Queensland.</p>

## Design

Question	Raised by SRG member representing	Response
<p>Will there be an exclusion zone around the proposed dam walls? How wide will this zone be?</p> <p>Will landowners be restricted in what they can do with or on this land within the exclusion zone?</p> <p>What is permitted within the exclusion zones?</p>	Save Eungella	<p>It is common practice for dams to have exclusion zones incorporated to prevent unauthorised access into operationally sensitive areas, including the dam wall and spillways. Exclusion zones will be required for the Pioneer-Burdekin project. Details of requirements will be developed as part of the project design process.</p>

Question	Raised by SRG member representing	Response
<p>What volume of water is required in upper reservoirs and what is the elevation of the water surface when the reservoirs are full and when they drained out?</p>	<p>Save Eungella</p>	<p>In the concept design, both upper reservoirs have an approximate volume of 38 gigalitres.</p> <p>If it proceeds, Upper Reservoir A will have an approximate elevation of 880m Australian Height Datum (AHD) when full while Upper Reservoir B would be approximately 920m AHD. At minimum operating level, Upper Reservoir A would have an approximate elevation of 850m AHD and Reservoir B would be 870m AHD.</p> <p>Please note, these levels may be adjusted as further technical studies are undertaken and the project design develops in response to these studies.</p>
<p>From the 2035 onwards what is the expected frequency of pumping the water up and down that results in a water surface elevation change of 1m, 2m, or much more?</p>	<p>Save Eungella</p>	<p>A typical daily generation cycle would run for 6 to 8 hours depending on the needs of Queensland households and businesses. When generating, the lower reservoir water level change (with current design assumptions) would average less than 0.8m per hour.</p> <p>The corresponding pump cycle to refill the upper reservoir is 8 to 11 hours. When pumping, the lower reservoir water level change (with current reservoir assumptions) would average less than 0.7m per hour.</p>
<p>Noting that the purple lines are the dam <b>wall(s)</b> as shown in the <a href="#">figure</a>, what are wall heights, from top of its main foundation base to top of wall structure?</p>	<p>Save Eungella</p>	<p>Based on the concept design, the dam walls at the tallest points are expected to be approximately:</p> <ul style="list-style-type: none"> <li>• 65m high for the lower reservoir</li> <li>• 55m high for Upper Reservoir A</li> <li>• 70m high for Upper Reservoir B.</li> </ul> <p>More information about expected wall heights of the proposed saddle dam walls of the upper reservoirs will become known as the design develops.</p>
<p>What is the expected type of construction for these walls? Concrete? roller compacted?</p>	<p>Save Eungella</p>	<p>A range of options are being considered for construction of the dam walls, and the final option has not yet been determined. These options include both earth / rock fill and roller compacted concrete.</p>
<p>What is the maximum depth of excavation that will be carried out for the wall foundations ignoring rock anchors and the like. And what is the total volume excavated?</p>	<p>Save Eungella</p>	<p>Excavation depths and volumes for the wall foundations will be determined upon completion of site geotechnical investigation works to inform the design solution.</p>
<p>What amount of offsite precast work will be carried out for the wall construction? And have the access roads been designed to ensure proper safety of works for all the heavy lift items to be brought into site?</p>	<p>Save Eungella</p>	<p>A range of options are being considered for construction of the dam walls, and the final option has not yet been determined. Construction methodology will be determined after the design is developed.</p> <p>Existing roads that may be used by construction traffic will be assessed as part of the development of the Project. The assessment will include projected vehicle volumes, and the type and size of vehicles to ensure that roads are safe and fit for use by the public and project.</p>

Question	Raised by SRG member representing	Response
What is the maximum depth of excavation that will be carried out in the reservoir area? And what is the total volume excavated?	Save Eungella	Any requirements for excavation within the reservoir areas (including depth and volumes) will be determined following further development of the design and completion of detailed geotechnical and topographical site investigations.
Will Qld Hydro be designing the reservoirs and all the structures for a 1,000 year or 10,000 year design life? Or what?	Save Eungella	The design life for civil infrastructure associated with the reservoir is at least 100 years. As with any major project, the infrastructure will need maintenance during this period to achieve the target design life and turbines would need to be overhauled to allow the asset to continue to be used.
What Australian Standard is being used for the design of the structures?	Save Eungella	The designs will comply with applicable national and international standards including Australian Standards, National Construction Code and Building Code of Australia.
What is the minimum distance from the edge of the constructed works to the National Park?  And what is the minimum distance from the camp-laydown area footprint and for all access roads and access structures for these works to the National Park?	Save Eungella	The proposed reservoirs do not inundate any areas of Eungella National Park. The power station, pump house and tunnels connecting the reservoirs will be located underneath Eungella National Park.  As the design progresses, we will gain a greater understanding of the exact nature and scale infrastructure located in proximity to the Eungella National Park and surrounding land. Queensland Hydro is committed to minimising potential national park impacts as part of the project.
How many bridges will need to be upgraded on Mackay Eungella Road to get any heavy gear up the end of the valley? They all have a load limit on them, none of which are rated. Most aren't even rated to get a franna crane over them.	Save Eungella	Technical studies and investigations will be undertaken as part of the current stage to assess the existing road network and determine whether infrastructure, such as bridges, need to be upgraded to facilitate construction traffic.
After driving the Dalrymple Rd today, and not understanding how Upper reservoir A will not just 'spill' over Dalrymple Rd to the east, I zoomed in on the map, and realised there is a massive chain of saddle dams extending from just north of Black's Rd, along Dalrymple Rd, to the northern extremity of Upper reservoir A. How is that not a massive risk for inundation, spill-over, and risk of dam-wall-failure?	Save Eungella	The saddle dams shown in the project map are necessary to prevent inundation of Eungella National Park while allowing storage of a sufficient volume of water within Upper Reservoir A.  The dams will be designed to comply with applicable national and international standards including Australian Standards, National Construction Code and Building Code of Australia.
Twin Hills Ute, and Truck, were seen coming out of Seninis' Rd around 1250 hrs, 4th July, and then travelling through Netherdale and turned up Dalrymple. Perhaps scoping out the 2nd lower reservoir at Seninis' that appeared on the Cabinet-In-Confidence map? Qld Hydro please advise if the 2nd lower reservoir is being considered?	Save Eungella	Queensland Hydro is not considering a second lower reservoir location. The map referenced is an outdated map of an earlier project concept option that had already been ruled out.

## Investigations

Question	Raised by SRG member representing	Response
<p>Request a plan of the locations of the test sites where the bored logs were taken (not just samples).</p> <p>Request the geotechnical assessment report</p> <p>Request full plan for all the testing planned to be conducted as part of the current phase of geotechnical investigations</p>	<p>Save Eungella</p>	<p>As we progress investigations and technical studies, we hope to share our key findings with the community as they become available. This information will be shared progressively through our project updates and other forums.</p>
<p>Why can't works be conducted within Monday to Friday business hours. The latest information is that work can be completed effectively 24/7. This might seem insignificant; however, it sets a precedent for the future. If there are specific reasons they need to extend outside of these hours, they should then notify the community. This will ensure the community isn't overly impacted in what is family and leisure time.</p> <p>Can you ask why they are intruding so heavily into the communities' quality of life?</p>	<p>Save Eungella</p>	<p>Current investigation work involves geotechnical drilling and environment and cultural heritage surveys at various locations across the project site. The majority of work is being carried out during the day from Monday to Saturday between 6am and 6pm to balance minimising community impacts and efficient delivery of the work.</p> <p>These times consider the crew setting and packing up at each location.</p> <p>Any work outside of these hours will be limited and on an as-needs basis and may be due to the specific preference of a landowner or the nature of the study being completed e.g., dawn and dusk surveys required for specific species as we move into environmental studies. The project team will notify relevant nearby residents and landholders of required out-of-hours work.</p>

## Water

Question	Raised by SRG member representing	Response
<p>How will wet season discharges be managed so that the waters overflowing into the respective catchments is free of contaminants and turbidity?</p> <p>We have been told that there will be little water taken from natural stream flows once the dams are initially filled. We also know that there will be mixing of water between the Burdekin and Pioneer catchments and potential for biosecurity risks if such water is discharged from the dams. It is also highly likely that, in addition to the biosecurity issues, the water will be constantly stirred up and may be turbid. We also know that wet season rainfalls will generate more water than the dams can hold and so dam discharges will be necessary.</p>	<p>Mackay Conservation Group</p>	<p>As part of the investigation phase and environmental impact statement (EIS) we will undertake a range of studies for water management and water quality to understand potential concerns and mitigation measures can be put in place.</p> <p>The dams will be designed to pass water downstream using both the outlet works and spillways. Controlled outlet works are used to maintain releases to downstream users, environmental and flushing flows, etc. Flood flows would be managed via spillways which overflow when water volumes exceed the reservoir capacity. The sizing of these works is developed alongside the ongoing hydrologic and water quality studies.</p>
<p>Will there be interception and diversion of the runoff water from the slopes above the lower dam level so that the multiple permanent streams and springs can be diverted directly to the creek below the dam wall, keeping them separate from the dam water and thus clean and clear?</p>	<p>Mackay Conservation Group</p>	<p>This is not expected to be a viable option due to the topography of the local area.</p>
<p>"Cattle Creek blocked for 3 years", per Qld Hydro staff at drop in session. Qld Hydro Please explain if this is true or exactly how natural flows will be maintained.</p>	<p>Save Eungella</p>	<p>Should the project proceed to construction, flows through Cattle Creek would be maintained. Any interruptions would be temporary and short term. Specific engineering solution for maintaining these flows during construction will be determined as part of the project design process.</p> <p>The dam wall would be fitted with adjustable outlet valves which would allow environmental flow releases during both filling and ongoing operation. These water releases would seek to replicate natural flow patterns and would ensure that the environmental flow objectives and water allocation security objectives of the Pioneer Water Plan are met.</p>



Question	Raised by SRG member representing	Response
<p>Snowy hydro uses a cloud seeding program. Is QLD hydro relying on using geo engineering to ensure reliable rainfall? And at what impact to the environment? And how is it possible to NOT impact National Park.</p> <p>+</p> <p>Is Queensland Hydro, privately owned companies, government organizations or any group that your team are aware of, considering and or conducting cloud seeding or weather modification programs/tests, or considering using similar techniques to fill, maintain dams or for any other purpose.(Doug Cannon)</p>	<p>Save Eungella</p>	<p>Queensland Hydro does not intend to use cloud seeding or any other form of manufactured weather modification during the project. As part of the current investigation phase, we will be undertaking hydrological studies to assess the capacity of the local catchment to sustain the Project, while still ensuring that environmental flows and water security for downstream users are maintained.</p>
<p>Should settlement ponds be required in order to mitigate water quality for release, where will these settlement ponds be located?</p>	<p>Save Eungella</p>	<p>As part of the detailed analytical report (DAR) and potential future environmental impact statement (EIS) Queensland Hydro is commissioning a range of studies into water management and water quality, and what mitigation measures can be put in place to mitigate any adverse impacts that may occur.</p> <p>The dam/reservoir design will aim to ensure water quality and sediment is managed by the project through several possible design elements. Settlement ponds are unlikely to be required, as the reservoirs themselves will provide this function.</p> <p>This sediment management approach is consistent with modern dam and reservoir design. Understanding of the material properties in the reservoir is being assessed currently, as part of the site investigation. Management of any fine sediment such as clay would be considered in the reservoir design and associated management plans.</p>
<p>What will be the impact to Quandong Creek that flows water into Pla Creek. Will these water systems and waterfalls run dry and what will be the expected impact to the downstream aquatic life and national parks flora and fauna. What amount of flow is expected to flow over the spillway dam walls in this location and what will be the quality of water</p>	<p>Save Eungella</p>	<p>The impacts of the upper reservoirs on flows in Pla Creek and Quandong Creek will be considered as part of the detailed analytical report (DAR), and a potential future environmental impact statement (EIS). These studies will also consider the potential need for environmental flow releases from the upper dam walls, as well as potential risks such as impacts to water quality or inter-catchment transfer of pest species should such releases be required.</p> <p>The DAR and EIS studies will also consider potential impacts to water quality as a result of the project, and will identify measures to mitigate these impacts.</p>

## Environment

Question	Raised by SRG member representing	Response
<p>Will fossil fuels be used in the construction of the project?</p> <p>If so, what is the nett CO2e that will be emitted due to this project, and will this project have a sufficient CO2e mitigation to pay back those initial capital emissions in the rapid timeframe that dealing with climate change demands?</p>	<p>Mackay Conservation Group</p>	<p>This project will enable transition of Queensland's generation system away from reliance on fossil fuels. Fossil fuels, like diesel, will however be used by machinery and equipment during construction.</p> <p>A preliminary greenhouse gas assessment will be prepared as part of the Detailed Analytical Report. A more detailed carbon footprint analysis would be prepared should the project proceed to an environmental impact statement (EIS) and will outline any potential mitigations.</p>
<p>What is Queensland Hydro's plan for Platypus in the upper and lower reservoirs – will they be trapped and relocated?</p> <p>Could you give examples of where and how platypus have been captured and successfully relocated.</p>	<p>Save Eungella</p>	<p>Queensland Hydro acknowledges that there is platypus habitat within the footprint of the proposed reservoirs. We are working with platypus experts to determine what measures can be implemented to avoid, mitigate or offset the associated potential impacts to the local platypus populations. The approach we adopt will be informed by advice from these experts and is expected to incorporate a variety of measures, which may include relocation.</p> <p>Examples of where relocation has been used previously include Royal National Park in NSW (2023), and Tidbinbilla Nature Reserve in ACT (2020).</p>
<p>Chemical 2,3,7,8,tetrachlorodibenzo-p-dioxin TCDD contamination will cause irreparable injury and death in ALL FAUNA including humans.</p> <p>Will bio-accumulate on any water infrastructure contaminating everything that is in the vicinity endlessly?</p>	<p>Save Eungella</p>	<p>The Detailed Analytical Report (DAR) will include a preliminary contaminated site assessment which will consider the potential risks (including ecological and health risks) associated with potential man-made contamination within the project area. This will include an assessment of potential risks associated with agricultural chemicals.</p> <p>A more detailed assessment will be undertaken should the project proceed to an environmental impact statement (EIS).</p>

## Social

Question	Raised by SRG member representing	Response
<p>How can we minimise the effects of the project on the local community?</p> <p>For example, loss of private properties resulting in loss of population in Eungella area and the flow on effect of a loss of school.</p>	<p>Eungella Community Development Association</p>	<p>A Social Impact Evaluation (SIE) will be prepared for the project as part of the investigation phase. Should the project proceed to an environmental impact statement (EIS), then a more detailed Social Impact Assessment (SIA) would be required, which would build on the findings of the SIE.</p> <p>The SIE and SIA will assess potential positive and adverse social impacts of the project, and will provide measures to enhance positive impacts and mitigate adverse impacts. The SIA will include a detailed Social Impact Management Plan (SIMP), which will provide a practical framework for implementing these measures.</p> <p>This assessment will incorporate an analysis of the impacts of project-induced population changes including on social services such as education. Queensland Hydro will also be engaging with the relevant state government departments – in this instance Department of Education – about these matters.</p>
<p>How many blocks will be inundated at Dalrymple Heights and Netherdale, and what are the characteristics of this land?</p> <p>Is there anything Queensland Hydro can do to encourage Council to increase the land available for various sizes of blocks (similar to what is being lost) to keep our current families here and allow some population increase during the proposed project?</p>	<p>Eungella Community Development Association</p>	<p>Approximately 80 blocks are expected to be directly affected by the project due to inundation or road realignment, with property sizes ranging from 400m<sup>2</sup> up to 159ha.</p> <p>The upper reservoir (Dalrymple Heights) contains small-medium lifestyle (rural residential) properties with small–medium scale grazing operations. The lower reservoir is also made up of small–medium lifestyle (rural residential) blocks with small scale cattle and sugar cane operations surrounding the Netherdale community. Most properties are rural residential, with properties around Netherdale being residential.</p> <p>We will liaise with Mackay Regional Council regarding land availability.</p>

## Construction

Question	Raised by SRG member representing	Response
<p>What is the extent of the construction camp- laydown area footprint alongside these reservoirs at the various stages of the works? A scaled diagram of the footprint and the constructed works needs to be shown along with the access roads and their supporting bridges and earthworks for the access.</p> <p>Mr Evans said in respect to accommodation for construction workers, Queensland Hydro would ask for community input as to where they should go. This seems a strange way of project management.</p> <p>Queensland Hydro, please advise us where the accommodation for construction workers is going.</p>	<p>Save Eungella</p>	<p>If the project proceeds to construction, it is anticipated that temporary construction camps may be required for both the upper and lower reservoir sites to accommodate the workforce. Specific locations and accesses for these facilities, as well as construction laydown areas, will be determined during future stages should the project proceed.</p> <p>At that point, Queensland Hydro will work with Mackay Regional Council and local service providers to understand how it can support future accommodation and housing opportunities in the region.</p> <p>Importantly, should the project proceed to an environmental impact statement (EIS), Queensland Hydro will be required to prepare a Social Impact Management Plan which will include a Workforce Housing and Accommodation Plan. Stakeholder input will be sought to inform this plan.</p> <p>In August 2023, Queensland Hydro was involved in the Greater Whitsunday Communities Housing Summit to better understand regional housing issues and future community aspirations for housing and accommodation.</p>

## Transmission Lines/Power

Question	Raised by SRG member representing	Response
<p>Queensland proposes 12 renewable energy zones in dash to quit coal  <a href="https://reneweconomy.com.au/queensland-proposes-12-renewable-energy-zones-in-dash-to-quitcoal/">https://reneweconomy.com.au/queensland-proposes-12-renewable-energy-zones-in-dash-to-quitcoal/</a>. In the section on the North REZ of which Mackay is a part, there's a map showing transmission lines just north of Mackay to Nebo. Does Qld Hydro envisage this to be the location of the Transmission lines?</p> <p>Attached document: Renewable Energy Zone – Transmission line plans going from Nebo to Mackay</p>	<p>Save Eungella</p>	<p>The Queensland Renewable Energy Zone Roadmap outlines the pathway for connecting 22 gigawatts of new wind and solar generation to provide clean, reliable and affordable power well into the future.</p> <p>Across the Southern, Central, and Northern (including North and Far North Queensland) regions, there are 12 potential future Renewable Energy Zones (REZs) to be developed across three phases to 2035. A REZ is an area with strong wind and sun that is developed in a coordinated way to lower costs and improve local community, environmental, and cultural heritage outcomes.</p> <p>A general area is shown for a transition network in the North and Far North Queensland REZs section of the Roadmap, and is indicative only.</p> <p>Powerlink, the transmission network provider in Queensland, will develop the potential transmission line corridors. We will work closely with Powerlink to provide information as it becomes available.</p> <p>Powerlink's process for developing the transmission line corridor involves comprehensive assessment of a range of social, environmental and economic factors, including existing and future land use, the location of homes, flora and fauna, existing electricity infrastructure corridors and topography. They expect to start formal engagement in Quarter 2, 2024.</p> <p>The Roadmap is available for viewing at <a href="https://www.epw.qld.gov.au/data/assets/pdf_file/0019/36037/draft-2023-queensland-rez-roadmap.pdf">https://www.epw.qld.gov.au/data/assets/pdf_file/0019/36037/draft-2023-queensland-rez-roadmap.pdf</a></p>
<p>Powerlink has stated that there will likely be two above-ground power stations, one at each of the Upper Reservoirs, similar to Borumba. This will obviously lead to more environmental loss, and more community displacement, which the community has a right to be made aware of. Similarly, the positioning of the Transmission lines should be made available. Why are Qld Hydro and Powerlink not working together to progress this project? No business case for a stand-alone battery storage facility would ever be approved without the critical poles and wires to support it.</p>	<p>Save Eungella</p>	<p>Powerlink, the transmission network provider in Queensland, will develop the potential transmission line corridors which the project will connect to. We will work closely with Powerlink to provide information as it becomes available.</p> <p>The infrastructure required to connect the transmission lines to the project will be assessed as part of development of the design in collaboration with Powerlink..</p>

Question	Raised by SRG member representing	Response
<p>Minister de Brenni (Minister for Public Works and Energy) noted Pioneer-Burdekin will be connected to the National Electricity Market and Powerlink will take this work forward. Recommended the process for Borumba be presented to PB SRG, including the multicriteria analysis, refinements, mitigations. Suggested it would help PB SRG understanding of the process.</p>	<p>Save Eungella</p>	<p>We have invited Powerlink to attend an SRG meeting. They will be able to provide information about how the proposed project may connect to the electricity grid.</p>

## Queensland Energy and Jobs Plan (QEJP)

Question	Raised by SRG member representing	Response
<p>If the world proceeds with mining and burning coal for electricity at projected rates, we will witness at least 2.5°C increase in global temperatures by 2100 and up to 10°C increase in the hottest days in terrestrial systems. This will lead to significant human impacts and biodiversity loss.</p> <p>How will PHES lead to a decrease in mining and exporting of coal or other fossil fuels from Australia?</p>	<p>Mackay Conservation Group</p>	<p>Pumped hydro is a tried and tested technology, accounting for about 97 per cent of energy storage worldwide. It can store a large amount of energy for long periods, making it the perfect backup for other renewable energy sources like solar and wind.</p> <p>Long duration pumped hydro energy storage (PHES) is required to ensure a secure, reliable and affordable energy grid, as it will support Queensland’s strategy of electricity generation decarbonisation and growth in renewable energy investment at the lowest cost as set out by the Queensland Energy and Jobs Plan (QEJP).</p> <p>Increased energy storage capacity is required as dispatchable thermal (coal) generation withdraws from the market and is replaced by variable renewable energy.</p> <p>The QEJP will ensure Queensland achieves its 50 per cent renewable energy target and continued growth in renewables, with two new targets of 70 per cent by 2032 and 80 per cent by 2035. The Plan will result in lower Queensland electricity emissions, with a 90% reduction (on 2005 levels) in electricity emissions by 2035-36.</p>

<p>Please provide us with documentation regarding the rationale for Queensland requiring more deep storage by 2035 than AEMO says Australia will need by 2050</p> <p>AEMO's ISP says Vehicle To Grid (V2G) will provide about 2/3 (31GW) of the storage in the NEM by 2050 (p.10). As an example, In recent days Toyota has reportedly said it has produced solid state batteries that have far greater capacity and charging speed than current systems. Toyota says those batteries will be commercially available by 2027. Other stationary utility-scale battery storage options also exist, such as flow batteries. Chemical battery storage is also likely to require a much smaller footprint and can be placed close to existing power grids, reducing their relative environmental impact and reducing associated transmission costs. The pumped hydro project could become a stranded asset if these alternatives become far more viable solutions. This will be a significant cost to the Queensland taxpayer...</p>	<p>Mackay Conservation Group</p>	<p>The AEMO modelling was for the entire national market, while the modelling completed for the Queensland SuperGrid Infrastructure Blueprint, was state specific going into more detail at a regional level.</p> <p>In an energy system with high levels of renewable energy, system modelling has demonstrated that long duration energy storage (24 hour plus) is integral to achieving system reliability (delivering enough power to meet demand) and system security (keeping the system within safe operating limits) at the least cost.</p> <p>The Blueprint modelling indicated that Queensland will need at least 6,000 MW of long duration storage for a highly renewable system, complemented by approximately 3,000 MW of grid-scale storage (with a shorter storage duration) and up to 3,000 MW of new low-to zero emission gas-fuelled plant to cover 'dunkelflaute' (energy drought) conditions (see page 4 of Queensland SuperGrid Infrastructure Blueprint)</p> <p>Large PHES has greater storage potential than batteries and can supply larger amounts of electricity over a longer duration. As a result, PHES are better placed to provide this long duration storage service. They are better placed to 'shift' large quantities of energy from days, weeks or seasons with surplus renewable generation, to periods with less renewable generation.</p> <p>Batteries can provide storage over shorter time intervals (several minutes up to a few hours). They have an advantage in the short-term balancing of supply and demand, and providing some other network supports such as frequency and voltage support. The capacity and volume of even the biggest battery systems remains relatively small (typically up to four hours) when compared to long duration PHES.</p> <p>In addition, batteries are also currently more expensive than PHES for long duration storage on a \$/MWh basis, and there is a significant risk that battery supply chains cannot meet the storage requirements of the scale required. Taking an example to illustrate the costs of batteries, consider the \$90 million Hornsdale Power Reserve, a short duration energy storage facility. This facility has a capacity of 150 MW and a duration of roughly 1 hour and 20 minutes, which provides 193.5 MWh of energy storage.</p> <p>The Pioneer-Burdekin pumped hydro project has a proposed capacity of 5,000 MW and a duration of 24 hours, which will provide 120,000 MWh of energy storage. To calculate the cost of using lithium-ion batteries to provide this volume of storage, we can consider how many Hornsdale batteries would be required to provide 120,000 MWh of energy storage. It would take in the order of 620 Hornsdale big batteries (120,000 MWh divided by 193.5 MWh) to provide the same volume of energy storage using big batteries. Procurement of 620 such battery systems at a cost of \$90 million each would incur a total cost in the order of \$55.8 billion dollars. This significantly exceeds the cost of developing a large-scale long duration pumped hydro facility at the Pioneer-Burdekin site.</p> <p>Future cost competitiveness of batteries will also be affected by supply chain conditions, including production bottlenecks in the face of high global demand (particularly from the expected rapid uptake of electric vehicles). There are legitimate concerns that battery energy storage supply chains are not yet sufficiently mature to provide the volume of energy storage required in the time frame necessary to decarbonise Queensland's energy system.</p> <p>For example, the International Energy Agency identifies that in 2021 slightly more than 6,000 MW of grid-scale battery capacity was added globally, predominantly with storage durations shorter than 2 hours. If a 2-hour duration for these batteries is assumed, delivering the volume of energy storage</p>
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		<p>available at the Pioneer-Burdekin pumped hydro project would require ten times the battery capacity deployed globally in 2021 to reach the 120,000 MWh available at the Pioneer-Burdekin site.</p> <p>To meet our goal of decarbonising Queensland’s energy grid, it is imperative that we act now to deliver the long duration energy storage necessary to enable zero emissions and allow renewable energy to be shifted to when it is needed. Pumped hydro energy storage is the only mature technology that will allow us to do this.</p>
<p>Please provide documentation about methods of shifting peak demand towards times when renewable electricity production peaks.</p> <p>The current electricity system uses pricing mechanisms to increase demand during nighttime. Demand management (especially with smart technologies) can be used to encourage use of electricity during the day when it is produced by solar and wind.</p>	<p>Mackay Conservation Group</p>	<p>Time shifting energy is something the Department of Energy and Public Works is investigating. Currently, the general daily demand sees a spike in the morning, dip during the day and a big spike at night between 6pm and 8pm. Changing daily demand means that households and businesses consume energy from the grid at different times of the day to smooth the overall demand profile.</p> <p>Pioneer-Burdekin would generate electricity most likely in the evening when solar is not available. There may also be days when there is no sun (overcast) or wind (still), and asset would also generate during the day. Duration of 24 hours allows for multiple days of energy, which provides firming generation that underpins system reliability and security.</p>