

MEETING MINUTES



MINUTES OF: Arrow Intensively Farmed Land Committee (AIFLC)
 HELD AT: Gip's Restaurant, Toowoomba
 DATE: Friday, 13 November 2020
 COMMENCEMENT TIME: 9.45 am

Present:	Stewart Hayllor – Landholder Graham Burt – Landholder Stuart Armitage – Landholder Stephen Williams – Landholder Nev Wirth - Landholder Brydie Hedges – Community Engagement Manager Chris Wicks – Senior Development Planner IFL Richard McLean – Principal Land Liaison Officer Guest presenters: Brydie Hedges – Community Manager Chris Wicks – Senior Development Planner IFL, Arrow Energy David Wigginton – Produced Water Manager, Arrow Energy Guy Young – General Manager Surat Opportunities, Arrow Energy Jason King – General Manager Contracting Procurement & Logistics, Arrow Energy Matthias Raiber – Isotope research, CSIRO St.John Herbert – Principal Groundwater Modeller, Arrow Energy Tyrone Wilkinson – Construction Manager, Arrow Energy
Apologies:	Warren Myring, Glen Ogden, Maxwell Murray

	Joint meeting – ASCRG & AIFL Committees	ACTION/ SUGGESTIONS
ITEM 1	<p>Welcome: Leisa Elder</p> <ul style="list-style-type: none"> Welcome to attendees and alternates from BSA, Brian Bender and DCCI, Rohan Stephenson. Apologies are acknowledged and noted. Thank you to guest speakers from Arrow and Matthais Raiber from CSIRO. Thank you to everyone who was able to dial in for the online meetings while restrictions were in place due to COVID. It is good to see everyone in person again. 	
ITEM 2	<p>Safety moment: Dam safety – David Wigginton</p> <ul style="list-style-type: none"> Arrow has been carrying out work around dam life. The example in the presentation shows an event that took place in Wisconsin (USA) which demonstrates a slope stability issue. Dam failures have numerous causes including damage from animals, roots, seepage and piping. A dam can fail due to slope stability issues. Slope stability can be impacted by variables like soil composition, water level changes or dam lining. Piping is where internal erosion occurs through the embankment, causing a failure. It can occur around cracks or pipework, if not engineered adequately. Water overtopping a dam, for example during a storm event, can lead to erosion and subsequent failure. Spillways are often incorporated into dam designs to prevent this. CSG dams generally have spillways which are appropriately armoured to prevent scouring as well as low operating levels to account for potential rainfall events and avoid overtopping events. 	

	<ul style="list-style-type: none"> • Seepage from a dam could also be considered a failure if the contents of the dam could cause harm. Uneven patches of green grass along a dam wall could be an indicator of seepage. • Risk assessments are carried out as typical business for regulated structures. Consequences of dam failure are usually high, impacting environment and safety. Likelihood of dam failure needs to be low to reduce the risk • CSG dams are evaluated using engineering analysis to determine likelihood of failure which, if appropriately designed, will be very low (e.g. 1-in-1,000 or 1-in-10,000 years). <p>Nev Wirth: The CSG dams in the Kumbarilla area have been in place for about 10 years now. What levels of salt do you have in these dams?</p> <p>David Wigginton: Arrow has CSG dam infrastructure in the Daandine area to contain raw CSG water, brine and treated water. CSG water dams only hold water while it transitions for treatment so only the brine dam will accumulate salt. Arrow’s Daandine brine dam won’t fill up until the end of project life because the amount of water production is low. Salt residue may be found in pilot dams where the water has evaporated, leaving salt on the bottom of the dam.</p> <p>Brian Bender: Is Arrow looking at doing something with the salt end-product from brine dams?</p> <p>David Wigginton: Our environmental impact statement (EIS) is based on safely disposing of salt in landfill, however we continue to look for beneficial use options. Our previous studies indicated possible beneficial use options but currently there is no market for them. The University of Queensland Centre for Natural Gas has also investigated more experimental alternative options.</p>	
<p>ITEM 3</p>	<p>Arrow update – Leisa Elder</p> <ul style="list-style-type: none"> • Heart of Australia’s Rolf Gomes was nominated for Queensland’s Australian of the Year. He is currently working on a fifth truck to deliver services to rural and remote areas. Congratulations go to Drought Angels (Natasha Johnston), who won the Queensland Local Hero category for this year’s awards. • This year Arrow has been connecting with different targeted groups through online webinars during COVID. • On the workfront, Arrow has set up an integrated project management team to oversee decisions as we move forward to execute the Surat Gas Project (SGP) • NAIDOC week celebrations are currently taking place in Dalby with the opening of an Indigenous artefacts display. • Arrow has been nominated as a finalist for the Queensland Resources Council Indigenous Awards for our Whanu Binal program. Winners announced on 30 November. • There is a strong focus on reducing emissions while looking to a gas led recovery for the economy. Arrow’s SGP announcement was made by the Premier of Queensland during COVID, which is good for Arrow and the economy. <p>Stuart Armitage (IFL): Acknowledged the Australian of the Year awards nomination for Mary O’Brien, Are You Boggled Mate (reinforced by the chair and other committee members).</p>	<p><i>Action: Provide feedback on gas industry impact to negative carbon status of properties/businesses</i></p>

	<p>Regarding emissions, if a landholder has established their agricultural business as a negative carbon emitter, will gas development on their property have an impact on their status?</p> <p>Leisa Elder: Agreed to take the question on notice.</p>	
<p>ITEM 4</p>	<p>Current operational activities – Tyrone Wilkinson</p> <ul style="list-style-type: none"> • Aerial surveying has occurred across Arrow tenure from Chinchilla to Millmerran. The data will be analysed to inform our understanding of ground levels and guide construction design. • In the Hopeland area we have decommissioned and rehabilitated five landholder bores under make-good agreements aligning with our UWIR 2019 obligations. • Drilling of the 13 wells in the Daandine area is complete with final construction and well commissioning activities ongoing until the end of the year/early 2021. • Three old farmhouses have been demolished and removed from Arrow’s Theten property. Neighbours were notified of the work. • The three new wells at Kogan North are being constructed and commissioned. They will connect into the existing Kogan network. • Construction of wellsite pads and tracks is progressing in the Stratheden field. Drilling is scheduled to commence in early December. The nearby community will be advised ahead of the rig arriving. • A snapshot of roadwork plans shows the current focus area for road upgrades and maintenance. These plans include two intersection upgrades to control Arrow traffic through the Kupunn area. Road maintenance and upgrades are currently underway in the Ducklo-School Road and Duleen Daandine Road area. Arrow’s construction supervisors will monitor road conditions as work progresses. • The 21 new wells in the Tipton field are now online. • A maintenance shutdown was carried out at the Tipton central gas processing facility (CGPF) in October to complete inspections and minor projects. There was no flaring of gas. <p>Stephen Williams (IFL): Are there road upgrades planned for Daandine-Nandi and Moonie Highway intersection? There was discussion about installing a slip-lane at this intersection.</p> <p>Tyrone Wilkinson: Arrow is working with the Department of Transport and Main Roads (DTMR) to upgrade this intersection to improve sight distances. We can come back to the committee with more detail on how the discussions with DTMR have progressed.</p> <p>Stuart Armitage (IFL): There were wells drilled in Nangwee and Cecil Plains areas in the early days of exploration. Could the committee have a report on how these were decommissioned?</p>	<p><i>Action: Provide feedback on plans for road intersection upgrade (Daandine-Nandi and Moonie Highway)</i></p> <p><i>Action: Provide information on decommissioned wells in the Nangwee/ Cecil Plains area</i></p>
<p>ITEM 5</p>	<p>Surat Gas Project (SGP) – Guy Young and Chris Wicks</p> <p><u>SGP construction activity 2020-2021 (Guy Young)</u></p> <ul style="list-style-type: none"> • The first 140 wells are commencing in December. In 2021, we plan to have three drill rigs operating as part of a sustained fleet over several years. • Construction of associated pipelines will include low-point drain and high-point vent installations for the network. 	

- The Beneficial Use Network (BUN) project that David Wigginton has been working on will commence in Phase 1 of the SGP. The BUN takes Arrow's produced water to the Kenya water treatment facility for processing and return to landholders to offset water use from the Condamine Alluvium.
- Pipelines to the David and Harry field compression stations and inlet processing facilities (IPFs) will be completed in 2022 and 2023.
- IPFs are small gas/water separating facilities. They also filter out solids to ensure the gas we are selling meets QGCs specifications.
- Phase 1 road upgrades will commence soon with more road improvements to take place in subsequent phases. We continue to work with the Queensland Department of Transport and Main Roads (DTMR) and Western Downs Regional Council (WDRC) on these plans.
- Two telecom towers will be constructed in the next couple of years for Arrow use, however they have been designed to have capacity for third-party infrastructure.

Pat Weir: Inland Rail project has proposed an alternate route that goes through Cecil Plains. Have Arrow been approached by Inland Rail to discuss this option?

Leisa Elder: No, not to my knowledge. We have also had issues with solar farms approved through council for development in areas that Arrow also plans to develop. These projects require a different level of engagement to CSG development so it's possible that they may proceed without adequate consultation.

SGP construction area 2020-2021 (Chris Wicks)

- An overview map shows first disturbance dates (by year/quarter).
- Construction of the first pads and tracks are currently underway.
- All landholders east of the Condamine River have been engaged and some conduct and compensation agreements (CCAs) have been completed; others are still in early stages of discussion.
- Area wide planning is underway in many areas to discuss infrastructure placement with landholders.
- In addition to the roadworks already mentioned, there may be an upgrade at the Broadwater Road intersection with the Moonie Highway.
- Drilling of 140 wells will commence in December and ramp up next year.
- Pipe will be transported straight to the gathering right-of way; however, there will be some laydown yards as well.
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Stuart Armitage (IFL): How confident is Arrow that their development will not cause land subsidence problems. We've seen some subsidence (up to 30cm) where the aquifer has been drained. It seems subsidence impact is still an unknown quantity. This would be a reason to proceed slow and steady on high quality land until doubts can be resolved.

Simon Gossmann: We are about a year into additional research on subsidence, but we have records dating back to 2006. There is a good understanding of CSG industry induced subsidence. We plan to present our latest findings in the new year. We have a sophisticated

	<p>model that shows Arrow's impacts, which is nothing like that seen in long wall mining. Impacts are expected to be minimal, region-wide and considered imperceptible. Large seasonal variation would have greater impact than predicted in the model. Like the groundwater research we have done, we plan to present the subsidence research to give landholders confidence in the information.</p> <p>Stuart Armitage (IFL): Are there plans to carry out baseline surveys on properties or is it too variable?</p> <p>Simon Gossmann: Seasonal ground movement is similar to groundwater levels which are up and down depending on use. We have just completed our third LiDAR data collection through aerial survey. Our main source of data is from satellite monitoring, augmented with LiDAR. The purpose of the monitoring is not to get a baseline, the ground naturally moves too much for this.</p> <p>Jane Walker: Landholders not being able to get a baseline is an issue. Their concern is that they will not be able to back a claim if impacts occur without having a baseline data. The data collected needs to be able to be used as a baseline for landholders.</p> <p>Simon Gossmann: The data includes satellite capture every 12 days, with millimetre accuracy. LiDAR is less accurate but can capture natural ground movement and make comparisons to pick up abnormal readings greater than natural variation. We will present our actual data in the new year to address the concerns.</p>	
<p>ITEM 6</p>	<p>SGP Telecommunications infrastructure – Chris Wicks</p> <ul style="list-style-type: none"> • Arrow plans to construct 10 telecommunications towers for Phase 1 of the SGP. The first two towers will be near Daandine and on Broadwater Road. • The communications equipment installed on the towers will use fibre optic cable and provide a 4G network; basically, a private mobile phone network to service the SGP wells. • The towers will be designed to host third-party infrastructure. Arrow will construct the towers and offer them to third parties like Optus/Telstra to use, however there is no guarantee that this opportunity will be taken up by the providers. • We have also been working with Western Downs Regional Council since some of our development overlap their telecommunications black spot areas. We hope the towers will be able to be used to assist the community. <p>Ian Hayllor: Arrow staff have been working with my family to fit wells in appropriate locations. They should be recognised for the care and consideration they have shown.</p>	
<p>ITEM 7</p>	<p>Surat attitudinal research – Brydie Hedges</p> <ul style="list-style-type: none"> • Interim findings of the research show increased support for the CSG industry from 53% (2019) to 58% (2020). • Baseline questions are used so we can make comparisons from year to year. • We are grateful to everyone who participated in the survey. • Complete findings will be shared in the new year. 	<p><i>Action: Provide complete findings for Surat attitudinal research</i></p>
<p>ITEM 8</p>	<p>SGP water monitoring and management plan – Simon Gossmann</p>	

	<ul style="list-style-type: none"> • The Water Monitoring and Management Plan (WMMP) is part of our Commonwealth approval in relation to water impacts which is over and above what is required from the State Government and overlaps with our groundwater monitoring obligations. • Arrow's EIS was released for public consultation and comment in 2012 and a supplementary report was prepared in response to the feedback in 2013. • Arrow has all primary and secondary approvals to proceed with the SGP. Stage 1 of the CSG WMMP was prepared and approved by the Minister in December 2018, ahead of SGP commencing. • Arrow undertook studies as part of the approval, and these were all prepared in a memorandum and peer reviewed. • The surface water-groundwater model shows that there is not much impact to the Condamine River and negligible impact on surface water (systems are not connected). • Groundwater dependent ecosystems (GDEs) studies have been conducted at Longswamp, Lake Broadwater and two other areas. • Subsidence monitoring has also been carried out in consortium with all CSG companies. A condition of the approval was to have trigger thresholds and annual reporting of monitoring results. Companies must address impacts if triggers are reached. • Subsidence is monitored using InSAR, LiDAR and aerial photography techniques. In-ground extensometers and data modelling are also used. • Models show that impacts due to the SGP are predicted to be imperceptible, ~2mm over 1km. • Results must be reported annually as required with by the WMMP. Arrow is obliged to follow this. • Arrow has installed ground water monitoring bores across our tenure to collect water pressure and quality data to establish baseline conditions. • The bores are installed in multiple formations. Other CSG tenure holders and the Department of Natural Resources, Mines and Energy (DNRME) also have their own groundwater monitoring bores. Monitoring has taken place for ~6 years now and there is a considerable amount of data for the Office of Groundwater and Impact Assessment (OGIA) to review. • Arrow's WMMP has been updated to include the latest modelling and address any changes relative to the Shell-QGC collaboration project. • GDE assessment findings show that the GDEs in our study areas take water from soil, not deep groundwater. 	
<p>ITEM 9</p>	<p>Helium isotope research – St.John Herbert & Mattias Raiber</p> <p>St.John Herbert: Arrow is working with CSIRO to investigate whether water-borne helium can offer a solution to measuring Arrow's actual impacts on groundwater in the Condamine Alluvium.</p> <p><u>Research studies (Mattias Raiber)</u></p> <ul style="list-style-type: none"> • CSIRO has been in the field last week collecting samples from Arrow sites for the noble gasses study. 	

	<ul style="list-style-type: none">• We will use a new facility with the latest scientific equipment for measuring noble gases. The Adelaide facility is the only one of its kind in Australia and only a few like it in the world.• One of the complexities with groundwater, is that it contains water with multiple groundwater ages (young and old).• Different tracers and modelling are used to determine age distribution.• The Daleglade and Lone Pine sites have been used to collect samples. Seven bores in total have been used for sampling.• The sampling method uses copper tubes to ensure samples are not contaminated by atmospheric gases. The samples take 1-2 hours to collect.• Helium-4 presence in the samples tells us one piece of information. The presence of other tracers tells us different things.• Whether we can derive the rate of movement depends on the results.• Noble gases are used because they don't with other elements, making it a conservative tracer.• Results of sampling analysis will be available in the next few months. Next steps will depend on the results.	
ITEM 10	<p>Local jobs and contracting – Jason King</p> <ul style="list-style-type: none">• In October Arrow held a local supplier webinar which was beyond our expectations with ~500 people attending.• We provided information on the registration process, encouraging organisations to use the ICN Gateway.• A lot of questions were received regarding the details of work packages. All questions and answers have been published on the Arrow website.• We continue to work to capture spend for the WDRC area. The figures show spend is down due to prolonged COVID impacts.• Payment terms of 14 days to support local business will continue for now. The reduced terms have been well received by the community.• Arrow has submitted its Australian Industry Participation Plan (AIPP) to the Commonwealth Government for approval. It outlines contracting and supply opportunities available locally.• Arrow's local content policy includes a commitment to build local opportunities. The AIPP outlines how this will be achieved.• We have increased resourcing in this space to enable us to better engage with stakeholders. A Local Content Lead, Matt Denyer, recently joined Arrow's team.• 80% of Arrow's spend will go towards the top 10 SGP activities.• We will be utilising existing available accommodation.• The high-level schedule of tendering opportunities shows where 90-95% of entire expenditure will go. Some 125 packages to be released out to the end of 2022. We are currently working on the logistics to get these into the market next year.• Valmec was recently awarded a contract for infrastructure upgrades (Daandine water treatment facility). Arrow has used them in the past. Valmec has a good Indigenous record. <p>Indigenous Relations update - Brydie Hedges</p>	

	<ul style="list-style-type: none"> • Arrow is currently working to release a new Reconciliation Action Plan (RAP) which includes commitments on Indigenous participation in employment, training, procurement spend and cultural competency at Arrow. • Arrow’s Whanu Binal Indigenous Entrepreneur Program is the only program where Tier 1 contractors volunteer to train participants, which is the backbone of the program. <p>Ian Hayllor: The 14-day payment term is good to see, benefits the community.</p> <p>Leisa Elder: This was an initiative of this committee to push Arrow towards shorter payment timeframes in support of small business.</p> <p>Jane Walker: How can people get in contact with the new Local Content Lead?</p> <p>Jason King: Matt’s just new to the team but we can share his contact details with you once he’s established in his role.</p>	<p><i>Action: Provide contact details for Local Content Lead</i></p>
<p>ITEM 11</p>	<p>Minutes of previous meeting and actions</p> <ul style="list-style-type: none"> • Meeting minutes for September have been circulated with no objections. • Consider these endorsed. 	
<p>ITEM 12</p>	<p>Any other business</p> <p>Jane Walker (GasFields Commission Queensland update):</p> <ul style="list-style-type: none"> • Surat stakeholder advisory group with landholders and non-government organisation representatives has been meeting. • Subsidence and alternate arrangements have been key issues. • Work continues on the review of assessment process under the <i>Regional Planning Interests Act 2014</i>, as identified in the Queensland Audit Office report. <p>Neville Wirth (IFL):</p> <ul style="list-style-type: none"> • There are still concerns amongst landholders in the Kupunn area with respect to gas development and public risk insurance. Landholders are still not clear how companies are going to police this. • Landholders with concerns would like to see a solution to this, they don’t want to be left isolated with a long-term risk after the project is completed. • It’s a stumbling block for the development and needs to be resolved for Arrow to proceed. <p>Jane Walker: WFI have extended their insurance until 30 Nov, we are hoping to see a resolution by then or an extension of insurance coverage.</p> <p>Brian Bender: Landholders see directional drilling as a risk to their insurance as well.</p> <p>Jane Walker: This has been described in the audit report.</p> <p>Ian Hayllor: I’ve heard that 1-2% of wells fail. Could Arrow come back to the committee with a definition of what a ‘failed well’ is and what</p>	

	<p>auditing processes are in place to monitor this so we can better understand the issue?</p> <p>Chris Wicks: Could the IFL members to have a think about what topics they would like to discuss in the new year and let me know.</p> <p>Leisa Elder: We have received notice of a couple committee resignations from Nancy Sommerfield and Graham Clapham and we will be looking to refill their positions for the new year.</p> <p>Stuart Armitage (IFL): I think we must acknowledge the time and effort put into the committee from both members, especially Graham who has been a very active part of the committee for many years.</p> <p>Ian Hayllor: I would also like to congratulate Arrow staff on the committee for their work, for listening to our questions and actioning feedback.</p> <p>Leisa Elder: I also wish to thank ongoing members for their time and attendance and look forward to seeing them in the new year, the committee's 10-year anniversary. Please keep raising issues and being interactive.</p>	<p><i>Action: provide feedback on well failures and Arrow's well auditing process. John Hughes to arrange for DNRME to provide an update on departmental CSG auditing.</i></p>
<p>ITEM 13</p>	<p>Agreed outcomes, actions, deliverables</p> <p><i>Actions:</i></p> <ul style="list-style-type: none"> • <i>Provide feedback in relation to gas industry impact on negative carbon status of properties/businesses</i> • <i>Provide feedback on plans for road intersection upgrade (Daandine-Nandi and Moonie Highway)</i> • <i>Provide contact details for Local Content Lead in due course</i> • <i>Provide information on decommissioned wells in the Nangwee/ Cecil Plains area</i> • <i>Provide complete findings for Surat attitudinal research</i> • <i>Provide feedback on Arrow's well auditing process</i> • <i>DNRME to provide update on CSG audits.</i> 	
	<p>No additional IFLC agenda items at this meeting.</p> <p>Next meeting – Dalby, Date TBC</p>	