

MEETING MINUTES



MINUTES OF: Arrow Surat Community Reference Group
 HELD AT: Fitzy's, Toowoomba
 DATE: 21 June 2018
 COMMENCEMENT TIME: 9.10 am

Present:	<p>Graham Clapham – Central Downs Irrigators Ltd Ian Hayllor – Chair of Resource Sector Interactions, AgForce Jane Walker – GasFields Commission John Hughes – CSG Compliance Unit, DNRME Lee McNicholl – Basin Sustainability Association Pat Weir MP – Member for Condamine Matthew Paull – APPEA Brydie Hedges – Community Engagement Manager, Arrow Energy Simon Gossmann – Groundwater Manager, Arrow Energy</p> <p>Proxies: Emma Rackley (Western Downs Regional Council)</p> <p>Presenters: Dr David Bilbrough – Skin Cancer Doctor at Skin Cancer Clinic Toowoomba Cameron Coles – Senior Hydrogeologist, DNRME Groundwater Investigation and Assessment Team Leisa Elder – VP External Relations & Tenure Management, Arrow Energy Chris Wicks – Development Planner IFL, Arrow Energy Suzanne Ferguson – Manager Tenements and Overlapping Tenure, Arrow Energy Simon Gossmann – Groundwater Manager, Arrow Energy Chris Jones – Senior Hydrogeologist, Arrow Energy Darren Marshall – Regional Coordinator for Weeds and Feral Animals, Queensland Murray Darling Committee Lavinnia Fiedler – Environment Advisor Biosecurity & Compliance, Arrow Energy</p>
Apologies:	<p>Ann Leahy MP – Member for Warrego Colin Boyce MP – Member for Callide Jody Monaghan – Dalby Chamber of Commerce & Industry Cr Nancy Sommerfield – Toowoomba Regional Council Mayor Paul McVeigh – Western Downs Regional Council Scott Braund – Lot Feeders Association</p>
Chair:	Leisa Elder – VP External Relations & Tenure Management, Arrow Energy
Secretariat:	Rita Hassan – Senior Community Officer (Dalby), Arrow Energy
Disclosures:	None recorded

	Joint Meeting – ASCRG & AIFL Committee	ACTION/ SUGGESTIONS
ITEM 1	<p>Welcome</p> <ul style="list-style-type: none"> Leisa Elder welcomed everyone to the meeting and acknowledged new members, delegate and guest presenters: <ul style="list-style-type: none"> Jane Walker as representative for the GasFields Commission Emma Rackley as delegate for Mayor Paul McVeigh, Western Downs Regional Council guest presenters Dr Bilbrough presenting the Safety Moment, and Cameron Coles of Groundwater Net. 	
ITEM 2	<p>Safety Moment, Skin Cancer – Dr David Bilbrough</p> <ul style="list-style-type: none"> Dr Bilbrough presented on sun skin safety, reinforcing four take-home messages: <ol style="list-style-type: none"> wear long sleeves wear a hat (caps are a poor second choice) use sun block everyday yearly skin checks. Dr Bilbrough thoroughly explained the different types of skin cancers. He outlined the important role of the immune system, and how sun exposure inhibits the body's natural ability to identify and reduce cancer cells. 	
ITEM 3	Groundwater Net analysis – Cameron Coles	

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	<ul style="list-style-type: none"> • Groundwater Net is an independent groundwater monitoring network that develops trust between landholders, industry and government. • Baseline and trend data is collected to document groundwater use, and enable early identification of significant changes in water levels, bore performance and bore pump maintenance issues. • The network for monitoring groundwater impacts in the Surat and Galilee basins includes: <ul style="list-style-type: none"> ○ resource company monitoring ○ Groundwater Online (strategically located bores equipped with loggers and telemetry, monitored continuously) ○ Groundwater Net – landholder monitoring. • Trend data recorded for sample bores was shown: <ul style="list-style-type: none"> ○ Condamine River Alluvium: a sample bore showed a general decline, with a slight increase in 2005. ○ Mooga Sandstone: a sample bore showed general decline, and incomplete recovery between pumping. DNRME advises landholders to wait at least 12 hours without pumping before monitoring to ensure the data they collect is accurate. ○ Walloon Coal Measures: a sample bore with measurements 1978-2018 showed a general decline. ○ Hutton Sandstone: an unequipped sample bore recorded a one metre decline over two years (2016-2018). Declines in the Hutton Sandstone were seen both inside and outside CSG areas. Initial investigations indicated non-CSG usage was most likely the cause. ○ Precipice Sandstone: a Taroom town bore had a pressure increase. A water reinjection site nearby at Reedy Creek may be the cause. • Further information is available on the Water Monitoring Information Portal https://water-monitoring.information.qld.gov.au/ • <i>Discussion on Hutton Sandstone:</i> <ul style="list-style-type: none"> ○ Lee McNicholl raised the issue of the presence of gas within the Hutton Sandstone and cited two examples. ○ Lee said there needed to be a baseline system for the presence of gas in water. He said this was an unresolved issue in determining if a bore had been impacted by the CSG industry. Lee said he had concerns about the sustainability of water take from the GAB. ○ Simon said OGIA recently presented the findings of its investigation into groundwater level trends within the Hutton Sandstone to the Basin Sustainability Alliance. ○ Simon said Arrow's Baseline Assessments of water bores included dissolved gas measurements. He said gas released from the Walloons was buoyant and travelled upwards, not downwards into the deeper Huttons. Gas in the Hutton Sandstone was known to pre-date CSG development and might be produced from coal seams (or other sources of natural gas) within the Hutton Sandstone, not CSG development. ○ Lee said that, as more water was removed, more gas would be released due to a drop in pressure. He said he would like to see this quantified so that landholders had the facts. Simon agreed landholder education and understanding was important. • <i>Discussion on Groundwater Net:</i> <ul style="list-style-type: none"> ○ Ian Hayllor stated his support for the Groundwater Net project. He said landholders had a lot to benefit in improving their understanding of the water systems they used and how the trends might lead to potential impacts to their business. He said he would like more landholders supporting the project. Ian said both monitoring and education were required to help landholders better understand changes to water entitlements. With better monitoring, landholders could plan ahead before a bore fails. ○ Stuart Armitage said 'at some point, the cost of measuring water take is going to pale in significance with the value of the resource itself'. He asked about the cost of automatic recorders. Cameron said a fully automated system, complete with telemetry, costed about \$15,000. A system that could be uploaded at the website would cost about \$3-5,000. Manual, pull up style systems were more economical. 	

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	<ul style="list-style-type: none"> ○ John Hughes advised the committee that grants were available for landholders to purchase bore monitoring equipment, funding to the value of 75 per cent. Link to grant information is provided: www.qmdc.org.au/what-we-do/land-water/groundwater-monitoring.html ● <i>Discussion on resources and agricultural extraction from the Surat Basin:</i> <ul style="list-style-type: none"> ○ Steve Williams asked how much water was extracted by the resources industry compared to agricultural water use. He said he imagined an increase in agricultural use would be expected but the volumes would be limited in the future. Lee responded, and advised that an increase in agricultural water was outlined under the GABORA plan. ○ Simon said there was a significant amount of information available about the CSG industry's impacts on water resources; however, the system needed to be looked at as a whole. ○ Graham Clapham noted there had been a lot of work to understand the Alluvium. Simon agreed and it was a good example of the level of understanding required to manage groundwater resources. ○ Neville Wirth questioned whether management plans considered unforeseen circumstances, e.g. if industry water use doubles? Simon said we already had very clear forecast information for the CSG industry. ○ Stuart Armitage said the early Great Artesian Basin (GAB) water plan looked at agricultural impacts which were sustainable in most cases. His concern is that CSG take is over and above this existing/original use. Water resources need to be valued like the Great Barrier Reef. If water resources are lost, landholder assets will be greatly diminished. ○ Stuart said the draft water plan tied agricultural users to levels. Changes to the entitlement system have put pressure on these users. The CSG industry is not subject to the same requirement. ● <i>Discussion on resources and agricultural extraction from the Surat Basin:</i> <ul style="list-style-type: none"> ○ Graham Clapham said the taxpayer, water users and companies like Arrow have all invested in understanding the Alluvium and Coal Measures. He wondered if any research has been carried out around the risk of gas migration into the Alluvium. ○ Chris Wicks said the Plainview Pilot project includes 23 soil gas monitoring bores to baseline soil gas content and monitor for any changes. ○ Simon said the Plainview Pilot monitoring points had been installed around the Horrane fault to determine if this acts as a conduit or barrier to gas migration. 	
ITEM 4	<p>Surat Gas Project update – Leisa Elder</p> <ul style="list-style-type: none"> ● Surat Gas Project planning continues internally with shareholder assurance reviews and engineering design for early works. ● A number of commercial agreements are being progressed with third parties. ● The Area Wide Planning (AWP) process is underway for the first development areas with early construction on track to commence in 2021 (further discussion in Item 5). ● More detail regarding tenure and environmental approvals will be covered off in Item 6. ● Arrow is targeting December 2018 for a financial investment decision, which will be determined by the Shareholder. ● Plans are underway for community updates in Q3 2018. 	
ITEM 5	<p>Activity update – Chris Wicks</p> <p>Plainview Pilot</p> <ul style="list-style-type: none"> ● Construction of gathering system will commence late July/early August. ● Gathering will connect back to the Tipton CGPF. ● Ian Hayllor asked if Arrow would contact all local landholders, not just those directly impacted. Arrow confirmed notifications to nearby landholders, and through the Arrow website. ● A road closure for pipeline pressure will be advertised closer to the time. The road closure is planned for a Friday night to reduce impact on road users. ● The 23 soil gas monitoring points to be installed will be 2-4km from the pilot. 	

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	<p>Groundwater monitoring will also measure for gas in water.</p> <ul style="list-style-type: none"> Ian Hayllor asked if Arrow had an understanding of gas migration in the soil. Simon Gossmann said Arrow previously presented to the ASCRG the work it has undertaken, and is continuing to undertake, into the potential for the Horrane Fault to act as a conduit for gas migration. What has been presented to the ASCRG to date indicates that it is unlikely that the fault would be a conduit for gas. <p>Tipton Expansion</p> <ul style="list-style-type: none"> 83 new wells will be constructed, mainly within Arrow’s existing Tipton field. 60 of these are on existing well pads, targeting deeper coal seams. Timeframes are subject to shareholder approval, with construction planned for late 2018 and into 2019. Four new compressors are planned within the existing central gas processing facility footprint. The expansion will increase capacity of the facility from ~30TJ to 80TJ/day, with new compressors online by 2020. Stuart Armitage asked to be shown the Condamine River on the diagram shown, as a point of reference. Activity will occur west of the river. Graham Clapham asked what Arrow planned to do with the additional water generated from the deeper wells. Arrow confirmed this water will go to an existing beneficial user (Grassdale Feedlot). Substitution of allocation plans will not commence until the Surat Gas Project development. Lee McNicholl said Grassdale wouldn’t use its 1800ML allocation for now; but hoped it was still available in the precipice down the track when it didn’t have access to CSG water. Jane Walker has talked to landholders in this area. Many of them enquire about access to water allocations. <p>Daandine</p> <ul style="list-style-type: none"> Current activity in the Daandine area includes commissioning of new wells with electrical submersible pumps on existing pads. 21 new wells have been drilled on six pads on the eastern side of Daandine field, all on Arrow’s Theten property. Construction of well pad facilities and 20km of gathering is due to commence soon. <p>Kogan area</p> <ul style="list-style-type: none"> Three new wells are online this year in the Kogan North field. Proposed SGP activity includes 113 new wells and gathering. Arrow is currently engaging with landholders in QGC’s David field. Arrow’s plans include gas supply to the David facility in 2021. Ian Hayllor asked if Arrow has discovered any abandoned mining bores in this area. Chris Wicks said the area had been pegged and nothing was raised. Lee McNicholl asked who, in the future, would benefit from the water Arrow sends to Kenya for treatment. Chris Wicks said Arrow would provide more detail on the Beneficial Use plans at the next committee meeting; however, most of the water treated at Kenya will be pumped back to Daandine for distribution through the Beneficial Use Network. This option is designed to return water to the area from which it was taken (area of the Condamine Alluvium), reducing the capital expenditure and additional footprint required to build a new water treatment facility. <p>Alderley Seismic</p> <ul style="list-style-type: none"> 100km seismic survey is planned for September/October in the Miles area. Landholders have been directly engaged, and broader community engagement will occur closer to the time. <p>Arrow Property</p> <ul style="list-style-type: none"> Four Arrow-owned properties in the Cecil Plains and Hopeland areas have been leased to local landholders. Meenawarra Homestead near Cecil Plains has been sold. 	<p>Beneficial Use plans on agenda for next meeting</p>

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	<ul style="list-style-type: none"> • Arrow will retain 93% of the Meenawarra property. • Arrow is assessing its remaining property portfolio. • Arrow continues with water and soil monitoring around the Theten irrigation area. Neville Wirth observed that there seems to be less water produced than forecast. Arrow agreed. <p>Construction look ahead</p> <ul style="list-style-type: none"> • Daandine: <ul style="list-style-type: none"> ○ 2019/2020 drilling five new wells and 15km gathering east of Wilkie Creek. ○ Plans are subject to shareholder approval to expand south east of existing area ○ Area Wide Planning scheduled to commence 2019. • Broadwater Road/Duleen/Nandi: <ul style="list-style-type: none"> ○ Initial AWP to take place late 2018 with first construction in 2021. ○ Steve Williams said he was contacted by Arrow yesterday. This contact was requested by landholders in the area, not part of AWP. The request came as a result of a shed meeting in the Broadwater area. Jane Walker attending this meeting with two hats. ○ Chris said we will continue to get plans ready before full AWP engagement commences. • Tipton/Cecil Plains: <ul style="list-style-type: none"> ○ AWP later in 2019 with scheduled first construction activity in 2021. • Off-tenure pipelines: <ul style="list-style-type: none"> ○ Some landholders have already been engaged as part of David AWP ○ First construction scheduled for 2021, subject to shareholder approval. 	
ITEM 6	<p>Tenure Management update: Approvals – Suzanne Ferguson Regional Interests Development Application (RIDA) - Glenelg</p> <ul style="list-style-type: none"> • The Tipton Expansion project requires two RIDA applications, for Glenelg property and Tipton CGPF works. • Glenelg: <ul style="list-style-type: none"> ○ 23 additional wells on 16 well pads ○ Two new pads and 14 existing pads will be extended ○ Co-located wells on existing pads to minimise long term impact. • Tipton CGPF: <ul style="list-style-type: none"> ○ no additional land disturbance for four new gas-powered CGPF compressors ○ one TEG gas dehydration unit ○ one inlet fuel gas compression engine. • Timeframes: <ul style="list-style-type: none"> ○ applications lodged 23 May 2018 ○ advertisements in the Dalby Herald on 15 June (for Glenelg only) ○ submission period 15 June to 6 July 2018 ○ construction period from October 2018. • Graham Clapham asked why Arrow was required to lodge an application for land we own. Suzanne advised that the Act is triggered when the tenure holder also owns the land. Even a small pipeline will trigger a requirement to lodge an application under the Act. • Matthew Paul said the intention was to reduce industry land acquisitions to avoid land access negotiations. • Graham asked whether Arrow was expecting submissions. Arrow had no indication so far. Jane Walker said some landholders in the Glenelg area had concerns. • Stuart Armitage said Arrow could consider how it contacted people about these applications. He advised against Arrow relying on people reading the Dalby Herald. • Steve Williams asked where water monitoring was taking place. Arrow said there were monitoring points on the eastern side of Lake Broadwater. • Graham asked whether right of way (ROW) areas are considered in calculating the <2% footprint. He said the footprint would actually be more like 8% with ROWs included. Graham also questioned whether landholders really had liberty to use the land when they needed permission for work >300mm 	

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	<p>below surface. He said he struggled to see this as having no impact.</p> <ul style="list-style-type: none"> • Chris Wicks said all properly rehabilitated land over ROWs should be able to be cropped. The pipeline is a minimum of 750mm below ground level. The requirement for a landholder to notify Arrow when working below the 300mm is a safeguard. • Brydie Hedges said the AWP process was when landholders could discuss the use of the land to inform placement of infrastructure and ensure mutually beneficial outcomes. • Stuart said for Priority Agricultural Land Use legislation, an activity 'will not constrain, restrict or prevent the use'. • Graham said his understanding of the process was that, where a landholder was a third party, they could make comment but the decision was made between the regulator and proponent. Graham was concerned that having CSG on a property would inhibit a landholder's ability to take advantage of opportunities as they come up. Cropping is not always predictable. Suzanne told Graham that potential cropping could be taken into account during negotiations. • Graham said landholders had more negotiating power by dealing with companies directly rather than deferring to legislation. Suzanne said Arrow's intent is for voluntary agreements. • Jane Walker said history showed landholders to be behind in their knowledge of legislation. GasFields Commission aims to educate and empower landholders prior to entering negotiations. • Steve Williams said landholders needed to think longer term for their business which is a longer outlook than the company perspective. He would like to see companies be more proactive in negotiations and offer better compensation straight up rather than the landholder having to negotiate a middle ground. He considered this 'being a good neighbour'. • Suzanne outlined the Surat Gas Project application for off-tenure development: <ul style="list-style-type: none"> ○ eight PPL applications (two already lodged) ○ eight environmental authorities (two already lodged) ○ one Environment Protection and Biodiversity Conservation Act (EPBC) approval (for off tenure pipelines, lodged 29 May 2018). • Graham asked if Arrow would notify neighbours east of the Condamine. Leisa Elder said the department did not mandate companies to do so however Arrow had opportunity to consider notification methods. Suzanne said the department assessed advertising for each EA application on a case by case basis. The assessment determines whether a company is required to notify. • Lee asked whether the EPBC had a water trigger. Suzanne said it depended on the activity. Arrow's application was purely for an off-tenure water pipeline to carry water, not for extraction, which was approved in the project EPBC approvals. 	
ITEM 7	<p>Groundwater Dependent Ecosystems monitoring update – Simon Gossmann / Chris Jones</p> <ul style="list-style-type: none"> • Arrow has undertaken two field investigation programs: <ol style="list-style-type: none"> 1. four site specific GDE assessments 2. four aquifer connectivity studies. • Field investigation programs are located at: <ul style="list-style-type: none"> ○ Burunga Lane ○ Glenburnie ○ Long Swamp ○ Lake Broadwater. • Ecological and hydrogeological information was gathered to determine if vegetation accesses groundwater (permanently or intermittently). Investigation looks at: <ul style="list-style-type: none"> ○ rooting depth ○ soil moisture potential measurement ○ leaf water potential measurement ○ water level and water quality ○ stable isotope analysis ○ leaf area index measurement. • This data helps to identify the likely zone of dominant root water uptake in 	

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	<p>target tree species (e.g. river red gum). It also allows for a conceptual model to be built for each site.</p> <ul style="list-style-type: none"> • The aquifer connectivity studies look to identify the degree of hydraulic connection between aquifer units (including coal formations) to verify if propagation of drawdown in deeper coal measures will impact shallow formations and identify stratigraphy to confirm geological mapping at these sites. • Collected data was used to identify the level of aquifer connectivity between the formations overlying the Walloon Coal Measures at each of the four sites. • Results for Long Swamp (as an example) have been analysed: <ul style="list-style-type: none"> ○ Core logging and downhole geophysics confirmed geological mapping. ○ Condamine Alluvium, Westbourne Formation, Springbok Sandstone and the Walloon Coal Measures are likely to have a poor hydraulic connection. 	
ASCRG Committee only		
ITEM 8	<p>Pest Management Research update – Darren Marshall / Lavinnia Fiedler</p> <ul style="list-style-type: none"> • Darren Marshall presented an update on his Pest Management Research, providing data from 2016-2017; part funded through Arrows' research group. • Pest animals have a significant impact across Arrow's operational areas, particularly in the cropping areas of the Surat Basin. • Pest animals damage crops, spread disease and kill young grazing animals. • Information gathered by tracking pest animals is used to paint a picture of where pest animals roam, and motivate communities to act on the problem which can be difficult to do if they are not aware of direct impacts. • Two programs have been funded: <ul style="list-style-type: none"> ○ Pest animal monitoring uses strategically placed cameras to gather data on pest numbers in various locations (wild dogs, pigs, foxes and macropods e.g. kangaroos). ○ Pig collaring program involves pig trapping, collaring and monitoring movement data (collars have GIS trackers which upload location data that can be mapped). • Jane Walker asked if the statistics considered the culling program managed by WDRC. Lavinnia Fiedler (Arrow Biosecurity Advisor) said Arrow had participated in the WDRC program and the area wide aerial shooting program. • Jane asked whether the national park beside Broadwater could be harbouring pest animals and influencing the high numbers. Darren said he did not believe the national park was a problem; the animals might shelter there but there was no food in the park. • Graham Clapham agreed pest animals impacted cropping. He experienced thousands of dollars' damage to his sorghum crop from pigs. It was a devastating experience and so many landholders were unaware that the damage was taking place. • Graham allows hunters onto his property. Darren said hunting has zero impact on the pig population community wide. 	
ITEM 9	<p>Minutes of previous meetings Comments on previous meeting minutes included:</p> <ul style="list-style-type: none"> • Arrow will clarify the statement from item 11, 'The Condamine Alluvium is 3% of Sustainable Diversion Limit (SDL)'. • In relation to Brian Bender's enquiry about BSA membership and the possibility for a second committee representative: <ul style="list-style-type: none"> ○ Lee took exception to Ian Hayllor's comments in the minutes regarding membership of a second BSA member. ○ Graham said he did not see it as an issue. ○ Ian said he was happy to withdraw his comment, but that the full context should be explained. ○ Lee said he would send Brian as a delegate BSA member at times. ○ Leisa Elder said Arrow would welcome Brian's attendance at the committee as Lee's delegate for the BSA. <p>Actions from previous meeting</p> <ul style="list-style-type: none"> • Out of time to go through in detail, mostly covered off in Items 4, 5 & 6 	Amend minutes as per comments
ITEM 10	<p>Tenure notification to landholders</p> <ul style="list-style-type: none"> • Leisa Elder proposed that committee members be consulted out of session about options for tenure notifications. 	Committee members to be consulted regarding options for tenure

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	<ul style="list-style-type: none"> Committee members will have an opportunity to provide their feedback and preferred method for communication. 	notifications
ITEM 11	<p>Any other business</p> <ul style="list-style-type: none"> Graham Clapham told the committee that community members in his area were interested in understanding what a gasfield looked like, particularly women from farming families. He proposed a site tour to help them understand what to expect. Leisa Elder said this can be arranged; Arrow has conducted approximately 140 site tours to date. Ian Hayllor said Arrow could consider showcasing a range of sites e.g. construction, production and a rehabilitated site. Leisa said some sites in the Bowen had been fully rehabilitated for some time, if anyone was interested in touring Arrow's operations in the Bowen Basin. Leisa Elder also sought to clarify some recent confusion over the relationship in the SGP gas sales agreement. To clarify: Arrow is the seller, QGC is the buyer. The agreement has room to find synergies but the companies remain two completely separate interests. 	Develop proposal re site tour for community members
ITEM 12	<p>Agreed outcomes, actions and deliverables</p> <ul style="list-style-type: none"> Beneficial use of water is to be added as an agenda item for the next meeting. Arrow is to amend minutes from previous meeting in line with feedback. Arrow will consult committee members about options for tenure notifications. Arrow will contact Graham Clapham to progress a site tour for a group of Cecil Plains community members. 	
ITEM 13	<p>Next meeting</p> <ul style="list-style-type: none"> 13 September 2018 	

There being no further business, the meeting was closed at 12.30pm.