

MEETING MINUTES



MINUTES OF: Arrow Intensively Farmed Land Committee
 HELD AT: BMO Business Centre, Dalby
 DATE: 8 March 2018
 COMMENCEMENT TIME: 9.05 am

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| Present: | Stewart Hayllor – Landholder, Warren Myring – Landholder, Steve Williams – Landholder, Ivan Tan – Chief Operating Officer, Arrow Energy, Chris Wicks – Development Planner IFL, Arrow Energy, Liam Stower – Community Engagement Lead, Arrow Energy, Gary Lees – Access Manager Surat |
| Apologies: | Stuart Armitage – Landholder Nev Wirth - Landholder |
| Chair: | Ivan Tan – Chief Operating Officer |
| Disclosures : | None recorded |

| | Joint Meeting – ASCRG & AIFL Committee | ACTION/ SUGGESTIONS |
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| ITEM 1 | <p>Welcome</p> <ul style="list-style-type: none"> Liam Stower welcomed attendees including proxies and introduced guest presenters. Liam passed on Leisa Elder’s apologies; Leisa was unable to attend due to a late meeting request. This is the second meeting she has missed in eight years. | |
| ITEM 2 | <p>Safety moment – Dalby PCYC and Queensland Police</p> <ul style="list-style-type: none"> Kelly Ryan, Development Officer Dalby PCYC Braking the Cycle Program - delivered in partnership with Arrow Sergeant Mark Weitowitz, Officer in Charge of Dalby Road Policing Unit - Understanding Fatigue and Driving | |
| ITEM 3 | <p>Community Engagement feedback – Liam Stower</p> <ul style="list-style-type: none"> Engagement Sessions held across the Surat Basin in 2017 and in 2018, following the Surat Gas Sales Agreement (GSA) announcement last December. Sessions held Toowoomba, Miles, Chinchilla, Wandoan, Dalby and Cecil plans, and business briefings run with Dalby Chamber of Commerce and Toowoomba Surat Basin Enterprise. More than 360 people attended to date. Main questions/interest areas were around Arrow’s Area Wide Planning process, groundwater and substitution of allocation, project phasing, and development timelines and impacts on intensively farmed land. | |
| ITEM 4 | <p>Recap Project announcement – Ivan Tan</p> <ul style="list-style-type: none"> Arrow has agreed to one of the largest gas supply deals on Australia’s east coast. The agreement is between Arrow and QCLNG and spans a 27 year timeframe. The deal utilises existing QGC-operated infrastructure to reduce our footprint and to reduce impacts to the community and environment. The original plan for the SGP included 8 Central Gas Processing Facilities (CGPFs) which may no longer be required. Arrow Surat Pipeline is no longer required as Arrow has a path to market for its gas. Economic benefits for the community will include jobs both in construction and in the long-term over the timeframe of the phased development (development phases and timeline displayed). Graham Clapham asked if there will be any extension to the existing Petroleum Lease (PL) areas in the Cecil Plains area. Chris Wicks advised that Arrow would be applying to convert ATP tenure to Petroleum Leases in the Cecil Plains area including east of the Condamine River. Development of this area is planned for mid-late 2020s. | |
| ITEM 5 | <p>Surat Gas Project: current status and milestones – Chris Wicks</p> <p>Arrow Surat Pipeline</p> <ul style="list-style-type: none"> Arrow is in the process of relinquishing any caveats, deeds or easements over properties along the route as the pipeline is no longer required. Land Liaison Officers are contacting affected landholders by phone. A letter will be mailed out to all title holders regarding relinquishment plans. <p>Surat Gas Project</p> | |

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| | <ul style="list-style-type: none"> • A large assurance review (conducted by Shareholders) is under way this week to mature the project. • Arrow will lodge applications for the State Government approvals required. • The Tipton Expansion Project (Tipex) execution will commence in 2019. This includes approximately 85 wells, gathering and an expansion to the existing CGPF. • In the Daandine area, Arrow will drill approximately 20 new wells this year, mainly on Arrow property east of the creek, adjacent to Daandine-Nandi Road. • Area Wide Planning for the David field has commenced with key landholders. This process is carried out 3-6 months before commencing detailed design to ensure landholder constraints are incorporated. • The David area is East of Kogan, North of Dalby Kogan Road, between there and the Condamine River (map shows locations of first 120 wells). • Construction estimated to start in H2 2019. • Graham Clapham asked whether Arrow plans to notify landholders who may be impacted by a change of tenure status, as this is a sensitive issue to many landholders. • John Hughes advised that this information is made available on the DNRME website in due course, but that the department does not notify individual landholders directly. • Action was taken to assess how Arrow might advise landholders of significant changes. <p>Soil gas monitoring</p> <ul style="list-style-type: none"> • Soil gas monitoring will be undertaken near the Plainview Pilot wells. • Five of 23 planned monitoring points have already been installed. • The monitoring points consist of 6m deep boreholes with poly tubing completion. • The installations will monitor for carbon dioxide and methane. • Brian Bender stated he is aware of a property in the Hopeland area where notable methane levels were detected 2m below the surface. • Simon Gossmann advised that Arrow has offered to carry out monitoring to assess this area. The landholder has not taken up the offer to date. | <p>Consider whether Arrow can implement a process to notify impacted landholders of PL changes</p> |
| ITEM 6 | <p>Arrow Horrane Fault analysis – Robin Viljoen</p> <ul style="list-style-type: none"> • Recent exploration activities include: <ul style="list-style-type: none"> ○ Tipton seismic survey in 2016 to delineate the Horrane Fault and plan well intersection for Plainview 34 ○ Plainview 34 in 2017 to intersect the Horrane Fault for analysis ○ Hopeland seismic survey in 2017 to delineate regional structure for future development plans. • Maps shown identify the main Horrane Fault and secondary faults. • Graham Clapham asked whether both maps shown are of the same geographical area. Shading depicts the dip of the fault, different colours reflect the topography (red is deeper). • Graham Clapham stated he was not aware that the fault extended east past Norwin. • The interpretation of results slide shows the fault lines as they extend through the strata in this area. • Plainview 34 well schematic depicts the 85mm core well drilled in this area. • This project included significant drilling effort to get through the fault. There was a lot of integrity in the core as it was brought to surface. The Horrane Fault core samples and the FMI (Fullbore Formation Microimager) log suggest that the only permeable fractures in the wellbore were drilling induced. No secondary mineralisation in the core samples backs up this result i.e. no minerals such as calcite or quartz were visible which can be an indicator for fluid movement. • Fault gauge in the sample measured approximately 10cm. • Drill seam testing was carried out to measure permeability and reservoir pressure and compare these results above and below the fault. • The results of testing indicate that the fault may act as a seal in this case. Brian Bender asked whether this relates to the Condamine River bubbling seen in Origin tenure. He stated Origin claims the geology is carrying the gas into the river, not sealing it. • Robin explained that gas has been seen in the Condamine where there is subcropping of the coal seam. This analysis only looks at the Horrane Fault which is confined to particular geographical/ geological area. The age and depth of the | |

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| | <p>structural activity can also influence the behaviour of gas.</p> <ul style="list-style-type: none"> • Stephen Williams (AIFL committee) commented that from the images supplied, the fault does not come to surface. Robin verified this. • A step rate test (to measure pressure changes) was also carried by pumping into the Juandah Formation above the fault and measuring pressure change at the fault. No pressure change was observed which suggests the fault is impermeable. • There is still further work to be done to confirm the theories. Arrow will continue to monitor this area to see how it is impacted over time. <p>Gas monitoring project</p> <ul style="list-style-type: none"> • To date Arrow has three active gas monitoring holes. • These holes will give a baseline over a period of months and will consider seasonal and daily changes. • Ongoing monitoring will be carried out as we produce in this area. • Monitoring points have been located above faults and in control locations for comparison. • Ian Hayllor asked if the Bowen has good gassy coal as well. Robin advised that the Bowen does have significant gas reserves, however the Surat is a younger geological formation and therefore it is easier to extract gas. The Bowen formation has very low permeability due to depth and age of the coal. The deepest producing wells in Arrow's Surat tenure are only around 650m. | |
| ITEM 7 | <p>Arrow Emissions Monitoring Program, flaring summary – Kelsey Bawden</p> <ul style="list-style-type: none"> • Arrow has a commercial incentive and obligation under law to use the gas we produce. • Flaring occurs for scheduled activities and unscheduled events (e.g. in the time it takes to manage field and facility, gas has to go out the flare). • Excess gas can over pressure the field and potentially damage infrastructure. • Gas is redirected, vented or flared to reduce pressure when needed. • Arrow has an obligation under law to flare over venting since flaring minimises Green House Gas (GHG) emissions. Venting is nine times worse than flaring when it comes to GHGs. • Arrow loses potential revenue when flaring occurs. Flared gas cannot be sold (and hence Arrow works to minimise flaring). • Location of Arrow flares: <ul style="list-style-type: none"> ○ low pressure side of the CGPF ○ appraisal wells on ATPs ○ gas field (field flares) • Regular auditing of emissions is carried out under the <i>National Greenhouse and Energy Reporting Act 2007</i>. • There is a safeguard mechanism which requires the purchase of Australian Carbon Credits (via the market) to offset excess emissions. This introduces a financial obligation and negative impact to the business if emissions targets are exceeded. • Emissions data is publically available on the internet by Petroleum Lease. • Arrow's Operational Excellence Program looks to improve reliability of plant. Annual shutdowns improve reliability and minimise unscheduled shutdown events (which lead to flaring). • Ian Hayllor asked if Arrow has ever had to purchase offsets for excess emissions. To date, Arrow has not had to purchase offsets. However, it may be considered for the future as a safeguard. • Ian suggested that Arrow should consider purchasing offsets locally to support landholders in the areas we operate. This may go a small way to mitigate the negative impacts of flaring which is viewed as pollution and wasteful from a community perspective. Better ways to manage the gas should be considered. • Kelsey Bawden concurred that by nature, flaring is very visible but it is much better for the environment than venting. • Ivan Tan added that flaring gas is a lost opportunity for Arrow and not viewed positively by the community. • Graham Clapham commented that locals see flaring of gas as an abhorrent waste. This opinion is compounded by ever increasing energy price impacts. Arrow may not be able to affect this, but that is how locals perceive the issue. | <p>Consider purchasing Carbon Credit offsets locally – raise internally</p> |
| ITEM 8 | <p>Arrow Water Database – Simon Gossmann & Ty Felmingham</p> <ul style="list-style-type: none"> • The water management database project was approved in 2016 to meet a definite | |

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| | <p>business need within Arrow.</p> <ul style="list-style-type: none"> The key outcome is a single point of truth for Arrow's water data. All data captured now feeds into a single system and is able to integrate with other Arrow systems e.g. consolidates to Avocet. <p>Demonstration of the Observr field data collection app:</p> <ul style="list-style-type: none"> data can be input direct via phone (iphone or android) or intrinsically safe devices may be used in gassy environments the app is be used for any water related environmental investigations landholder bore reports generated by the system and include all bore information including chemical data (example of report generated shown to committees) the app is a promising solution which reduces human error and waste. Paper-based system to electronic forms will allow more time interpreting data. Landholders receive their individual bore data. Other groundwater monitoring data is also publically available through OGIA and DNRME via the internet. John Hughes suggested an update on the Groundwater Net project for the next committee meeting. Groundwater Net is a community-based monitoring program where landholders are supported to monitor their own standing water levels. The program also includes landholder workshops to build knowledge and networks. Brian Bender added grants are available to landholders who wish to put an airline into their bore. | |
| IFL Committee only | | |
| ITEM 9 | <p>SGP Phasing</p> <ul style="list-style-type: none"> Chris Wicks introduced the SGP phasing and presented maps. General discussion about when the landholders present would be affected and what might change the proposed timings. Steve Williams made a general comment that the main issue remains the overall impact of CSG on the GAB. | |
| ITEM 10 | <p>Landholder Negotiations</p> <ul style="list-style-type: none"> Stewart Hayllor raised a concern that the condition that companies pay for landholders legal advice was being changed and/or limits on the amount of legal advice being charged. Chris Wicks and Gary Lees confirmed that Arrow will pay for reasonable legal costs associated with a Conduct & Compensation Agreement. Ivan Tan discussed how the increase of the development area would impact more landholders. Arrow needs to continue to be credible and consistent in the way it undertakes landholder negotiations. Chris Wicks noted that Arrow will become more schedule driven as the SGP is developed compared to current activities. Arrow wants to have open and fair negotiations but not open ended. Gary Lees noted that landholders sometimes were isolated from negotiations once the legal process is initiated. Arrow understands that the negotiations become commercial agreements but there needs to be a balance between legal and commercial priorities. Steve Williams noted that the landholders who take longer could potentially learn more and get a better deal. | Arrow to check whether there are any changes to this condition |
| ITEM 11 | <p>Any Other Business</p> <p>Future Agenda Ideas – Chris Wicks</p> <ul style="list-style-type: none"> Discuss how Area Wide Planning is progressing Warren Myring raised that there was no mobile phone coverage at his property and this was an issue for his business. | |
| ITEM 12 | <p>Agreed outcomes, actions and deliverables</p> <ul style="list-style-type: none"> Confirm if there are any changes to how landholder legal costs are managed and discuss what it is hoping to achieve. Develop a picture book of infrastructure and under construction photos as part of a landholder pack | |
| ITEM 13 | <p>Next meeting</p> <ul style="list-style-type: none"> 21 June 2018 | |

There being no further business, the meeting was closed at 11.45pm.