

MEETING MINUTES



MINUTES OF: Arrow IFL Committee Meeting
 HELD AT: BMO Business Centre, Dalby
 DATE: 15 September 2016
 COMMENCEMENT TIME: 9.00am

Present:	Darryl Phillips, Jamie Grant, Chris Wicks, Stewart Hayllor, Neville Wirth, Richard McLean, Neville Wirth, Graham Burt, David Wolf, Steve Hanlon, Katie Whittle.
	Apologies: Stuart Armitage, Ian Valler, Wayne Newton, Brydie Hedges, Yihua Xu, Richard McLean
CHAIR:	Darryl Phillips
DISCLOSURES	None recorded

	Joint Meeting - ASCRG & AIFL Committee	ACTION/ SUGGESTIONS
ITEM 1	Welcome – Leisa Elder <ul style="list-style-type: none"> Leisa Elder welcomed attendees 	
ITEM 2	Safety moment – Daandine Brine Dam video	
ITEM 3	Arrow Update – Leisa Elder <ul style="list-style-type: none"> Arrow is working at 2 priorities – <ol style="list-style-type: none"> Considerable expansion of its domestic infrastructure including an announcement last week of approval of the \$100M Produce the Limit project (PTL). Collaboration discussions around the majority of Arrow’s reserves in terms of bringing this gas to market. A small structural change occurred within Arrow last month in preparation for the scope of work decided for 2017. 	
ITEM 4	Operations Update – Darryl Phillips Daandine Central Gas Processing Facility: <ul style="list-style-type: none"> Annual shutdown took place on 6-8 September involving field ramp down and flaring. All landowners within 25km radius were sent letters advising of flaring. 20 contractors as well as additional Arrow Staff were involved. Modifications being undertaken to increase production capacity. Installation of catalytic convertors on compressor engine exhausts was completed to reduce environmental footprint. Daandine Water Treatment Plant <ul style="list-style-type: none"> Optimisation to increase recovery rates from 75% to 83% completed. Installation of a pilot closed-circuit desalination unit to further improve recovery rates percentage is to be undertaken. Installation of solar powered de-stratification units on feed water dam to improve water quality prior to entering water treatment plant to be undertaken. Kogan North <ul style="list-style-type: none"> Drilling of 9 wells has been completed. Commissioning of both Kogan North and Tipton additional wells to be undertaken. Chris Wicks advised that the colour of the new skids has been changed to green as a result of landholder feedback. Tipton CGPF <ul style="list-style-type: none"> Annual maintenance shutdown planned for 20-21 September. Flaring is not undertaken at Tipton. Cold venting of gas will be required. Braemar 2 power station <ul style="list-style-type: none"> Full station outage to upgrade software and hardware control system. Maintenance outages to occur on Units 32 and 33 which will be 4 days each. <ul style="list-style-type: none"> Neville Wirth (AIFL Committee) asked where Arrow was with brine containment. Darryl advised that due to Arrow having a new brine dam and the Daandine 	

	<p>Water Treatment Plant optimisation project, this will extend the storage capacity for brine to meet current requirements.</p> <ul style="list-style-type: none"> • Neville Wirth also commented that other operators are looking for storage facilities for salt. Darryl Phillips advised that Arrow is not producing as much water as initially was expected and therefore not as much brine. • Neville Wirth asked if flaring was the only way to deal with the excess gas during works. Darryl Phillips advised that flaring is only undertaken when necessary. The field production is turned down as much as possible, however cannot be turned off completely as some wells will not restart requiring further works to be undertaken. Environmentally flaring is the best option. • Max Winders noted that in the most recent environmental authority, Arrow can pump up to 8ML of treated water in to Wilkie Creek. He noted this needs to be reconsidered. He advised that the Basin Sustainability Alliance is commissioning a study into the economics of the use of this water. • Simon Gossmann responded that all water from the Daandine and Kogan fields is beneficially used and currently goes to Braemar 1 and Braemar 2 power stations, Wambo Feedlot and another Landholder and Theten Farm for crop irrigation. • Paul McVeigh stated that Western Downs Regional Council (WDRC) was restricted at present on water. He also wanted to know if it was Arrow's intention to keep salt on tenement. Simon Gossmann advised that in the Environmental Impact Statement (EIS) Arrow considered a number of feasible long term solutions for salt; a regulated landfill option is within those options, but not constrained to tenement locations. In terms of concentrated brine, this will remain in the brine dams. If landfill was used this would need to be processed to a crystallised product. • Ian Hayllor asked about the percentage of brine currently produced. Darryl Phillips advised that the Daandine Water Treatment Plant (WTP) maximum throughput is 12ML/day. The Daandine WTP is currently being operated at 6ML/d (average throughput). Arrow does not currently predict a need for further brine storages for brine produced as part of the existing Domestic Gas business. 	<p>From the water through the plant ~17% was brine.</p> <p>More information to be presented at the next meeting</p>
<p>ITEM 5</p>	<p>Project Update – Katie Whittle Produce the Limit (PtL) -</p> <ul style="list-style-type: none"> • Arrow has received board approval for a new project – ‘Produce the Limit’ (PtL). • This will be an investment of \$100 million into Queensland’s domestic gas production. • This project will enable compression facilities to use their maximum design limits through: <ul style="list-style-type: none"> ○ drilling of 11 new infill wells at Daandine and 12 new wells at Tipton ○ gathering infrastructure (pipelines to connect to wells) ○ upgrades to the Central Gas Processing Facilities (CGPF) • Next steps for the project: <ul style="list-style-type: none"> ○ supply and procurement activities ○ engagement with affected landholders 	

<p>ITEM 5 (cont)</p>	<p>Surat Gas Project Update</p> <p>Ecology Surveys</p> <ul style="list-style-type: none"> • The information from the surveys will contribute to Queensland and Federal Government approvals. • Ecology surveys are conducted by small teams of independent specialists- September - October 2016 and February - March 2017. These two periods will cover wet and dry seasons. • The areas being surveyed have been identified through the EIS as possibly containing threatened ecological communities or species. • Arrow will also prepare Water Monitoring and Management Plans (WMMP) • Groundwater dependent ecosystem surveys will assess ecosystems reliant on the sub-surface presence of water. These will be conducted in conjunction with the ecology surveys. <p>Arrow Bowen Pipeline</p> <ul style="list-style-type: none"> • As part of the continuing Bowen de-risking work, Arrow is progressing approvals for the Arrow Bowen Pipeline (ABP). • Arrow recently submitted an application for a Petroleum Pipeline Licence (PL) and Environmental Authority (EA) for the ABP. • To-date, Arrow has invested significant resource into the ABP, including: <ul style="list-style-type: none"> ○ 60 landholder-requested amendments to the pipeline route ○ ~25 overlapping tenure agreements with coal parties ○ practical completion of Front End Engineering Design. • Trudi Bartlett asked what sort of local content would be required during procurement. Dave Wolf (AIFL Committee) advised that Arrow would be using as many local companies as possible to undertake works and reviewing what can also be sourced locally. Trudi Bartlett asked if there was an opportunity for Arrow to provide a speaker to a Chamber of Commerce Breakfast to speak to local business on possible contracting opportunities. 	<p>Provide speaker at Dalby Chamber of Commerce Breakfast.</p>
	<p>ITEM 6</p>	<p>Community Engagement Feedback – Peta Tucker</p> <ul style="list-style-type: none"> • Community information sessions were held across the Surat Basin from 26-28 July 2016. • More than 100 community members attended. • Five sessions were held from Wandoan to Cecil Plains. • Communities were well informed about CSG development. • Community interest focussed on: <ul style="list-style-type: none"> ○ timeframes for development ○ gas migration ○ Horrane Fault and its impact on development planning ○ water continues to trend as a major concern among landholders; Arrow's offset plan, management of produced water. <p>Next broad community engagement planned for early 2017.</p> <ul style="list-style-type: none"> • Ian Hayllor asked if information could be provided on gas migration. Leisa Elder advised that this will be held over to next meeting to ensure a subject

	<p>matter expert was in attendance to provide information.</p> <ul style="list-style-type: none"> Trudi Bartlett advised that the feedback the Dalby Chamber of Commerce had received was very positive about the community engagement sessions. 	
ITEM 7	<p>Seismic Survey Results – Katie Whittle</p> <ul style="list-style-type: none"> Surat Basin coals comprise the Walloon Subgroup. Walloon Coal Measures (WCM) include the Juandah Coal Measures and the Taroom Coal Measures. The general location of the Horrane Fault has been known for some time, although the exact location had not been determined. Deeper layers of rock are hot and soft, in comparison to surface layers which tend to be cooler and less malleable. Faults form when stress from underlying rock movements causes the more brittle surfacer rock to crack or slip. The seismic survey was undertaken from 5-25 February 2016 in the Tipton and Cecil Plains areas. The survey took place along 117km of public roads. Seismic surveys are used to gather detailed images of the rock formations below the earth's surface. The seismic profile can be used to interpret the architecture and structural attributes of coal seams. The survey was designed to map the Horrane Fault, to provide Arrow with information about how the fault intersects with the Walloon Coal Measures. A crew of 40 people undertook the works equating to 15,274 man hours. 22,150km were driven during the survey. ~6.6km of seismic was completed per day. ~13,300 vibration points and 13,300 receivers were used. The Horrane Basin is a small sub-basin located within the Surat Basin. The location of the Horrane Fault was identified – it occurs within the Walloon Coal Measures. The major faulting has occurred at depths of 50-600m. Beside the major fault, various minor faults extend to the east. The major fault lies immediately east of Arrow's existing Tipton field which has been operating since 2007. Horrane Fault is not geologically unique; similar faults exist in Arrow's Daandine and Tipton fields, as well as other areas across the Surat Basin. Ian Hayllor asked where does the Horrane Fault occur 50m from the surface, if this was in the area of the Condamine Alluvium, would this cause inter-connectivity? 	<p>Information on the connectivity between the Horrane Fault and the Condamine Alluvium to be provided at next meeting.</p>
ITEM 8	<p>Gas migration – This agenda item was held over to next meeting.</p>	
ITEM 9	<p>Ground Water Monitoring Program Update – Simon Gossmann</p> <p>Groundwater monitoring</p> <ul style="list-style-type: none"> In the 2012 UWIR Arrow was required to install monitoring at 36 sites between 2012 and 2016. These monitoring bores monitor formations above, into and below the Walloon Coal Measures. Arrow has also installed a further 62 bores as part of technical studies. Another 70 bores have been installed to monitor infrastructure. In 2016 UWIR Arrow is required to install 11 sites. There are currently six sites remaining for 2016. Groundwater monitoring bores are required to monitor groundwater levels in the Condamine Alluvium and Walloon Coal Measures. At some sites; monitoring will include groundwater levels in three separate seams near the top, middle and bottom of the coal measures. Data will be provided to OGIA to incorporate into updates to the UWIR. <p>Baseline assessment of water bores</p> <ul style="list-style-type: none"> Under the <i>Water Act 2000</i>, petroleum tenure holders are required to conduct baseline assessments of all water bores. Assessments obtain information about the bore, including water level and quality, bore construction, existing pumping infrastructure. Since 2011, Arrow has completed more than 750 baseline assessments of 	

	<p>water bores in the Surat Basin.</p> <ul style="list-style-type: none"> • In 2016 and 2017, Arrow will conduct baseline assessments of water bores within Dalby Township. • Arrow has contacted landholders with registered water bores in order to collect information for the assessment program. • Currently only about a third of bore owners have taken up the offer. • Paul McVeigh suggested that Arrow again contact the bore owners as it is important for Arrow's business that a large number of bores are assessed. • Trudi Bartlett asked what the benefit was to bore owners to be involved. Simon Gossmann advised that water levels, quality and infrastructure information was assessed and that the information was provided to the bore owner. • Neville Wirth advised that adverts regarding such a project should not be placed in the Tuesday Herald as the readership was low on that day. • Ian Hayllor questioned about how Arrow was addressing landholder bores that were producing gas especially in the Hopeland area. Simon Gossmann advised that Arrow had been in discussions with the landholder since July about resolving the issue. 	
<p>ITEM 10</p>	<p>Research Projects University of Queensland Centre for Coal Seam Gas (CCSG) –Assoc Prof Will Rifkin Presentation on Handling Social & Economic Changes in Queensland CSG Areas – (research undertaken by Witt, Everingham, Johnson et al)</p> <ul style="list-style-type: none"> • The Centre conducts research across Water, Geoscience, Petroleum Engineering and Social Performance themes. • Assoc Prof Will Rifkin spoke on social and economic changes in Queensland in areas where CSG is produced. • Data was gathered from a wide range of sources including Local, State and Federal Governments, Chambers of Commerce, Schools and the local community. • Research included the effects of CSG, was it a cause or a trigger for an issue, what are the impacts on people – both good and bad. • Ian Hayllor asked if any research was undertaken on agricultural impacts. Will Rifkin advised that UQ has undertaken research in that area. Results showed that mostly conduct and compensation agreements were acceptable, the amount of land affected was larger than expected, but the biggest concern was the time taken to deal with CSG companies. <p>Presentation on Interactions between Coal Seam Gas operations & Agriculture</p> <ul style="list-style-type: none"> • Will Rifkin spoke on 'co-existence' and impacts on agricultural production and profitability. CCSG undertook two studies – Interactions between CSG operations & Agriculture (Cavaye, Kelly, et al – UQ School of Agriculture & Food Sciences) and Trust in the CSG industry (Gillespie, Bond, et al – QU Business School). The results of the studies were combined in Will Rifkins presentation. The studies looked at co-existence and what is the aspiration? Respectful management of resources across agricultural and coal seam gas industries and land use to maintain the economic, social, and environmental welfare of those involved. • Ian Hayllor noted Trust of CSG companies seemed to be low. Will Rifkin stated the data was from 2013/2014. • Ian Hayllor noted that landholders would not need to spend as much time on management of landholder issues, as they currently do, if relationships were better. • Neville Wirth stated that in order to get success in trust, the little things must be tidied up i.e. erosion and dust. <p>Centre for Coal Seam Gas website references: https://boomtown-indicators.org https://boomtown-toolkit.org http://www.ccsq.uq.edu.au</p>	

	IFL Committee Business	
ITEM 11	Arrow IFL Committee Membership update	
	Some additional landholders will be invited onto the AIFLC and the next meeting will be asked to endorse their membership of the committee.	
ITEM 12	Minutes of previous meeting & actions	
	The minutes of the previous meeting in May have been sent to committee members. The minutes were endorsed by the committee.	
ITEM 13	Any Other Business	
	Area Wide Planning (AWP) and Landholder Compensation <ul style="list-style-type: none"> Arrow presented it's AWP process and landholder compensation matrix for newer members of the committee The principles of AWP and Arrow's compensation model were generally well received by the committee. Landholders noted that the information from the CCSG survey (presented in joint meeting) was that landholder time was generally under estimated. 	
	<ul style="list-style-type: none"> Issue of how landholders can undertake pad and track maintenance was raised by the committee. 	Arrow to follow up on what arrangements other CSG operators may have with landholders for maintaining pads and tracks
	Field Visits to gathering construction and rehabilitation	
	<ul style="list-style-type: none"> Arrow will be installing gathering on black soil in 2017 at Tipton West. Proposing to compare trenching vs ploughing and soil impacts AIFL members expressed strong interest in this work 	Develop plan for construction trial (Dave Wolf)
	Landholder noted that there was a lot of light being emitted from the drilling site of a monitoring bore at Pampas.	LLO contacted drill rig manager and an adjustment to the lights was made
ITEM 14	Next meeting 2 December 2016 - Toowoomba– Gip's Restaurant	
	There being no further business, the meeting was closed at 12.15pm.	

CONFIRMED AS A TRUE AND CORRECT RECORD.

Chairman