

MEETING MINUTES



MINUTES OF: Arrow IFL Committee Meeting
 HELD AT: Gip's Restaurant, Toowoomba
 DATE: 2 December 2016
 COMMENCEMENT TIME: 9.00am

Present:	Darryl Phillips, Stuart Armitage, Chris Wicks, Stewart Hayllor, Neville Wirth, Stephen Williams, .. Brydie Hedges, Gary Lees
	Apologies:., Graham Burt, Ian Valler, Wayne Newton, Jamie Grant, Richard McLean, Steve Hanlon
CHAIR:	Darryl Phillips
DISCLOSURES	None recorded

	Joint Meeting - ASCRG & AIFL Committee	ACTION/ SUGGESTIONS
ITEM 1	<p>Welcome – Leisa Elder</p> <ul style="list-style-type: none"> Leisa Elder welcomed attendees 	
ITEM 2	<p>Safety moment – Itcanwait – Mobile phone usage and driving video</p>	
ITEM 3	<p>Arrow Update – Leisa Elder</p> <ul style="list-style-type: none"> Over the last year Arrow has completed the \$250M Daandine Expansion project, and now commenced a \$100M expansion project PtL. Currently, the company is doing some early works that landholders may have seen at a potential expansion facility near Tipton that could be valued at \$500M (for domestic & export). However, this was at a very early stage and would take considerable time before any decision to proceed would be made. Collaboration discussions are continuing into 2017 regarding the majority of Arrow's gas in the Surat Basin. <p>Lee McNicholl asked how many wells would be drilled. Chris Wicks advised that over the initial 4 year period, 107 wells would be drilled. Approximately 60 of these will be on existing well pads, targeting deeper coal seams into the Walloons. The expansion will include 4 additional compressors, upgrades of other plant at the Tipton Facility, gathering lines and may include an upgrade of the water treatment facilities.</p> <p>Nev Wirth (AIFL Committee) asked if the existing high pressure pipeline can manage the increased capacity. Chris Wicks advised the base plan was to use the existing pipeline from Tipton.</p> <p>Trudi Bartlett asked what sort of work may be able to be undertaken by local contractors. Darryl Phillips advised that the contractor strategy would be looked at a later date. Detailed design and engineering is planned to be undertaken in 2017 with a financial investment decision taken in 2018. Works to commence in 2018 with the expanded plant online in 2020.</p> <p>Scott Braund asked if the majority of the expansion to the east will be in the area where the Hutton Sandstone overlies the Walloon Coal Measures.</p> <p>Simon Gossmann advised that both the Hutton and the Precipice Sandstones generally underlie the Walloon Coal Measures in the majority of the Surat Basin. Simon Gossmann also stated that connectivity between the Walloons and overlying or underlying aquifers is modelled by OGIA and that any impacts from the TipEx project on the Huttons and Precipice, and further greenfield development by Arrow, are already modelled by OGIA.</p> <p>Chris Wicks advised that the first phase would be mainly in the existing Tipton field development area, then expanding mainly East but remaining west of the Condamine River.</p> <p>Stuart Armitage (AIFL Committee) stated that if Arrow was drilling into the Huttons, this aquifer would be impacted. He also noted that in the next 20 years west of the Condamine River there may be intensive livestock farming with large water needs.</p> <p>Simon Gossmann advised there was no proposal to drill into the Huttons.</p>	

<p>ITEM 4</p>	<p>Operations Update – Darryl Phillips Completed and current activities</p> <ul style="list-style-type: none"> • Tipton CGPF annual maintenance shutdown undertaken 20-21 September involving field ramp down and venting • Kogan North 9 wells – surface facilities completed and commissioned • Tipton 4 wells – continuing with installation of surface facilities then commissioning • Tipton K5 Compressor commence vibration rectification works • Braemar 2 Power Station – 4 day full station outage to upgrade software and hardware of the control systems and 3 days of maintenance outages for 2 units. • Daandine Water Treatment Plant – Installation of solar powered de-stratification units on feed water dam and completion of backwash diversion pipeline project which manages quality of water in the plant <p>Upcoming works</p> <ul style="list-style-type: none"> • Daandine CGPF – modifications to increase gas export capacity • Daandine Water Treatment Plant – installation of a pilot closed circuit desalination unit to further improve recovery rates • Tipton wells – commissioning of wells to be undertaken • Preparation for 2017 works program and Operational Readiness for PtL project • Finalise Tipton K5 vibration works, carry out performance testing and then implement solution on other units in 2017. <p>Lee McNicholl asked which formation will the new wells go into. Carey Bradford advised that the twinned wells will go into the Taroom coal measures.</p> <p>Darryl Phillips advised there was recently flaring at the Daandine CGPF due to an Ergon electrical issue causing an outage at Daandine Power Station.</p> <p>Lee McNicholl noted that he lives 45km from Miles and that the Condabri Facility had large flaring recently. He commented that flares have big impacts on people's lives.</p> <p>Nev Wirth stated he had concerns as flaring is a waste of gas.</p> <p>Lee McNicholl asked if Arrow were paying royalties on flared gas. Darryl Phillips advised that all gas that is flared at Daandine CGPF is metered, and hence royalties are paid. He also stated it was Arrow's preference to always put the gas to market rather than any additional flaring (outside testing needs).</p>	<p>Information to be provided to LM on royalties on flared gas.</p>
<p>ITEM 5</p>	<p>Gas Migration – Carey Bradford Gas Storage</p> <ul style="list-style-type: none"> • Gas is chemically held deep within the coal's structure and almost always needs water extraction to release the gas (Saturation Dependent). <p>Relative Permeability</p> <ul style="list-style-type: none"> • Initially the seam is very permeable to water but once the reservoir pressure reaches the critical desorption point, the seam becomes very permeable to gas and less permeable to water. <p>Gas Movement</p> <ul style="list-style-type: none"> • Gas moves from areas of high pressure to low pressure i.e. to the production well. • This is offset by the buoyancy of gas. • In the vast majority of cases the mobilised gas will be reabsorbed into the under-saturated coals. • In general gas is difficult to mobilise laterally in the reservoir. <p>Seam Dip</p> <ul style="list-style-type: none"> • The seam dip of the Walloon Coal Measures is generally very flat i.e. in the order of 2 degrees. <p>Stuart Armitage (AIFL Committee) noted that once you remove the water and gas from a coal seam it takes a long time to recharge the coal seam.</p> <p>Carey Bradford stated that the Horrane Fault is a complicated structure. As the seam dip increases, the structural complexity increases (50-70m in some places). He did not believe that faults are good conduits to the surface.</p> <p>Gas Migration Pathways Bores (e.g. CSG production wells) -</p>	

	<ul style="list-style-type: none"> • Provide highest likelihood of migration to surface • Low pressure and open pathways • Used as a route to surface in preference to natural pathways. <p><u>Faults</u> –</p> <ul style="list-style-type: none"> • Generally not good pathways to the surface. Preference is to travel through a more open bore • Gas can travel up faults when the overburden is stiff and brittle, or when the fault is isolated from other pathways i.e. production wells or water bores. <p><u>Migration to subcrop</u> –</p> <ul style="list-style-type: none"> • Difficult to achieve without high gas saturations, high seam dip and high permeability (e.g. gas seeps). <p>Lee McNicholl asked if the increased gas migration occurring in the Hopeland area, is because there are no gas pumping wells to remove the gas and therefore it will then escape?</p> <p>Carey Bradford advised there are a number of gassy bores and have been for many years due to high saturation of gas occurring naturally in the area.</p>	
<p>ITEM 6</p>	<p>Water Act Changes – Simon Gossmann Explained government’s motivation was to address concerns raised by landholders during the committee stage of consideration of the <i>Water Legislation Amendment Bill 2015</i>.</p> <p>The Bill</p> <ul style="list-style-type: none"> • Extended make good to cover landholder bores affected by free gas • Shifting the onus for make good to where impacts are likely to have been caused by a resource activity • Requiring tenure holders to cover the cost of any alternative dispute resolution process • Allowing a cooling-off period for make good agreements • Requiring tenure holders to pay a landholder’s costs for engaging a hydro geologist for the purposes of negotiating a make good agreement, and • Requiring additional information on Environmental Values to be included in a UWIR; part of duplication of information submitted in a UWIR as part of Environmental Authority application <p>Implementation Water Act now requires evaluation of presence (and cause of free gas)</p> <ul style="list-style-type: none"> • UWIR does not currently predict movement of free gas • DEHP guideline has not been developed for assessment of free gas <p>Current Make Good Obligations</p> <ul style="list-style-type: none"> • 6 Bores identified in IAA in 2016 UWIR <ul style="list-style-type: none"> ○ 1 bore assessment completed ○ 5 commenced, scheduled for completion mid 2017 due to extended monitoring of bore behaviour • 15 Bores identified in IAA in 2012 UWIR: <ul style="list-style-type: none"> ○ 3 on others’ tenures ○ 5 bores not actually into Walloon Coal Measures, 1 never drilled (removed) ○ 2 bore owners refused access for bore assessments ○ 3 make good agreements signed ○ 1 other still in discussion ○ 5 additional bores added via direction; also in discussion <p>Lee McNicholl asked if the bore assessment guideline had been changed to reflect the changes in legislation. Simon Gossmann advised the government has not yet updated its guidelines but industry was working with government to identify an appropriate process. Lee McNicholl noted that the quicker the guidelines are developed the better for planning.</p> <p>Scott Braund asked what the nature of the bores was for which Arrow is required to undertake bore assessments. Simon Gossmann advised that it had been assumed that all the bores were in the Walloons based on government registration data. However, bore assessments identified that a number of the bores were only drilled into the Springbok Sandstone and hence no longer predicted to be impacted.</p> <p>Stuart Armitage wants an update on the other changes to the Water Act, including associated and non-associated water licences.</p>	<p>Simon Gossmann to provide update on the other changes to the Water Act, including associated and non-associated water licences at future meeting.</p>

<p>ITEM 7</p>	<p>Water and Salt Management - Dave Wigginton An overview of the operation of the Daandine Water Treatment Facility was provided and the GoldSim modelling was explained.</p> <p>Water Treatment <i>Daandine -</i></p> <ul style="list-style-type: none"> • 12ML/d (total capacity) MF/RO • Operates at 75-83% recovery dependent on water quality (hardness) • Currently operating at 6ML/d at 83% recovery • Operation fluctuates based on water profile • Tipton WTP similar size and recovery – however water production is significantly lower at Tipton. <p>Brine Management</p> <ul style="list-style-type: none"> • Brine is managed in a fit-for-purpose facility (double HDPE lined, leak detection and collection) • Current initiative to extend storage life through further brine concentration (reduce volume by another 50%) • Overall recovery following brine concentration 92% • Reference case salt solution is to crystallise end-of-life brine volume and landfill in a fit-for-purpose facility • Salt management at end-of-field life allows opportunities for further technological advances and/or collaborative/beneficial opportunities to emerge <p>Nev Wirth asked if Arrow's earlier forecasts were higher than actual production. Dave Wigginton advised that was correct.</p> <p>Scott Braund asked if there was a model of salt production at end of life. Dave Wigginton advised that in Arrow's SREIS the prediction is 2.2Million tonnes of salt for the full Arrow Surat development.</p> <p>Nancy Sommerfield asked if a site had been identified for the salt. Dave Wigginton advised that a site had not yet been determined and that the eventual site would not be on or near intensively farmed land.</p>	
<p>ITEM 8</p>	<p>Regional Planning – Suzanne Ferguson 3PL-</p> <ul style="list-style-type: none"> • In 2017, Arrow will expand its Tipton field on PL260 by <ul style="list-style-type: none"> ○ drilling an additional two wells ○ extending the existing gathering system ○ work covered by voluntary CCA • Up to 10 metres of the water and gas gathering lines will tie-in to an existing pipeline (built in 2009) on PL198 • The existing pipeline is on Glenelg owned by Arrow (Tipton) Pty Ltd • Exemptions under the Act do not apply <p>Glenelg-</p> <ul style="list-style-type: none"> • Purchased by Arrow (Tipton) Pty Ltd in June 2007 • Farmed and grazed commercially by Arrow in this period • Existing CSG infrastructure constructed and operated on it by Arrow since 2007 including: <ul style="list-style-type: none"> ○ 17 water monitoring bores ○ 18 production wells ○ Water and gas gathering pipelines ○ Small scale RO plant and Beneficial Use trial • Activity has no impact on Glenelg agricultural productivity. The Area is a pipeline on the edge of the cultivation under an existing access track. <p>Arrow is about to submit its first Regional Planning application for effectively 10m of gathering on an Arrow owned property.</p> <p>Regional Interests Development Application Application will include –</p> <ul style="list-style-type: none"> • Right of Way of 15m from the access track • Expected area of Impact – <ul style="list-style-type: none"> ○ 0.068 ha PAA ○ 0.068 ha SCA • Constructed is expected to take 6 weeks • Reinstatement and rehabilitation will follow <p>Expected timeframes –</p> <ul style="list-style-type: none"> • Relevant CCAs signed in November • Pre-lodgement meeting with DILGP/DNRM and DAFF held on 28 November 	

- RIDA expected to be lodged by 9 December 2016
- Decision expected by end February 2017
- 3PL activity planned for H1 2017

**Social Investment Update – Peta Tucker
Brighter Futures - Overview of Round 2**

- 16 organisations were successful in the latest round of our Brighter Futures program across the Bowen, Brisbane and Surat regions
- 7 projects directly benefiting the Surat Region
- Projects ranged from safety, health, resilience and employment opportunities

Broncos visiting the Surat Region in 2016 & 2017

Broncos Fan Day -

- To be held in Dalby 3 December
- Event will run from 9am-11am
- 17 current team members and some previous stars attending.

Broncos Blitz

- Team will be visiting schools within the Surat Region on 1 & 2 February 2017
- Players will be attending primary and secondary schools delivering positive education and health messages.

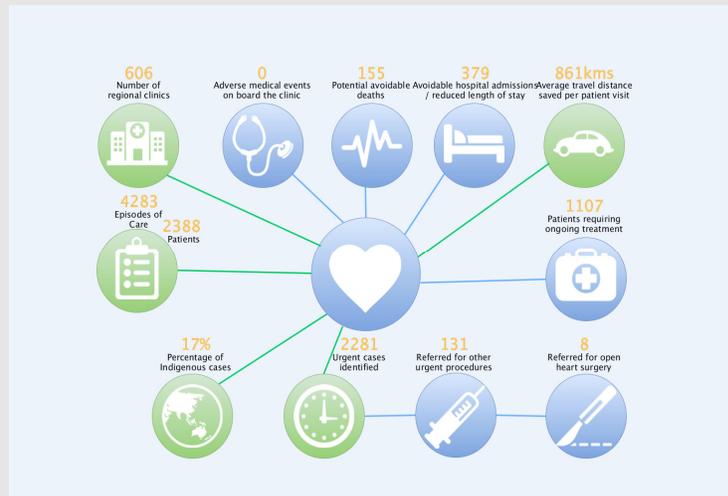
Partnerships - PCYC Braking the Cycle (BTC) and Ignition –

- BTC continues to provide assistance to learners in receiving the hours and support needed to get their licence
In 2016
 - 22 Mentors were involved in training
 - 29 learner drivers were involved
 - 82 Provisional licenses were received
- Ignition Program was developed to directly benefit youth at risk through fun and health focused activities.
In 2016:
 - 36 Skirmish sessions were held, where 1,589 attendances were recorded
 - 1,607 attendees at boxing classes which directly benefited young disengaged males and encouraged participants to compete in tournaments within SEQ
 - Gym/sports membership awarded to seven young people, whose families encountered financial hardships

ITEM 9

Partnerships – Heart of Australia -

- Heart of Australia is the first mobile heart service to regional Australia
- The program meets critical Industry need – Surat Gas Industry Aeromedical Service cardiac related retrievals are the highest number of admissions per month
- In partnership with Arrow, Goondir Health Service and Heart of Australia, an Indigenous Health video was produced to reach out to the wider indigenous population within the Surat Regions
- Program continuing in 2017.



	<p>Partnerships – Endeavour Foundation –</p> <ul style="list-style-type: none"> • The Endeavour’s School Holiday Program continued to provide significant support to local families with children with intellectual disabilities • School Holiday programs are delivered four times a year and catered for up to 20 children between the ages of 4 – 11 • The Program provides respite care to families within the Western Downs Region. <p>Partnerships – Dalby State High School Agricultural Scholarships -</p> <ul style="list-style-type: none"> • In 2016, 10 scholarships awarded to students across grades 8 – 12 • Students who were involved in 2015 have since gone onto traineeships with agricultural industry • 	
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	IFL Committee Business	
ITEM 10	Welcome and Memberships	Darryl Phillips
ITEM 11	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 12	Workshop on landholder maintenance of Arrow infrastructure – Working Together	
	<p><u>Introduction by Arrow</u></p> <p>Opportunity for landholders with Arrow infrastructure to provide services and materials to Arrow. This could benefit both Arrow and landholders in the following ways:</p> <ul style="list-style-type: none"> • Better maintenance of infrastructure on landholder’s properties • Ability to contract and pay landholders for services and materials that Arrow requires • More efficient provision of services to Arrow • Less third parties undertaking work on landholders properties • Better coexistence between Arrow and landholders <p>The supply of services and materials could include:</p> <ul style="list-style-type: none"> • Pad maintenance (slashing, weed control) • Track maintenance (grading) • Right of Way (ROW) maintenance • Water (supply only) • Gravel (supply only) <p>Some challenges to be overcome including:</p> <ul style="list-style-type: none"> • HSE requirements of oil and gas companies (Arrow) <ul style="list-style-type: none"> • Inductions • Assurance of qualifications and equipment • Liability • Landholders working as “contractors” for Arrow • Agreeing rates, frequency and scheduling of works • Assurance of work undertaken <p>Working Together would not be applicable or of interest to all landholders</p> <p><u>Committee Discussion</u></p> <ul style="list-style-type: none"> • Nev Wirth described his experience of undertaking work on the ROW on his property – achieving a good result from his perspective • Discussion about inductions – Stuart A said the cotton industry have their Best Management Practice (BMP) programs on blacksoil – Cotton Australia owns it and the other industries are currently developing theirs as well. These could be a foundation for landholder inductions. • Discussed requirement for a landholder induction to Arrow if landholders were to be engaged by Arrow. The committee thought a 30min induction by Arrow staff at an office could be suitable. 	

	<ul style="list-style-type: none">• Talked about need for a HSE induction - potential to have a generic HSE induction developed through Farmsafe which might also benefit the LHs. This would include ensuring equipment was appropriate for use and puts the onus back on the LH if they change up their equipment to make sure it's still acceptable.• Discussion about risk assessments – explained the issues (i.e. liability) to the LHs. They initially suggested they could just accept the liability themselves – Arrow explained this wasn't technically possible – hence inductions, risk assessments, Standard Operating Procedures (SOPs). Landholders were happy with the concept of a SOPs.• Discussion about chemicals for weed control. LHs were much more comfortable with the concept of undertaking spraying themselves – they had concerns about AE staff undertaking spraying on their properties.• Discussed types of maintenance – weed control, ploughing, basic activities. LHs indicated an annual agreement would be best for these activities. All agreed that basic track maintenance would be best as a one-off or as required activity. All agreed cartage materials would be out of scope.• The LHs said they'd much rather undertake basic maintenance themselves rather than having third parties on their properties. Highlighted that some LHs might not want to do this. Arrow agreed it would be opt in arrangement. <p>Going forward:</p> <ul style="list-style-type: none">○ Committee discussed developing a pilot program to be run through Nev Wirth in 2017. Nev is supportive of this.○ Gary Lees to follow up with other Origin this week about their program and to investigate the opportunity for a Farmsafe induction	
ITEM 14	Next meeting 2017 – Dalby – Details to be advised	
	There being no further business, the meeting was closed at 12.00pm.	

CONFIRMED AS A TRUE AND CORRECT RECORD.

Chairman
