



Arrow Energy

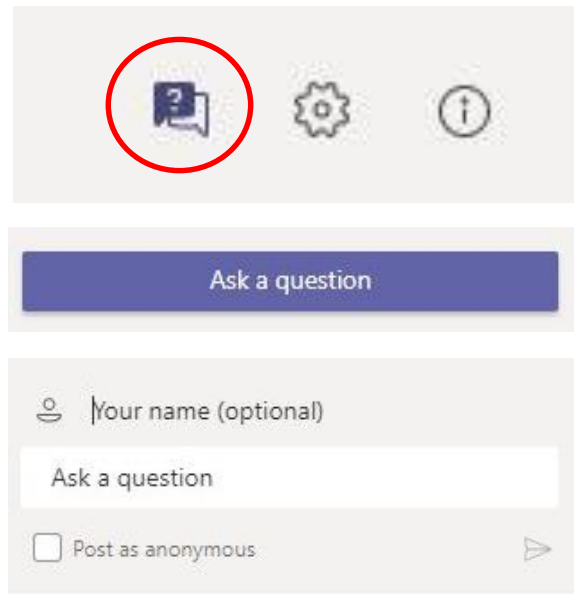
Surat Gas Project Community Online Update

June 2020

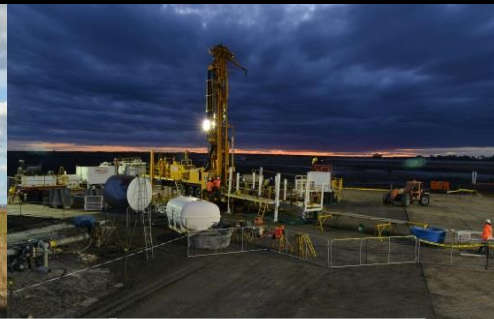
To ask a question:

- Select **Q&A button** on the top-right side of your screen to open
- Click on the '**Ask a question**' button
- Type your question in the compose box, and then select **Send**. If you want to ask your question anonymously, select '**Post as anonymous**'
- Attendees will be able to submit questions throughout the presentation using the Q&A feature
- You can also text your questions to: **0428 744 520**

Questions will be communicated to the presenters to answer at the end of the presentation.



The screenshot displays the Q&A interface. At the top, there are three icons: a Q&A icon (circled in red), a settings gear, and an information icon. Below these is a blue button labeled "Ask a question". The main form area includes a name field with a placeholder "Your name (optional)", a text input field with a placeholder "Ask a question", and a checkbox labeled "Post as anonymous". A send button is located on the right side of the form.



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Current locations

2020 expansion

2021 expansion

- Arrow Energy is Foundation Partner of the life-saving Heart of Australia (HoA)
- Heart disease is Queensland's leading cause of death
 - rural and regional areas have significantly higher incidence
- HoA brings capital city levels of care to the country
 - Launched 2014, with Arrow
 - Has helped 8000+ patients, saving 350+ lives (end-2019)
 - Arrow, HOA, and other partners built the first three trucks, bringing 18 specialist services to 16 regional towns.
 - Fortnightly visits to Surat Basin communities

Upcoming Milestones

- 2020: Celebrating 1500th Dalby patient
- 2020: Heart 4 launch (Federal Government funding)
 - nine more regional towns, including discrete Indigenous communities.
- 2021: Heart 5 launch (Queensland Government funding)
 - extra specialist services and four more regional towns.



8000+
patients helped



18
Specialist Services
and Tests offered



15%
Indigenous clients



20
regional communities
served by HOA



14
GP Capacity Building
sessions in Dalby and
Moranbah



3
state of the art mobile
medical clinics



28
Collective impact partners



350+
lives saved



20
referrals to open
heart surgery



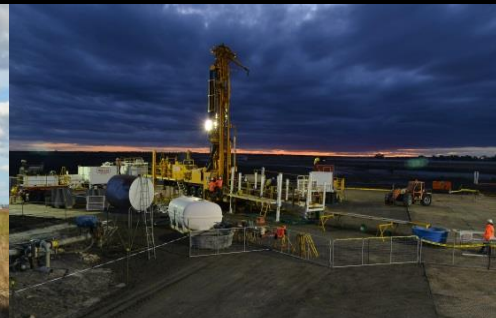
400
avoidable hospital
admissions
/ reduced length of stay



200,000
kilometres travelled by
Heart 1, Heart 2 and Heart 3



813
kilometres
average travel distance
saved per patient visit



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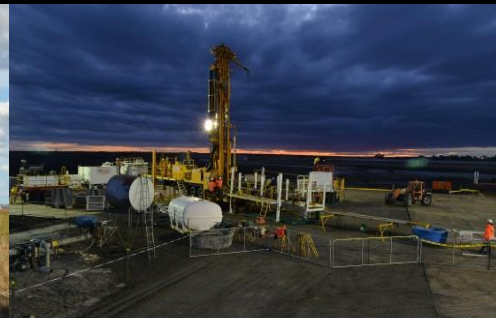


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- Like the rest of the CSG industry, earlier this year we quickly introduced restrictions on worker movements in and out of the region in response to COVID-19
- Under our measures, which are in addition to Federal and State Government regulations:
 - Staff are working from their homes where possible
 - Arrow's Dalby Community Information Centre closed to the public and was turned over to locally-living staff who were unable to work from home. Non-resident workers are not permitted in the CIC
 - All non-critical worker movements into and out of Western Downs have been halted. Only identified critical staff are permitted in and out
 - Such critical, non-residential workers must satisfy all government-mandated procedures. Additionally:
 - They must complete self-assessment health checks, and have their temperature checked before travelling
 - All non-resident workers must stay in camps and are restricted from going into town



- Arrow is an integrated energy company owned 50/50 by Shell and PetroChina
 - 17,000km² of tenements over the Surat and Bowen Basins in Queensland
 - ~1450 gas wells currently
 - ~6,500 petajoules of 2P gas reserves to date
- Existing domestic gas operations:
 - five gas producing projects in the Surat and Bowen basins - Tipton, Daandine, Kogan, Stratheden (Surat Basin) and Moranbah Gas Project (50/50 AGL - Bowen Basin)
 - supply gas to 4 power stations - Braemar 1, Braemar 2 (100% owned), Yabulu, Daandine, Moranbah, Swanbank
- Generation capacity = supply for ~800,000 Queensland homes
- The Surat Gas Project (SGP) is underpinned by the largest gas sales agreement on the east coast of Australia, with the Shell-QGC joint venture:
 - in April, Shareholders made a Final Investment Decision (FID) for phase one of the 27 year project
 - Arrow sanctioned construction to start in 2020
- Peak construction - 2021-2025; first gas - 2021



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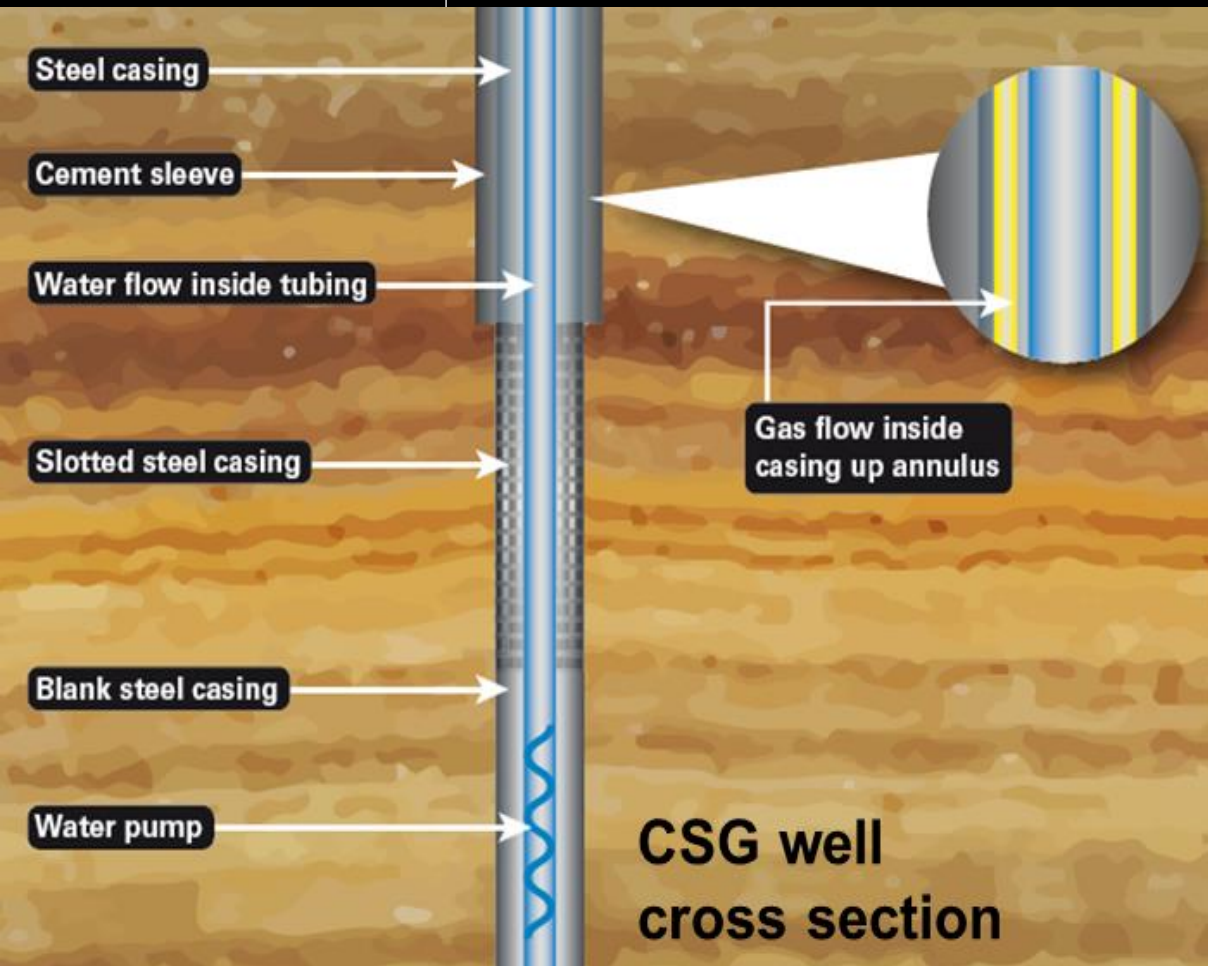
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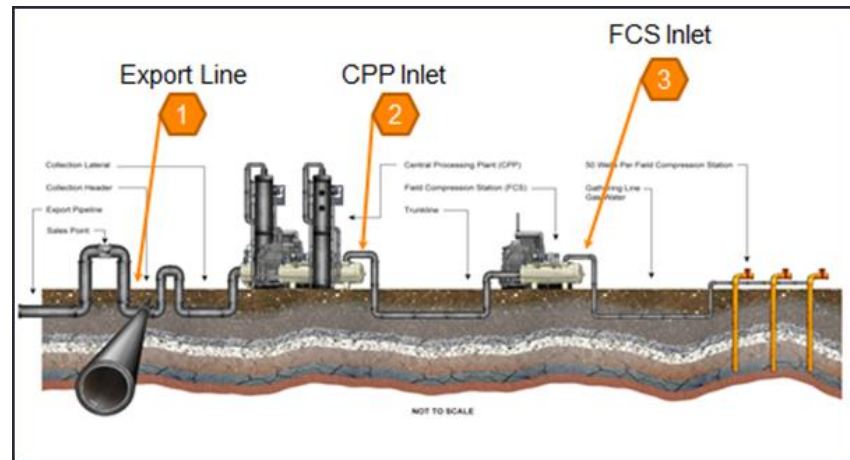


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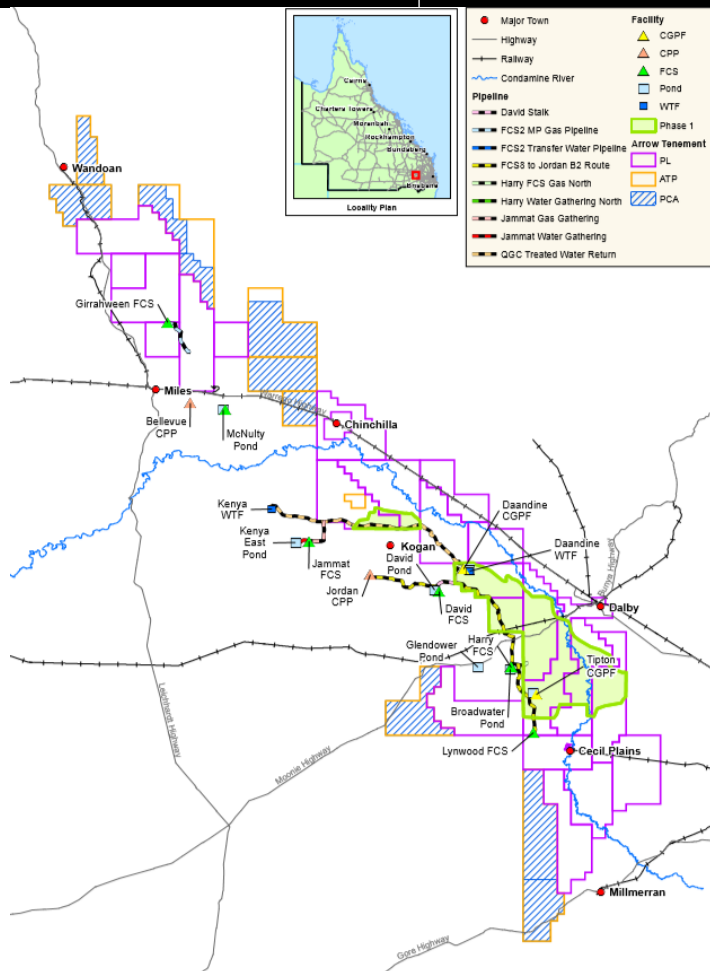
- CSG is natural gas:
 - trapped in underground coal beds
 - by water and pressure.
- To extract CSG:
 - 300-750m well to the target seam/s
 - in-seam water pumped out to release gas
 - gas and water flow separately to the surface.
- Well design isolates coal seams from groundwater aquifers.

- Collaboration will enable Arrow to use existing Shell-QGC operated infrastructure to reduce impacts to landholders and communities
- Arrow will drill wells and install gas and water gathering pipelines
- Gas and water will be sent to existing Arrow facilities, as well as Shell-QGC operated facilities Field Compression Stations (FCS) and Central Processing Plants (CPP)
- Arrow will construct new 'inlet processing facilities' (IPFs) at Shell-QGC operated Central Processing Plants to let Arrow gas into the facilities
- Arrow will also use the Shell-QGC operated Kenya Water Treatment Facility (south-west of Chinchilla)

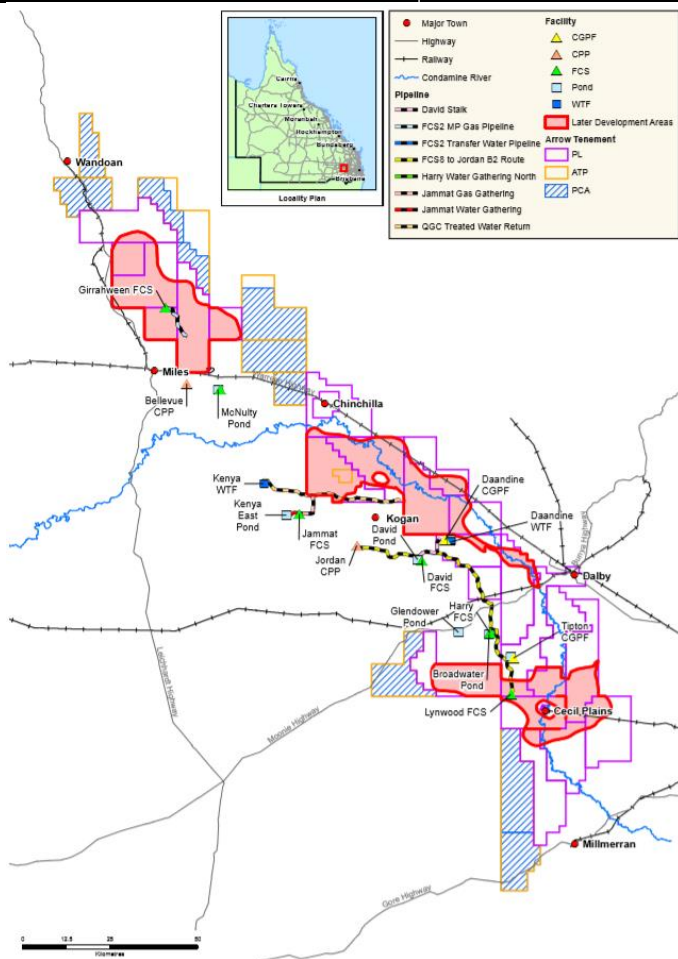




- Arrow has 12 intensively farmed land commitments to:
 - minimise impact
 - ensure no permanent damage to land productivity or Great Artesian Basin
 - fairly compensate landholders
- Construction impacts <2%:
 - multi-well pads (four - eight *deviated* wells per pad)
 - more than 60% of all phase one SGP wells
 - predominately on field boundaries
 - where geology allows (coal 400m-plus)
 - up to 1.5km apart
- Area wide planning:
 - with neighbouring landholders
 - co-develop the field layout (simultaneous operations or 'SIMOPS')
 - infrastructure positions reduce impacts on farming land and operations

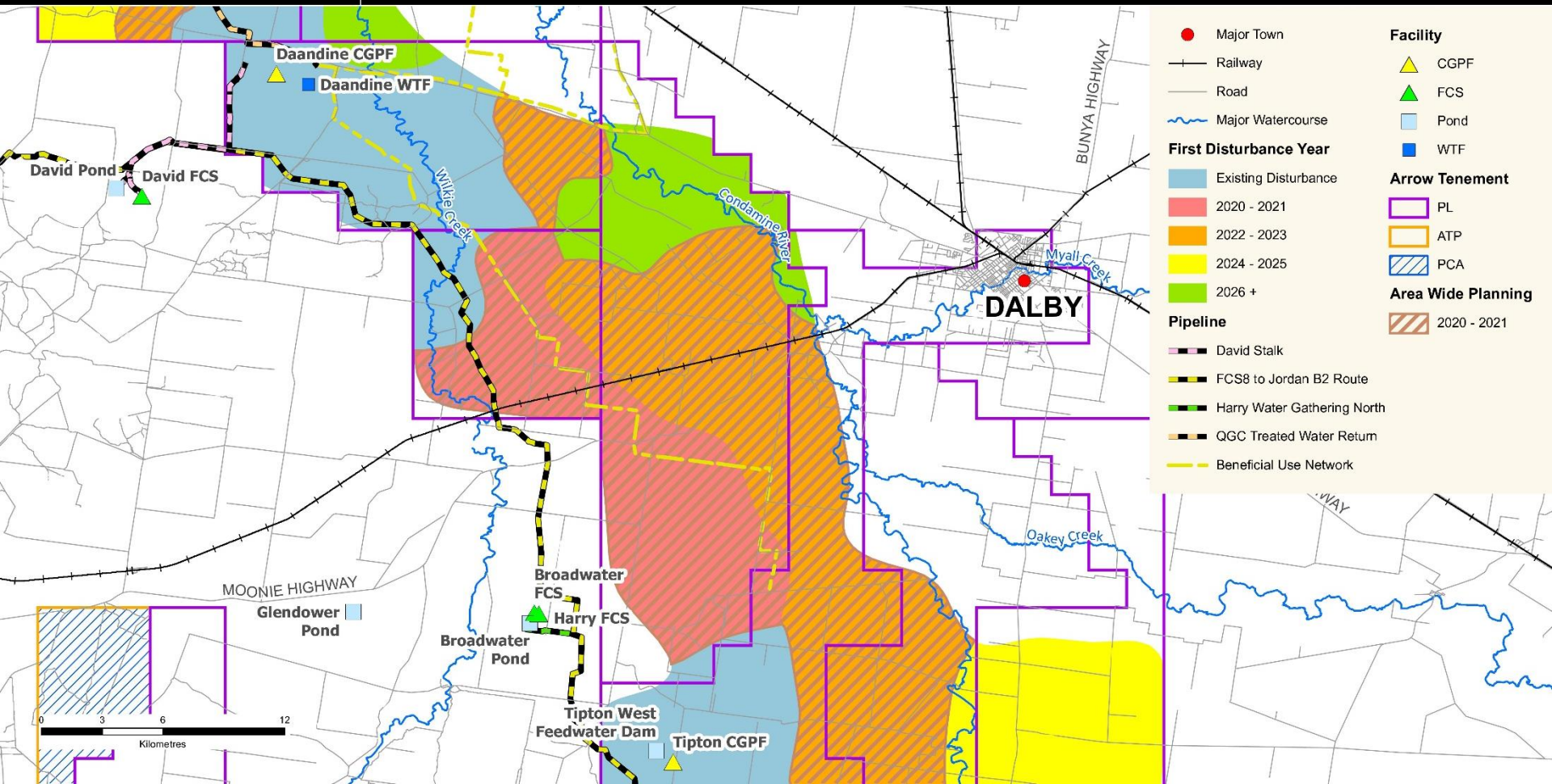


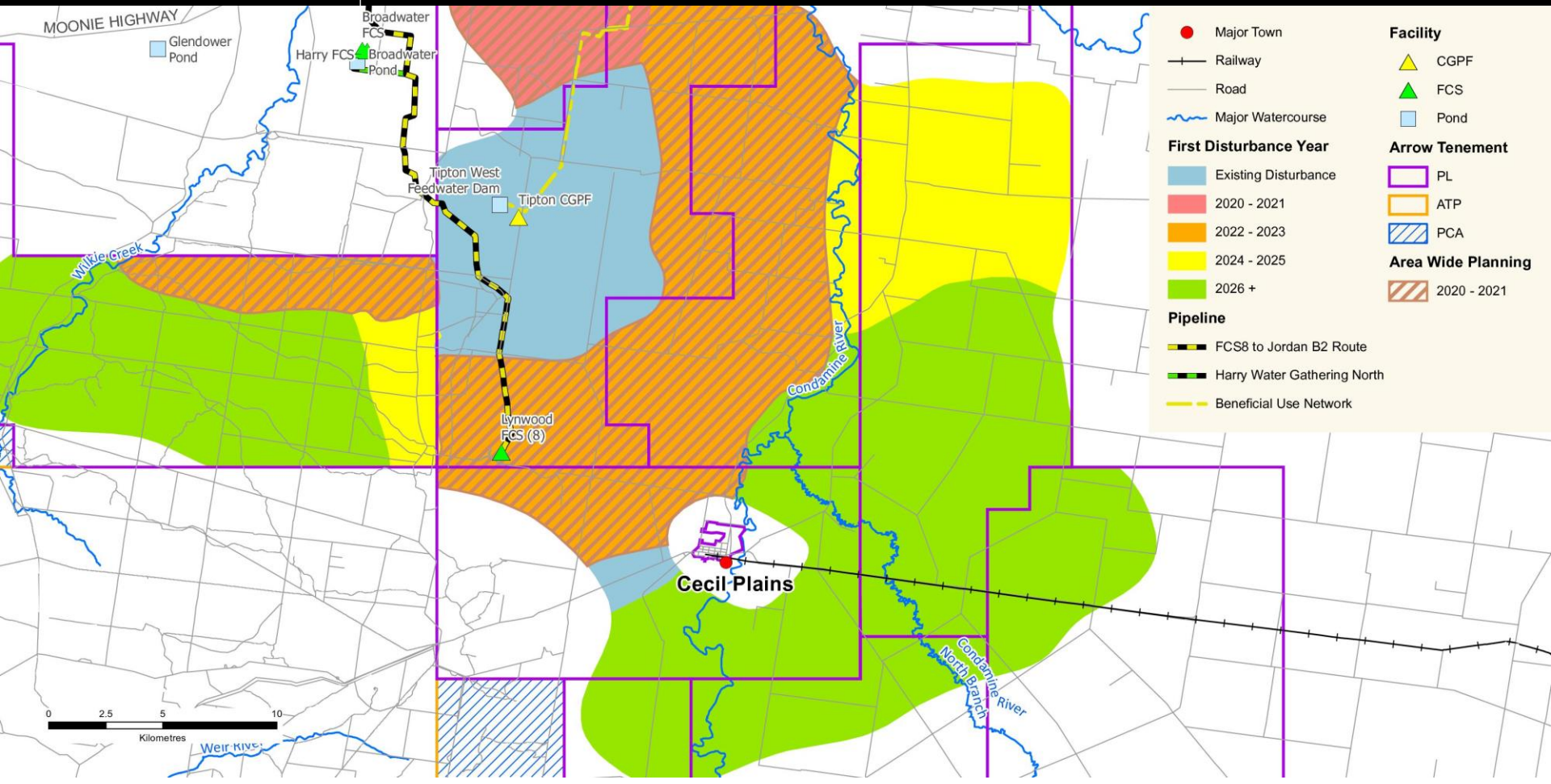
- Expansion north of current operations at Daandine, to Tipton:
 - 600+ wells and associated gathering; drilling starts 2020
 - new 'inlet processing facilities' (IPFs) at two Shell-QGC field compression stations (David, Harry)
 - David IPF the first delivery point; online late 2021
 - Arrow will continue using Daandine and Tipton compression facilities; upgrade at Tipton to extend its operating life
- New on and off-tenure gas/water pipelines to Shell-QGC facilities
- Upgrades to Arrow's water treatment facilities

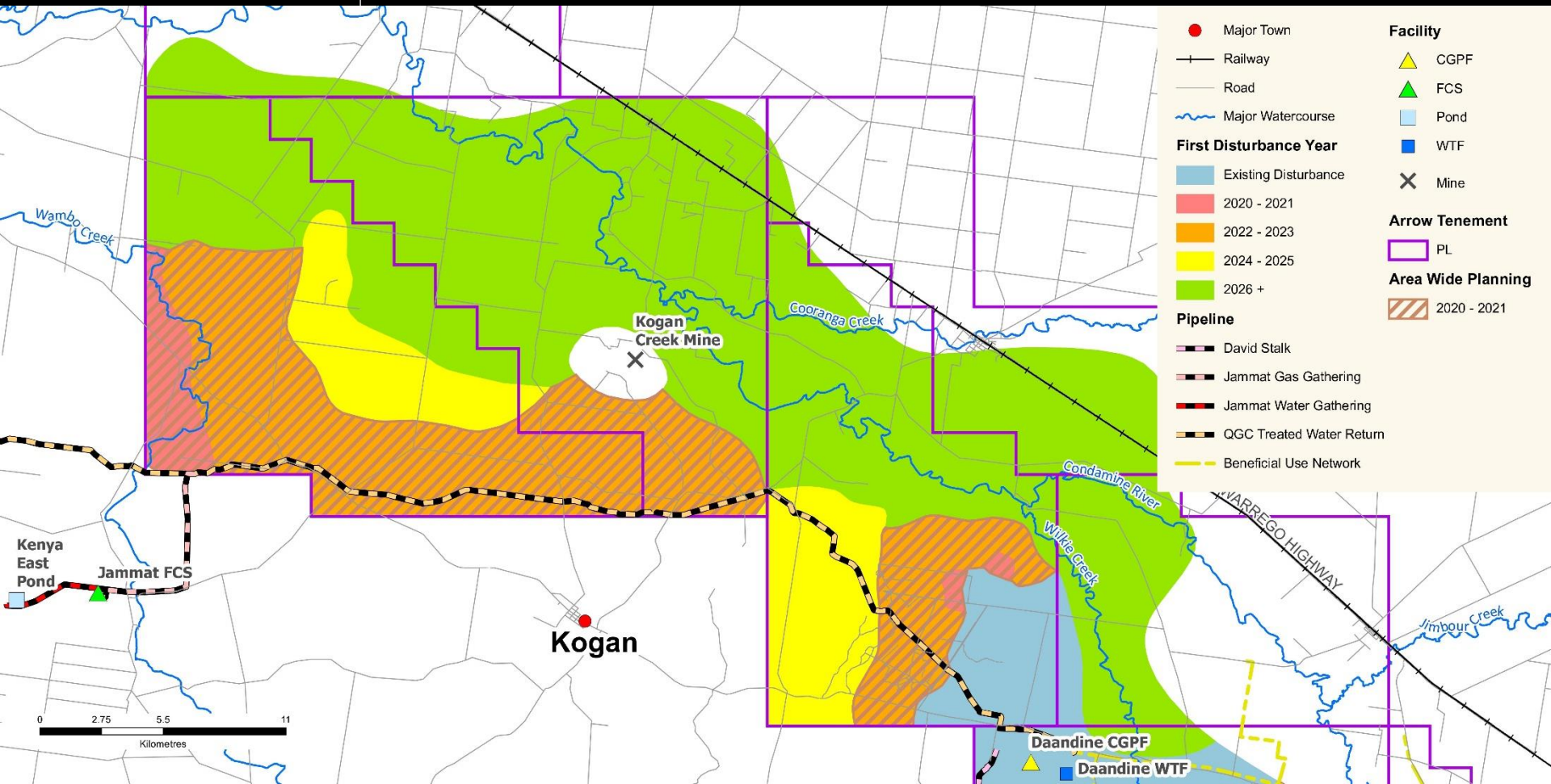


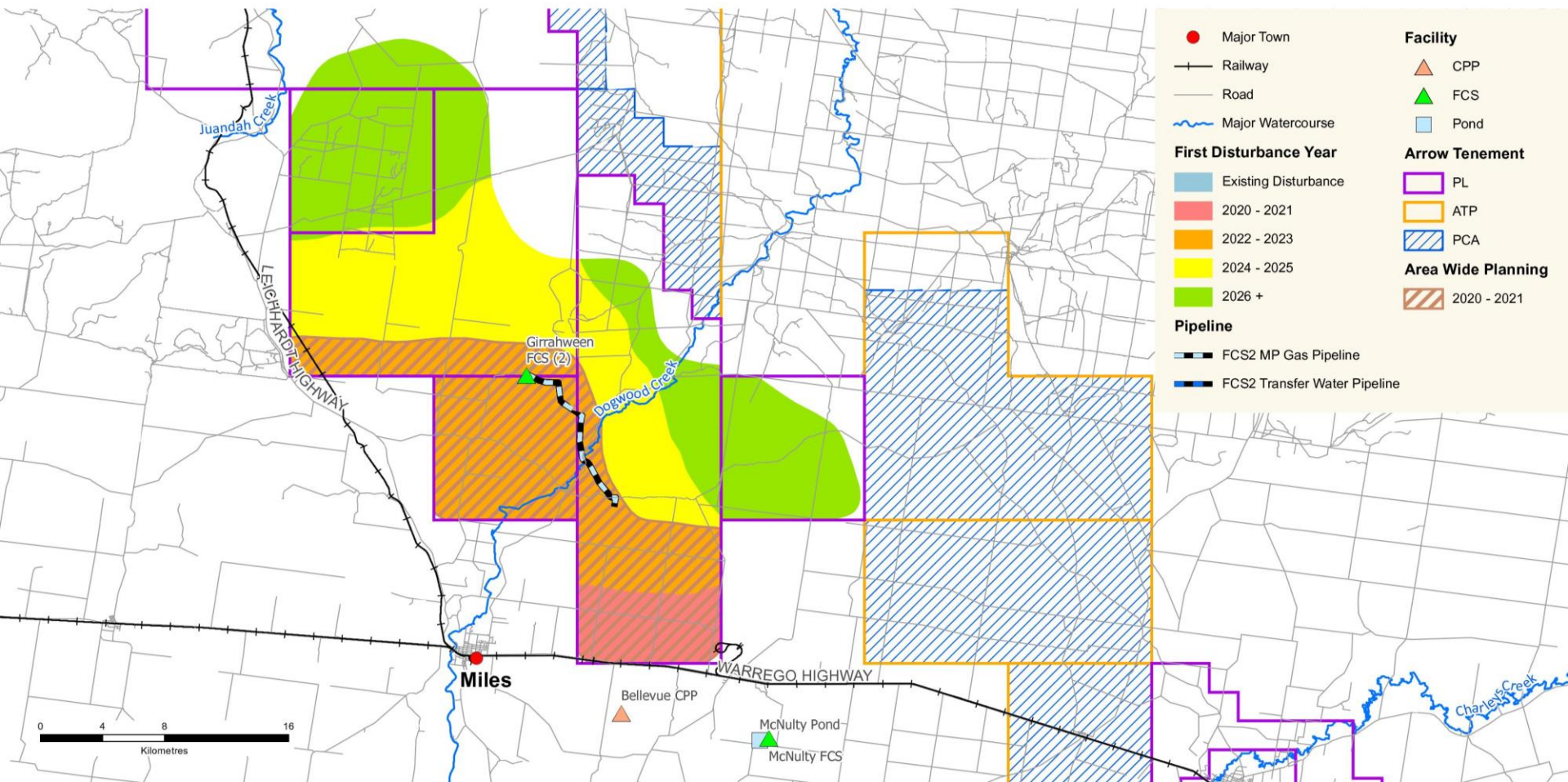
Subsequent phases will include:

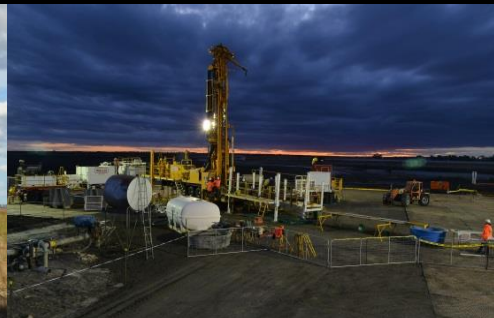
- Two new field compression stations:
 - Lynwood, south of Arrow's Tipton development and Girrahween, near Miles
- Two extra inlet processing facilities:
 - Shell-QGC operated Jammat and McNulty field compression stations
- ~1900 additional wells and gathering:
 - feeding Lynwood and Girrahween FCSs
 - new development (wells and gathering) south of Wandoan; south and east of Cecil Plains
- Arrow's fields will continue to expand with development beyond these phases. Ultimately, gas will be commercialised across Arrow's Surat tenure
- Planning for subsequent phases continues. Arrow will seek shareholder investment for phases as engineering definition is complete











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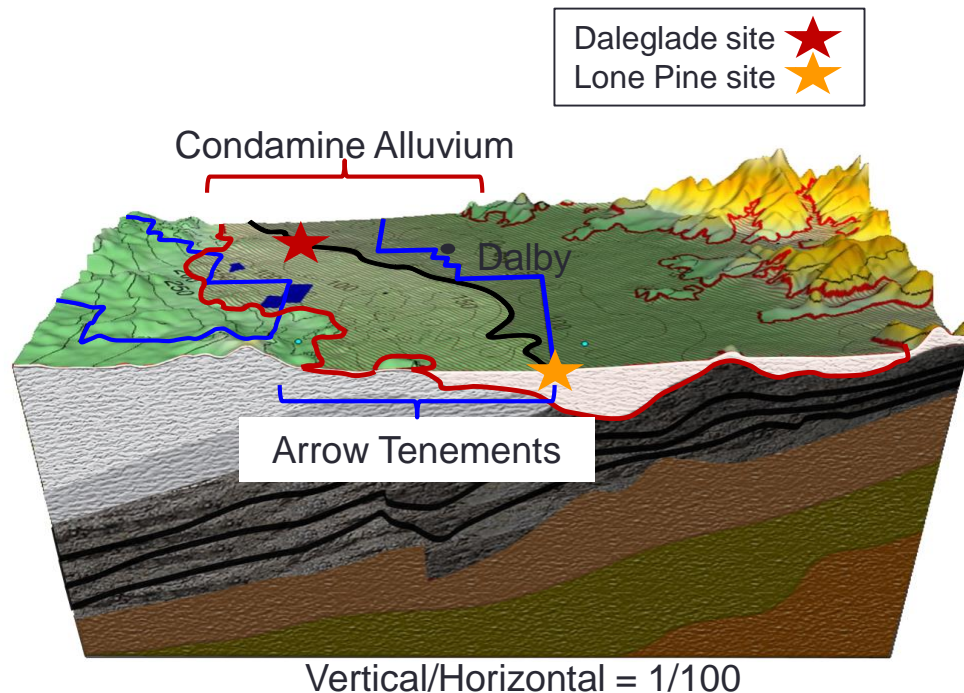
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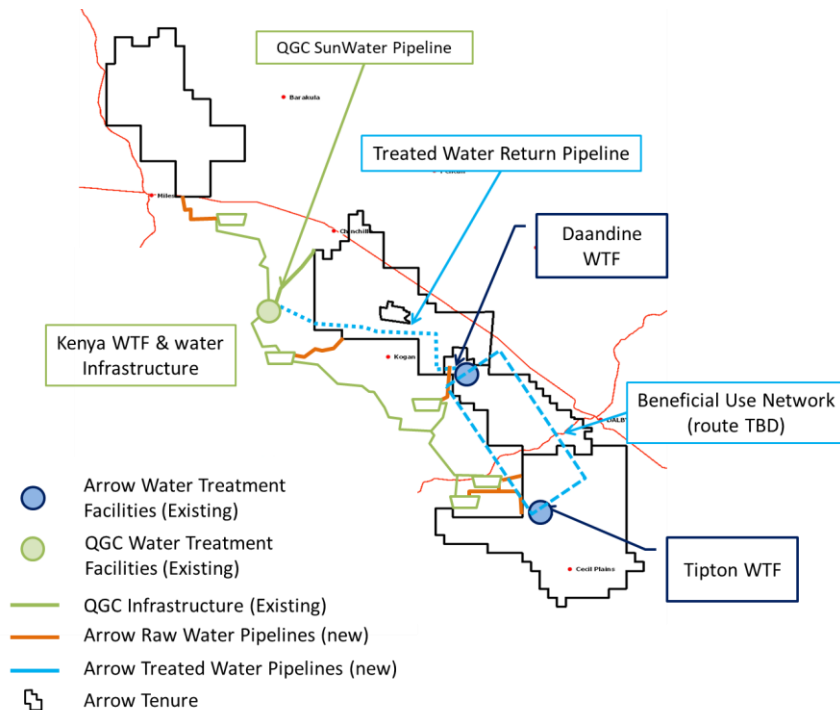
- Condamine Alluvium aquifer critical to supporting local irrigation
- Concerns that CSG activity will reduce groundwater availability from the Condamine Alluvium
- Any impact will be dependent on whether groundwater moves between the Condamine Alluvium and Walloon Coal Measures (hydraulic connectivity)
- Research designed to provide scientific evidence:
 - does CSG development of coal seams underlying and to the west of the Condamine Alluvium aquifer impact on critical groundwater supplies for irrigation?
 - undertaken in partnership with the Office of Groundwater Impact Assessment (OGIA) as part of a broader program to provide more scientific evidence on industry impacts on groundwater
- Two research sites:
 - Daleglade – ~20 km west of Dalby where the CA directly overlies the WCM
 - Lone Pine – ~40 km south of Dalby where CA directly overlies the WCM

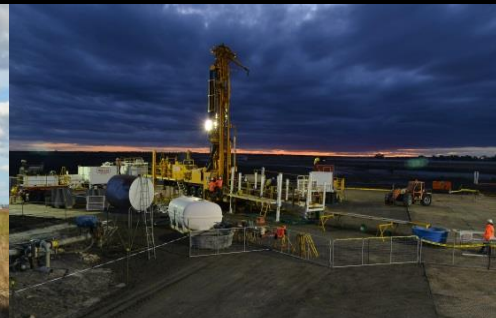




- Data collected from the tests:
 - Verified only a low level of hydraulic connection between the Condamine Alluvium and the underlying Walloon Coal Measures
 - Supported earlier OGIA modelling that predicted CSG operations would have a minimal effect on the Condamine Alluvium (OGIA, 2012)
- Groundwater modelling conducted by Arrow in 2012 predicted 63 GL will move out of the Condamine Alluvium over 100 years, as a result of this low level of interconnectivity (due to Arrow's project)
- To mitigate this, Arrow has committed to:
 1. Maximise beneficial use of produced water
 2. Where practical, return water to the region from which it is produced
 3. Offset our impact on the Condamine Alluvium in the area of greatest predicted Arrow drawdown
- Following previous community feedback, Arrow committed to achieving this through substitution of allocation

- Beneficial use network design
 - committee of Arrow staff and Condamine Alluvium allocation holders designing BUN
 - pipelines to return treated coal seam water for:
 - substitution of Condamine Alluvium groundwater allocations (in Arrow's area of greatest predicted drawdown)
 - the existing SunWater pipeline (near Chinchilla)
- Broader engagement later 2020
 - opportunity for allocation holders in the area of predicted greatest drawdown to apply for access to the scheme
- Target for operational network 2023





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Arrow operating in the Dalby region:

- 15+ years, providing and sustaining local jobs
- Contributed \$4.5M to the Western Downs local economy in 2019 through contracting packages alone
- 80% of our Surat Basin workforce resides locally
- Whanu Binal Indigenous Entrepreneur Program will help to increase the capacity of 100+ Indigenous businesses and entrepreneurs

Top 10 SGP phase one activities:

1. **Drilling**
2. **Well services**
3. **Construction**
4. Engineering
5. Environment & water management
6. **Camps & accommodation**
7. **Transport** and warehousing
8. **Logistics**
9. Rotating equipment
10. Other maintenance and support

Highlighted activities require ramp up

- 200+ construction jobs in phase one
 - all phases jobs: 800 construction and 200 operations
- 600+ wells in phase one
 - all phases wells: up to 2,500, over 27 years
- Gas sales agreement with Shell-QGC:
 - path to market for ~5 TCF of Arrow's Surat gas, over project life
 - Comparison: Queensland's projected 2020 domestic gas consumption of 126PJ is about 0.12 TCF

Finding opportunities

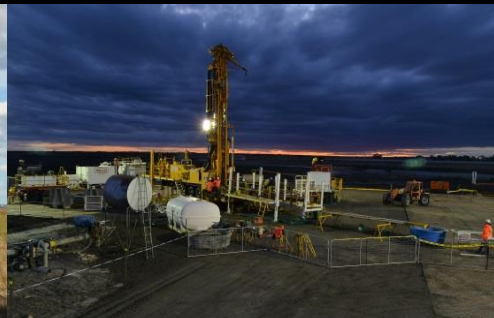
- Complete the *Supplier Registration Form* on the Supplier and Contractor Portal (Arrow's website)
- Dedicated information sessions - next session will be delivered through Toowoomba Surat Basin Enterprise, more details to come soon
- Local industry networks

Tendering

- Register with the Industry Capability Network (ICN) Gateway

Sub-contracting opportunities

- Contractors notify Arrow stakeholders of subcontractor opportunities
- Arrow's contracting requirements for local, Indigenous and regional opportunities will be cascaded to successful contractors and embedded in local content plans



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Heart of Australia

- Three mobile clinics: specialist health care to regional and remote Queensland - book through the Heart of Australia website

Brisbane Broncos

- Connecting the Broncos with regional Queensland to promote healthy lifestyles

Surat Gas Aero-Medical Service (SGAS)

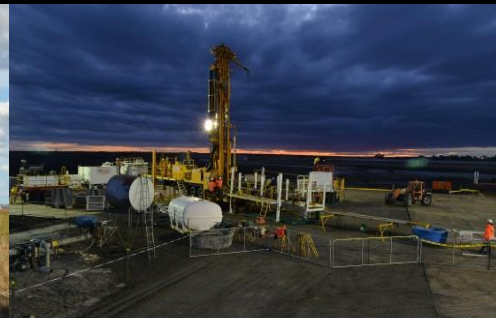
- Working with other gas companies through LifeFlight to respond to emergencies across the Surat Basin (servicing industry and the community)

We also support:

- Dalby State High School Annual Agricultural Scholarships
- PCYC – Ignition and Braking the Cycle programs
- Dalby Business Excellence Awards
- Dalby Christmas Street Party
- Queensland Minerals and Energy Academy (QMEA)

Brighter Futures community investment program

- Supporting sustainable development of communities: next application round closes 4 September



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- Landholder engagement, including:
 - ongoing area wide planning and negotiation of infrastructure placement with landholders from Daandine to Tipton
 - development of Conduct and Compensation Agreements with individual landholders
- Construction in the Daandine-Kupunn area from later 2020
- Supplier information sessions as contracting packages are developed
- Ongoing community investment programs, including Brighter Futures

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