Tanami Gas Pipeline
Project Delivery

Tubridgi Gas Storage Facility
Successful Commissioning & Operations

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AGIG

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About Australian Gas Infrastructure Group
AGIG formed from the merger of AGN, DBP & Multinet

- Wholly owned by the CK Group
- CK Group is a large multinational employing over 290,000 people and a presence in over 50 countries across the world
- CK Groups businesses include: Ports, Retail, Infrastructure, Energy, Telecoms, Property, Healthcare, Agriculture and Media
- The Group is privately owned and is listed on the Hong Kong stock exchange (~US$100bln market cap)
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Tanami Gas Pipeline
Project Delivery
• Customer required cost effective and reliable gas fired power generation to replace existing diesel power generation

• Solution via a 440km of 8” steel gas pipeline

• 13TJ/d capacity free flow

• Potential to expand to 39TJ/d capacity with installation of compression

• Connected to Amadeus Gas Pipeline and can supply gas from a number of sources
Tanami Gas Pipeline | Scope of work

- Pipeline connected to Amadeus Pipeline approximately 160km North West of Alice Springs
- Route follows alignment of Tanami Road reserve
- Two scraper stations and provision for future Yuendemu offtake
- Final 40km is within Newmont’s mine lease where two custody meter stations will be constructed at Granites & Dead Bullock Soak
Tanami Gas Pipeline | Project schedule

- **2017**
  - Initial pipeline route determined
  - AGIG appointed as preferred proponent
  - Commence approvals process
  - Order long leads
  - Gas Transmission Agreement executed
- **2018**
  - Approvals process completed
  - Pipeline construction completed
- **2019**
  - Facilities completed
  - Commissioning
  - Practical completion (1st quarter)
Tanami Gas Pipeline | Risks

- Weather
  - Construction to be scheduled to minimise construction during wet season
- Water supply
  - Access to water for construction purposes
- Pipe supply
  - New supplier for AGIG
- Land tenure, native title and sacred site approvals
  - Timing
- Regulatory approvals
  - Timing

Camp 1 sign provided by Larmaba Community
Tanami Gas Pipeline | Land Tenure and Native Title

- Pipeline route passes through a variety of land ownerships:
  - crown land
  - pastoral leases
  - traditional owner freehold land
  - mining leases
- Extensive stakeholder engagement required
- Complex inter-relationship between the various interested parties (CLC, DPIR, DENR, NTEPA, DOEE, DPIL, AAPA, etc)
- Cultural heritage, ecological and environmental challenges
- High level of engagement with TO’s via CLC
Tanami Gas Pipeline | Regulatory approvals

- High level focus on certain species particularly the potential for Night Parrot
- Vegetation clearing permits could not be applied for until tenure and landholder approvals
- Lengthy EPBC approval process – 5 threatened species potentially in area of works
- Stop work requirement in EPBC approval caused 5km route deviation
- Permit post approval conditions
Tanami Gas Pipeline | Project delivery

- Fly camp & first pipe storage area established at Tilmouth Well Roadhouse
- Four x 140 man camps established along pipeline route
- Two workfronts for pipeline construction, working from each end
- Five HDD crossings (roads, watercourses, sacred sites)
- Ten waterbores plus turkey’s nests
- Manning peaks at 310 plus indirects
- Anticipated Project Construction Cost of $180m
Tubridgi Gas Storage Facility
Successful delivery and operations
Tubridgi Gas Storage | The Project

- Customer required cost effective gas storage to support their large gas book
- Solution via a 42PJ gas storage facility
- 50TJ/d firm gas injection/withdrawal capability
- Located at Onslow 1,135km North of Perth
- Connected to Wheatstone, Tubridgi and Dampier to Bunbury Gas Pipelines
- Access to the full WA domestic gas market
- Originally the Tubridgi gas field produced 69PJ of gas by BHP until 2004
- AGIG acquired in 2011
Tubridgi Gas Storage | Scope of work

- Total Capital $74 million
- Purchased and refurbished a drill rig
- 5 new wells drilled, plus associated 8” steel flowlines
- 2 new Compressors
- Refurbished brownfields surface facilities
- Project fast tracked, finished ahead of schedule and on budget
- Commissioned in September 2017
- 20+ year design life
Tubridgi Gas Storage | How it works

- Tubridgi is a depleted gas reservoir
- Gas injected displaces water in reservoir but remains above the gas water contact
- Free flow into reservoir
- Compression required on withdrawal (DBNGP MAOP 8.48MPa well above reservoir pressure)
- Dehydration required on withdrawal
- Otherwise gas remains at pipeline specification
Tubridgi Gas Storage | Risks

- Weather
  - Construction scheduled during wet season
  - Risk drilling costs would escalate as a result of flooding (wells on mud flats)
Tubridgi Gas Storage | Risks

- Reservoir
  - Would the reservoir support gas storage
- Wells
  - Well deliverability
Tubridgi Gas Storage | Risks

• Brown fields development
  - Recommissioning a facility decommissioned and mothballed for 10 years
Tubridgi Gas Storage | Future capability

- Expansion project (Stage 1)
  - 50+ PJ storage capacity
  - 90TJ/day Injection
  - 60TJ/day Withdrawal
  - new wells being considered for additional Injection capacity

- Expansion project (beyond stage 1)
  - further increases to injection and withdrawal rates
  - additional wells
  - additional compression
  - expansion of dehydration capability