Lessons from the Varanus Is Incident

CEDA

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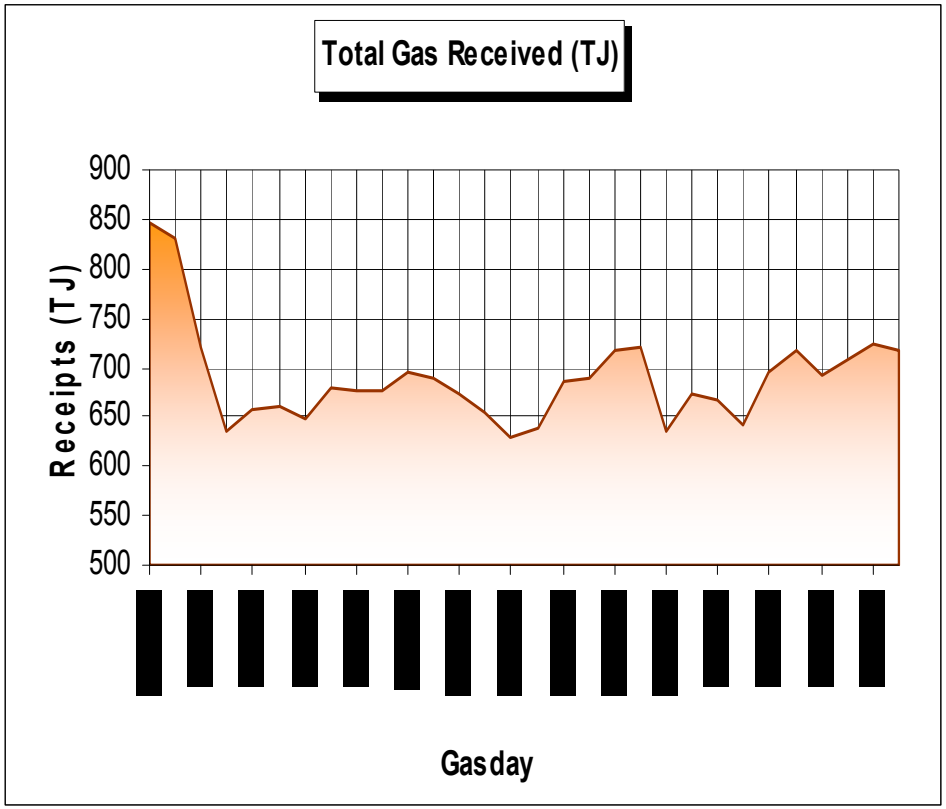
Dampier to Bunbury Natural Gas Pipeline

- DBNGP is Australia's largest natural gas pipeline
- Approx 1600km from Dampier to Capel
- Approx 50% duplicated
- 26 inch diameter
- 8,480kPa Max Allowable Operating Pressure
- 10 compressor stations with 26 compressor units - 216MW installed power
- 4 inlet points
- 55 outlet points
- Daily deliveries ~850TJ/day

Gas Received into DBNGP

- Total receipts from all inlets
- Up to 3 June, add ~100TJ/day into GGP
- Fluctuations caused by:
  - NWSG production issues
  - Varying LPG content
  - Matching production with demand

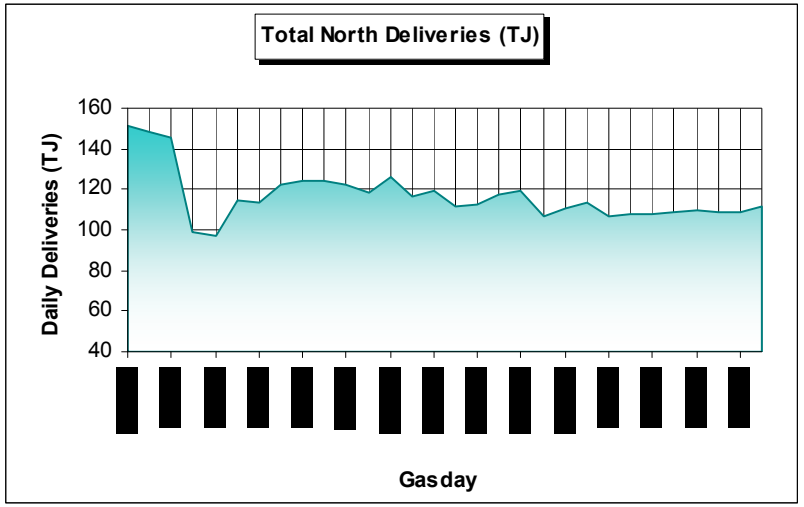


Gas Delivered from DBNGP

Pilbara and Goldfields

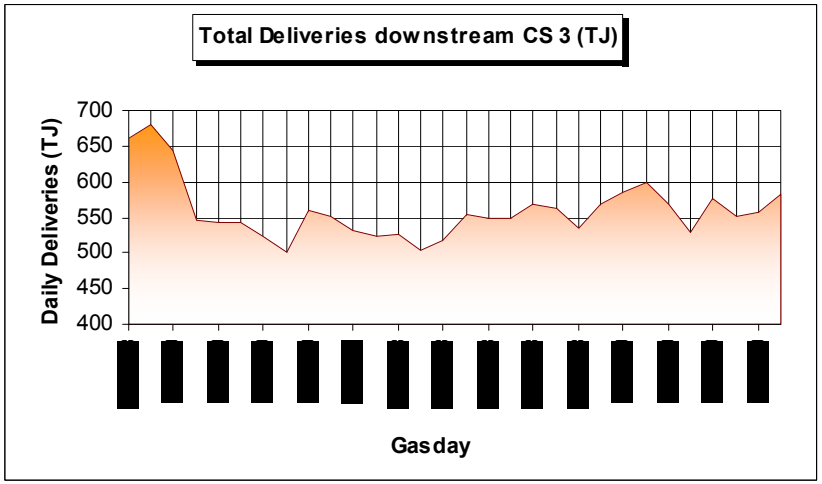
- Total impact includes ~100TJ/day GGP load included from 4 June

- Early movers to secure alternative supplies
- Relatively price elastic
- Gas vs distillate vs no production equation
- Adjusted to “new reality” within 3 weeks



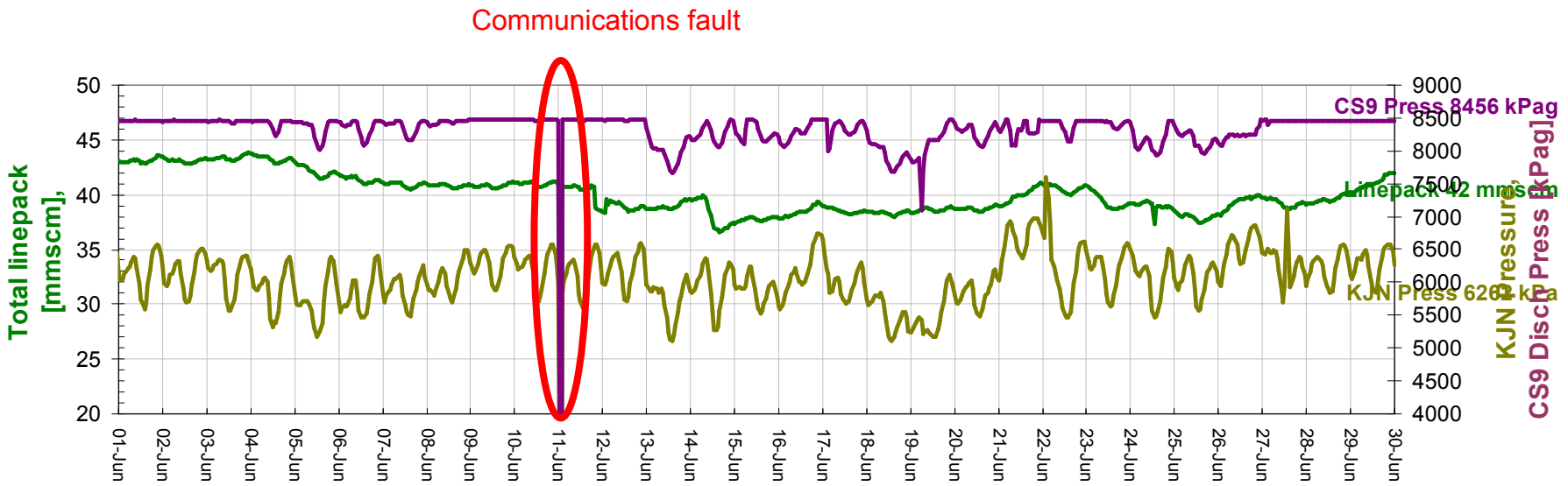
South West

- Slower to react
- Price sensitive market
  - Retail gas
  - Retail electricity
  - Trade exposed industries
- Securing gas as / when available
- Fluctuating residential demand
  - Doing the right thing
  - Weather became cold mid-June



DBNGP Operations

- Started with optimum linepack and stable operations
  - Best scenario if there is going to be a problem
- Able to support balancing between production and demand
- Some instability from mid-June as residential load became less predictable
- No threat to deliveries



DBP Response

- Secure operations
  - Station personnel at CS1, 2, 3 for immediate response
  - Reschedule non-essential works
- Communications between infrastructure operators
  - Western Power (electricity system)
  - AlintaGas Networks (gas distribution)
  - Epic Energy (Pilbara Pipeline System)
  - APA Group (Goldfields and Parmelia Pipelines)
- Maximise receipt capability
  - Operate CS1, 2, 3 to match NWSG pressure
  - Allow NWSG to flow at maximum rate
  - Release from minimum delivery pressure obligations
  - Receipt capability >750TJ/day
- Emergency Services
  - Inlet Relocation – allows Varanus Is customers to receive gas at NWSG
  - Park & Loan – match variations between purchases and demands
  - Data for government to monitor overall situation

Key Impacts

- 2 major industrial plants shut down for duration
- Small / medium industries production curtailed
  - Day to day uncertainty
  - Difficulties in switching suppliers
  - Bulletin Board provided opportunities for small trades at margin
- Increased costs for power generation & industry
  - Alternative fuels – challenges in supply, transport and price
  - 3 coal plants unavailable
  - Short term gas supplies at high prices
- Residential customers doing the right thing
  - Short / cold showers
  - Reduced heating, lighting

Lessons Learned

- DBNGP emergency response worked well
  - Good operating state at start
- Good response from (most) shippers
  - Early communication of issues
- Co-operation between infrastructure operators
- Use worst case assumptions
  - Allowed continuing stable operations for duration
  - Gradually introduce flexibility for shippers as impacts are understood
- Information flow limited due to commercial confidentiality

Discussion Issues

- Gas Supply System Emergency is extreme reaction so not invoked
- Market mechanisms function for “big” players
  - Trading experience
  - Fuel options
- Can retailers match demand with supply with price for small industrial / commercial sector?
  - Challenges in process for gas customers to switch suppliers
  - Bulletin Board allowed small trades at the margin
- Is mitigation economically feasible?
  - Gas storage – how much and where?
    - Underground
    - Pipeline
    - LNG
  - Alternative fuels
    - Liquids were effective in bridging the gap – at a price
  - Who finances mitigation?

DBP
Dampier Bunbury Pipeline