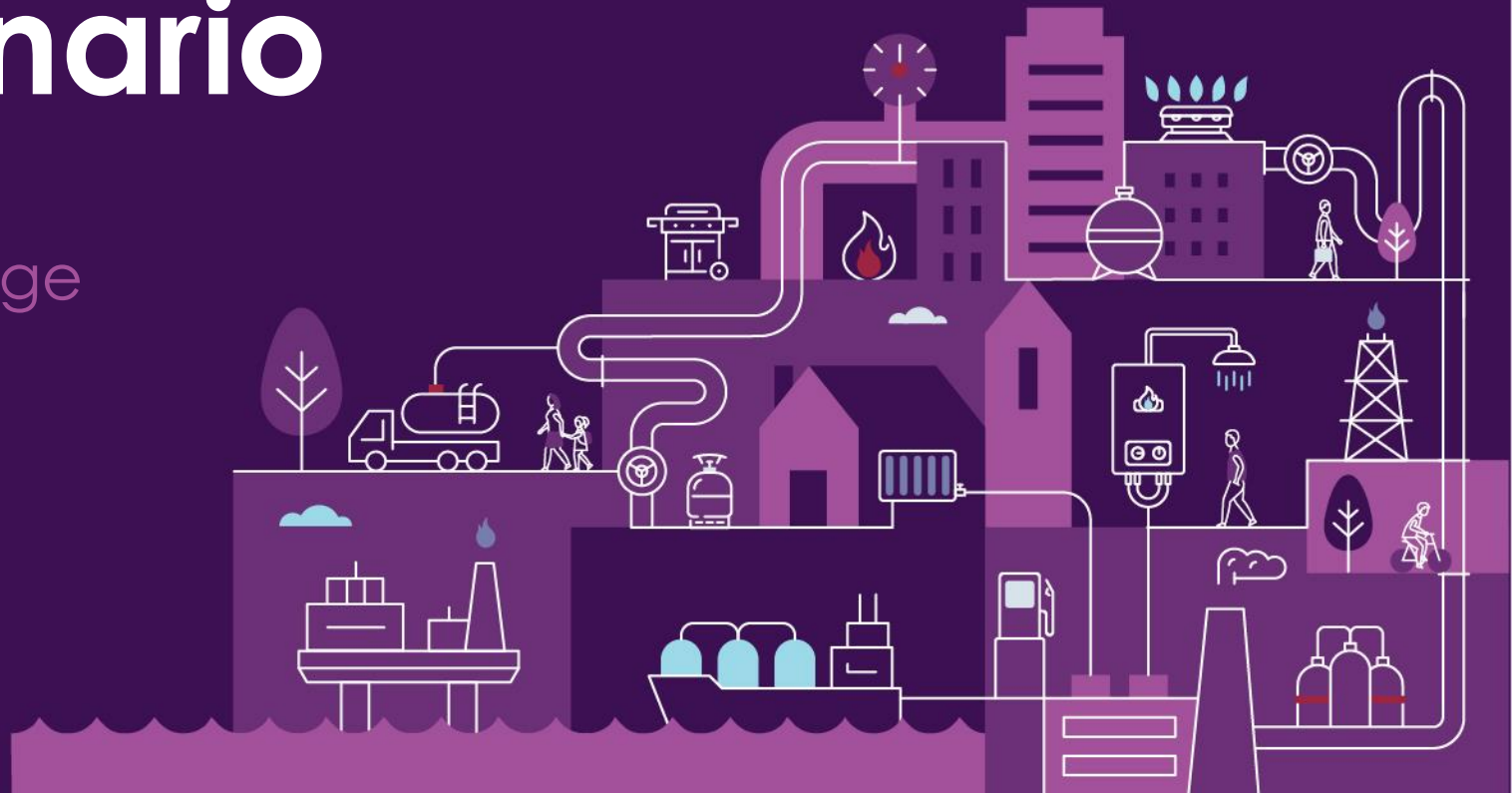
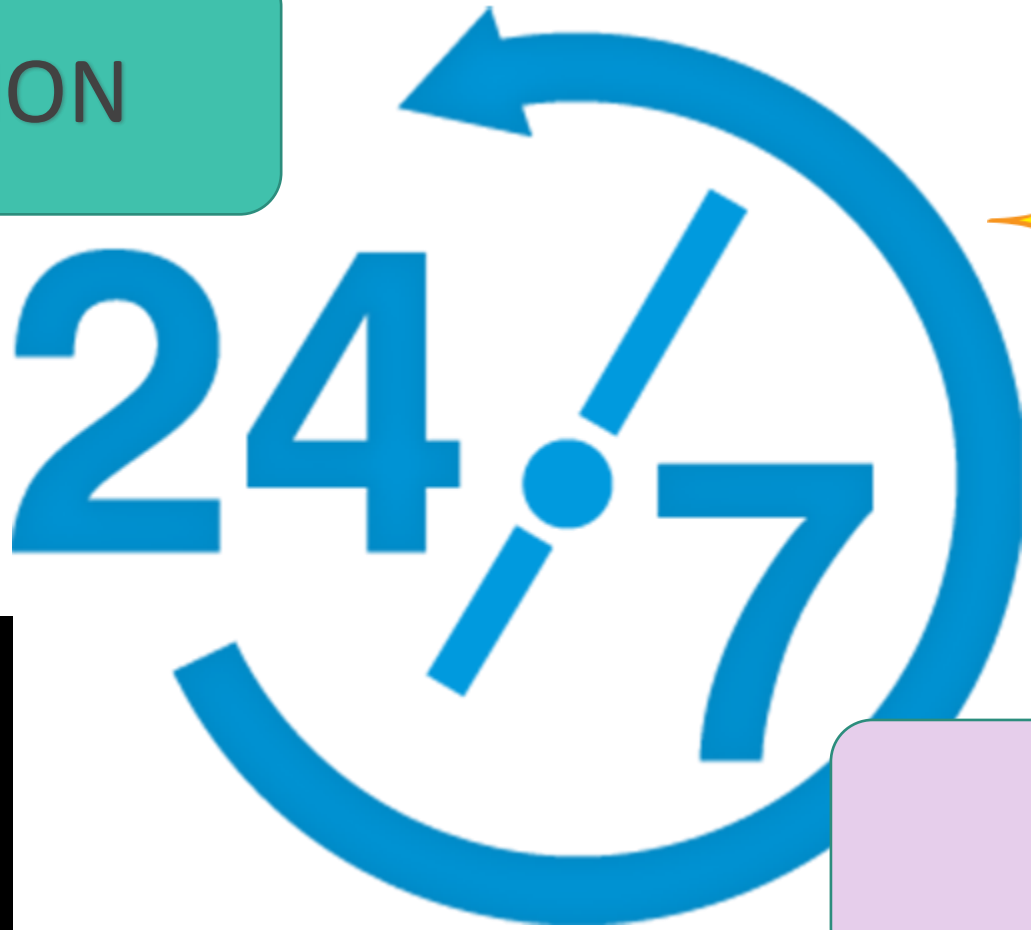
Transmission and markets scenario

Unplanned production outage



The AEMO Gas Control Room

TRANSMISSION



SCHEDULING

Gas Operations Engineer Roles

TRANSMISSION

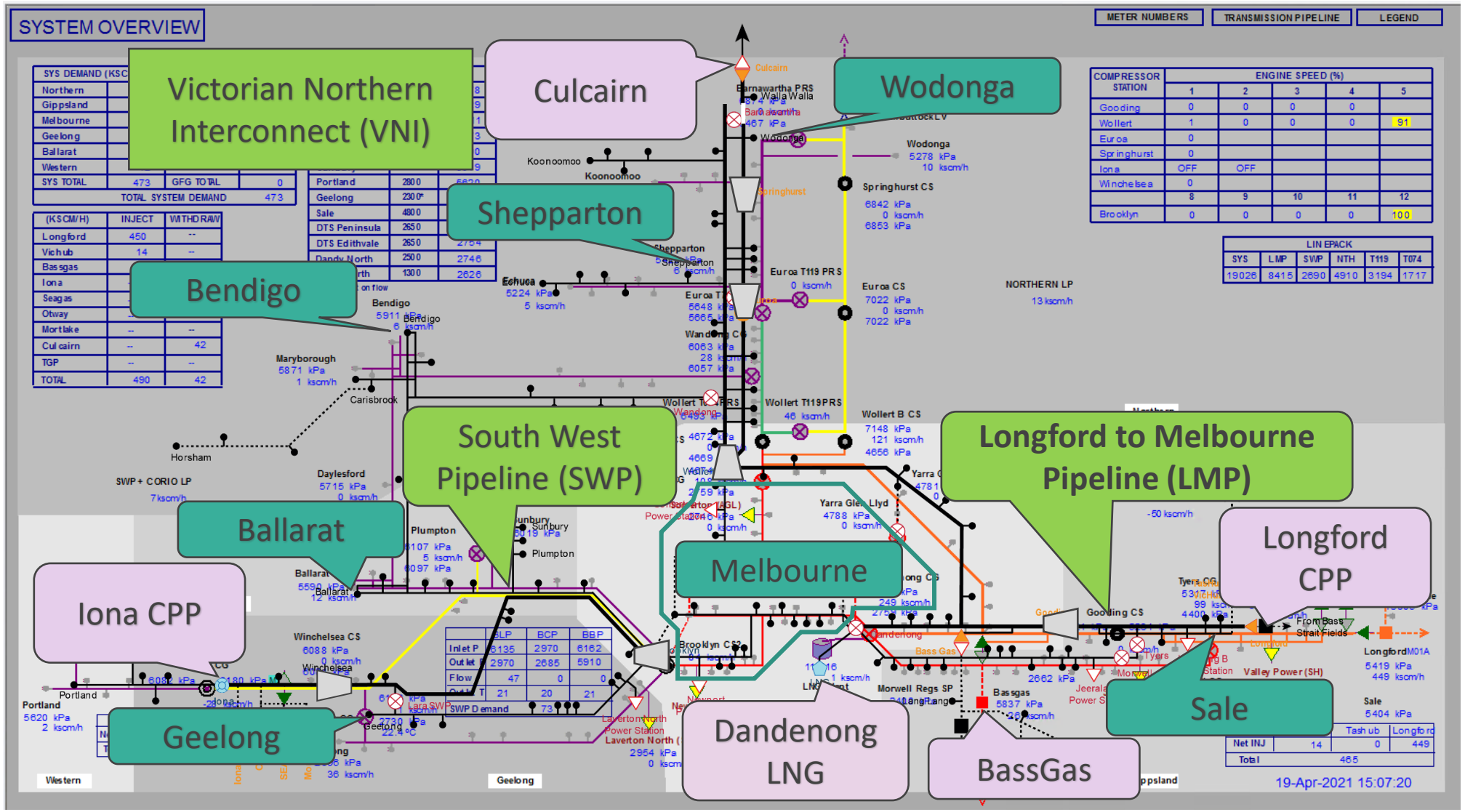
- DTS Operations
- Linepack Management
- Demand Forecasts
- Gas Quality

SCHEDULING

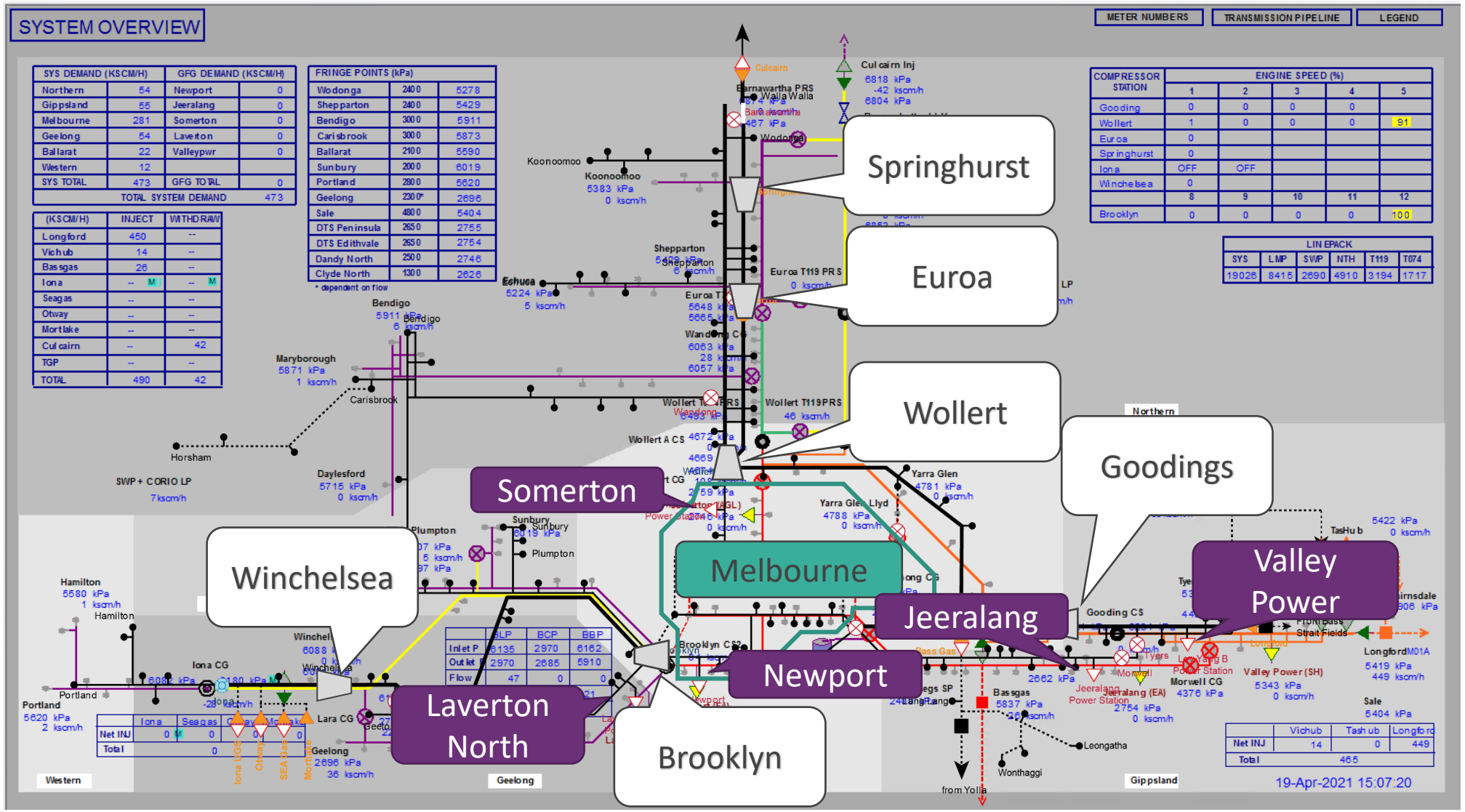
- Producing Schedules
- Processing Constraints
- Monitoring Bids

- Emergency Management Response

A brief overview of the DTS



A brief overview of the DTS



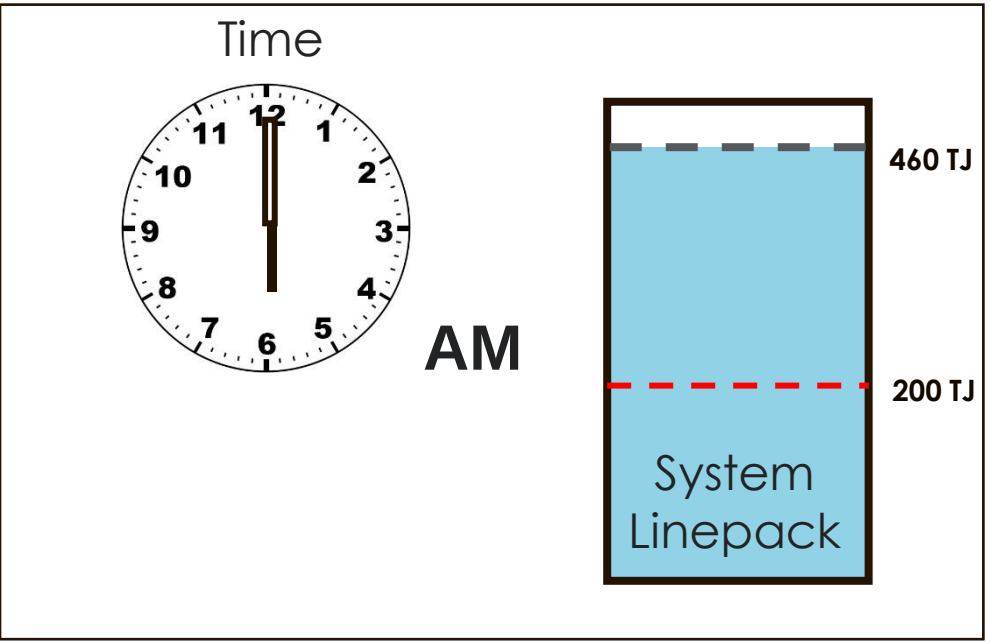
Scenario objectives

- Highlight increased risk due to Longford GP1 Inlet System retirement
- Highlight AEMO's operational response to unplanned outage
- Highlight likelihood of high gas prices due to a prolonged unplanned outages – CPT and Admin Price Cap
- Highlight what would likely occur if the unplanned outage was prolonged
  - Low levels of Dandenong LNG contracting
  - Supply/demand balance across East Coast Gas Market
  - AEMO's potential actions including demand side curtailment

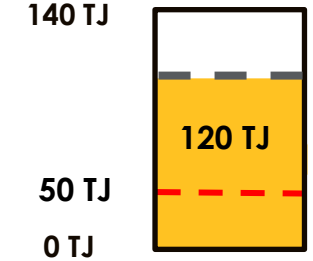
Scenario overview

- Hypothetical day – 1 June 2022
- Cold weather, but not extreme – system demand 1,033 TJ
- There are coal outages and the wind level is low and forecast to remain low – leading to a forecast of 47 TJ gas generation at Newport Power Station.

Scenario overview – system operation



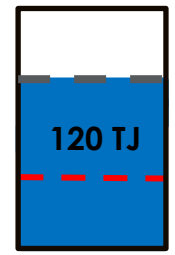
Total gas demand: 1080 TJ



Start Winchelsea CS

Iona CPP: 327 TJ

Culcairn: 31 TJ



Stop Wollert CS

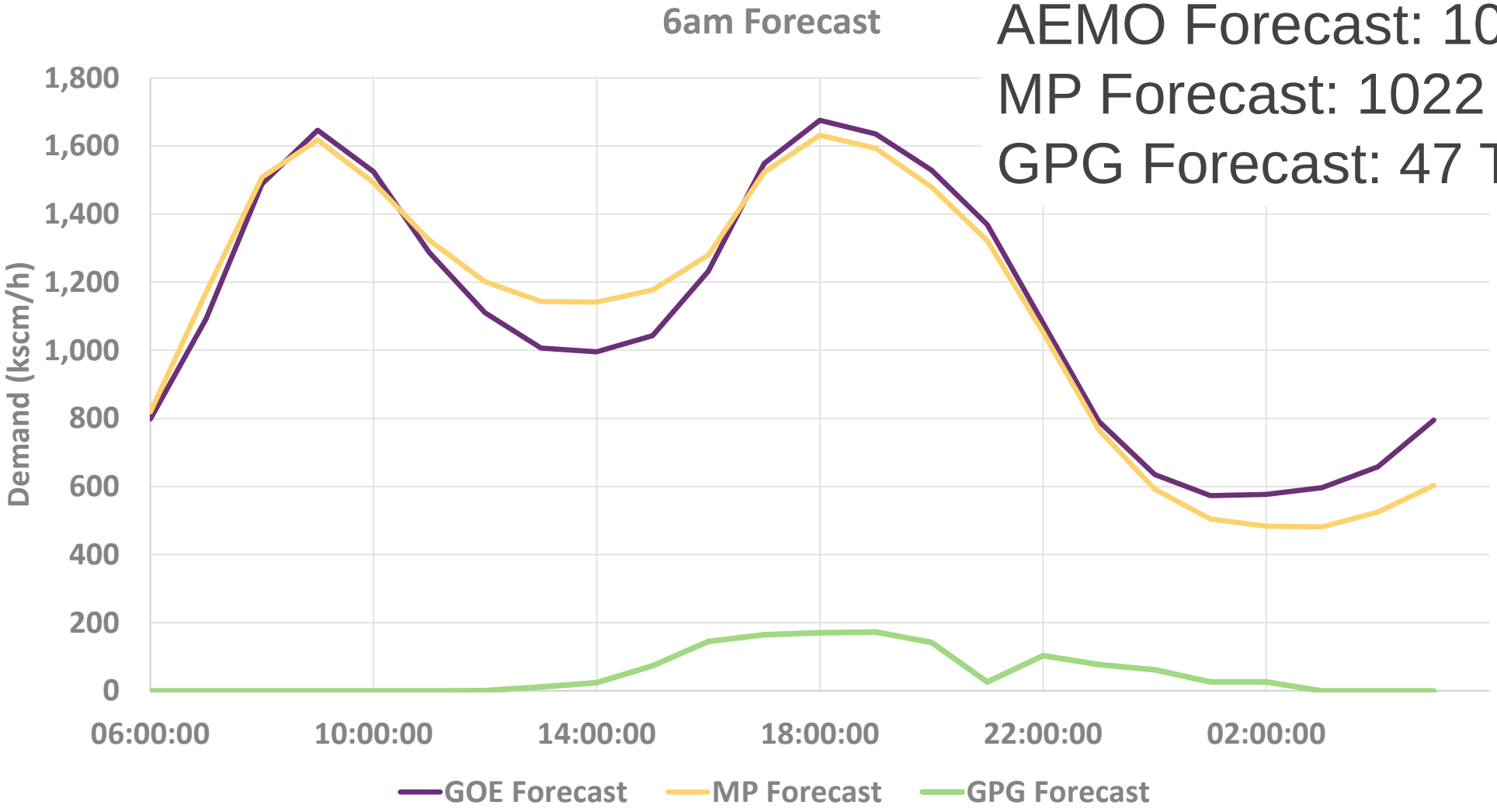
Wollert CS running

Gooding CS running

Start flowing through Brooklyn City Gate

Longford CPP: 722 TJ

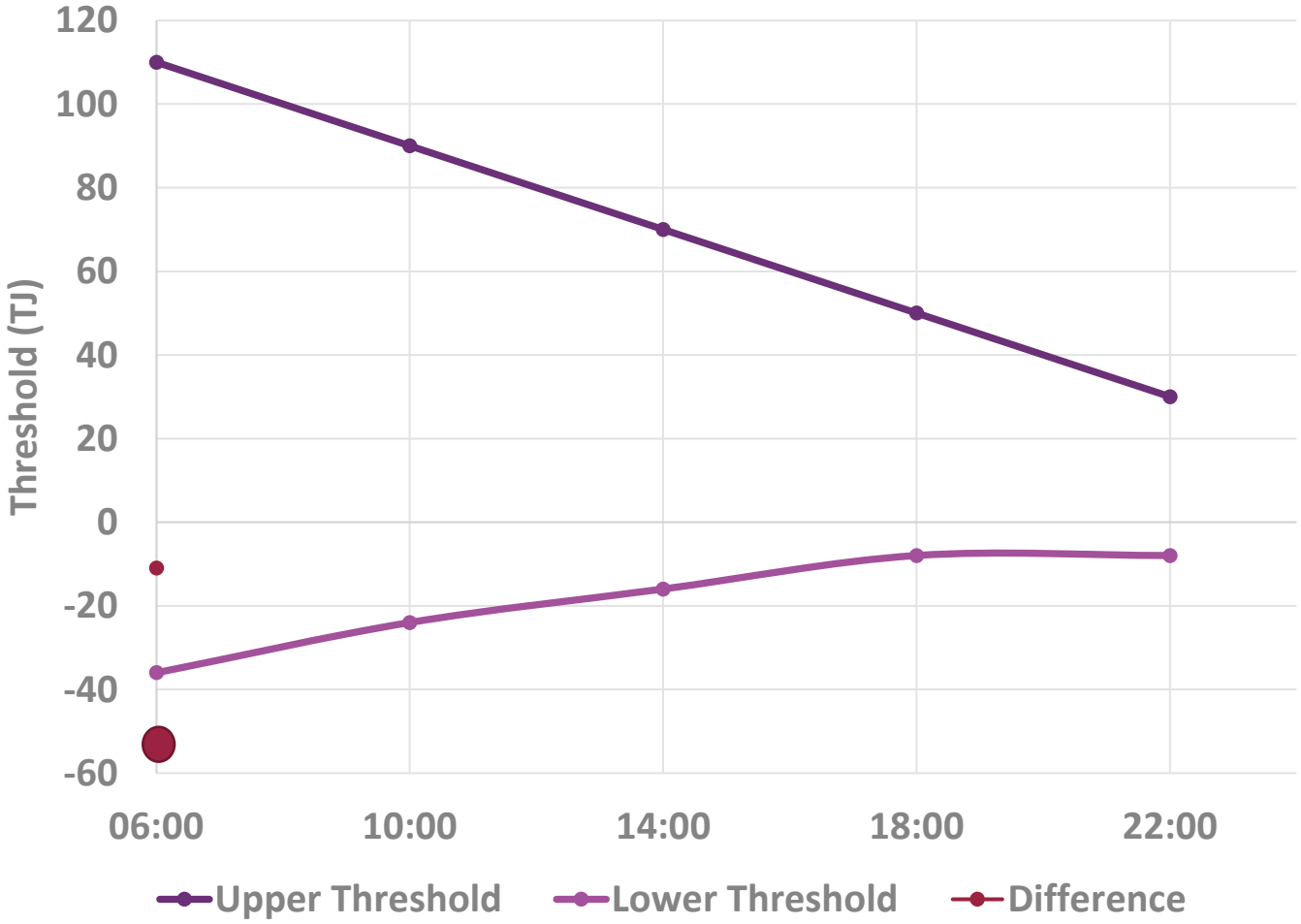
Scenario overview – system demand forecast



AEMO Forecast: 1033 TJ
MP Forecast: 1022 TJ
GPG Forecast: 47 TJ

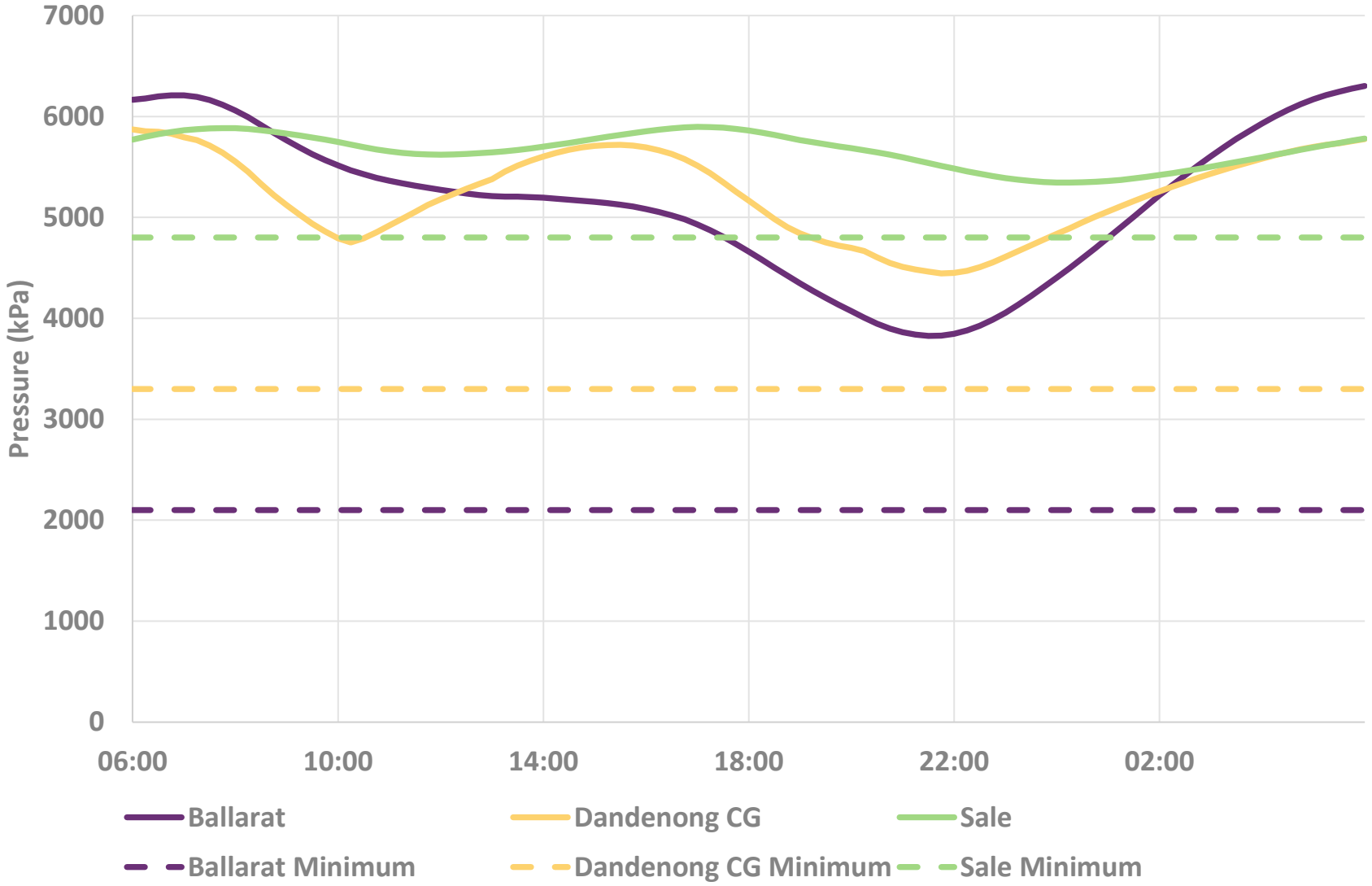
- Demand well below 1-in-2 level
- Close alignment between AEMO and MP forecasts
- Uncertainty in GPG forecast

Demand override



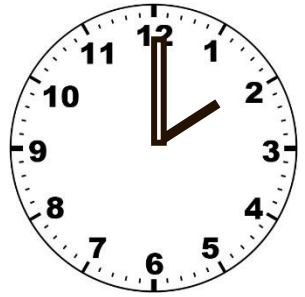
- Demand thresholds have been adjusted for:
  - Profile factor
  - Demand level
  - BOD target (assumed on target)
- AEMO does not apply a demand override in this scenario
- Overrides are applied to bring the difference in AEMO and MP forecasts to the threshold value

Scenario overview – modelling

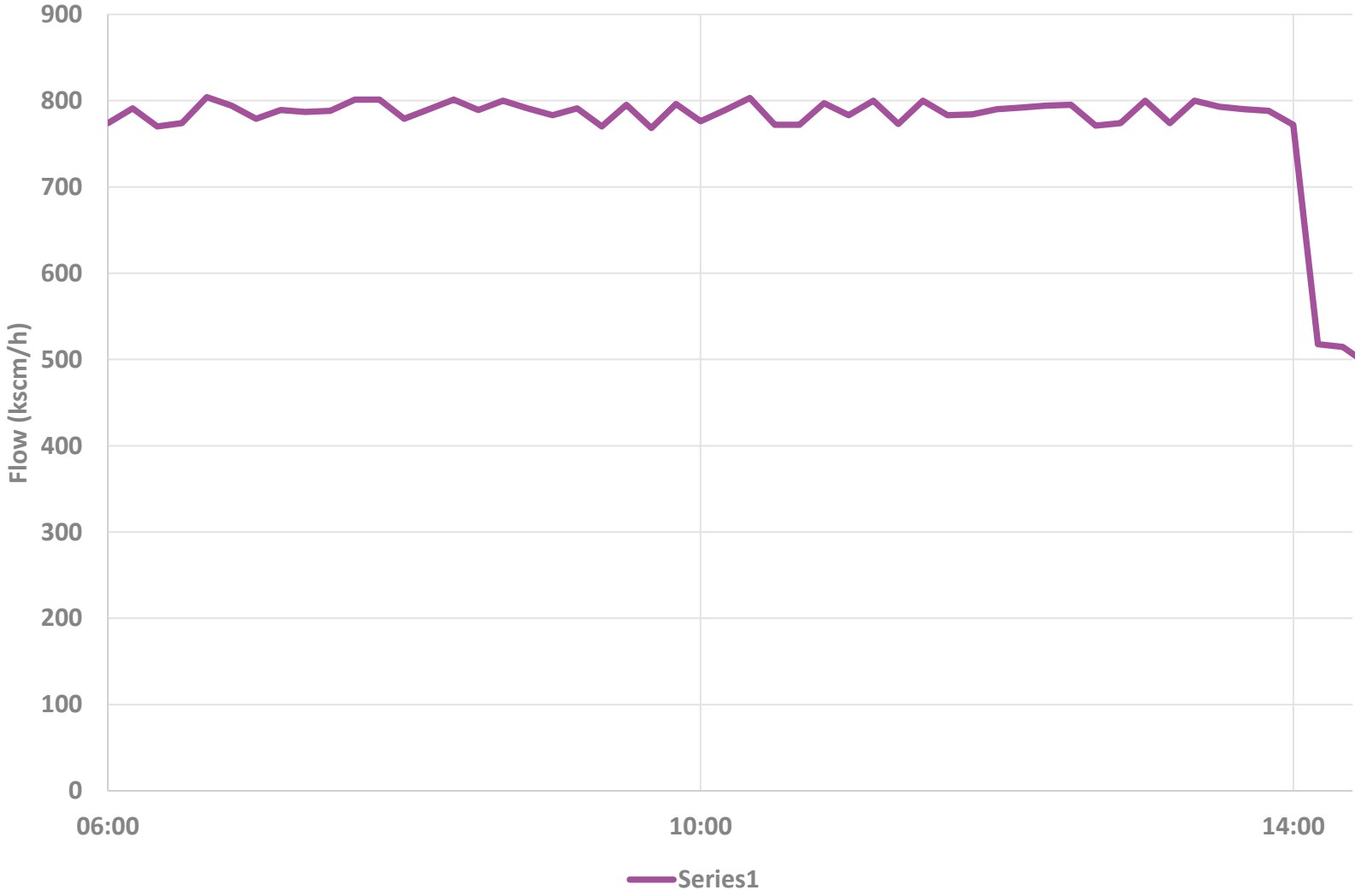


All pressures within acceptable bounds, with appropriate buffer

Situation changes



PM



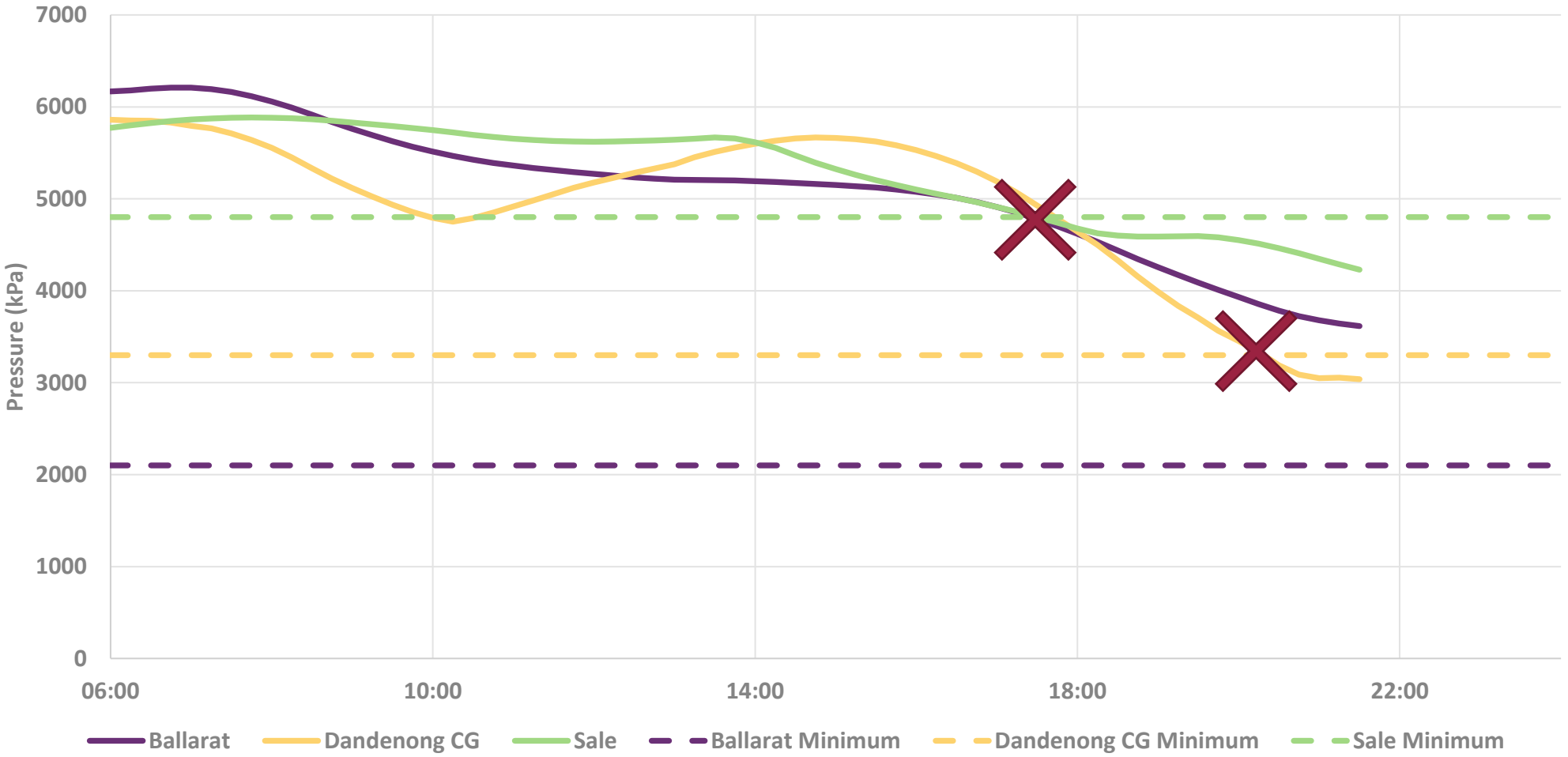
Longford Flow rate reduces significantly, with a loss of ~12 TJ/h

Situation assessment

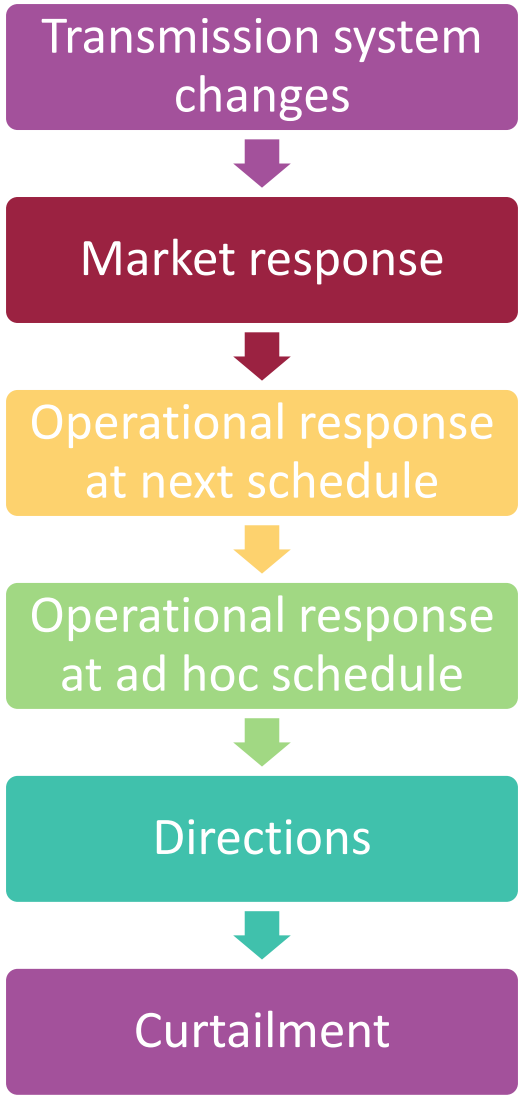
Hi Esso, we've noticed your rate has dropped.

Yes, we're looking into it at the moment. We will give you more information as soon as we can.

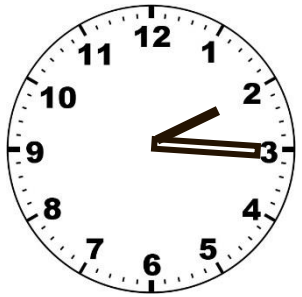
Situation assessment – how bad is the problem?



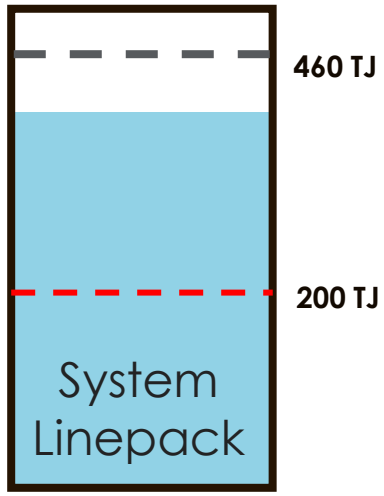
Hierarchy of response



Transmission system changes

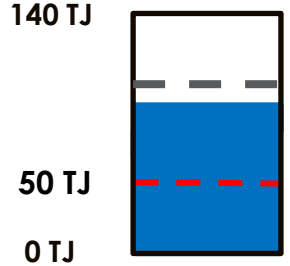


PM

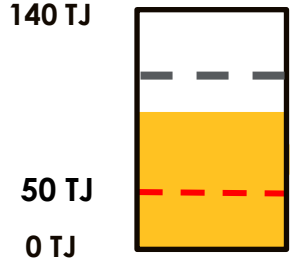


Culcairn: 31 TJ

Start Springhurst and Euroa Compressors



Increase flow from North into Melbourne



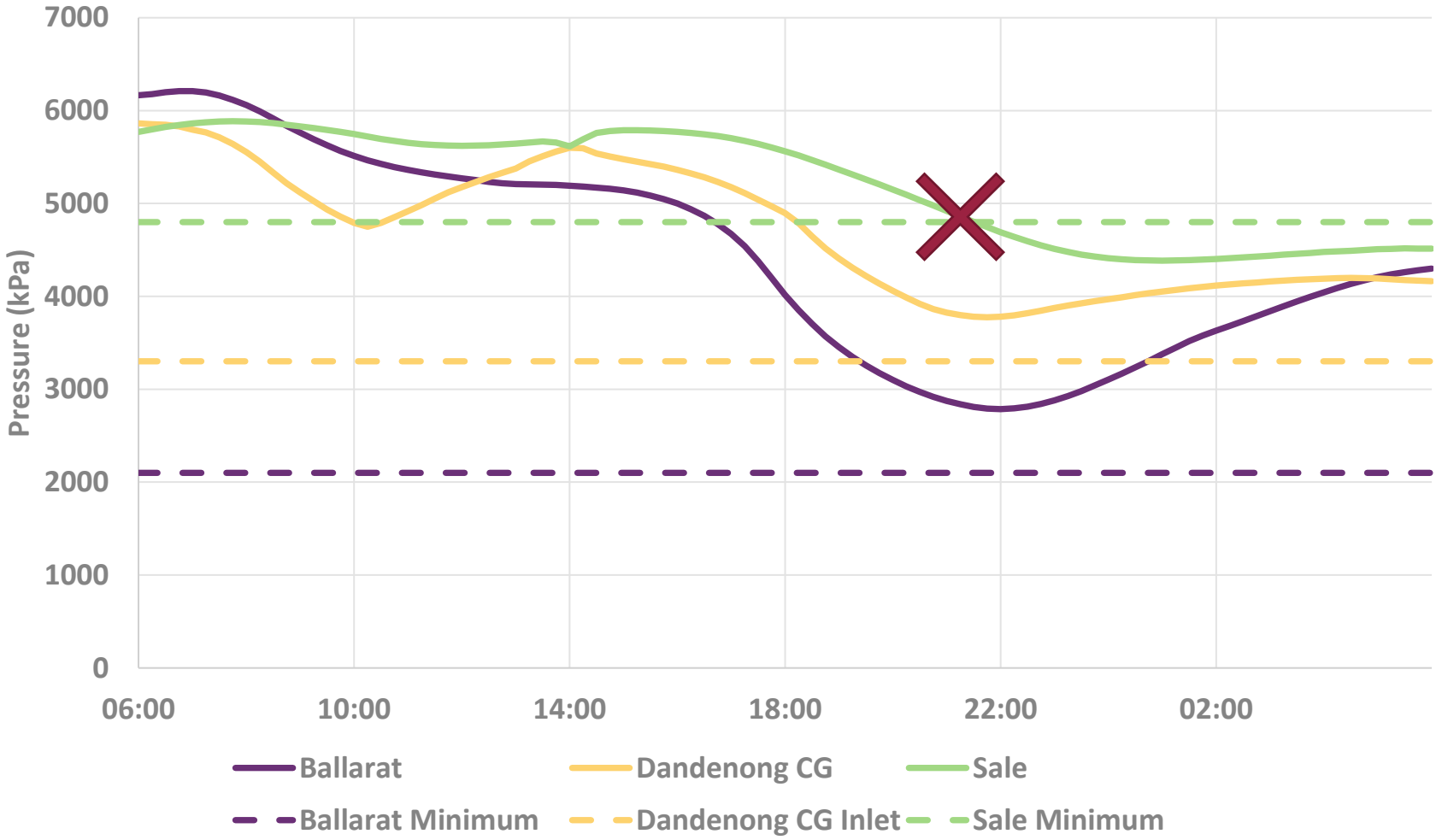
Stop Gooding CS

Increase flow through Brooklyn

Iona CPP: 327 TJ

Longford CPP: ~500 TJ

How effective are the transmission system changes?



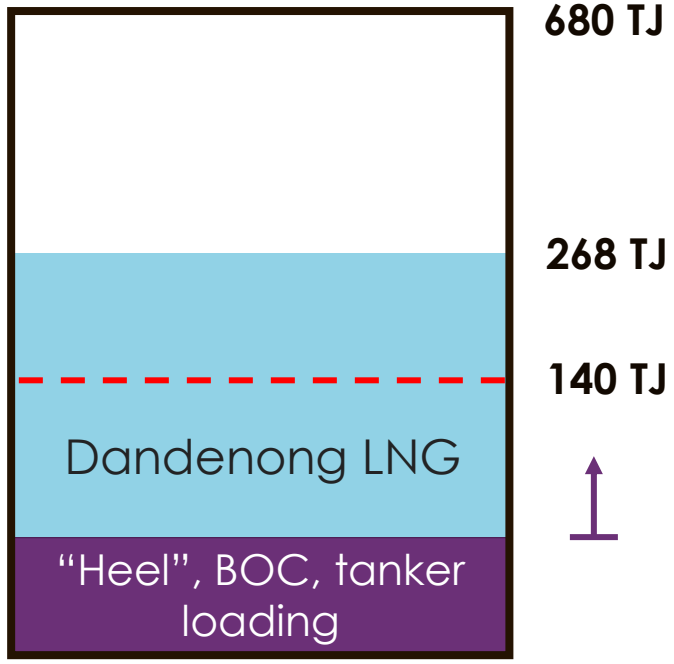
Operational Response has resulted in:

- Sale CG breach delayed to 21:00
- Dandenong CG breach avoided.
- Assuming Longford rate does not improve

We've got a problem…

- Contact Duty Manager – enact Gas Incident Response Plan
- Dandenong LNG likely required – call APA Control Room
- Contact NEM control room – risk of being unable to support gas generation

DLNG inventory

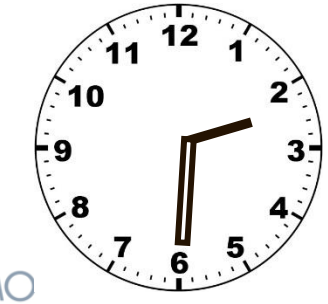


- Ongoing low participant contracted DLNG
- AEMO required to maintain 140 TJ for emergency reserve
- 128 TJ available for operational response
  - 23 hours at firm rate (normal) of 100 t/h (~5.5TJ/h)
  - 13 hours at non-firm rate (emergency) of 180 t/h (~9.8TJ/h)

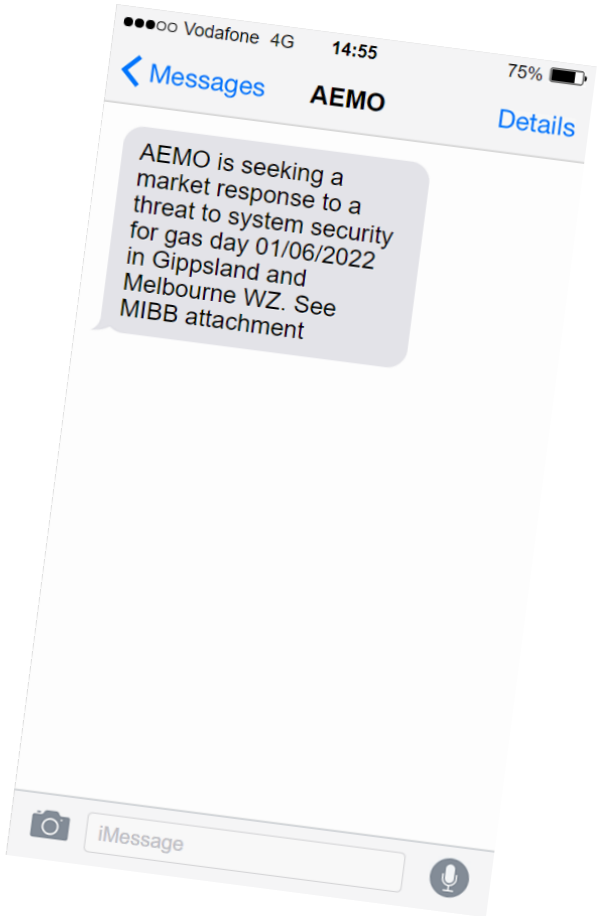
Hierarchy of response

- Pressure breach not until 21:00 and it's only ~14:30
- There's time to ask for a market response at the 18:00 schedule
- However, we need to be confident that the market response can still solve the problem!

Issue Notice of a Threat to System Security



PM



Notice of a Threat to System Security – Seeking a Market Response

Reference: *National Gas Rules (NGR), Part 19, Division 5, Subdivision 5, Notice of Threat to System Security*

Under rule 341 of the NGR, AEMO is notifying participants of a threat to system security in the Declared Transmission System.

AEMO advises that the threat to system security is due to:

- A gas supply resource incident, including gas quality excursions or facility plant trip
- A supply and demand imbalance exists such that the projected pressure at Sale City Gate may breach the minimum operating pressure of 4800 kPa.
- The threat to system security is expected to start at 15:00 AEST 01/06/2022 and end at 22:00 AEST 02/06/2022.

The threat to system security is likely to impact:

☐	Total System	☒	Melbourne Withdrawal Zone
☒	Gippsland Withdrawal Zone	☐	Northern Withdrawal Zone
☐	Geelong Withdrawal Zone	☐	Ballarat Withdrawal Zone
☐	Western Withdrawal Zone		

A market response to this notice may alleviate the threat to system security and remove the need for AEMO to take action. Market participants are asked to re-evaluate their bids and offers.

The market may alleviate the threat by increasing injections from Longford CPP to obtain a total net daily injection quantity of 620 TJ.

- There will be a market notice to advise the removal of the threat to system security.
- AEMO reserves the right to determine an appropriate operational response if the market response is insufficient to avert the threat to system security

Issued on 1/06/2022

Matthew Clemow
Group Manager Gas Real Time Operations
Australian Energy Market Operator

Recap

- Longford rate reduced
- Transmission system changes have delayed pressure breach until 21:00
- Request for market response issued
- Now what?

Determining available supply

Dandenong LNG: Full capacity available, including non-firm

Iona: full capacity available

BassGas: we're already at full capacity.

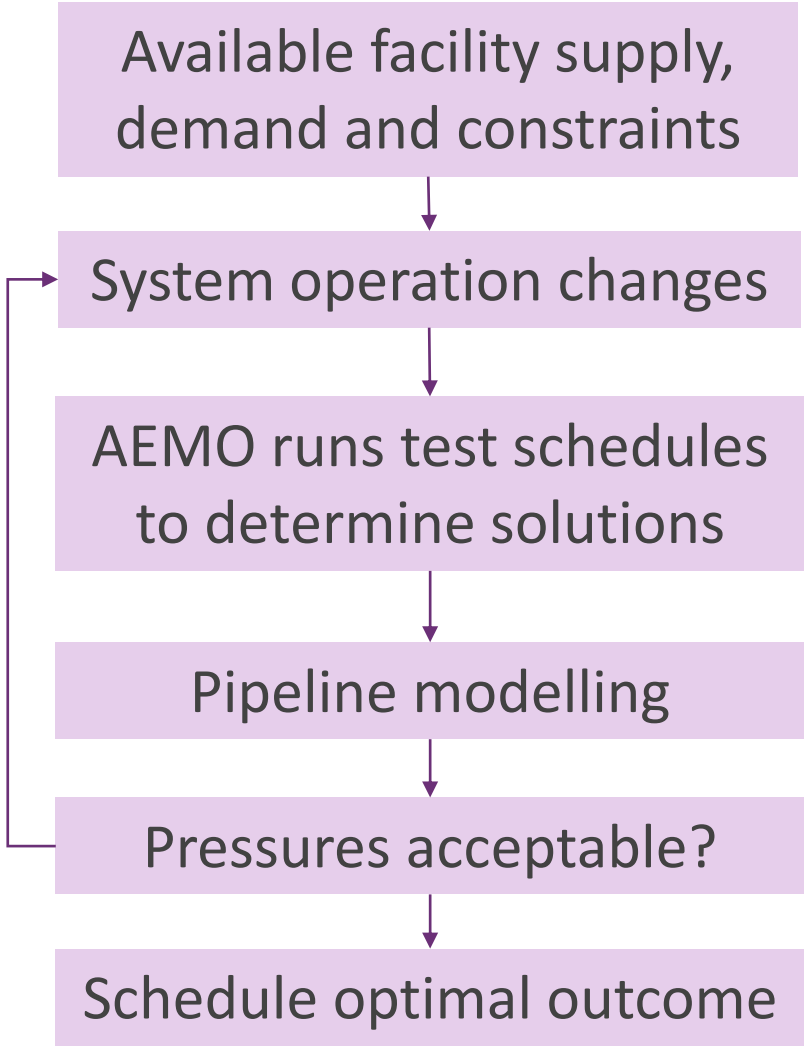
SEAGas: can provide as much as we're scheduled.

Culcairn: we're limited in what we can supply due to high flows to Sydney. We can supply up to 6.5 TJ/h.

VicHub: we can provide 5 TJ/h and up to 20 TJ total

TasHub: we can provide up to 4 -5 TJ/h from linepack, up to 30 TJ, but no more than that.

Contingency analysis and planning



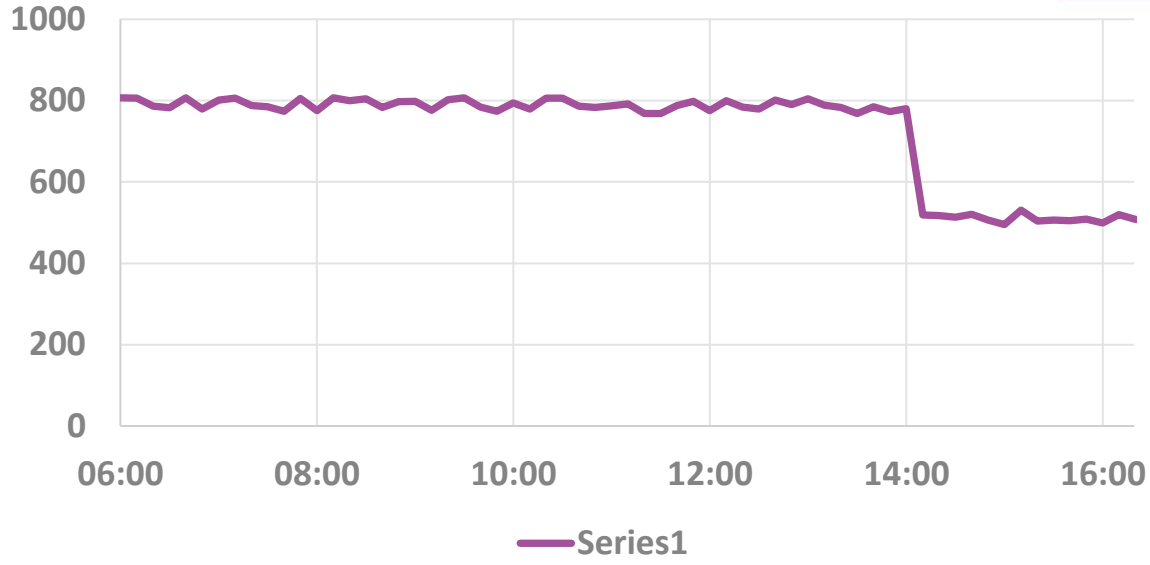
Branch planning

- Unforecast gas generation
- Transmission facility outages
- Reduction in Longford rate further
- Weather forecast/demand uncertainty
- What are a range of possible Longford constraints based on DTS/EGP split?

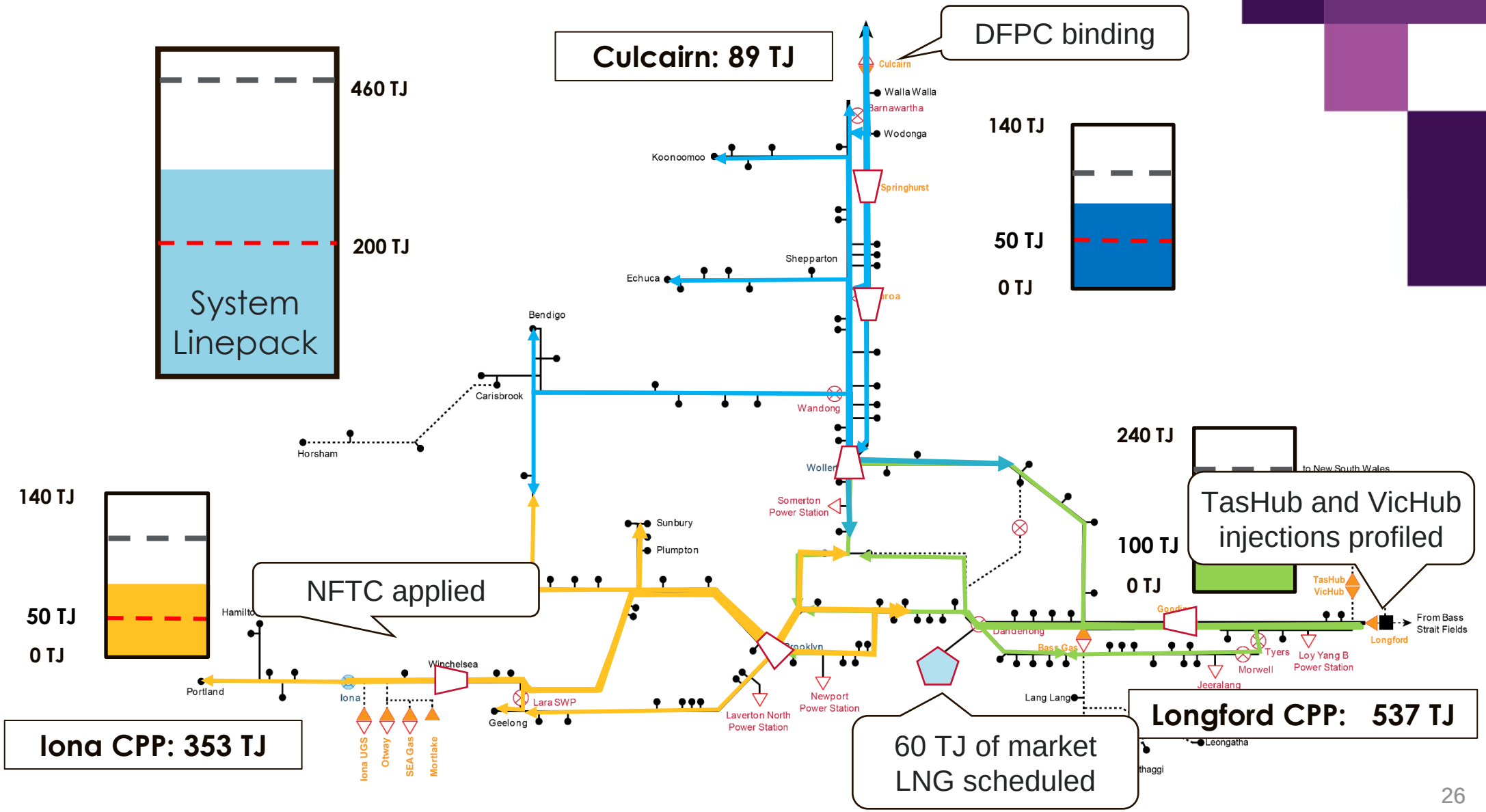
An update from Longford…

PM

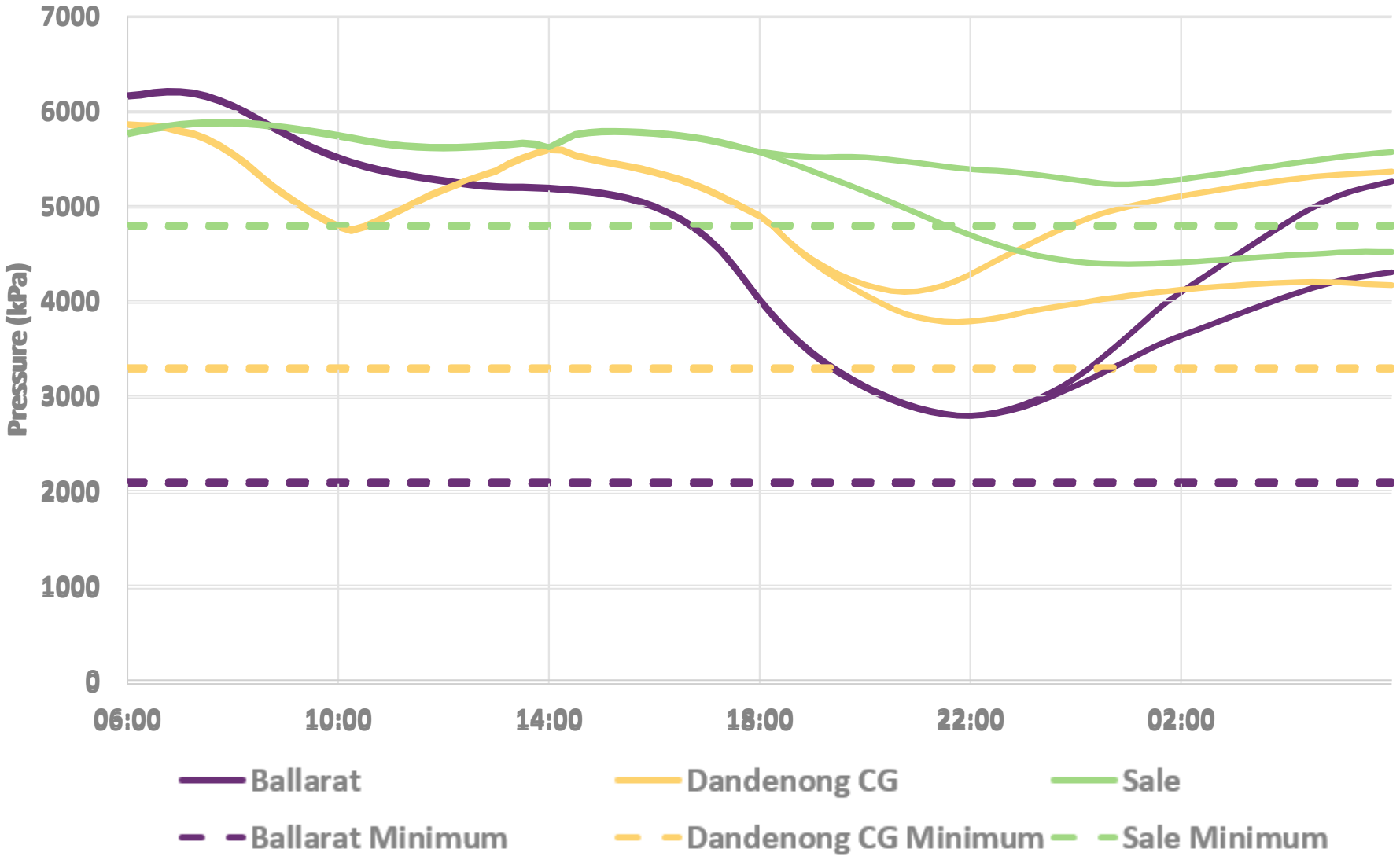
*Hi AEMO, we believe we've identified the issue and we believe we'll be **unlikely to resolve it today**. Our best estimate of the total amount of gas we can provide to the DTS today is **467 TJ**. I'll send through a constraint shortly.*



6pm schedule outcome



Modelling outcome

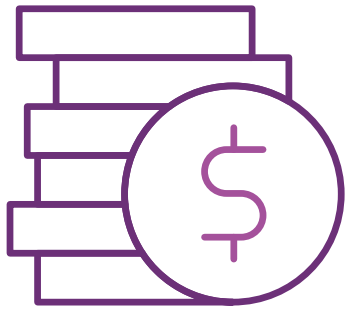


- Model assuming Longford rate does not recover
- Fringe pressures satisfactory
- OOMO gas not required

6pm market implications

High Market price

- LNG marginal (setting price)
- 2021 bid stack $220/GJ



Ancillary and uplift payments

- Due to NFTC on SWP, OS only constraint
- OS price very high
- Participants exposed to uplift payments

Cumulative price threshold

- Monitored due to elevated price
- Admin market trigger

Summary

Reduction in Longford production

Sale and Dandenong pressures forecast to breach

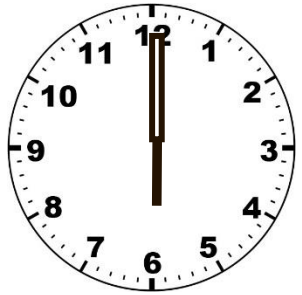
Threat to system security issued

Supply increased from other sources and profiled injections

High prices

Future days

An update from Longford…



AM

*Hi AEMO, some technicians have located the problem. We anticipate that we won't have the problem fixed for **7 days**, and until then our **production is limited to 500 TJ/d**. We are in the process of confirming constraints for DTS supply.*

Initial considerations

Remember the context:

- Low wind and coal generator outages – gas generation likely
- Only the start of winter – risk of extreme cold days still exists

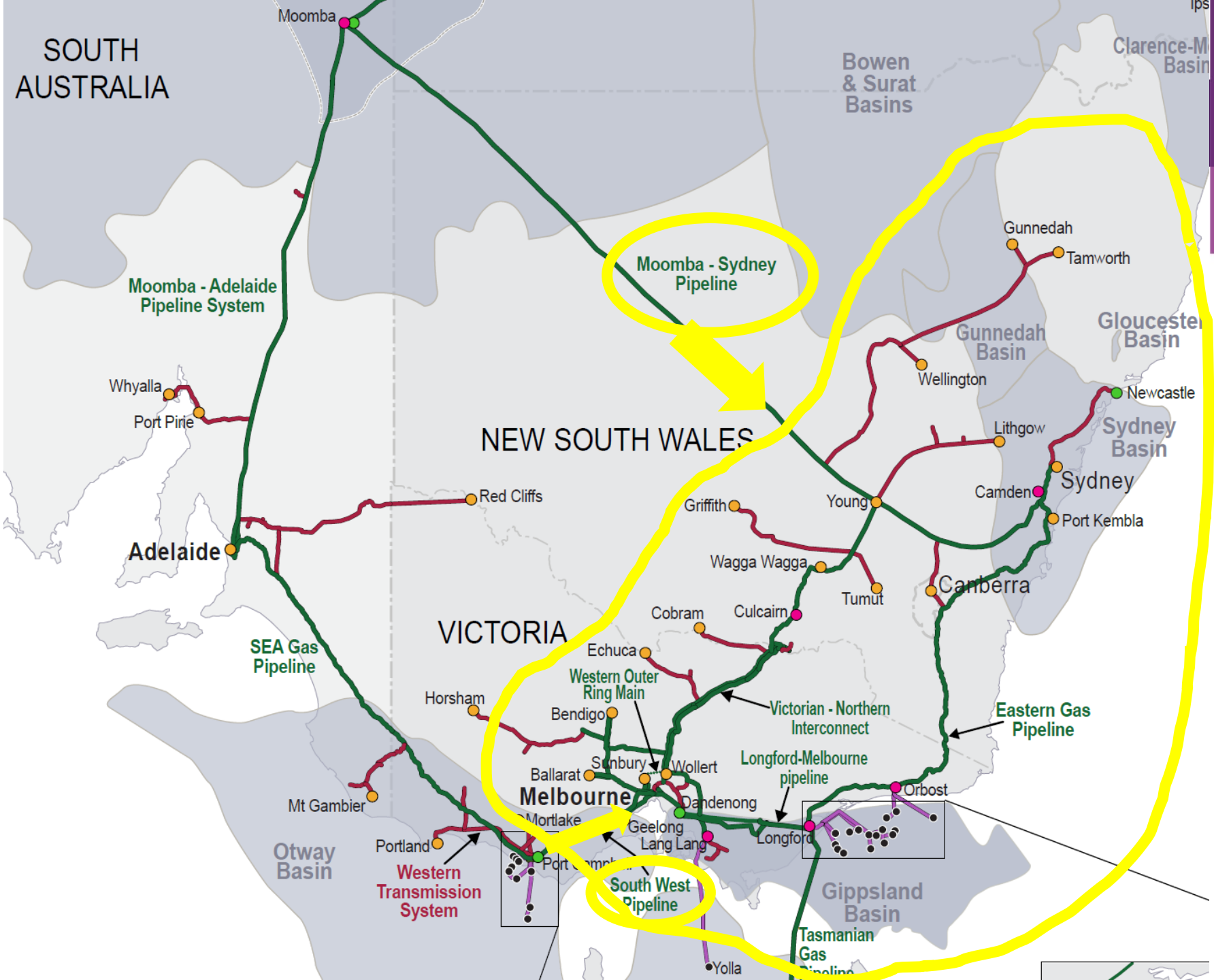
Tight supply remains in Victoria

- Though supply is also tight in south-east constraint region
- Monitor Sydney STTM – significant constraint and admin market trigger, contingency gas

Low Dandenong LNG inventory

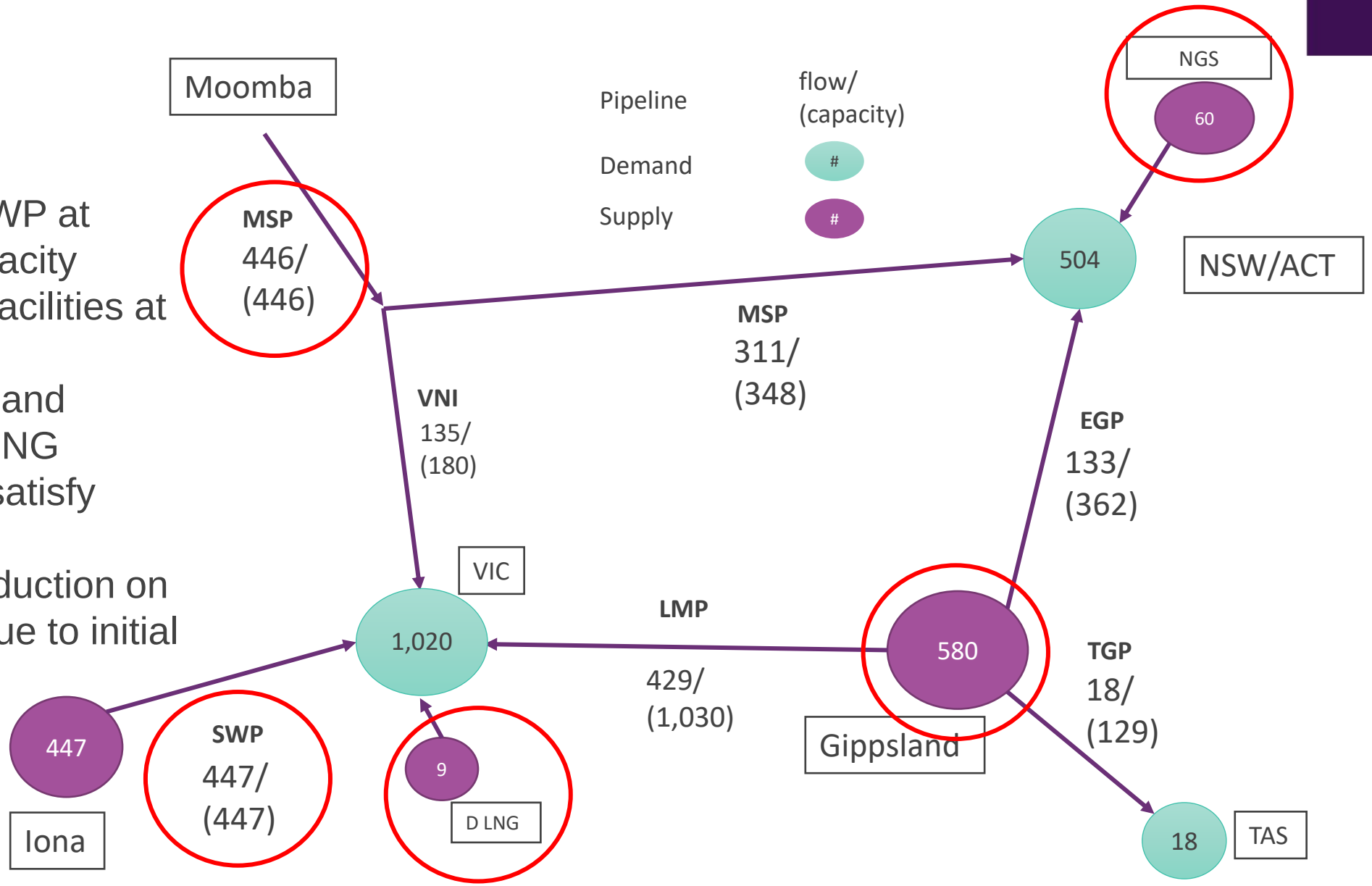
- How much more can we use while maintaining emergency reserve?

South-east constraint region

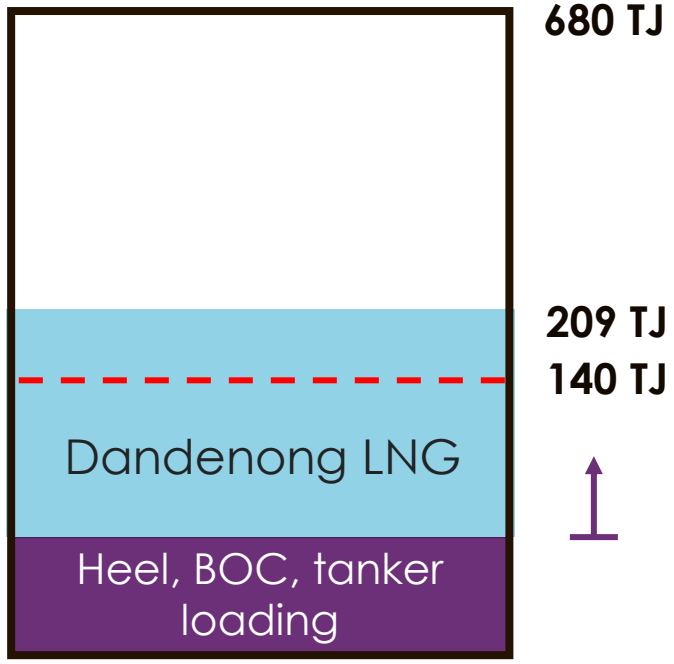


A broader view… 2/6/22 (D+1)

- MSP and SWP at pipeline capacity
- Production facilities at capacity
- Dandenong and Newcastle LNG required to satisfy demand
- Linepack reduction on EGP/TGP due to initial response

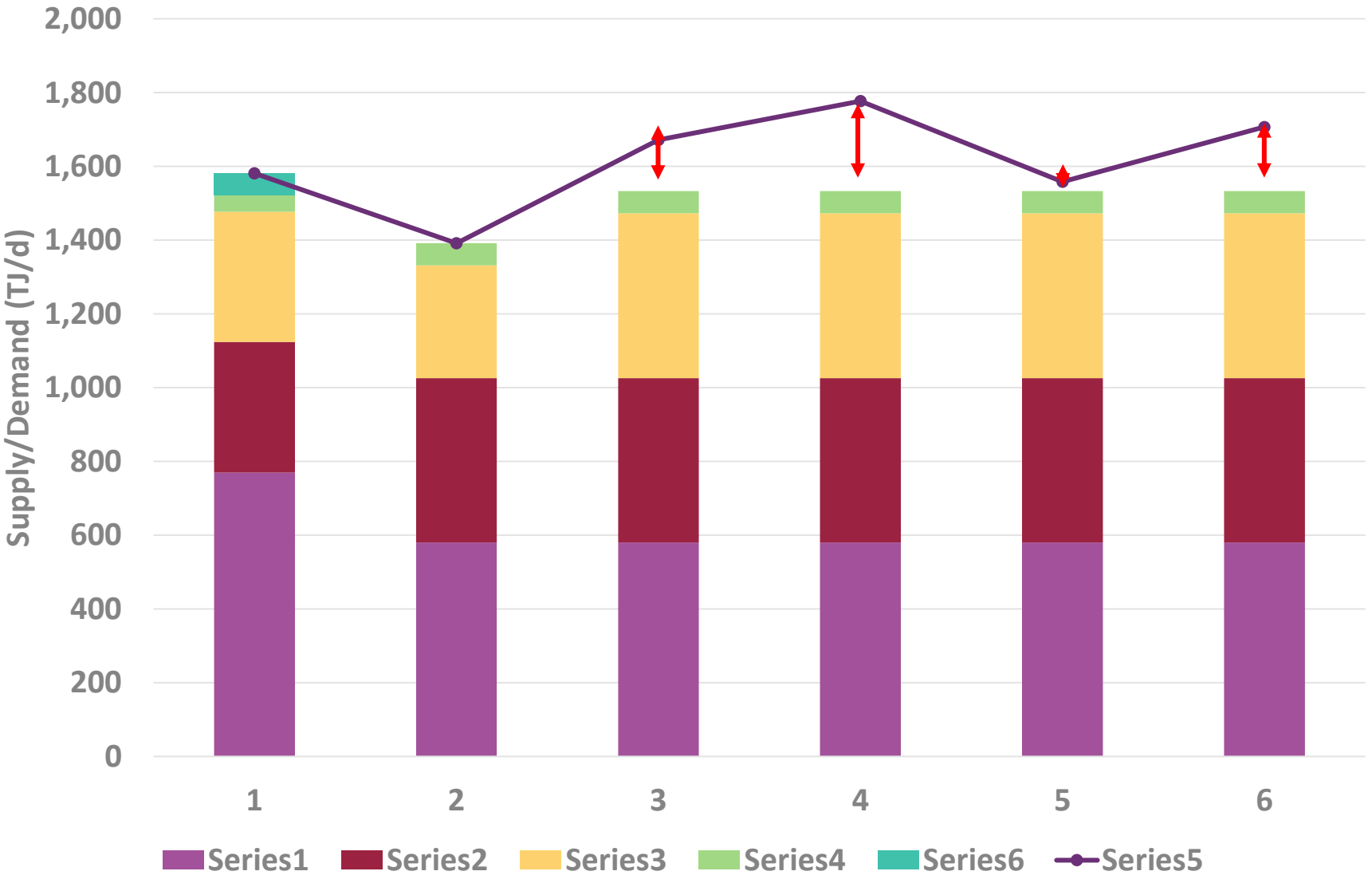


LNG considerations



- Substantial LNG already used
- Need to maintain emergency reserve
- How is the remaining quantity used?
- Likely to be a similar issue at Newcastle LNG

East coast outlook



- ~600 TJ of shortfalls
- 69 TJ of Dandenong LNG left
- ~530 TJ of forecast shortfall to manage.

Potential response

- Voluntary vs mandatory restrictions
- Initial curtailment response vs longer-term rationing
- Pain sharing between jurisdictions
- Emergency powers
- LNG inventory

For more information visit

aemo.com.au