

Energy in
action.®

ASX & Media Release

AGL Macquarie presentation

27 May 2015

Attached is a presentation to be made today by AGL executives at AGL Macquarie in the Hunter Valley, New South Wales.



Further inquiries:

Investors

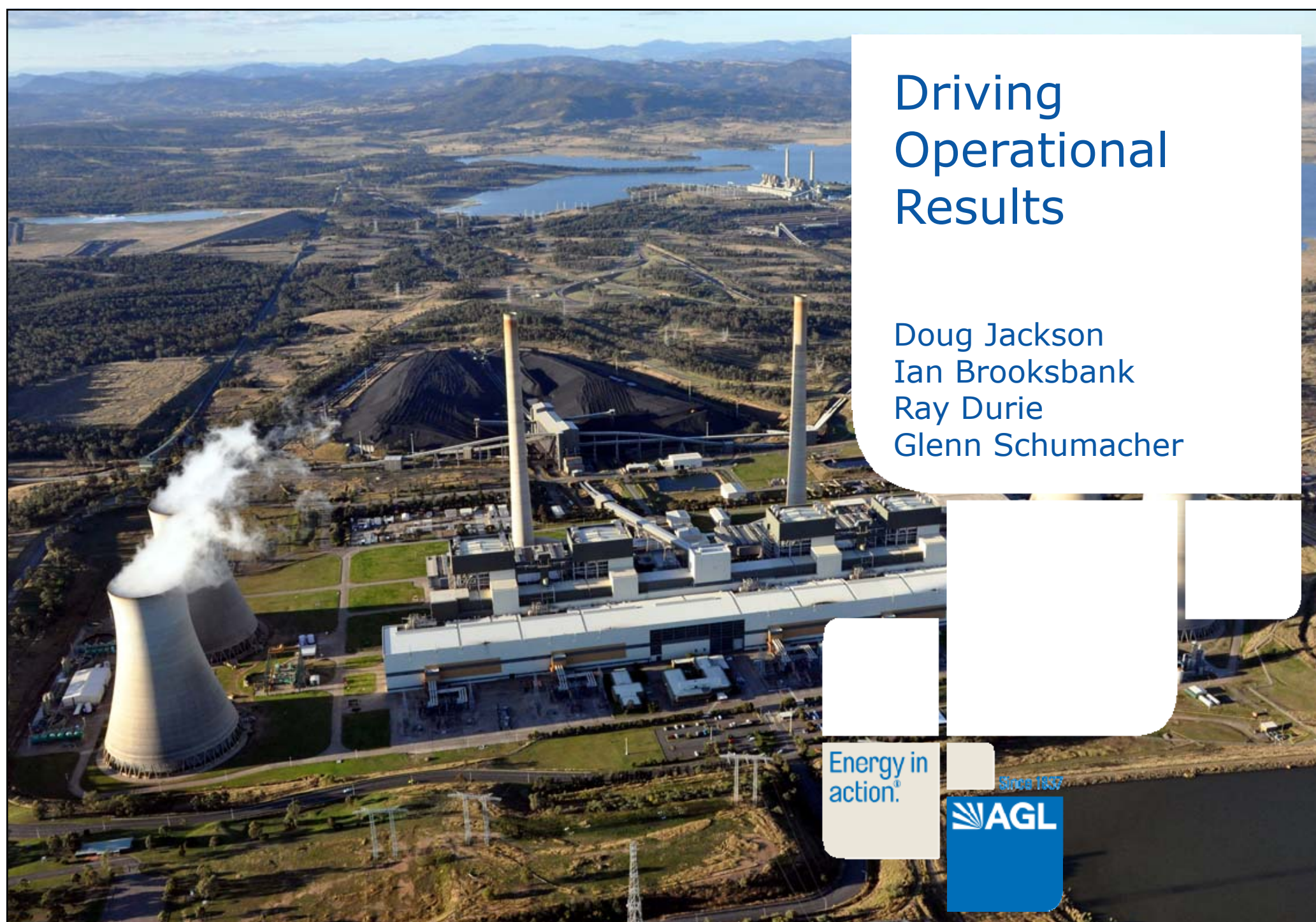
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About AGL

AGL is one of Australia's leading integrated energy companies and is the largest ASX listed owner, operator and developer of renewable energy generation in the country. Drawing on over 175 years of experience, AGL operates retail and merchant energy businesses, power generation assets and an upstream gas portfolio. AGL has one of Australia's largest retail energy and dual fuel customer bases. AGL has a diverse power generation portfolio including base, peaking and intermediate generation plants, spread across traditional thermal generation as well as renewable sources including hydro, wind, landfill gas and biomass. AGL is taking action toward creating a sustainable energy future for investors, communities and customers.



Driving Operational Results

Doug Jackson
Ian Brooksbank
Ray Durie
Glenn Schumacher

Energy in action.

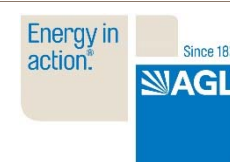


Agenda

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- 1 > Group Operations – Doug Jackson
- 2 > AGL Macquarie overview – Ian Brooksbank
- 3 > Coal advantage – Ray Durie
- 4 > Asset strategy – Glenn Schumacher

> Driving Operational Results
> Doug Jackson, Ian Brooksbank, Ray Durie and Glenn Schumacher
> 27 May 2015





Group Operations

Clear objectives; execute well.

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Safe and secure



Asset strategy



Capital discipline



Driving productivity



Cost effective



Harness insights



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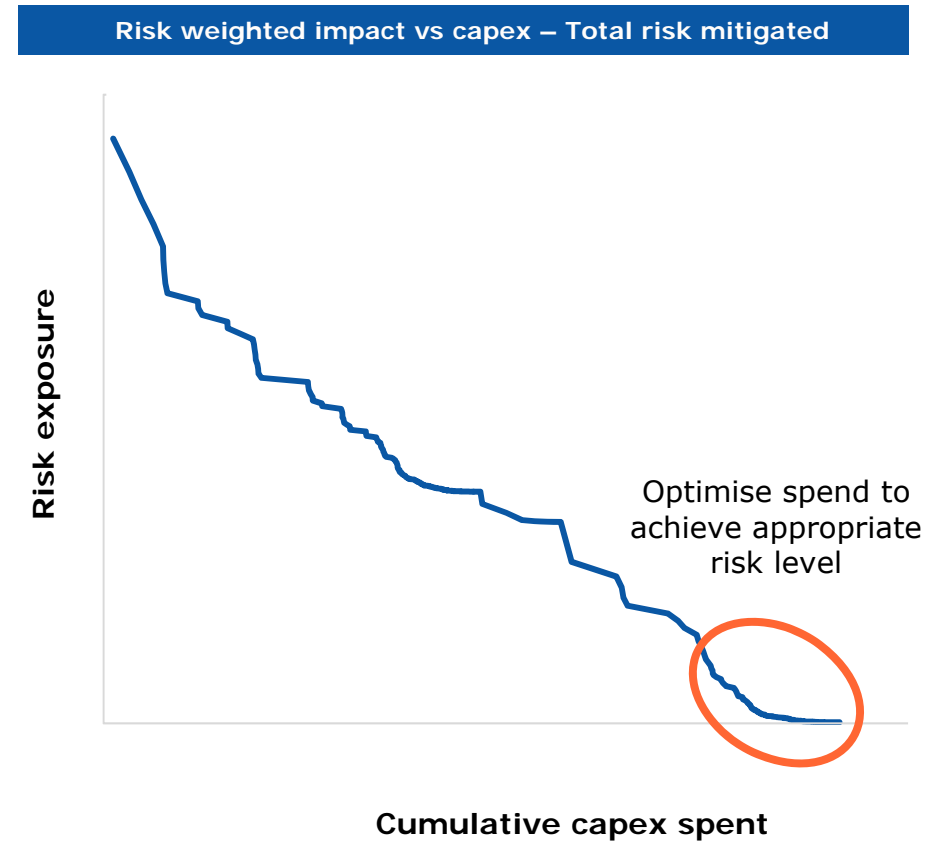


Capital efficiency

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Discipline around doing the right work at the right cost.

- > Periscope risk tool
- > Capital projects ranked across asset portfolio
- > Consistent management of capital projects
- > Standard project tools and processes
 - » Project Management Office (PMO)



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Project Pulse

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Driving sustainable improvements in cost and availability.

Continuous improvement

Procurement focus

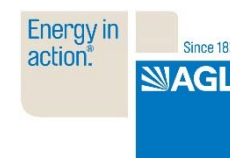
- > O&M spend
- > Capex spend
- > Outsourced services
- > Engineering & consulting services
- > Site services
- > Procurement structure

Business improvement

- > Visual boards and KPI's
- > Rewiring the Rhythm
- > Cost control process
- > Forced outage readiness
- > Work force productivity
- > Simplify processes

Results delivered

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Project Pulse: Bucket teeth initiative

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Challenging the status quo.

Concerns:

- > Low dig time
- > Low tool time
- > High wear rates

A better way

Results

- > Fewer replacements
- > Tool time nearly 100%
- > Lowered cost ~\$192,000 p.a.
- > ~2m tonnes more material moved



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Project Pulse: Conveyor shutdown

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Using technology to improve results.

Concerns:

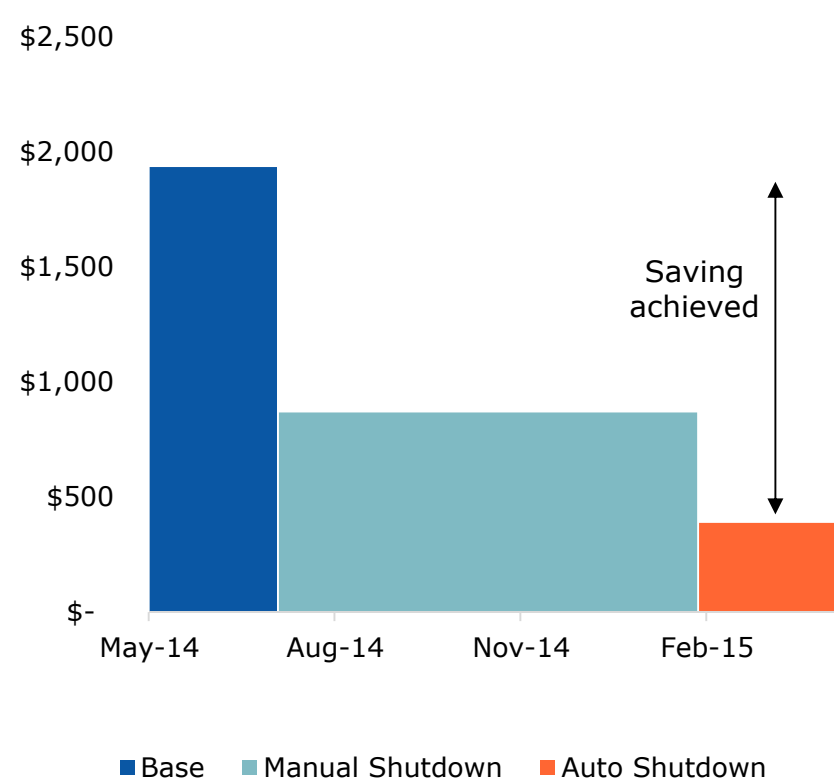
- > Conveyors running empty up to 4 hours per day
- > Increased maintenance costs
- > Electricity costs
- > High wear rates

Automation

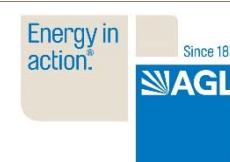
Results

- > Saved \$1 million p.a.
- > Lower carbon emissions
- > Reduced electricity bill
- > Less maintenance

Average Daily Cost of operating unloaded conveyors



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Project Pulse: Overtime reduction

People making a difference

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Concerns:

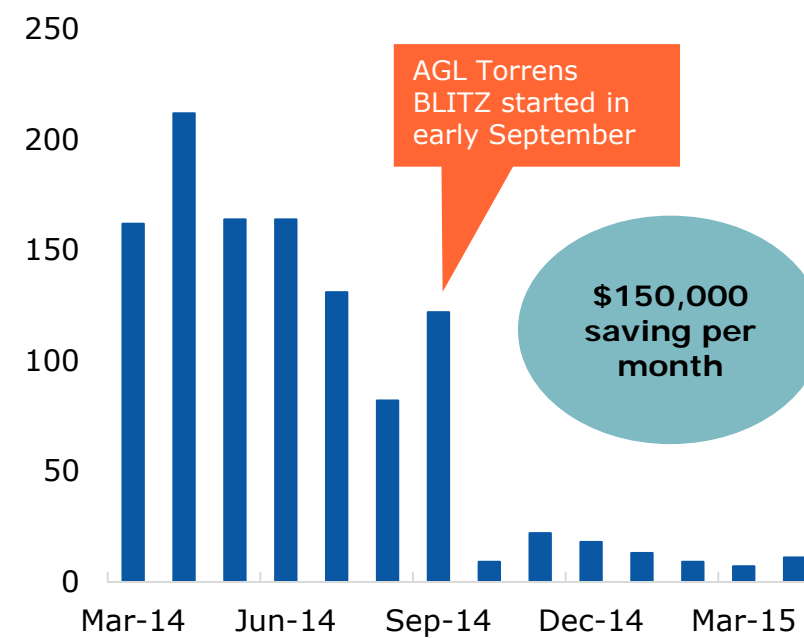
- > Excessive overtime costs
- > Rescheduling of work
- > Poor schedule compliance

Visible measures

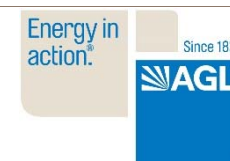
Results

- > 90% reduction in overtime
- > Planning compliance nearly 100%

Overtime cost per month (\$ 000)



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Project Pulse: Torrens boiler feed pumps

Improved quality at lower cost.

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Concerns:

- > Poor pump availability
- > \$m losses each year
- > Unplanned events
- > Significant rework

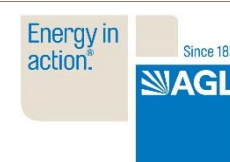
Improved process

Results

- > Specialist teams
- > High quality repairs
- > Increased system availability



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Project Pulse: Forced outage readiness

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Lean process to improve margins.

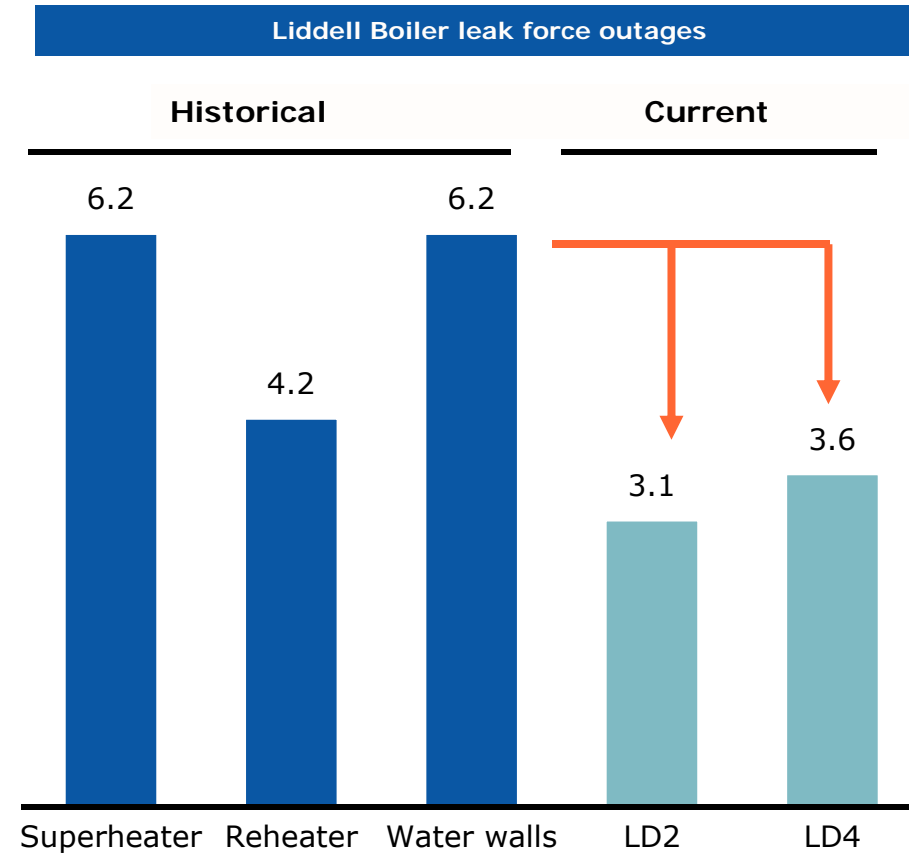
Concerns:

- > Poor tool time
- > No integrated schedule
- > Inconsistent delivery
- > Series processes

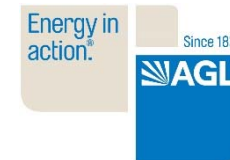
Lean process

Results

- > Average repair time reduced 40%
- > Tool time nearly 100%
- > EBIT improvement of \$350,000 per outage



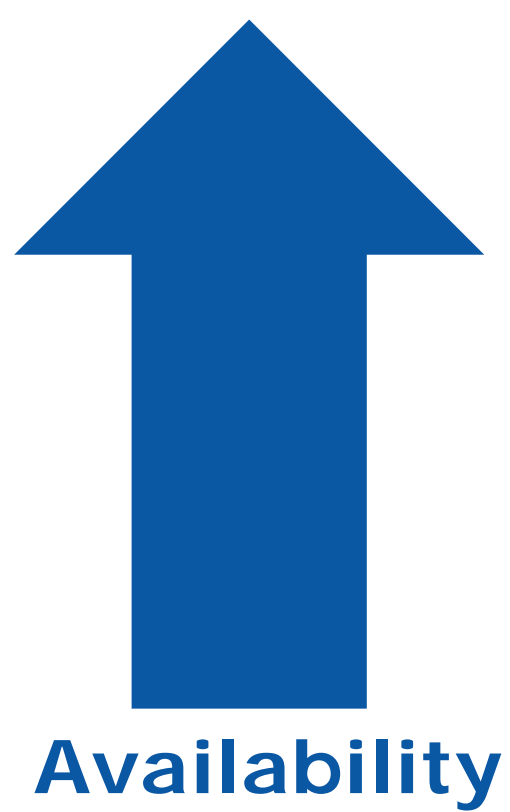
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Extracting value

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Executing with discipline and focus.



- > Generation asset efficiency
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AGL Macquarie: The Flagship

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Key facts.

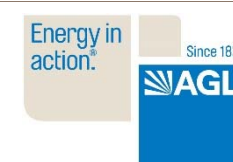
- > Produced 33.7% of NSW electricity in April 2015
- > FY14 last full year of NSW ownership:
 - » Generated 21.9 TWh
 - » 10% of the NEM
 - » Revenue of ~\$1 billion
 - » 10+ million tonnes of coal
 - » ~81.5 GL water

Opportunity

- > 1% increase in output lifts revenue by ~\$10 million



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Overview

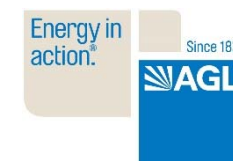
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Two of the lowest cost generators.

- > Two black coal fired power stations
 - » Bayswater (2,640 MW)
 - » Liddell (2,000 MW)
 - » Coal is delivered by rail unloaders (Antiene and Ravensworth) and conveyor
 - » Contracts substantially covered out to 2025
- > Annual water entitlements exceed 130% of typical use
- > Significant spend by previous owner
 - » Water infrastructure (\$110 million)
 - » Rail infrastructure (\$120 million)
 - » Liddell turbines new blades and rotors in last 10 years, Control system upgrade in 2003

Key metrics		
	Bayswater	Liddell
Nameplate Capacity	2,640 MW	2,000 MW
Commissioned	1985-1986	1971-1973
End of Technical Life	2035	2022
Fuel Type	Black Coal	Black Coal
% installed capacity in NSW	17%	13%
% installed capacity in NEM	6%	5%
Coal Consumption	c. 8.0 Mtpa	c. 3.0 Mtpa

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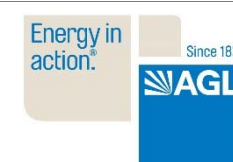
Overview

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Integration: Building on the foundation of great assets and great people.

- > Bayswater is well-designed, solidly built and well-maintained
 - » Significant opportunities to improve availability and reliability
- > Liddell has a good heart – but needs support at its end of life
 - » Prudent asset management
- > AGL Macquarie employs approximately 650 FTE
 - » Can do spirit
 - » Progressive union relations
 - » Well-trained
 - » Strong technical capabilities
- > Outperforming acquisition case to date

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Bayswater power station

Well-designed and built.

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- > Plant configuration
 - » 4 x 660 MW units = 16 Jumbo jets
 - » Turbine weighs over 1,300 tonnes
 - » Flexible coal handling plant
 - » Hyperbolic cooling towers
- > Plant History
 - » Commissioned between 1985 and 1986
 - » Proven preventative maintenance program



Bayswater - Larger than the Sydney Harbour bridge

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Liddell power station

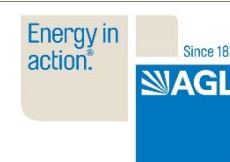
Managing output as it nears end of life.

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- > Plant configuration
 - » 4 x 500 MW units = 12 Jumbo jets
 - » High efficiency turbines
 - » Eight coal grinding mills per unit
 - » Cooling Pond (Lake Liddell)
- > Plant history
 - » Commissioned in 1970s
 - » Low to moderate utilisation since 1985
 - » Major plant replacements and refurbishments during the 1990s and 2000s
 - » Proven base load operations and flexibility
 - » Remaining life well understood

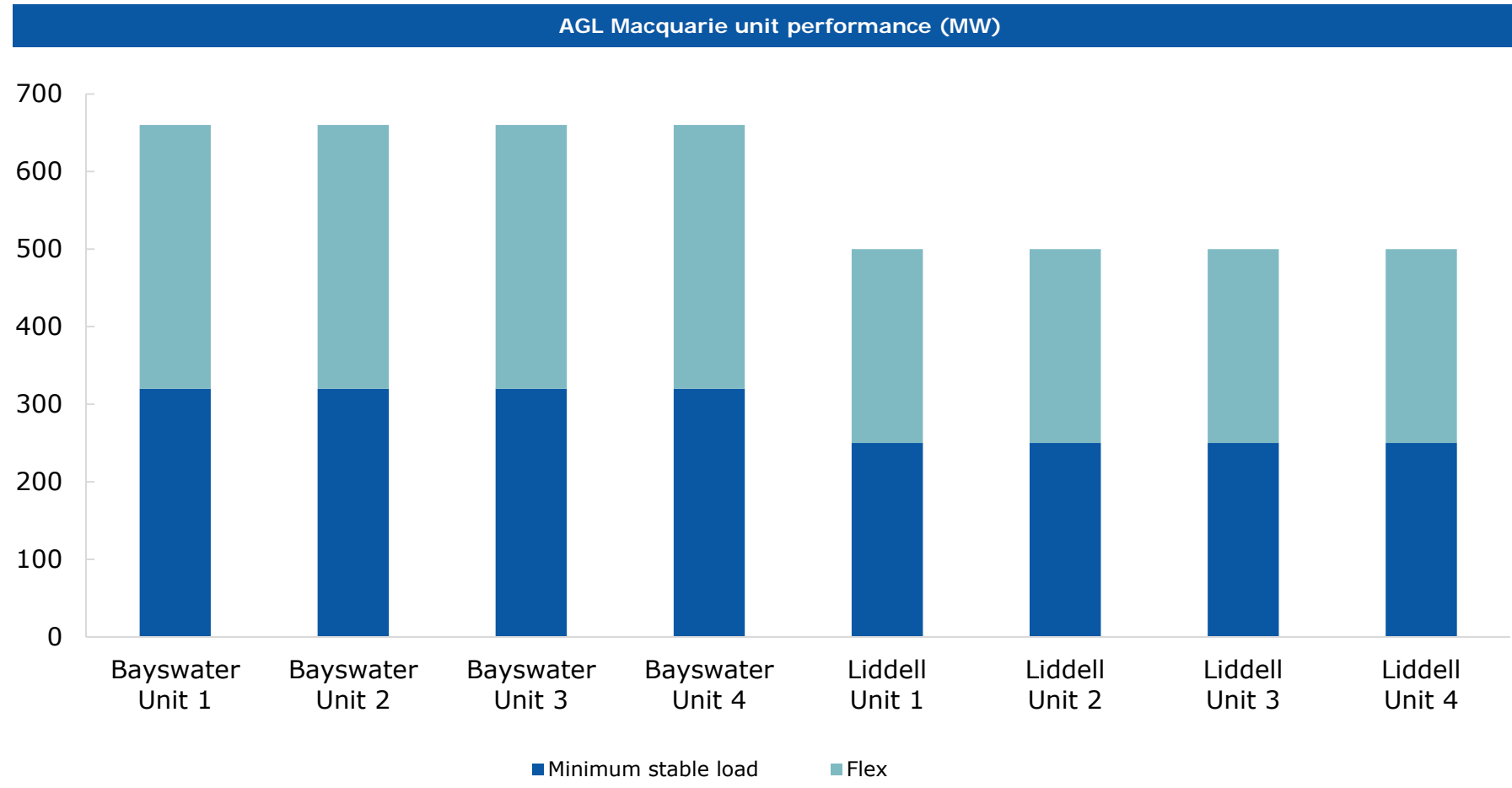


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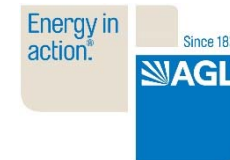


Generation flexibility

AGL Macquarie provides total flex of 2,360 MW.



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Water Security



Water resources

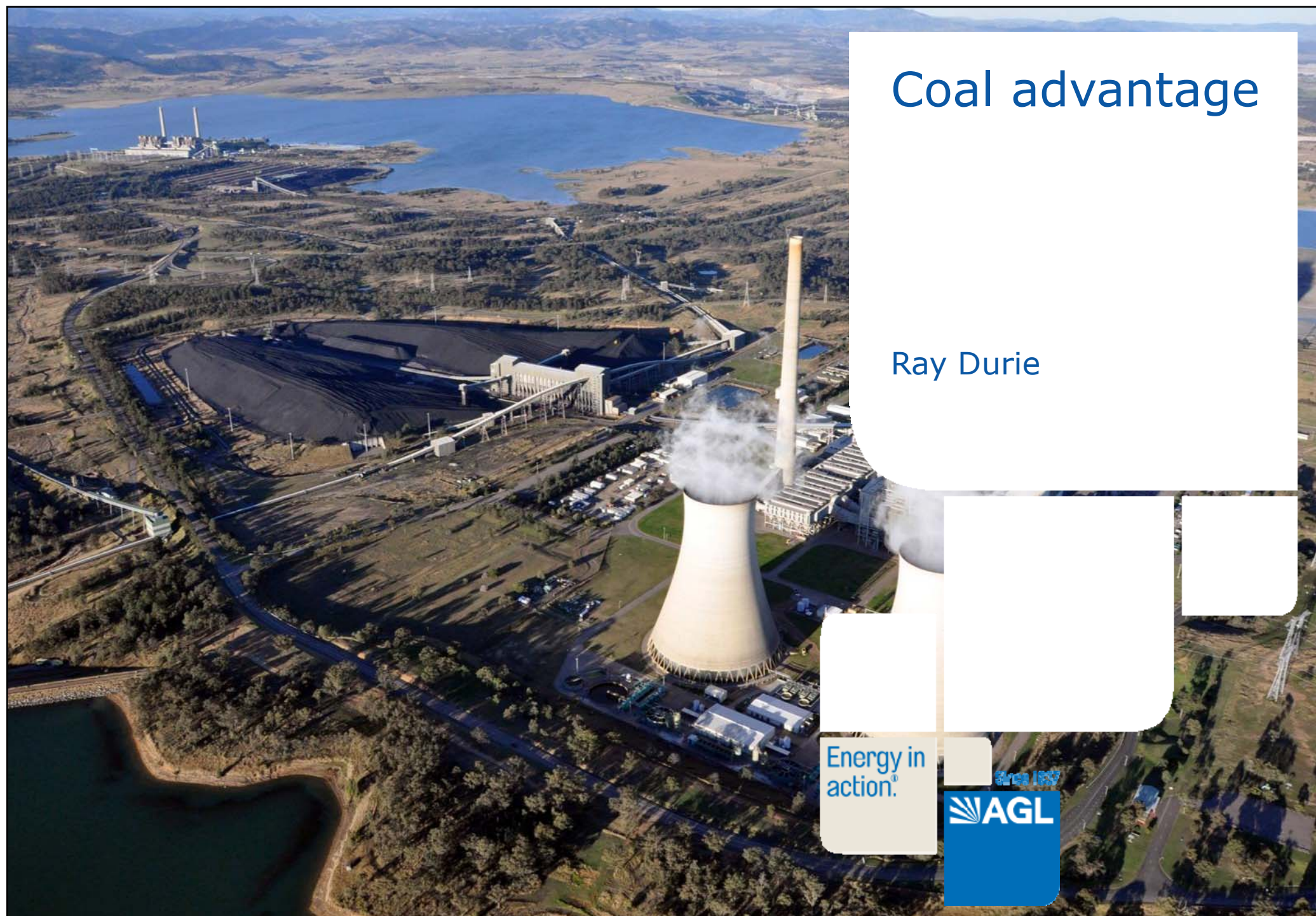
Drought proof in a dry climate.

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- > First zero discharge power station built in Australia
- > Annual water entitlements (106GL)
- > Water storage – 2.5 times Sydney Harbour
 - » Offsite (1,033GL)
 - » Onsite (218GL)
- > Pumping upgrade
 - » Increase of 160% to 1,200ML/day
- > Treatment plant upgrade
 - » Salt removal capacity increased 100% to 38,000 tpa
- > All storage levels currently ~ 90% or greater



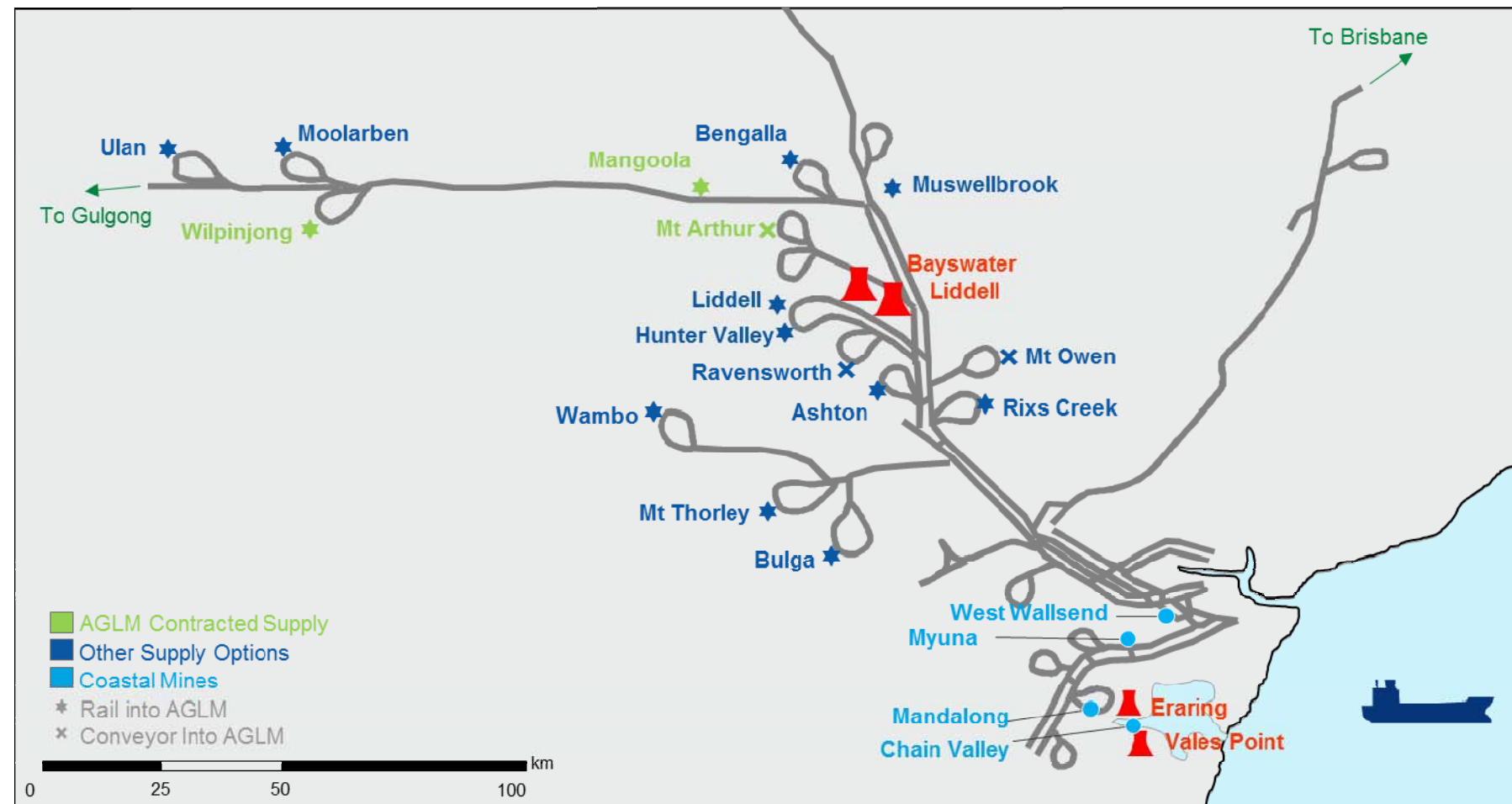
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Strategic coal advantage

Ideally located with significant delivery infrastructure.

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Rail access and infrastructure

State of the art rail access and infrastructure.

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Rail access

- > Contracted with ARTC until December 2024

Antiene coal unloader

- > Constructed in 2007
- > Loop designed for 96 wagon trains
- > Up to 3 trains on site
- > Facilities on site for train provisioning and maintenance
- > Currently operating at 9mtpa (85% of AGLM's current coal deliveries)
- > Approved for 15mtpa

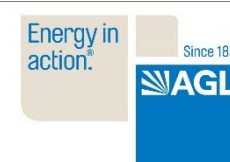
Ravensworth coal unloader

- > Backup facility
- > Approved for 8mtpa



Antiene coal unloading facility

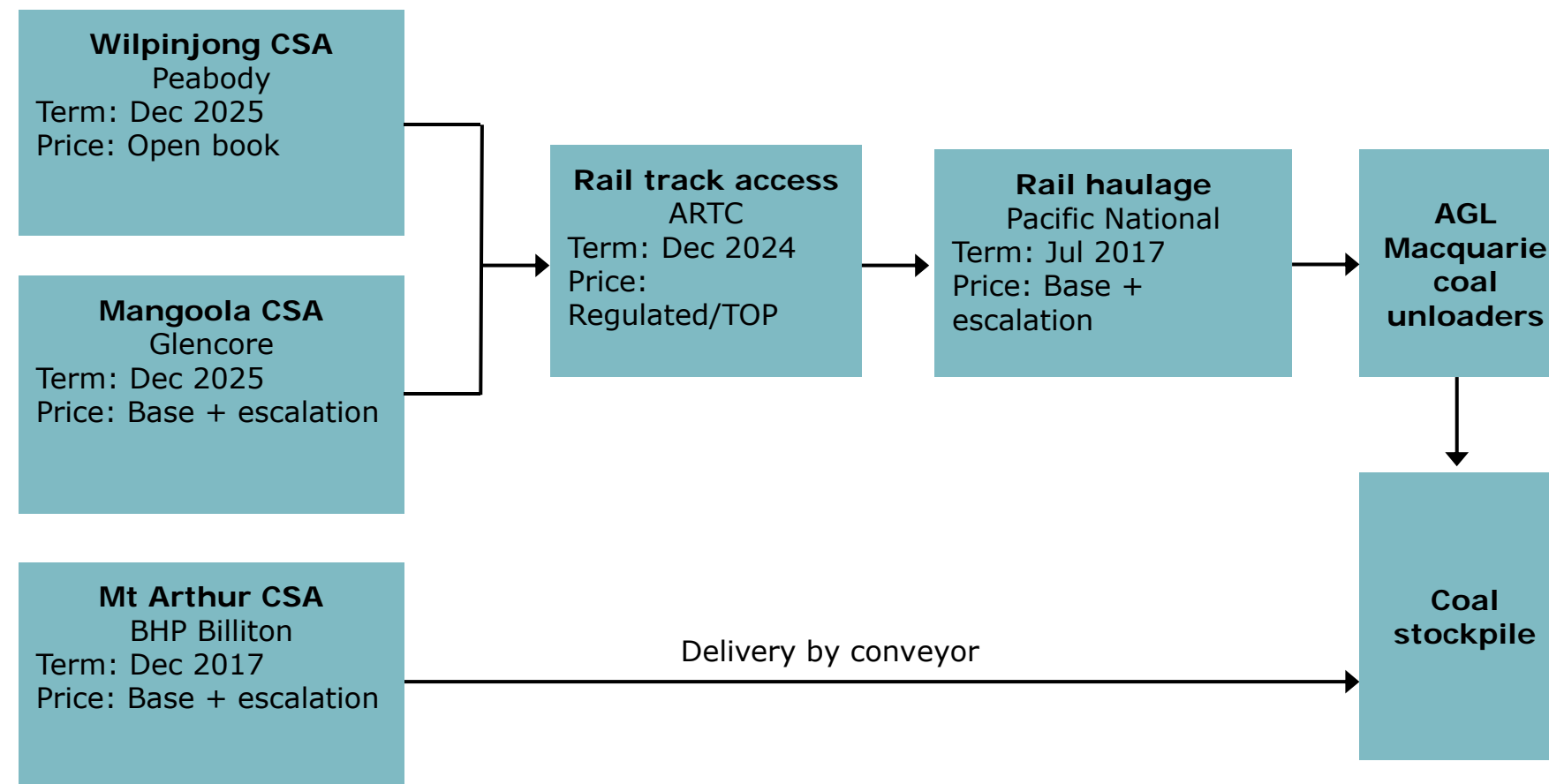
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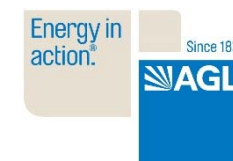
Coal supply and transport agreements

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Provides significant fuel flexibility.



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Coal quality comparison

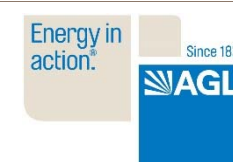
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Strategically sourced coal supply = competitive advantage.

- > Opportunity to access low cost coal that is not suitable for export
- > Coal price decoupled from export market pricing
- > Lower coal price significantly outweighs lower calorific value

	Typical AGL Macquarie	High ash export thermal	Export thermal
Calorific value (kcal/kg NAR)	5,000	5,500	6,000
Calorific value (MJ/kg GAR)	22.0	23.2 min	25.5 min
Moisture (% AR)	9	15 max	15 max
Ash (% AR)	26	23 max	14 max
Sulphur (% AR)	0.45	1.0 max	0.75 max

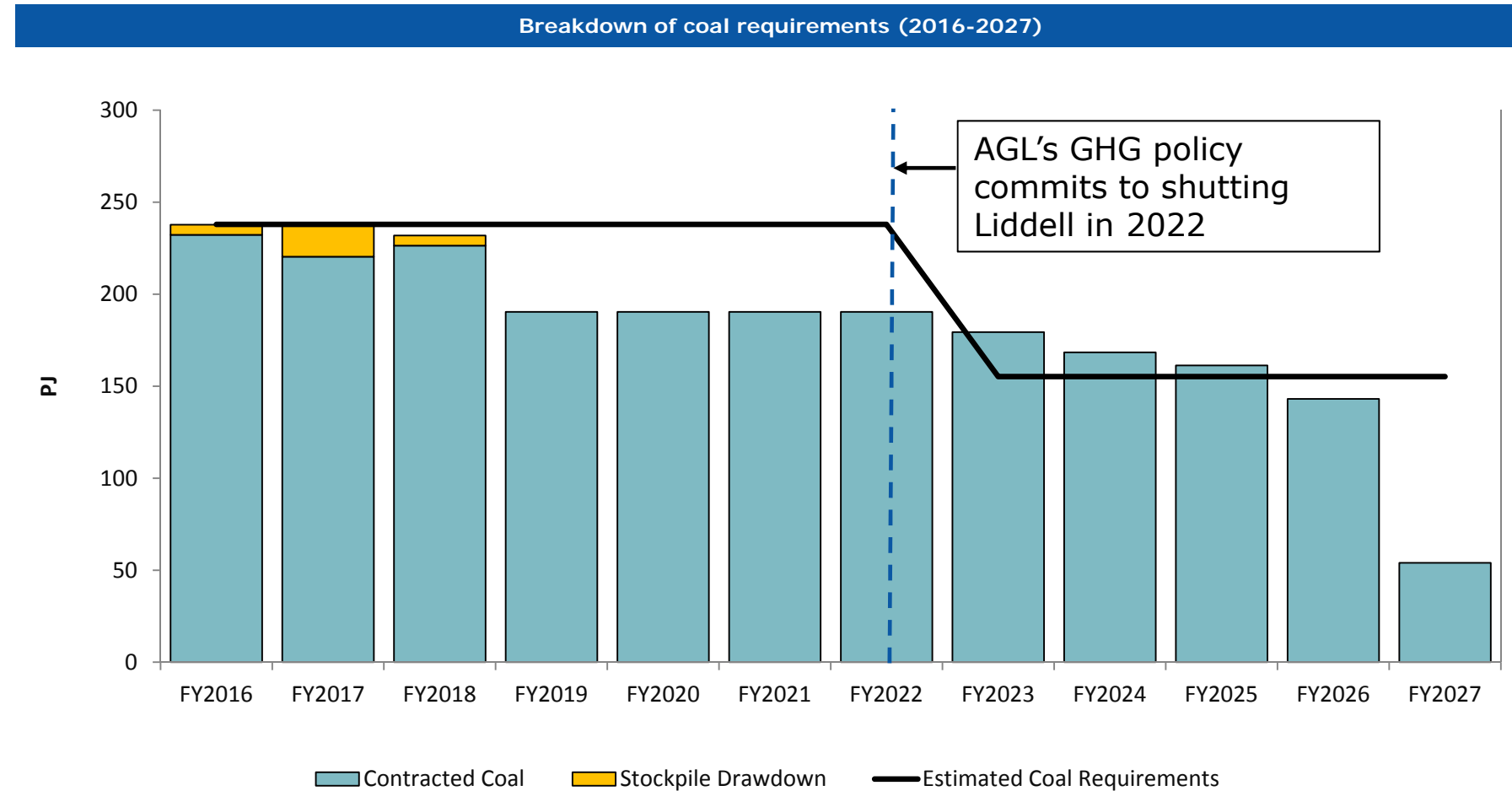
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Contracted coal supplies

Maintain price advantage through 2026.

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- > Coal advantage
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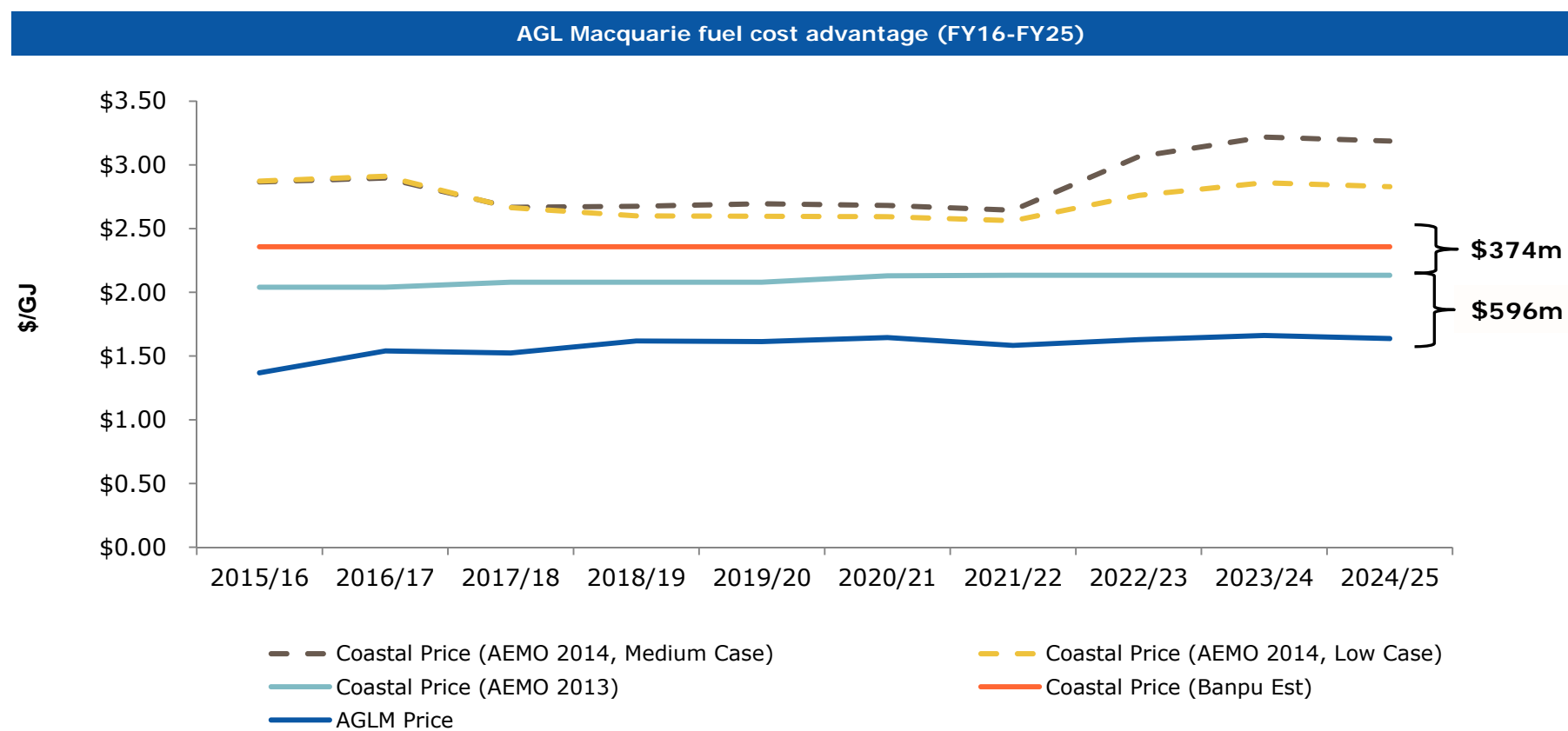


Long-term coal cost advantage

AGL Macquarie's fuel advantage estimated at ~\$1 billion^{3,4,5}.

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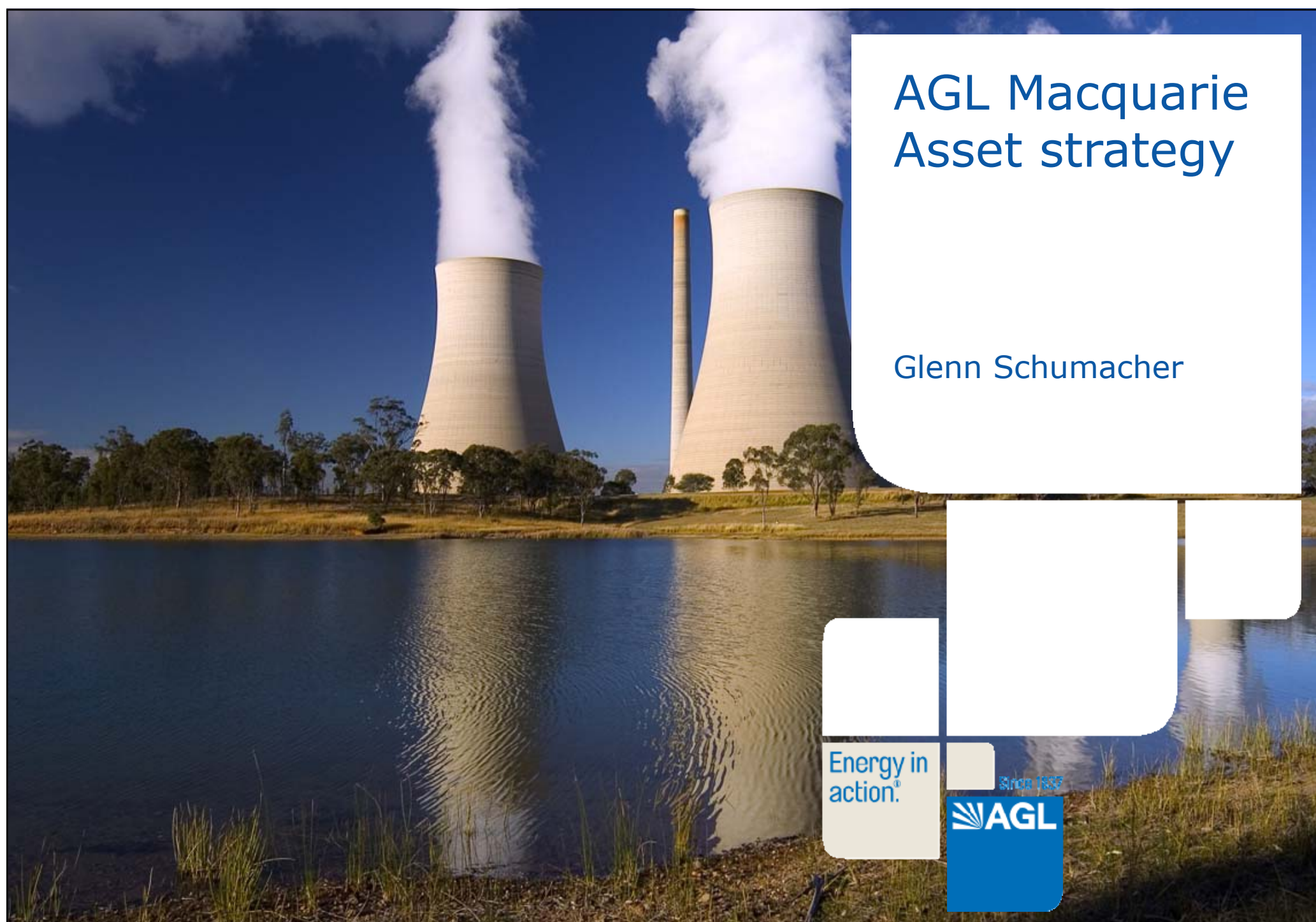
- > Fuel cost advantage between ~\$0.70-\$1.00/GJ^{3,4} versus coastal generators



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1. ACIL Allen 2014 Fuel and Technology Cost Review prepared for AEMO, low scenario
2. AEMO 2013 Planning Studies - Existing Generator Technical Data Summary
3. Price estimate for coastal stations based on Banpu Q1 2015 Investor and Analyst Update
4. AGL Data
5. FY16-FY25





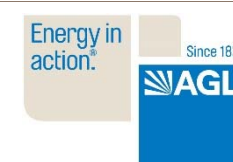
Asset strategy

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A "clean sheet" approach to both power stations.

- 1 > Engineering review of asset performance capability
- 2 > Challenging the status quo
- 3 > Catch up of maintenance backlog
- 4 > Trialing new methods
- 5 > Building upon fuel source strategy through plant flexibility

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Asset strategy

Due diligence identified opportunities.

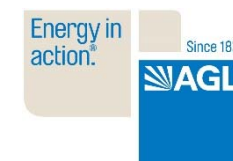
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- > Identified a number of critical areas that needed focused effort:
 - » Reducing milling losses at Bayswater ("Milling IS Thrilling" project underway)
 - » Reducing plant performance losses
 - » Improved outage management
 - » Boiler leak reduction
 - » Improved maintenance planning and scheduling
 - » Investing in turbines and control systems over next five years
- > Our experience is consistent with due diligence process



Bayswater ball mill

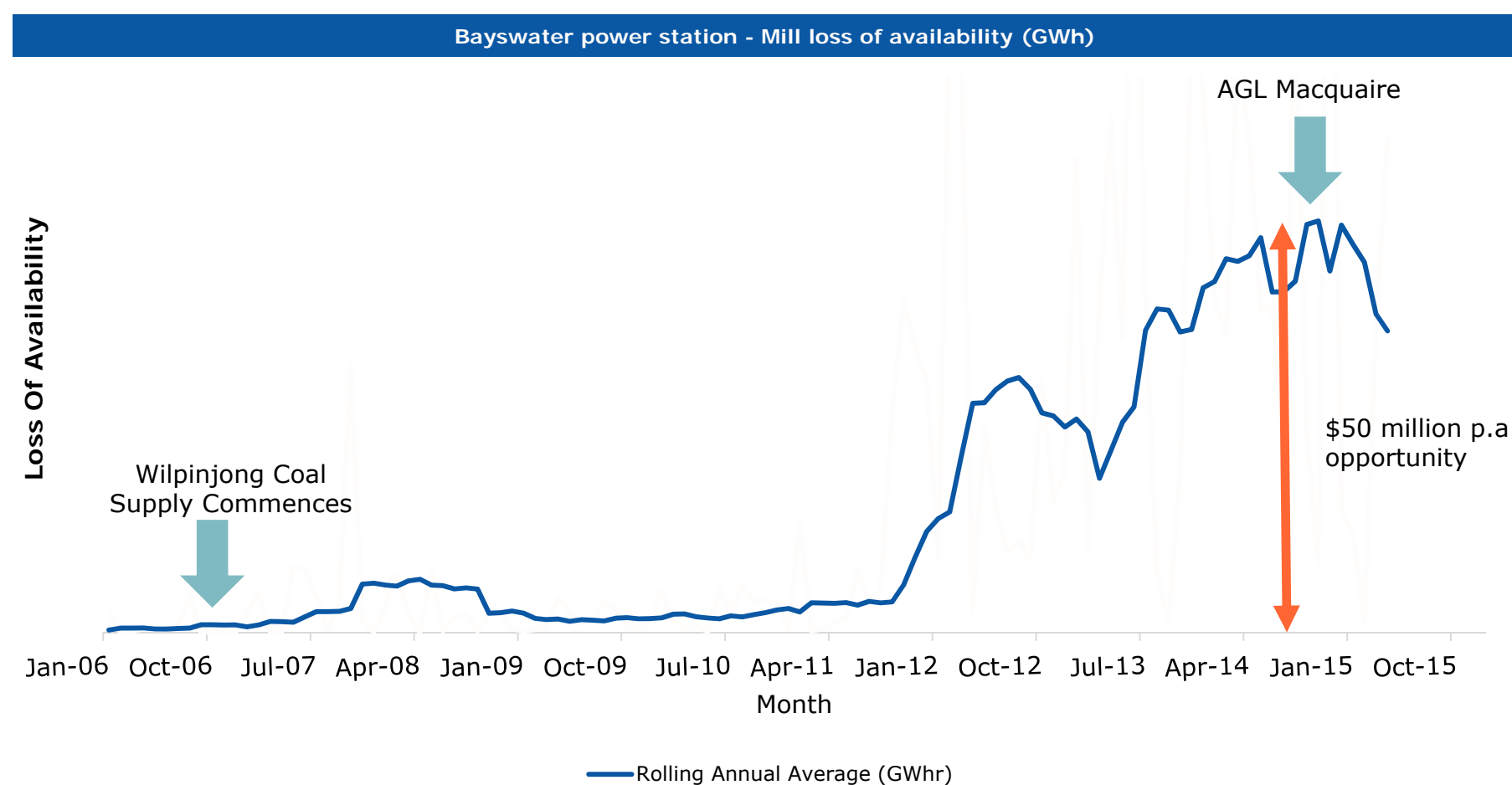
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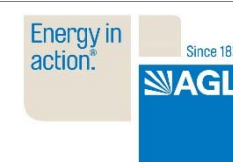
Asset strategy

Investing wisely to improve performance.

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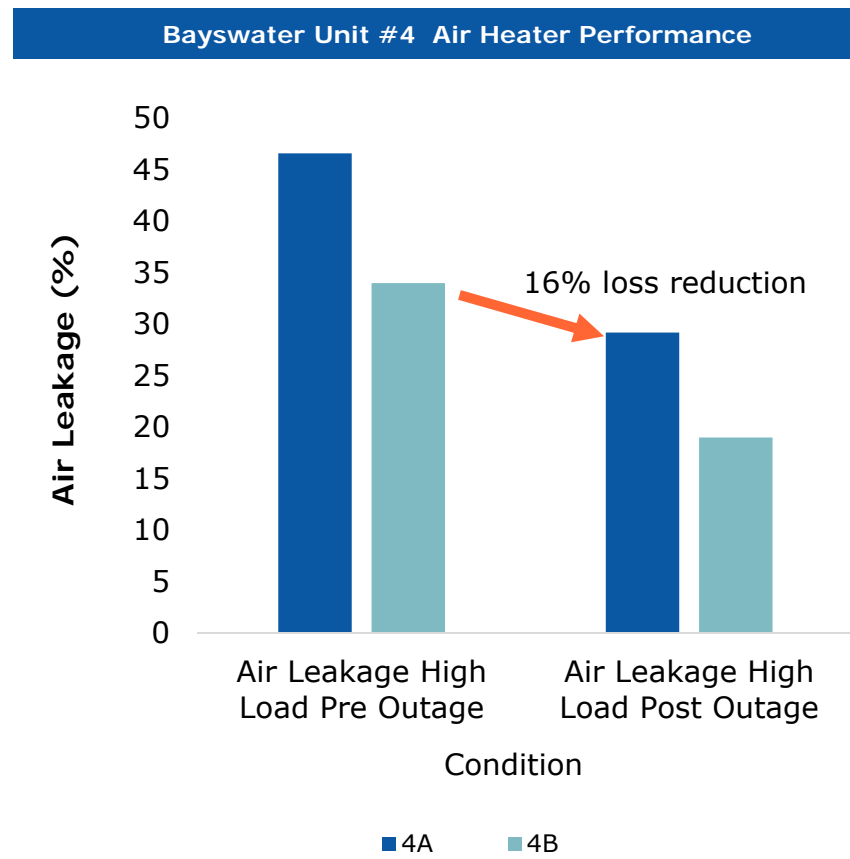


Asset strategy: Bayswater

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Enhancing asset performance delivers >\$200,000 p.a. improvement.

- > Improving air heater seals efficiency
 - » 30 MW maximum capacity recovery
 - » Reduced fan power losses
 - » ~6,300 tonnes of coal saved p.a.



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Asset strategy: Bayswater

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\$200 million investment in turbines and control systems.



Bayswater control room



Modern control room (AGL Torrens)



Bayswater turbines

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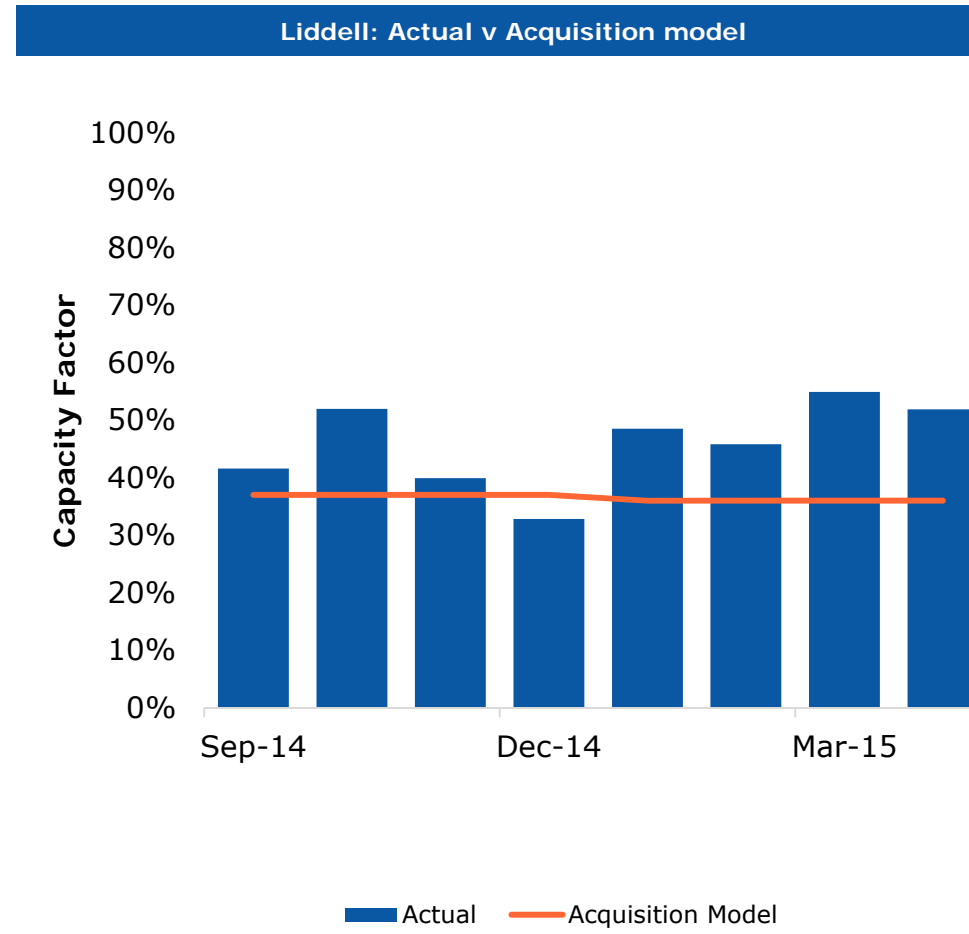


Asset strategy: Liddell

Safely extracting value.

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- > Asset life to 2022
- > 33 discrete asset management plans
- > Modest capital investment plans
- > Station output has been higher than Acquisition model due to:
 - » Refocus on plant return to service
 - » Outage planning and execution



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