



To	Company Announcements Office	Facsimile	1300 135 638
Company	ASX Limited	Date	28 November 2017
From	Helen Hardy	Pages	62
Subject	ORG 2017 Investor Day Presentation		

Please find attached a release on the above subject.

Regards

Helen Hardy  
Company Secretary  
02 8345 5000





origin

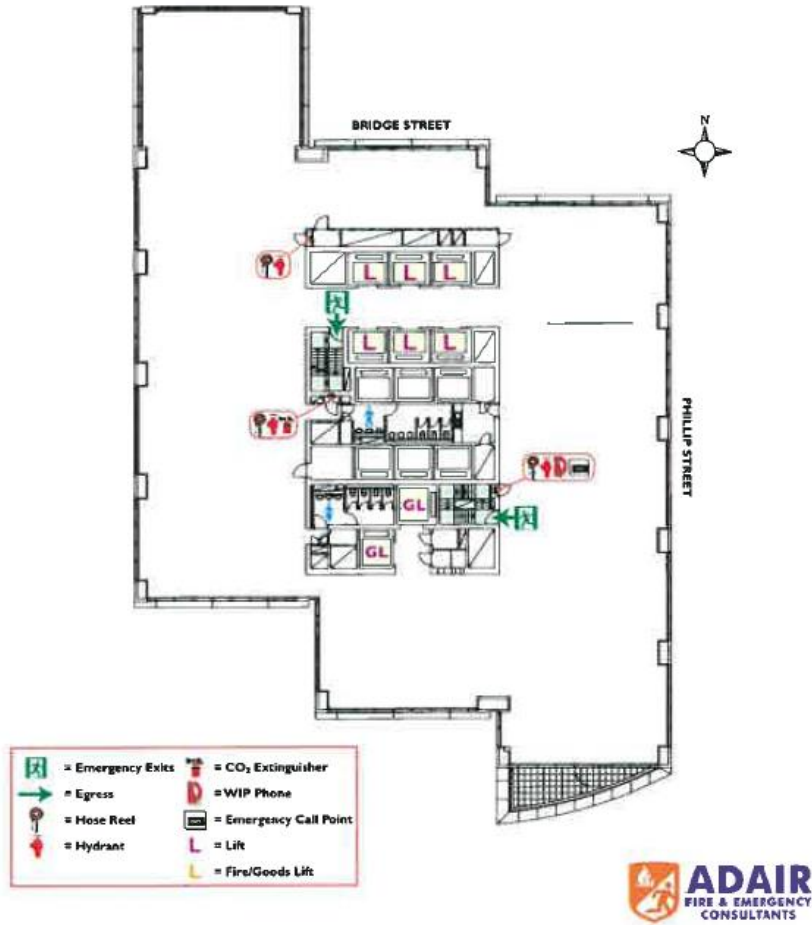
# 2017 Investor Day

28 November 2017



# Safety moment

## Governor Macquarie Tower - Levels 15 & 19-27 Floor Plan



- **Alert tone (“beep, beep, beep”)**
  - Follow instructions of Wardens
  - Be ready to evacuate
- **Evacuation tone (“whoop, whoop, whoop”)**
  - Evacuate via nearest exit
  - Proceed calmly to assembly area



# Schedule

## 28 November (Sydney - Dexus, Level 15, 1 Farrer Place)

Time	Duration	Topic	Presenter
10:00	5 mins	Introduction	Peter Rice (GM, Capital Markets)
10:05	15 mins	Strategic overview	Frank Calabria (CEO)
10:20	15 mins	Capital management	Lawrie Tremaine (CFO)
10:35	30 mins	Upstream	Mark Schubert (EGM, Integrated Gas)
11:05	25 mins	Q&A session	
11:30	15 mins	Morning tea	
11:45	20 mins	Energy Supply & Operations	Greg Jarvis (EGM, Energy Supply & Operations)
12:05	20 mins	Retail	Jon Briskin (EGM, Origin Retail)
12:25	35 mins	Wrap up / Q&A session	Frank Calabria (CEO)
13:00	45 mins	Lunch	

## 29 November (Eraring Power Station)

Time	Duration	Activity
08:00	120 mins	Bus departs from Radisson Blu (27 O'Connell Street)
10:00	60 mins	Eraring Power Station - Safety induction & overview
11:00	90 mins	Bus tour
12:30	45 mins	Lunch
13:15	60 mins	Walking tour
14:15		Conclusion and return bus trip to Sydney



# STRATEGIC OVERVIEW

Frank Calabria

1. Delivering on near term priorities
2. Rebuilding the right to grow
3. Global energy markets accelerating to a low carbon future
4. Origin part of the energy solution and positioned to prosper in a changing energy world
5. Near term catalysts

# Delivering on FY2018 priorities



## REDUCING DEBT AND IMPROVING RETURNS

- Sale of Lattice for \$1,585 million
- On track for Adjusted Net Debt below \$7 billion by June 2018
- Disciplined capital management
- Addressing complexity and cost



## LEADERSHIP IN ENERGY MARKETS

- Secured 41PJ of additional gas for the domestic market
- FY2018 Eraring output of 15.5 – 16 TWh (higher than prior guidance)
- Renewables coming online
- Transforming customer experience through digital, innovative products and future energy solutions



## LEADERSHIP IN INTEGRATED GAS

- Business reset (zero base)
- Targeting A\$500m+ p.a. APLNG cost reduction over 18 months
- Targeting <US\$40/boe<sup>1</sup> distribution breakeven run rate from June 2019
- Preparing for FEED on Ironbark

## TRANSFORMING CULTURE

- Moving to a simpler and leaner operating model
- Refreshing Purpose, Values and Behaviours
- Proactively adapting to changing energy markets

(1) AUD = 0.75 USD

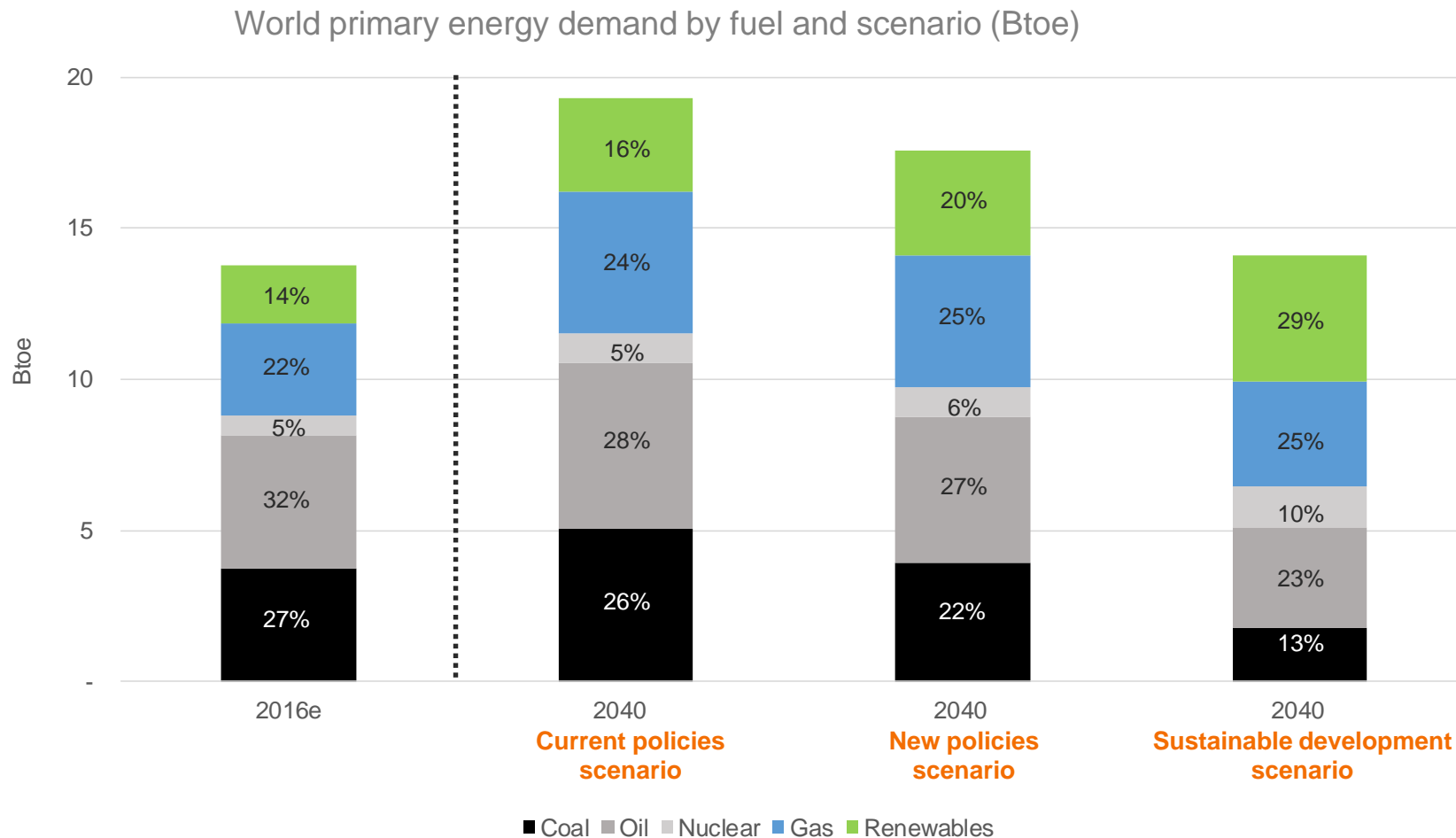
# Rebuilding the right to grow

- Asset sale program largely complete
- Making good progress on balance sheet repair
- Capital discipline strengthened
- Renewing efforts to lift the bar on organisation complexity and cost



# Changing global energy markets

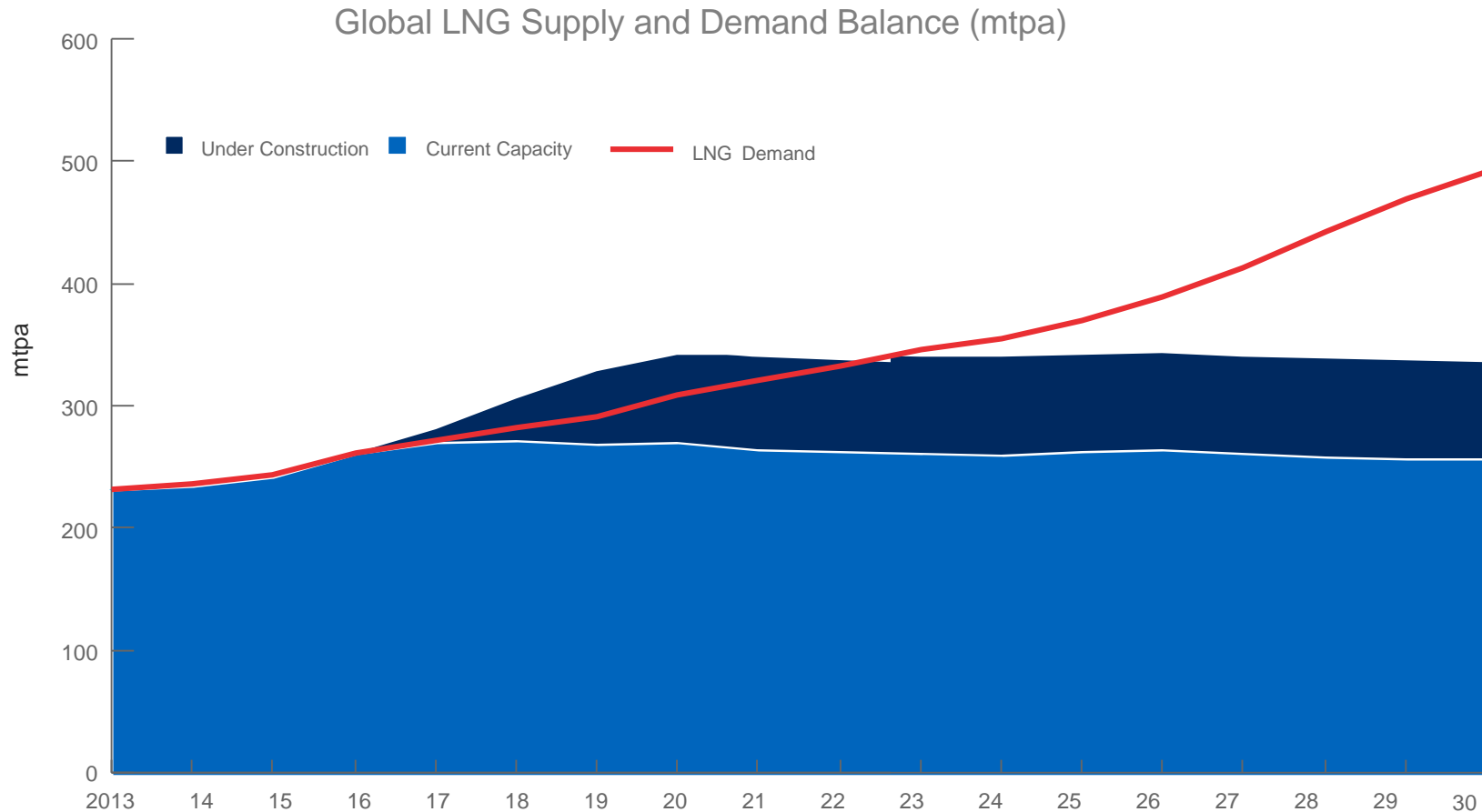
Renewables expected to be the fastest growing source of energy with gas continuing to play an important role under all IEA carbon reduction scenarios



Source: International Energy Agency (IEA), World Energy Outlook 2017

# Changing global energy markets

LNG market is forecast to be oversupplied near term, but moving into a deficit position from early 2020s



Source: McKinsey Energy Insights Global Gas Model

# Changing global energy markets

## Decarbonisation

- Efforts to tackle climate change continue to support **strong growth in renewables** and **gas as a partner of renewables**

## Decentralisation

- Technological advancement enabling **consumer empowerment** and transition towards a **decentralised** energy future

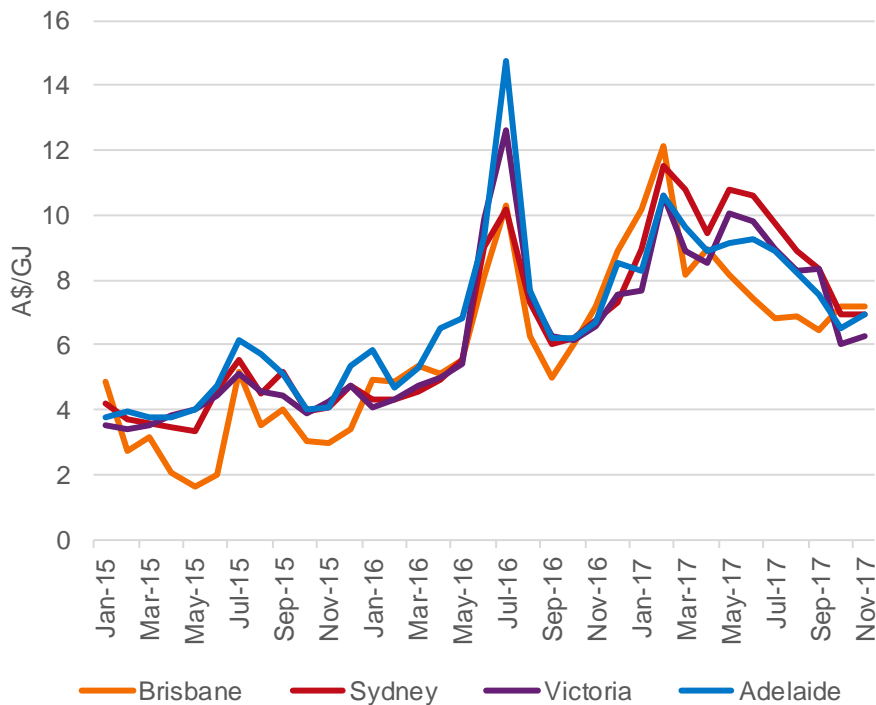
## Digitisation

- Changing all aspects of operations and requiring an overhaul of **business processes** and **interactions with customers**

# Australian energy market

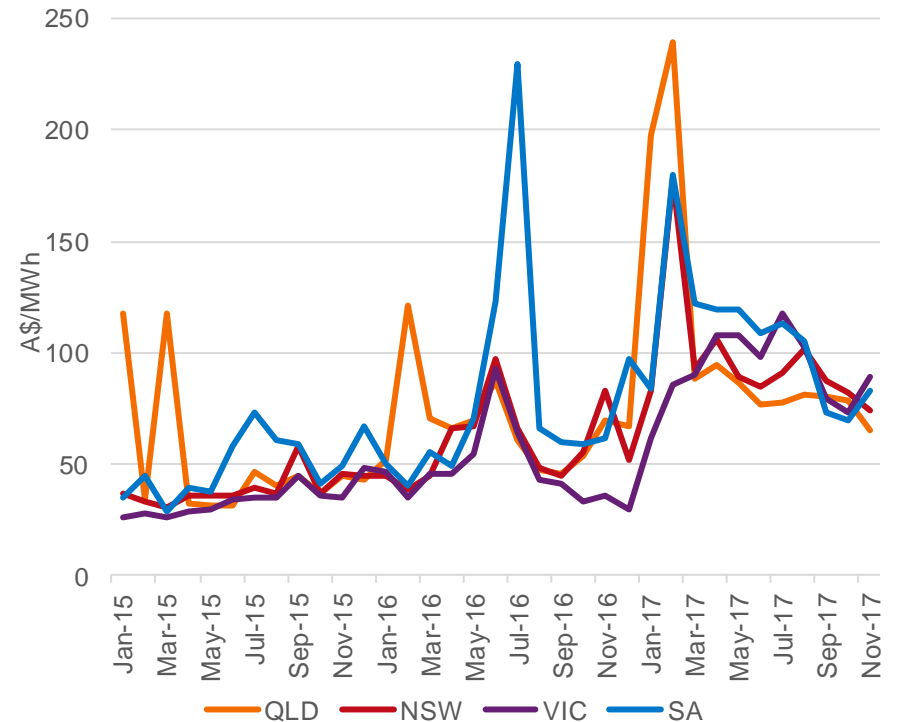
As markets transition there is heightened concern for reliability & affordability

### Historical Monthly Average Wholesale Gas Prices<sup>1</sup>



Source: AEMO

### Historical Monthly Average Wholesale Electricity Prices



Source: AEMO

1) Short term trading market

# Origin is focused on being part of the energy solution

- ✓ Increasing Eraring output (to 15.5 – 16 TWh)
- ✓ Recently secured 41 PJ of additional gas from APLNG for the domestic market
- ✓ Brought 240 MW of generation back on line in SA
- ✓ Providing energy reliability via Australia's largest fleet of peaking gas-fired power stations
- ✓ Renewable supply expected to almost triple by 2020 (1,200 MW committed since March 2016)
- ✓ Working with government to address energy affordability, reliability and sustainability
  - ❑ Support the National Energy Guarantee
  - ❑ APLNG committed to meeting AEMO gas shortfall
  - ❑ Support retail initiatives at a Federal and State level





# Origin's strategy is designed to capture value in the future energy world

**Leading the transition to a  
cleaner, smarter and customer-centric energy future**

**Connecting customers to the energy and technologies of the future**

Leading customer  
experience and  
solutions

Accelerate  
towards clean  
energy

Embrace a  
decentralised and  
digital future

Low cost operator

Develop  
resources to meet  
growing gas  
demand

**Disciplined capital management**



Employees



Customers



Shareholders



Communities

# Near-term catalysts

- Continued deleverage
- Capturing value from our energy market position
  - Running Eraring harder in response to high wholesale prices
  - Gas supply position to grow market share and support generation
  - Growing renewables, partnered with existing gas fleet
- Step change cost reduction in APLNG

## FY2018 guidance reaffirmed

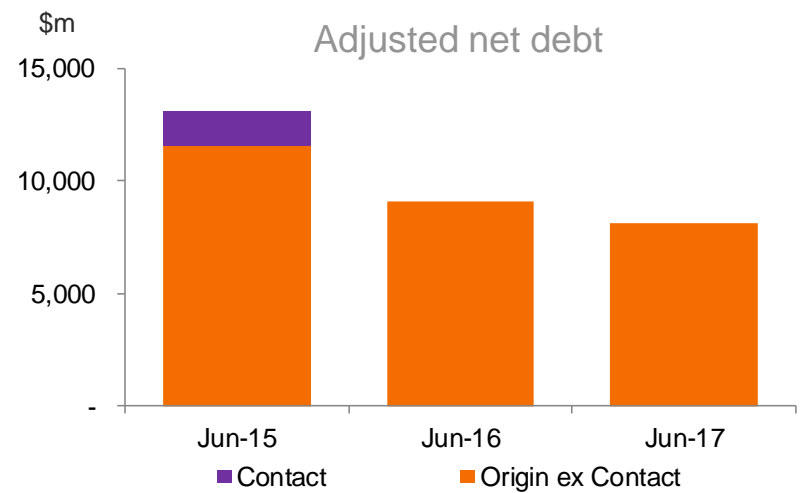
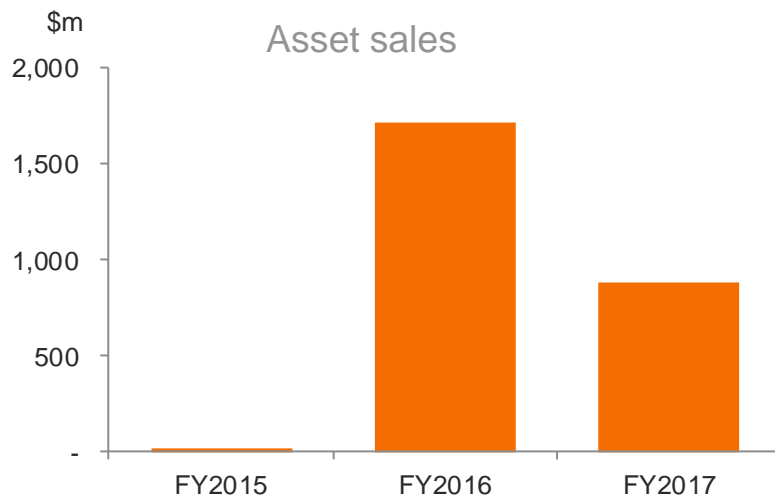
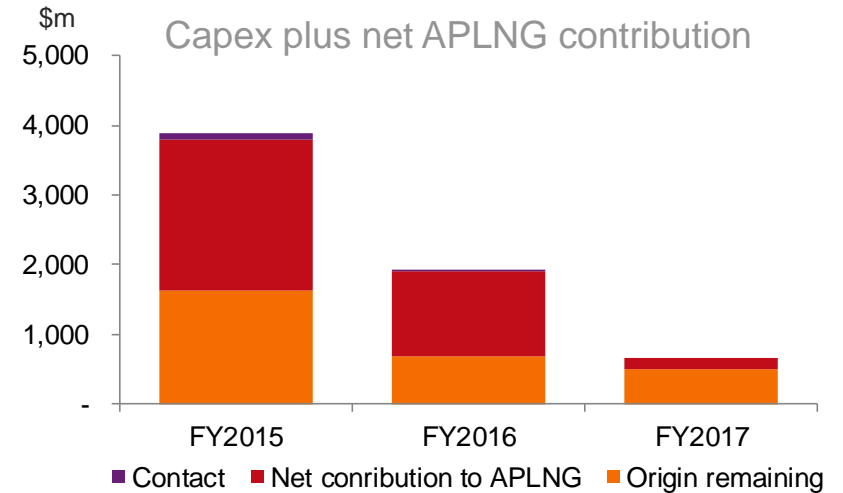
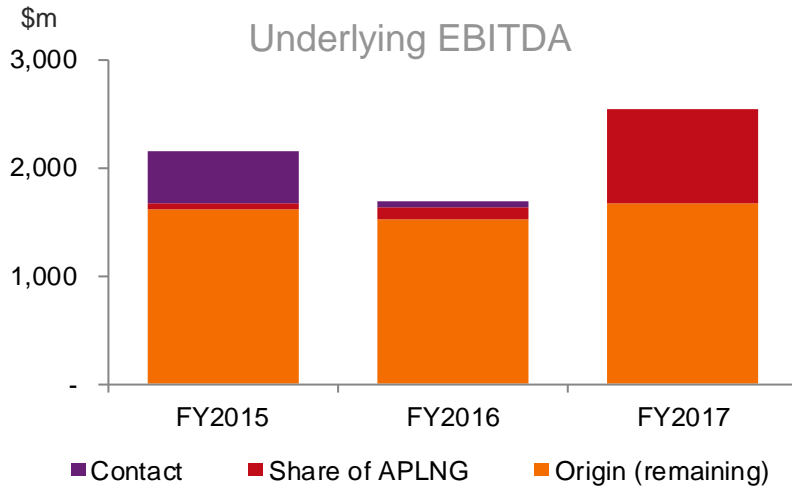
- ✓ Energy Markets FY2018 EBITDA is expected to be in the range of \$1.7 - \$1.8 billion, provided that market conditions and the regulatory environment do not materially change
- ✓ Origin's share of APLNG production is expected to be 245 - 265 PJ
- ✓ In FY2018, APLNG is expected to be cash flow break-even at US\$48/boe (assuming AUD:USD exchange rate of 0.75)
- ✓ Capital expenditure (excluding Lattice Energy) is expected to be \$360 - \$420 million
- ✓ Adjusted Net Debt is expected to be below \$7 billion



# CAPITAL MANAGEMENT

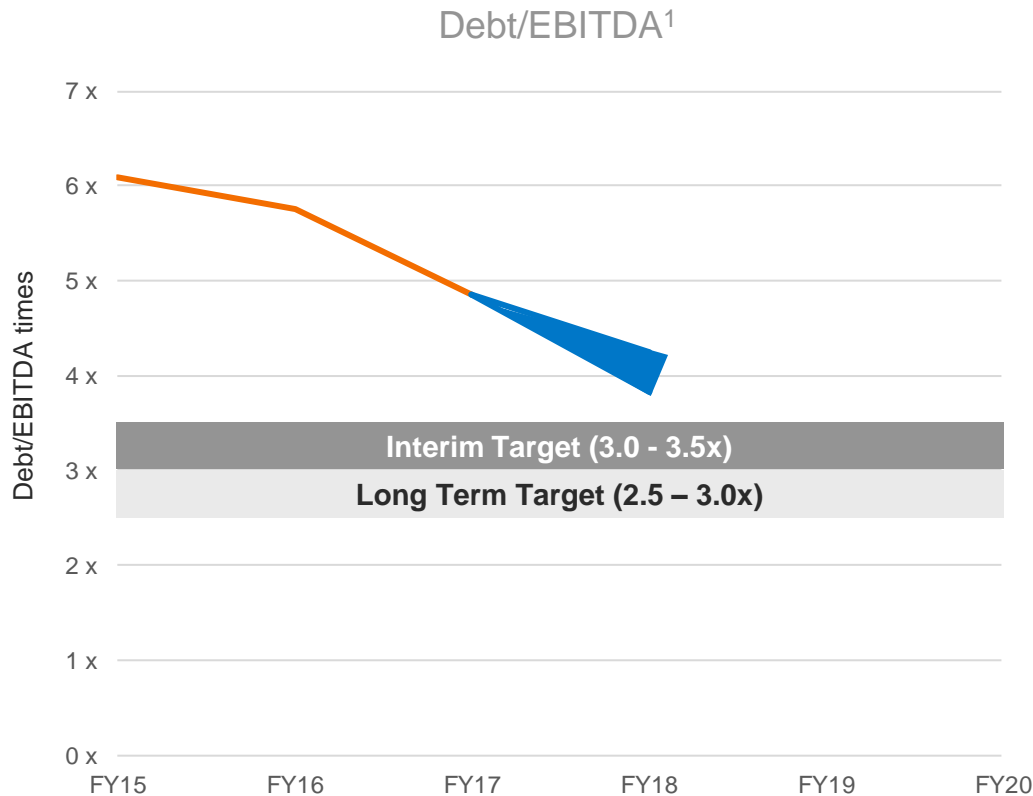
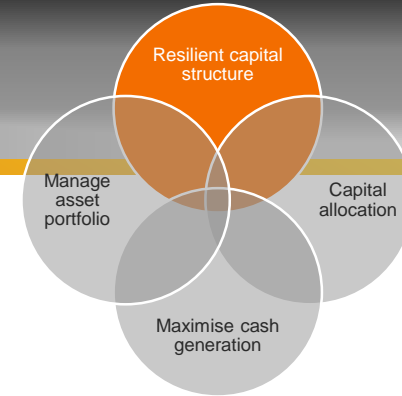
Lawrie Tremaine

# Performance highlights





# Target capital structure



## Goal to achieve stable investment grade rating

- BBB/Baa2
- Upgraded rating action following Lattice Energy sale and FY2017 results

## Stable investment grade

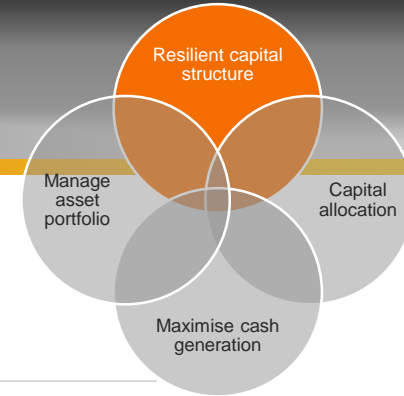
- Increases resilience
- Reduces risk to debt refinance

## Target capital structure (Debt / EBITDA<sup>1</sup>)

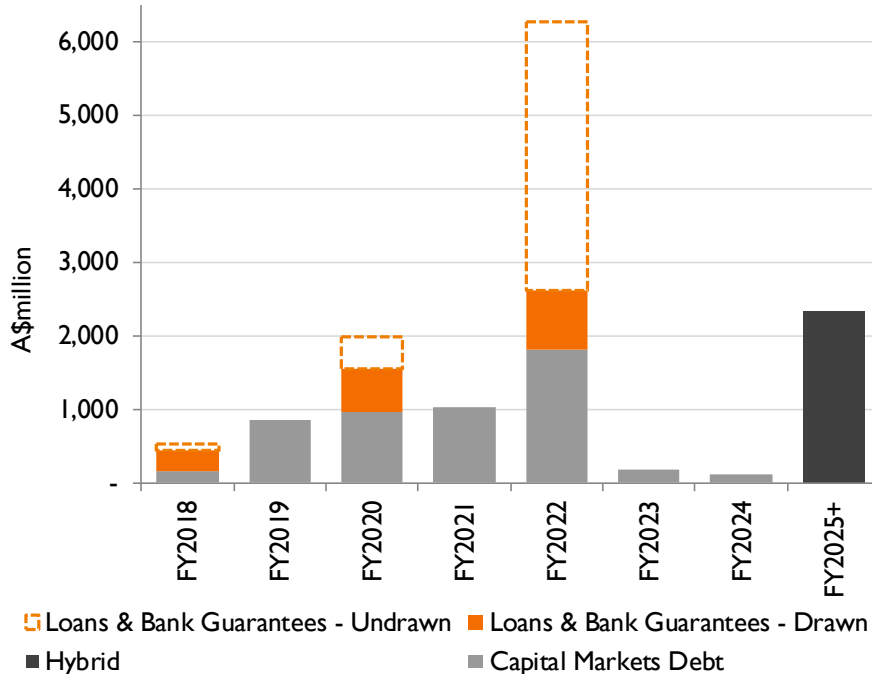
- Interim target of 3.0-3.5x
- Long term target of 2.5-3.0x
  - Equates to gearing of ~25%-30%

1) EBITDA excludes Origin's share of APLNG EBITDA and includes cash distributions from APLNG

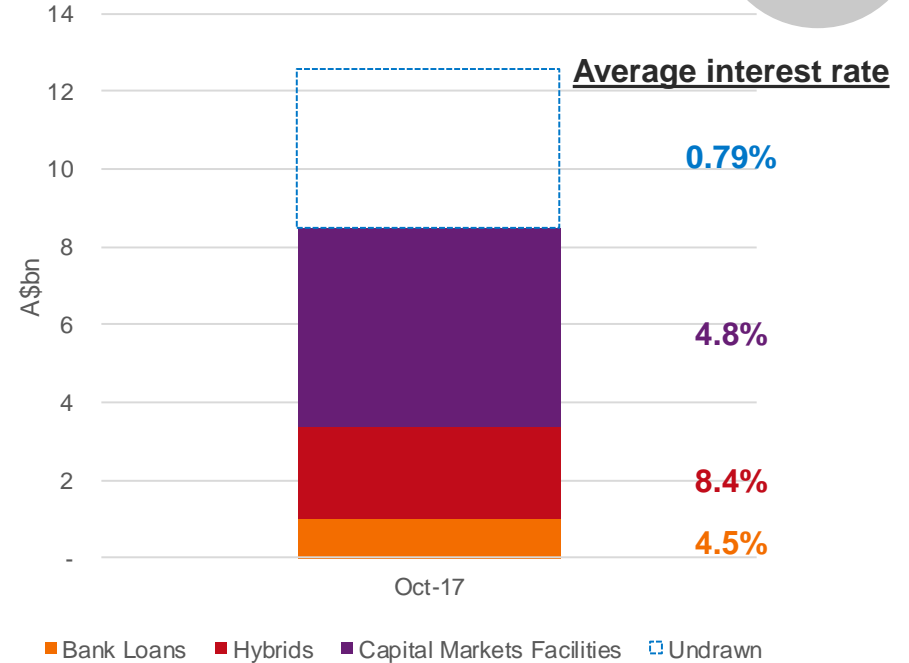
# Management of debt portfolio



Debt & bank guarantee maturity profile (as at 31-Oct-17)



Debt composition (as at 31-Oct-17)



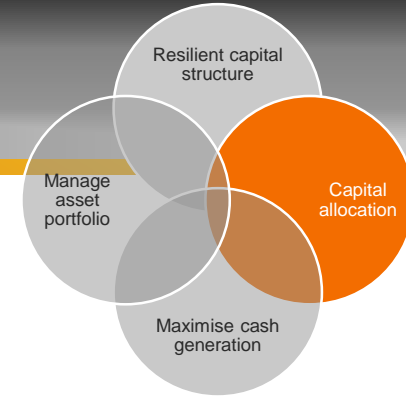
- \$4.3 billion<sup>1</sup> of liquidity at 31 October 2017
- Portfolio term to maturity is 3.3 years (excluding Hybrids)
- Average interest rate of 6.2% (YTD Oct-17)

- Opportunities to reduce cost of debt
- \$2 billion surplus undrawn debt facilities cancelled - interest savings of ~\$14 million p.a.
- A\$2.3 billion Hybrids premium of ~4%

(1) Includes cash but excludes bank guarantees

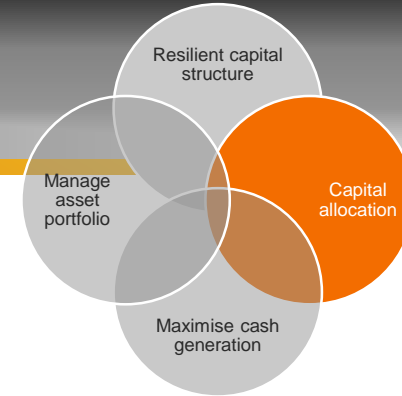
# Capital investment

## Rebuilding the right to grow



- Disciplined capital allocation process established
- Improved business case and economic analysis tools and methods
- Opportunities ranked on returns and strategic fit
- Increased emphasis on downside cases – targeting positive NPV

# Priorities for use of capital



**Debt reduction and servicing**

**Sustaining capital to stay in business**

**Growth capital**

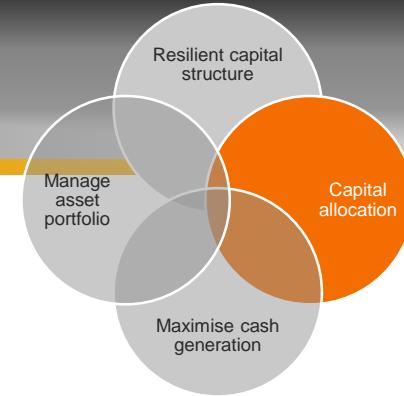
Will pursue high quality growth

**Dividends**

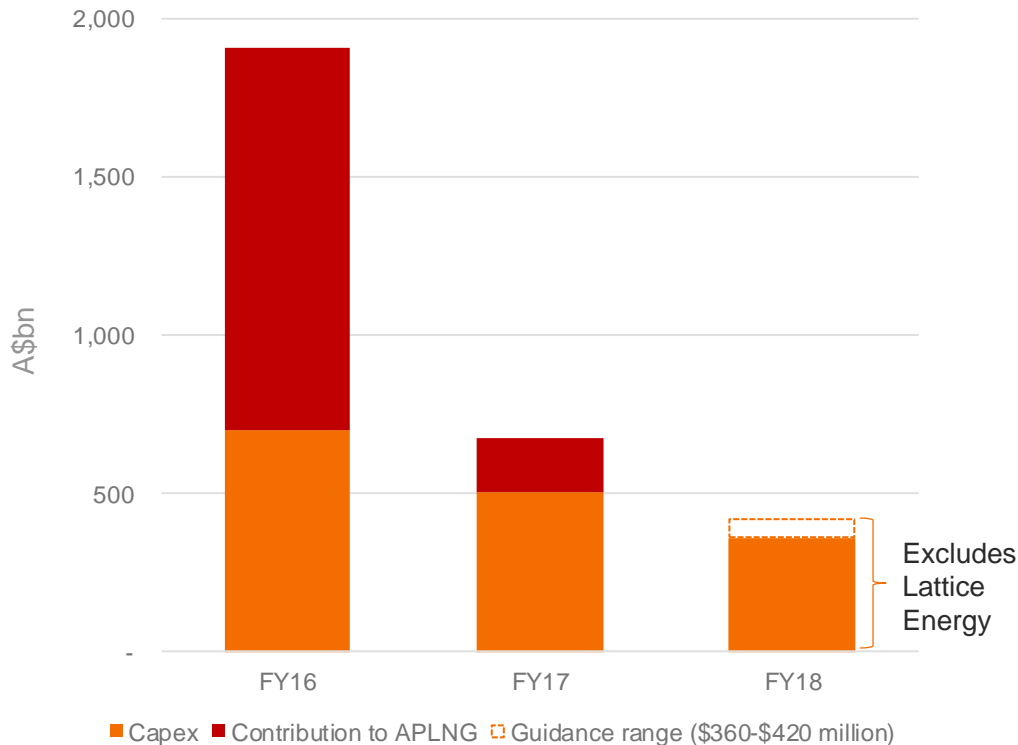
Triggered by target capital structure

**Return surplus capital to shareholders**

# Disciplined capital spend



## Capital expenditure

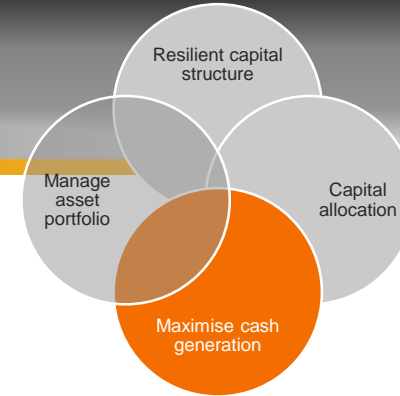


## FY2018 capital expenditure

- Mandatory spend (\$80 - 100 million)
  - Digital metering (retail system upgrade)
  - Upstream commitments
- Sustaining (\$170 - 190 million)
  - Generation
  - Solar
  - LPG
- Productivity/Growth (\$110 - 130 million)
  - Upstream exploration and appraisal
  - Quarantine refit
  - Digital systems
  - Future energy



# Oil price risk management



## Principles

- Objective to protect cash flow to ensure target deleveraging
- Structured to protect downside and may include capping some upside
- Will reassess as leverage is reduced

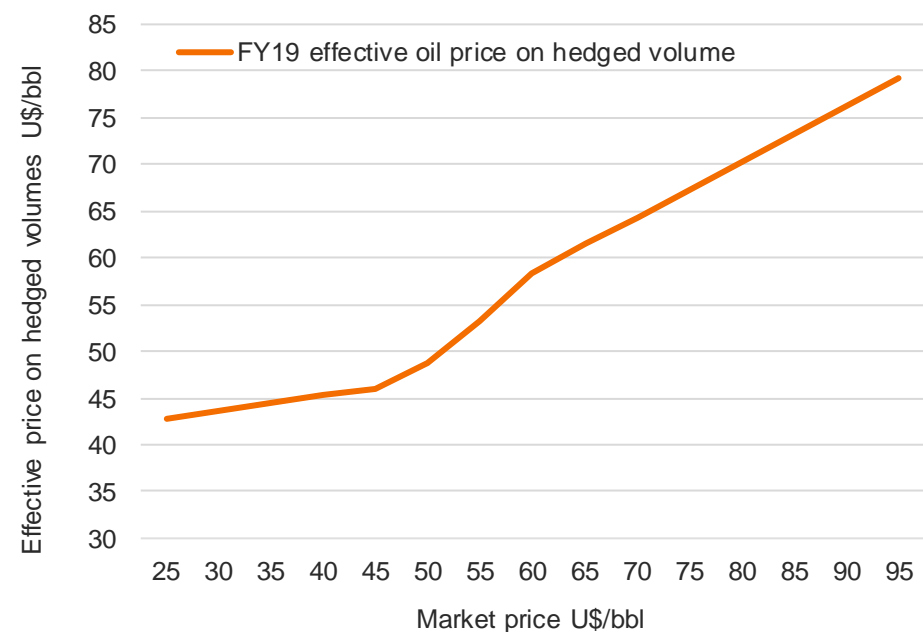
## FY2018 hedge program

- Secured minimum of US\$58/bbl for remaining volume with full participation above U\$62/bbl
- Premium of A\$68 million

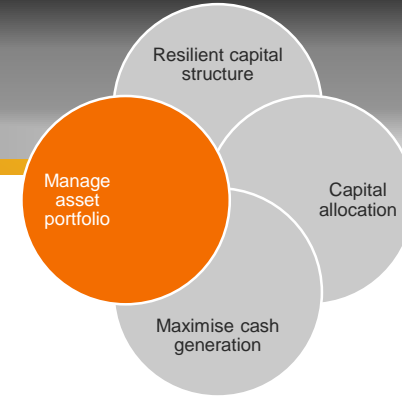
## FY2019 hedge program

- 14.3mmbbl hedged through a combination of put options, collars and three-way producer hedges
- Premium of A\$31 million

FY19 oil hedging payoff chart (inclusive of premium)



Note: Oil prices quoted in Brent crude oil equivalent



## Sale of Lattice Energy

- \$1,585 million sale of Lattice Energy announced on 28 September 2017
- Transition planning including managing stranded costs progressing well
- New Zealand regulatory approval is critical path – expected early 2018
- Effective date 1 July 2017 – Impacts FY2018 results

## Acumen

- East coast metering business
- Sale process established with transaction targeted for 2H FY2018

## Ironbark

- Reassessing field development plan
- Will test carrying value at half year results



# UPSTREAM

Mark Schubert

# Building a low cost operating model over 18 months

## Delivered

- ✓ **Strong resource position supplying**
  - Long term LNG contracts
  - Around 20-30% of east coast demand
- ✓ **Strong operational performance**
  - 10%+ above nameplate capacity during lenders' test
  - Excellent plant reliability

## In Focus

- **Aligned and simplified organisation**
- **Streamlined processes**
- **Capex reduction**
- **Opex reduction**
- **Production optimisation**

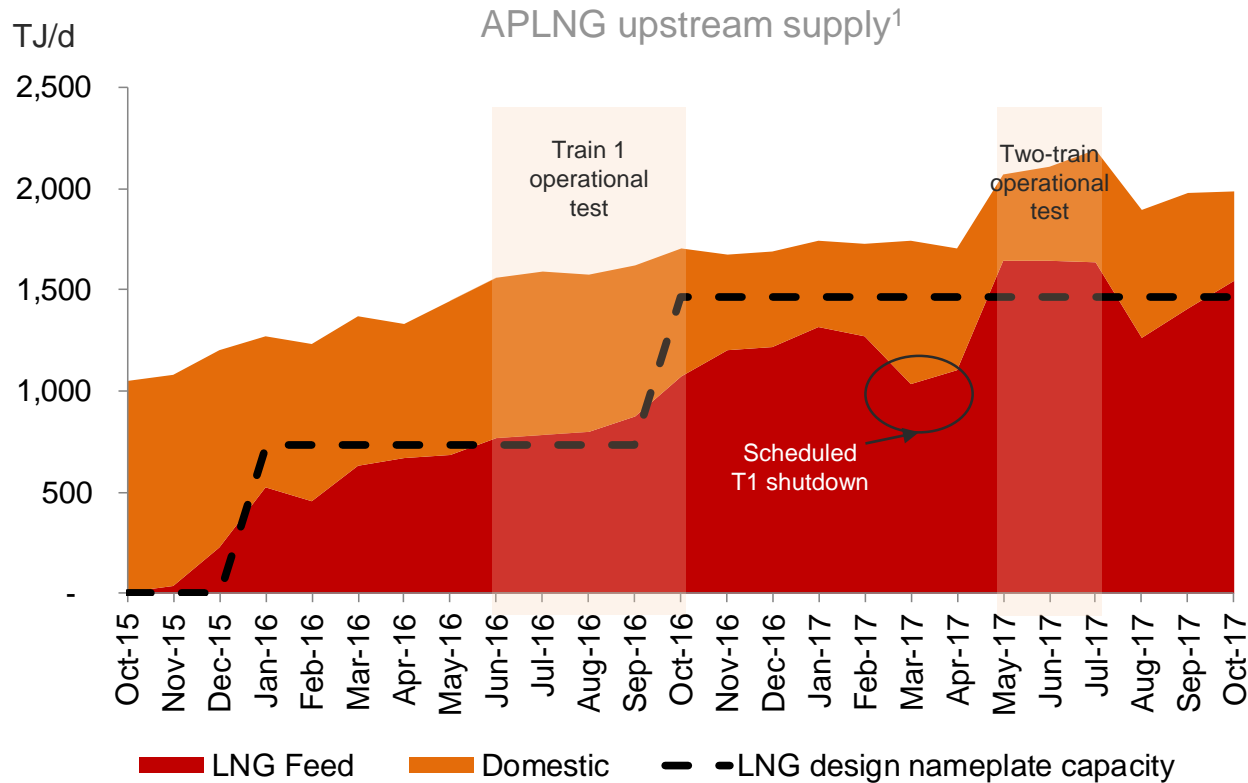
## Targets

### June 2019 run rate targets:

- A\$500m+ p.a. reduction in capital and operating expenditure
- Operating breakeven < US\$24/boe<sup>1</sup>
- Distribution breakeven < US\$40/boe<sup>1</sup>
- Further cost reductions targeted thereafter

(1) AUD = 0.75 USD

# APLNG project is complete and exceeding performance expectations



- 175+ LNG cargoes delivered
- Proven production performance >10% above nameplate capacity
- >95% upstream plant reliability
- Strong downstream plant thermal efficiency
- Project finance shareholder guarantees released

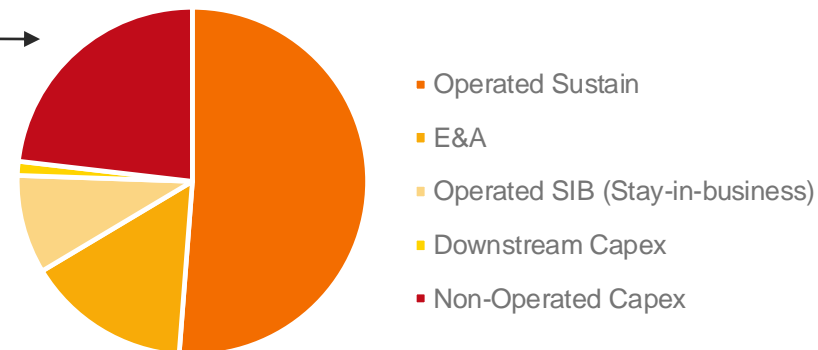
(1) Includes 16 PJ of insurance gas purchased for two-train operational test



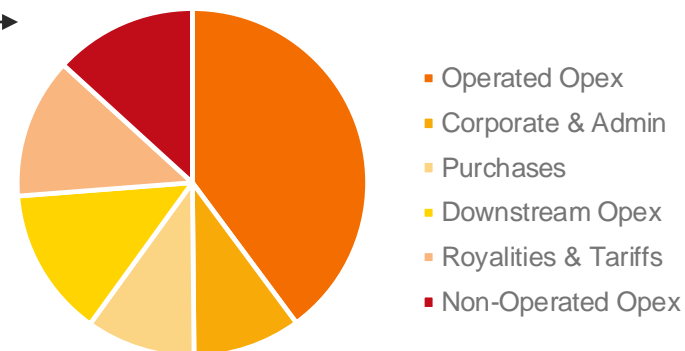
# APLNG FY2018 breakeven guidance maintained

100% APLNG (A\$bn)	FY2018 Guidance @ 0.75 AUD/USD
Capital expenditure – Sustain	1.4
Capital expenditure – E&A	0.3
Operating expenses – pre capitalisation	1.6
Less: Spot LNG & Domestic revenue <sup>1</sup>	(1.1)
<b>Operating breakeven</b>	<b>2.3</b>
<b>Operating breakeven (US\$/boe)<sup>2</sup></b>	<b>30</b>
Project finance interest	0.4
Project finance principal	1.0
<b>Distribution breakeven</b>	<b>3.6</b>
<b>Distribution breakeven (US\$/boe)<sup>2</sup></b>	<b>48</b>

Capital expenditure (breakdown %)



Operating costs (breakdown %)



Sales volumes, 100% APLNG (100%)	Guidance
Domestic and Spot LNG (PJ)	256
Contract LNG volumes (PJ)	433
<b>Contract LNG volumes (mmboe)<sup>2</sup></b>	<b>57</b>

(1) Based on Facts Global Energy – May 2017 forecast for spot LNG prices

(2) Based on contract LNG sales volumes converted to barrels of oil equivalent adjusted for contract slope.

# Implementing a new operating model

To achieve a step change reduction in cost and breakeven within 18 months

## Approach

- **In scope:** Capex, opex, production and project finance interest
- **Starting point:** Zero based
- **Included:** only essential activity to meet value and risk objectives
- **Influenced by:** US shale and domestic CSG best practice

## Key focus areas

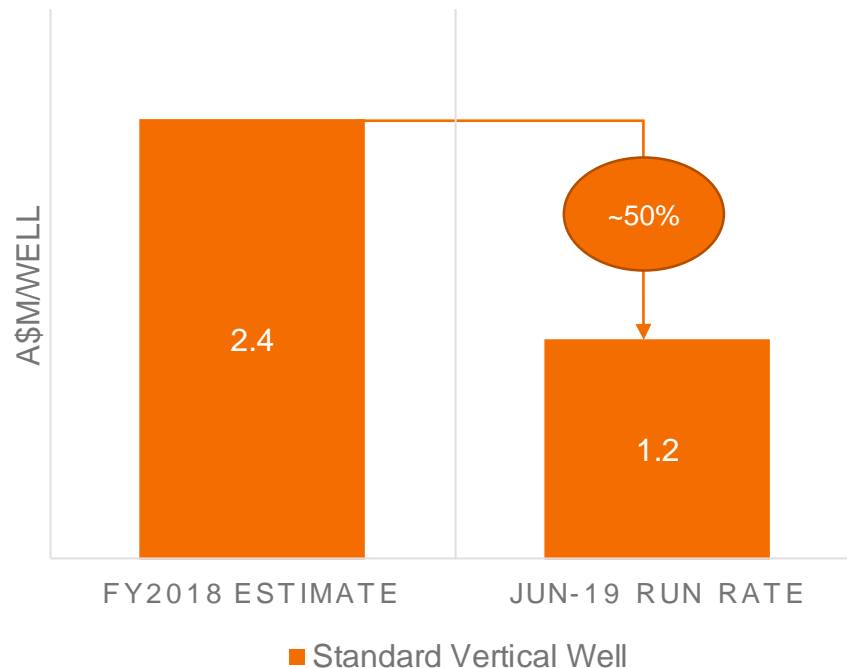
- A **Aligned & simplified organisation, streamlined processes**
- B **Capex**
- C **Opex**
- D **Production optimisation**

# A Aligned and simplified organisation, streamlined processes

	Today	Tomorrow FY19
<b>Organisational Structure</b>	<p><b>Functional Structure</b></p> <ul style="list-style-type: none"> <li>▪ Supporting a multiple conventional &amp; unconventional asset portfolio</li> <li>▪ Organised around functional disciplines supporting project execution</li> </ul>	<p><b>Asset Structure</b></p> <ul style="list-style-type: none"> <li>▪ Unconventional operating model replicating independent US shale gas best practice</li> <li>▪ Organised around asset managers with cost and productivity accountability</li> </ul>
<b>Process Improvement</b>	<ul style="list-style-type: none"> <li>▪ Complex process framework</li> </ul>	<ul style="list-style-type: none"> <li>▪ Simple set of core processes</li> </ul>
<b>Operating Capability</b>	<ul style="list-style-type: none"> <li>▪ Project and construction capability</li> </ul>	<ul style="list-style-type: none"> <li>▪ Capability reset</li> <li>▪ Multi-skilled operations</li> </ul>

## B Capex - targeting material reductions in new well costs

### Lower cost Surat wells<sup>1</sup>



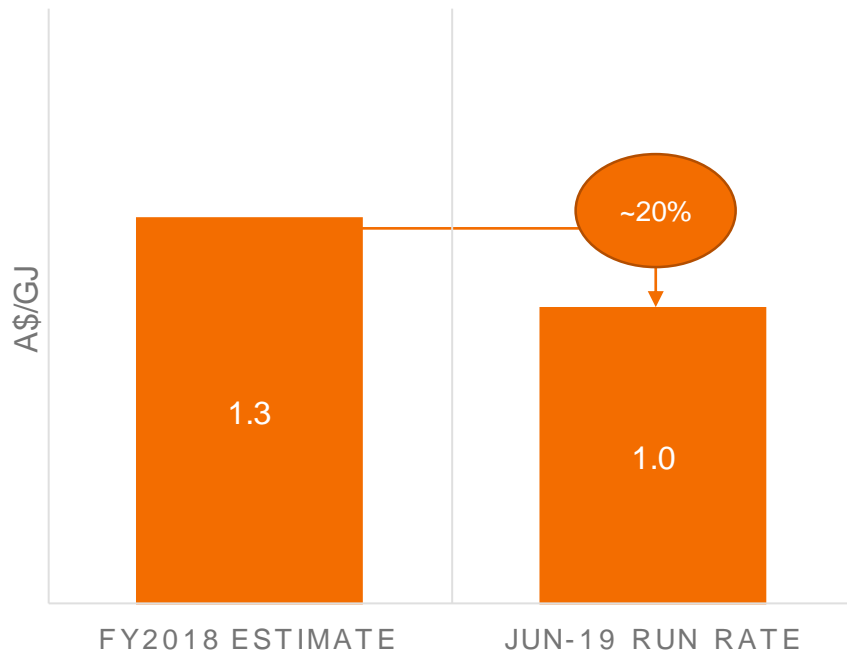
### Simplified and streamlined well delivery targeted by June 2019

- Well factory approach
- Simple, standardised surface facilities allow rebased service and supply contracts
- Lower cost well electrification solution
- Significantly reduce owners' cost

(1) Standard vertical non-fracked well

## C Opex - targeting material improvements in operational efficiency

### Lower unit operating costs<sup>1</sup>



### Lean and simplified operations:

- Reducing amount of work (e.g. rationalised maintenance strategy)
- Lean, agile and multi-skilled workforce
- Front line asset responsibility drives planning and decision efficiency
- Review support services, contracts and non production operating costs
- Reduced power costs
- Downstream cost reduction initiatives underway including collaboration with the other LNG proponents

(1) Operating costs include power costs

## D Production optimisation gets more from existing assets

### Debottleneck existing assets

- Existing constrained wells can be debottlenecked to improve production
  - Installation of surface facilities, pumps and loop lines to reduce surface pressure
  - Downhole solutions to increase production and add reserves from existing wells (i.e. re-fracking)
- Outcome – Strong IRRs achieved per well. Targeting June 2019 run rate - 25 TJ/day

### Optimise production

- Harnessing digital capabilities to optimise production from existing assets:
  - Accelerate rate at which a worked-over well returns to full production
- Outcome - 7 TJ/day added in first month (actual). Targeting June 2019 run rate - 50 TJ/day



One Day Install (ODI) skid

# Targeting step change reduction in cost from June 2019

## With further reductions targeted beyond 2019

Key Outcomes	Initial Targets	Metric	FY18 Guidance	June 2019 Run Rate
Cost reduction and productivity improvement	Well cost <sup>1</sup>	A\$m/well	2.4	1.2
	Operating cost <sup>2</sup>	A\$/GJ	1.3	1.0
	Opex and Capex	A\$bn	3.3	<2.8
	Operating breakeven <sup>3</sup>	US\$/boe	30	<24
	Distribution breakeven <sup>3</sup>	US\$/boe	48	<40

Distribution breakeven includes target savings from project finance

(1) Standard unfracked vertical Surat well (2) Upstream operated (3) AUD = 0.75 USD

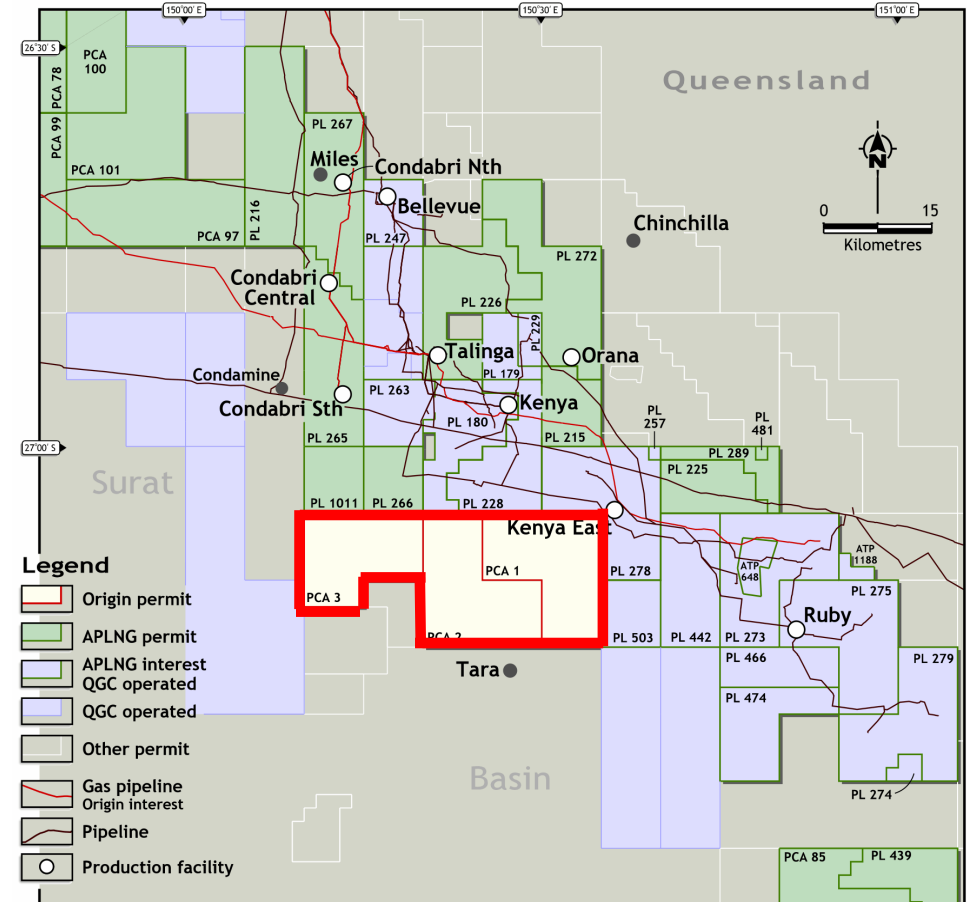




# Origin is revisiting Ironbark development and value in preparation for FEED

## Ironbark

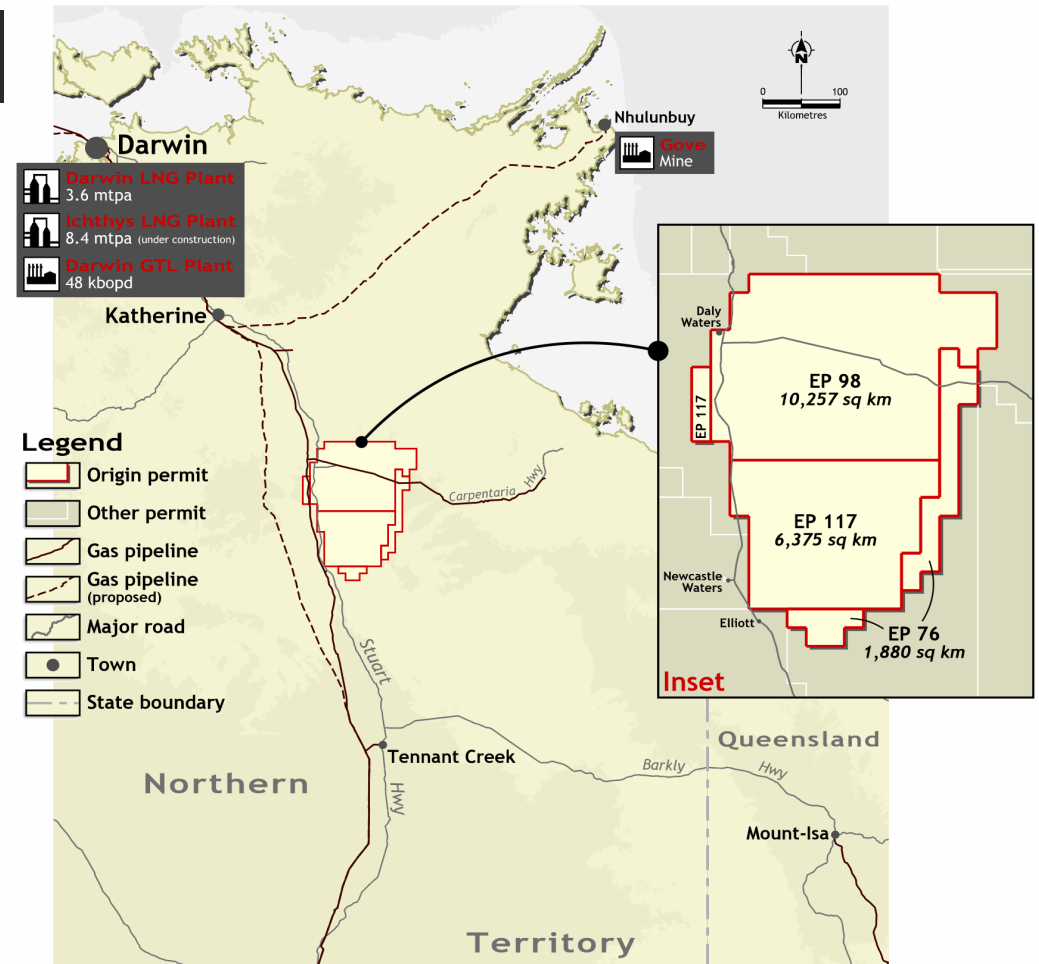
- 100% owned Queensland CSG resource, adjacent to APLNG and QGC infrastructure
- Adopting a lean operating model
- Ironbark is ideally located to supply to the east coast domestic market via the Wallumbilla Hub
- Exploring collaboration opportunities to enhance economics



# Improvements can also be leveraged to improve economics of Beetaloo

## Beetaloo

- 70% owned Northern Territory resource
- Upstream capital and operating cost savings can be applied to all project stages
- 2C Resource 6.6Tcf<sup>1</sup> (gross)
- Origin continues to support the NT Government's Scientific Inquiry into Hydraulic Fracturing
- Over the medium/long-term Beetaloo provides opportunities for both export and domestic East coast gas markets



(1) As announced to the ASX on 15 February 2017. Origin is not aware of any new information or data that materially affects the information included in this announcement to the ASX and all material assumptions and technical parameters underpinning these estimates continue to apply and have not materially changed.



# ENERGY SUPPLY & OPERATIONS

Greg Jarvis

## Electricity

- Flexible generation portfolio running harder in high wholesale price environment

## Gas

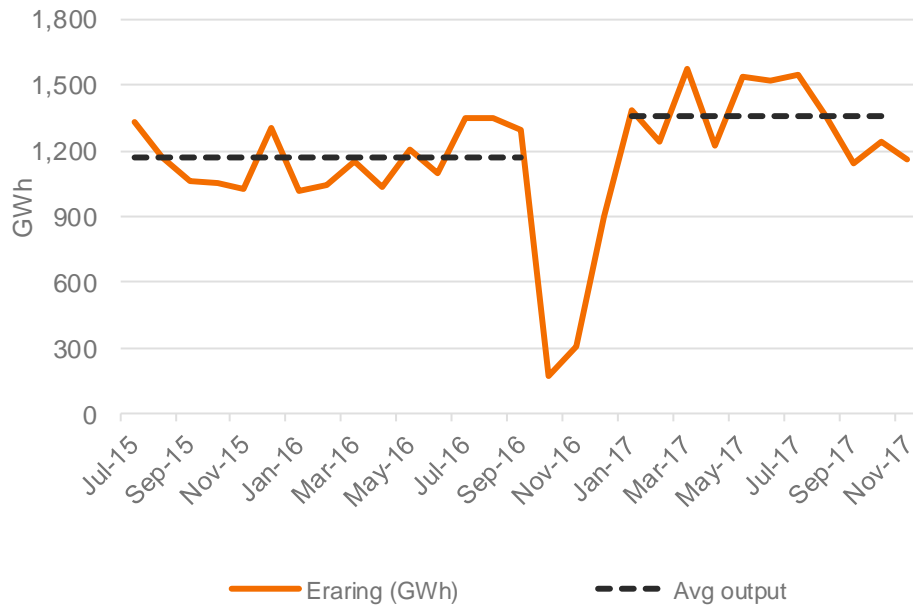
- Growing customer volumes
- Monetising gas through electricity generation

## Renewables

- Lowest cost new build generation today
- Target 1,500 MW of new renewable offtake supply by 2020
- Portfolio set up to prosper in a low carbon economy

## Eraring is running harder than ever in response to high wholesale prices

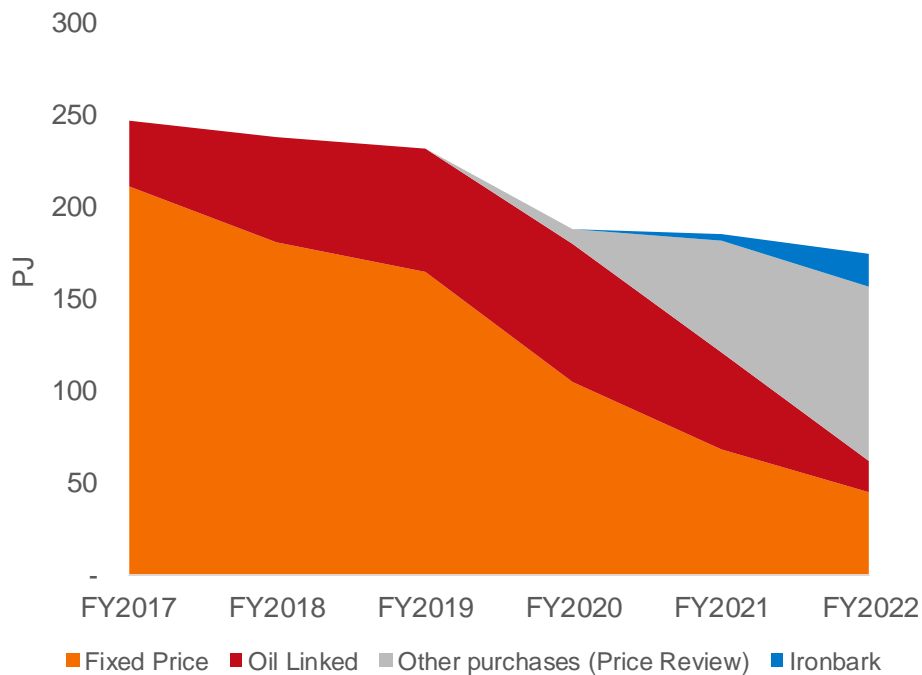
Eraring monthly generation output



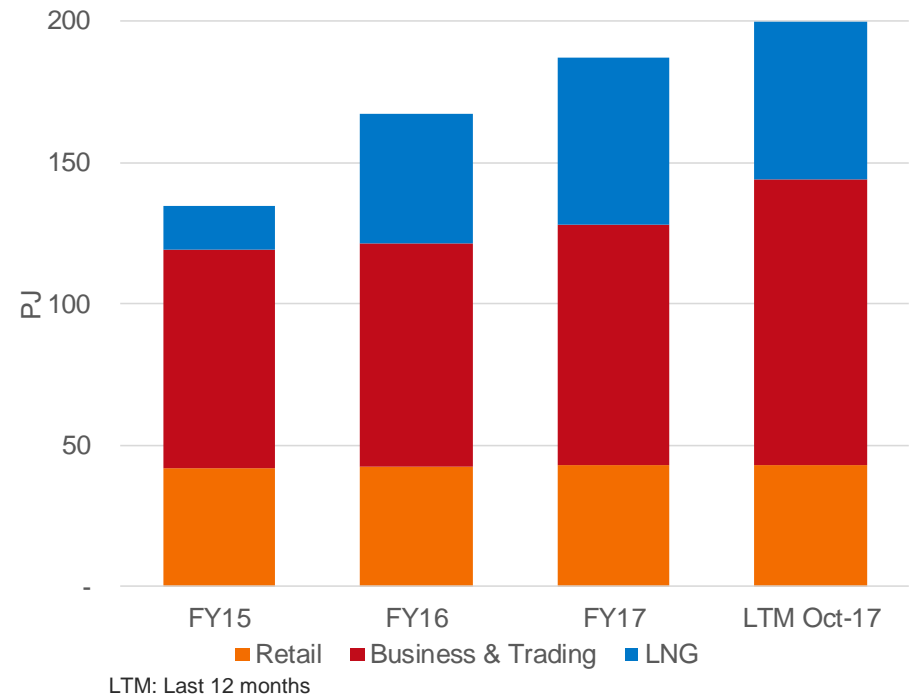
- FY2018 output expected to be 15.5 – 16 TWh (higher than previous guidance), supported by long and short-term contracts and optimised supply chain
- Long term coal supply contract 4mtpa to 2022

## Strong and flexible portfolio enabling growth in sales volumes

Energy Markets East Coast Gas Supply Portfolio

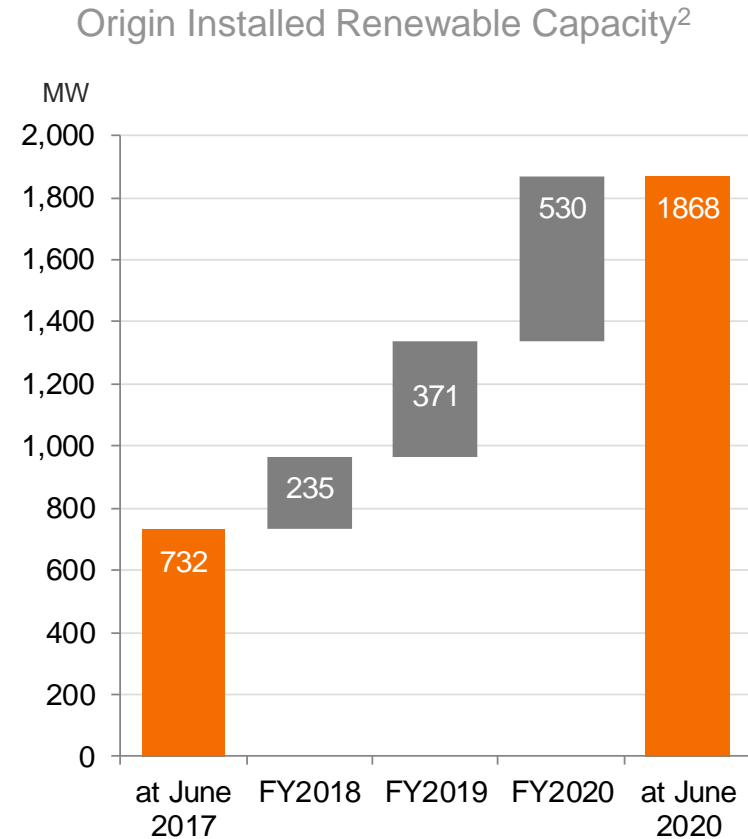
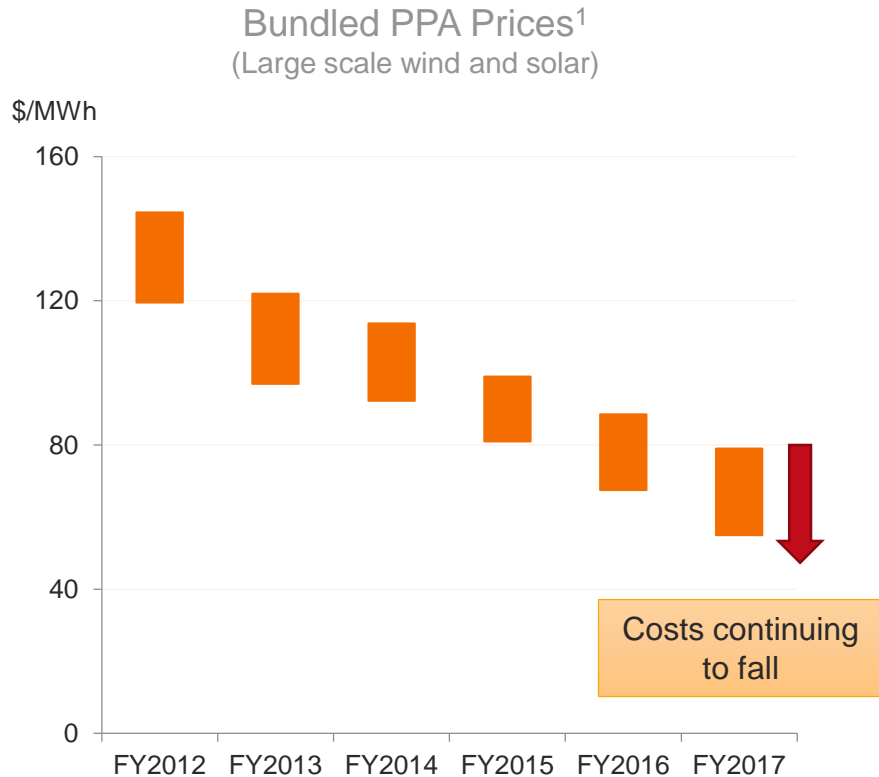


Energy Markets gas sales



# Renewables

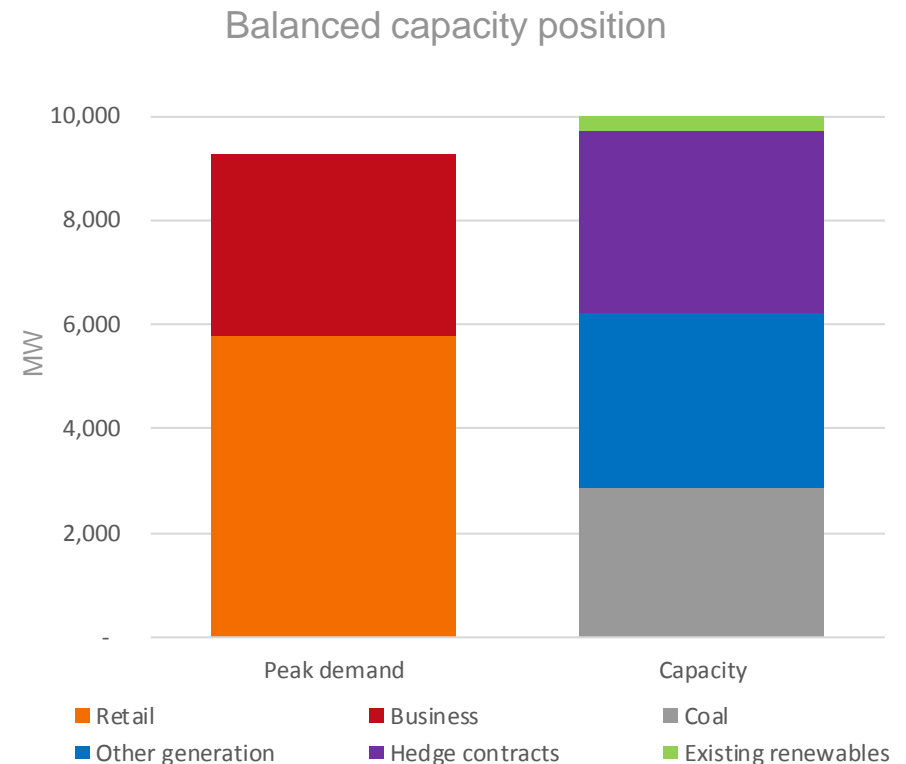
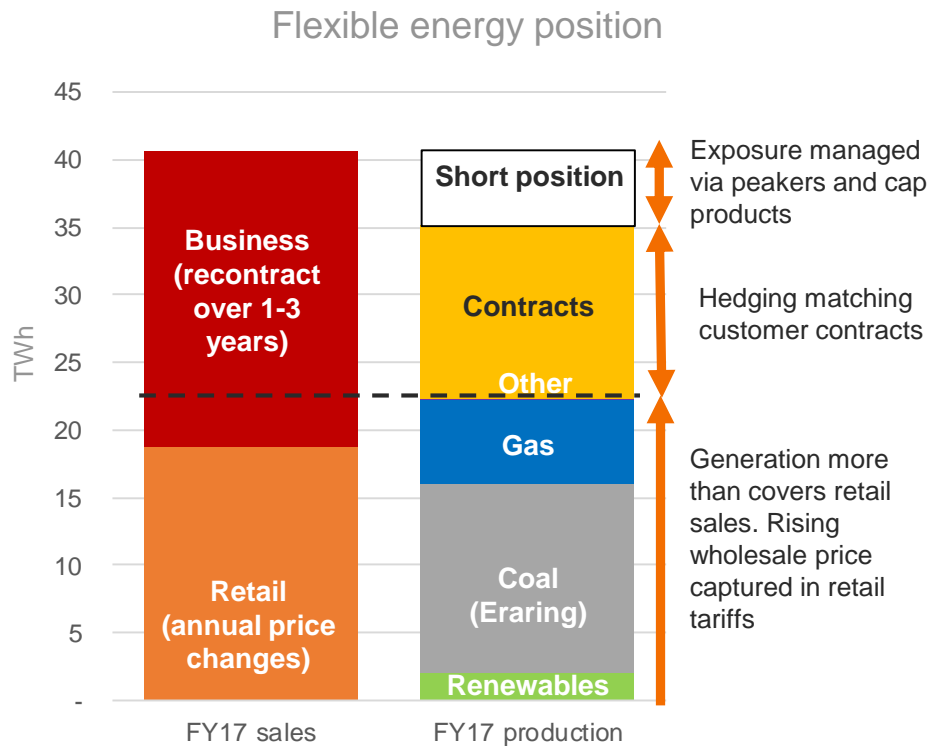
## Origin is capturing the benefit of falling renewable costs



- (1) Origin and publicly released third party data
- (2) Assume projects being developed by third parties are completed



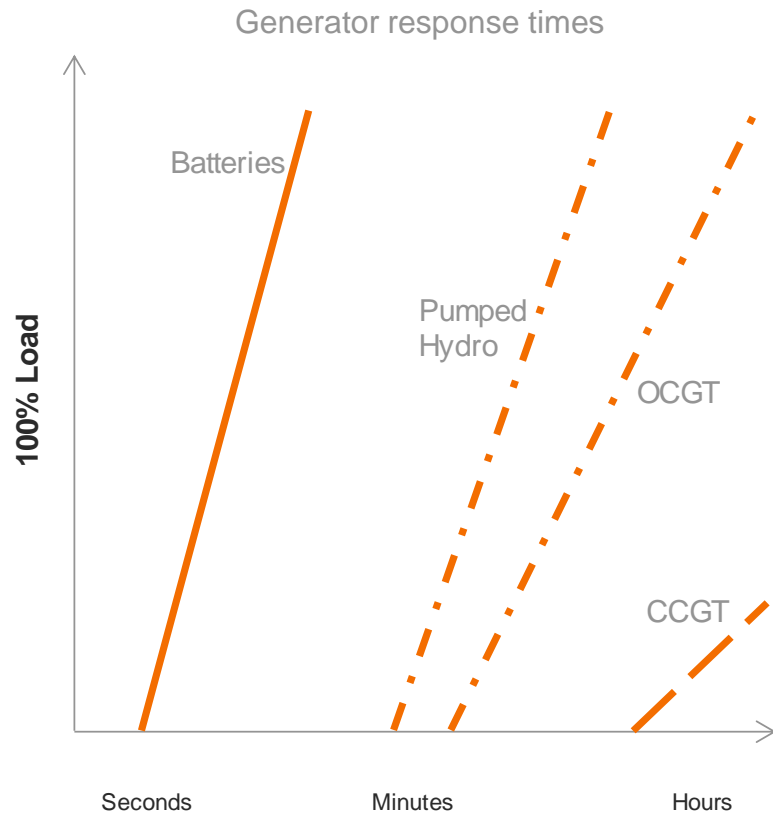
# Flexible portfolio well positioned in a changing energy market



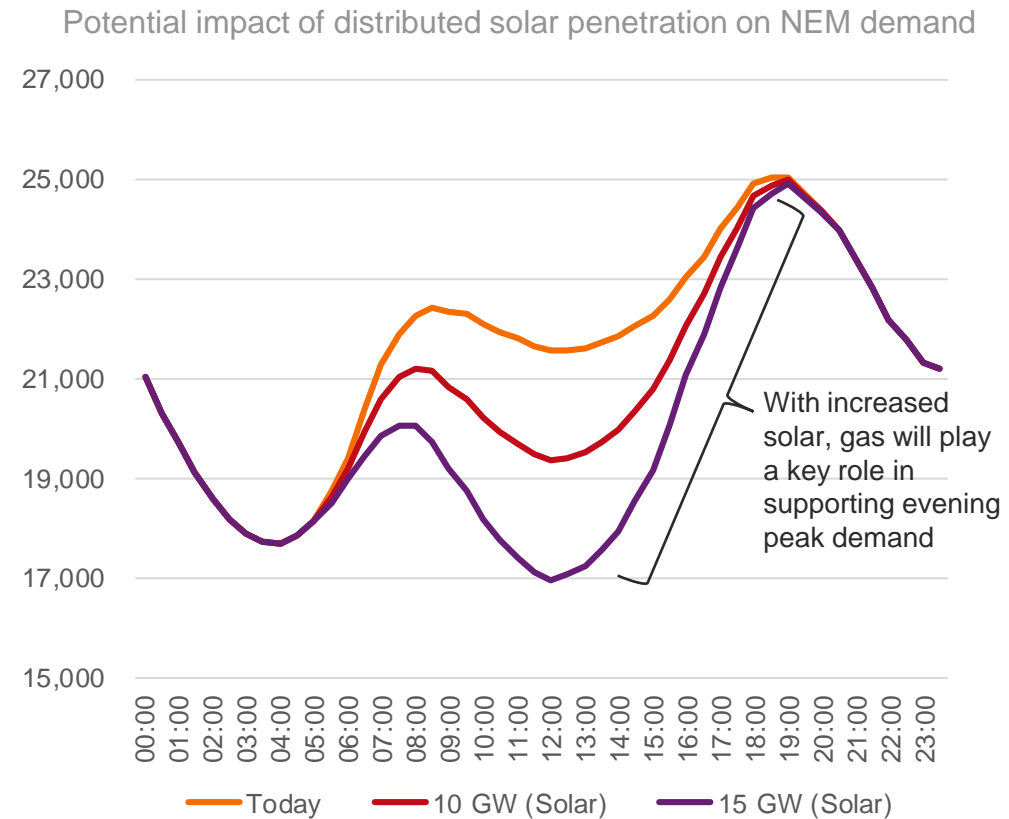
- Able to flex short position via generation and hedging
- Renewable supply expected to almost triple by 2020 (without stranding existing generation)

- Covered for peak demand
- Renewables will replace hedge capacity

# As renewable penetration increases, gas will play a significant firming role



- While batteries are suited to immediate response, they discharge quickly
- Gas-fired generation and pumped hydro will be required to fill longer periods of low renewable generation



- Solar penetration drives increased intraday volatility
- Gas-fired generation is well suited to a more variable load profile as solar penetration increases

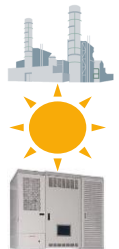
Source: Origin modelling

# Opportunities for investment in renewables, fast-start gas and storage



## Queensland

- Opportunities to increase flexibility and expand capacity at Darling Downs (largest gas generator in QLD today)
- > 400 MW of solar expected to come online by FY2019
- Opportunities for large-scale batteries on existing gas generation sites



## New South Wales

- Increasing Eraring output in response to higher wholesale prices
- Opportunity to expand Shoalhaven pumped hydro to firm renewable energy (existing infrastructure already in place)



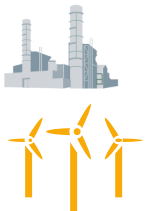
## South Australia

- Gas plays a significant role in backing up wind
- 200 MW of solar expected to come online in CY2018
- Opportunities to increase flexibility, expand generation capacity and install batteries at existing gas generation sites



## Victoria

- Mortlake and long-term hedge contracts allow Origin to manage cost of energy
- 530 MW of wind expected to come online in FY2020
- Short energy position provides further opportunity to integrate low cost Renewable PPAs and/or expand Mortlake





RETAIL

Jon Briskin

## Market Dynamics

- Customer activity increasing driven by price rises and spotlight on affordability
- Market remains highly competitive
- Defending share and managing for value

## Customer Strategy

- Leading customer experience and service
- Low cost business model
- Increase customer lifetime value
- Innovative and differentiated products and services

## Execution

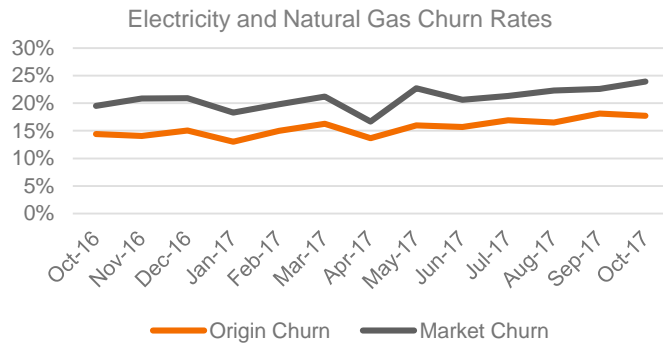
- Digital-first
  - Increasing digital interactions
  - Improving operational efficiencies
- Leveraging data analytics to drive customer value
- Investing in product innovation and launching trials in market

# Increasing customer activity

## Driven by affordability and price-based competition



### Customer switching rates in market

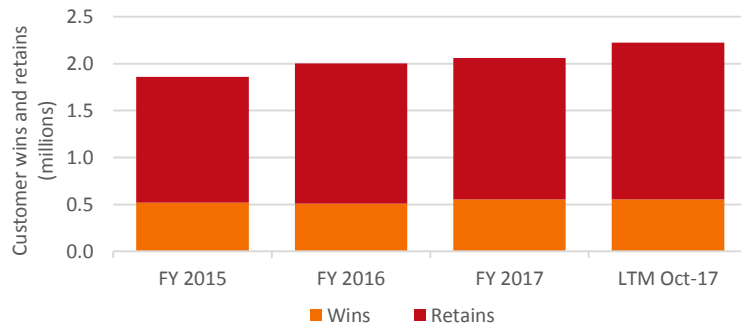


Source: AEMO; Origin internal analysis



### Customer interactions

#### ■ Increase in Origin wins and retains



### Defending share and managing for value

#### • Campaigning in market



#### • Well progressed in meeting government commitments

- Communicated with approximately 70% of targeted customers

# Responding by building a leading digitally-enabled customer experience

## Innovative products and services that increase customer lifetime value



**Leading customer experience and service**

*Simple, frictionless, digital customer experiences and journeys*



**Low cost business model**

*Best in class service, but at a lower cost*



**Increase customer lifetime value**

*Segmented customer propositions and interactions that grow customer lifetime value*



**Innovative & differentiated products and services**

*Products and services that connect energy management in the home and create new revenue streams*

**DIGITAL**



**DATA AND ANALYTICS**



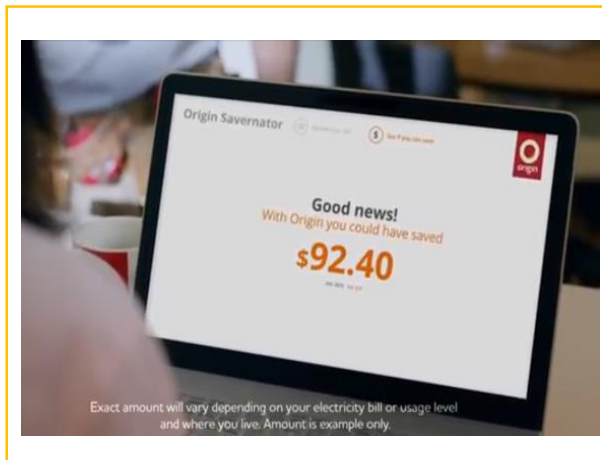
**INNOVATIVE CULTURE**



# Digital-first design

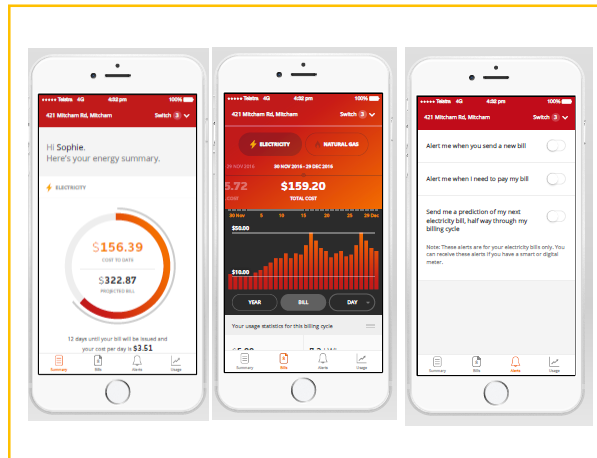
## Customer experiences that are simple, smart, personalised, connected and empowering

### Price transparency with Origin Savernator



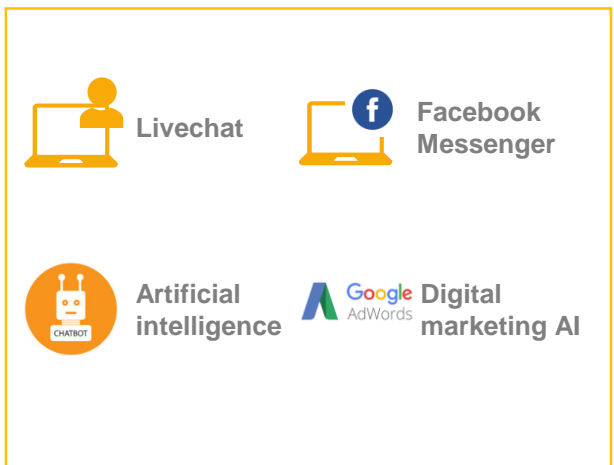
- New personalised online price comparison tool

### Origin App



- View usage and bills, predict bill, pay bills, set alerts

### New digital channels



- Mobile-led design
- Data analytics and machine learning to drive personalisation
- Agile teams, fast iterative delivery

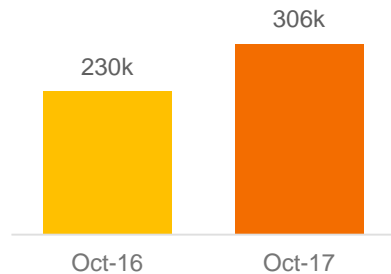


# Digitisation and automation driving continued focus on cost reduction

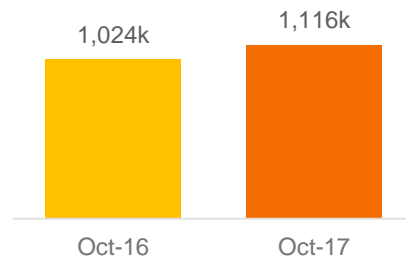
## Process innovation, optimisation and removal of effort

### Increasing digital interactions

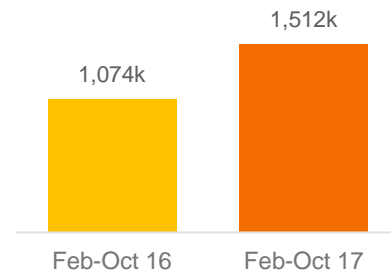
#### Online sales up 33%



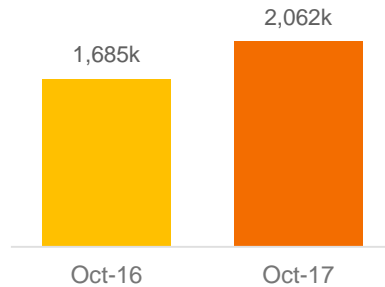
#### MyAccount registrations up 9%



#### My Account visits up 41%\*



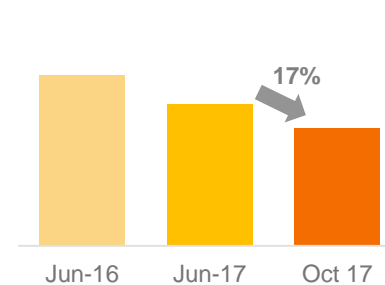
#### eBilling accounts up 22%



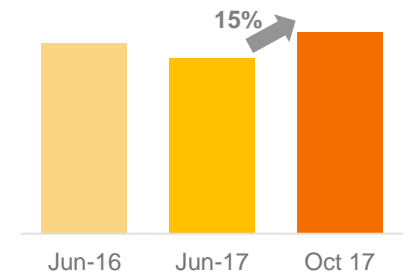
\* Unique visits – measurement commenced Feb 2016

### Managing operational performance

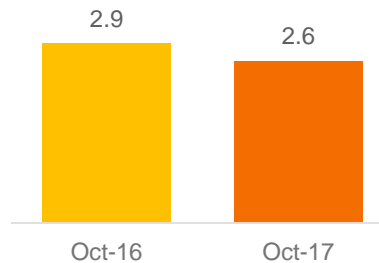
#### Reducing back office FTE



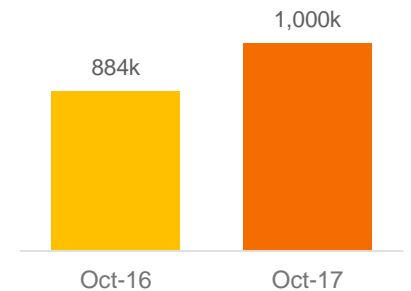
#### Increase in front office FTE (↑ customer activity)



#### Ombudsman complaints (per '000 customer accounts) down 10%



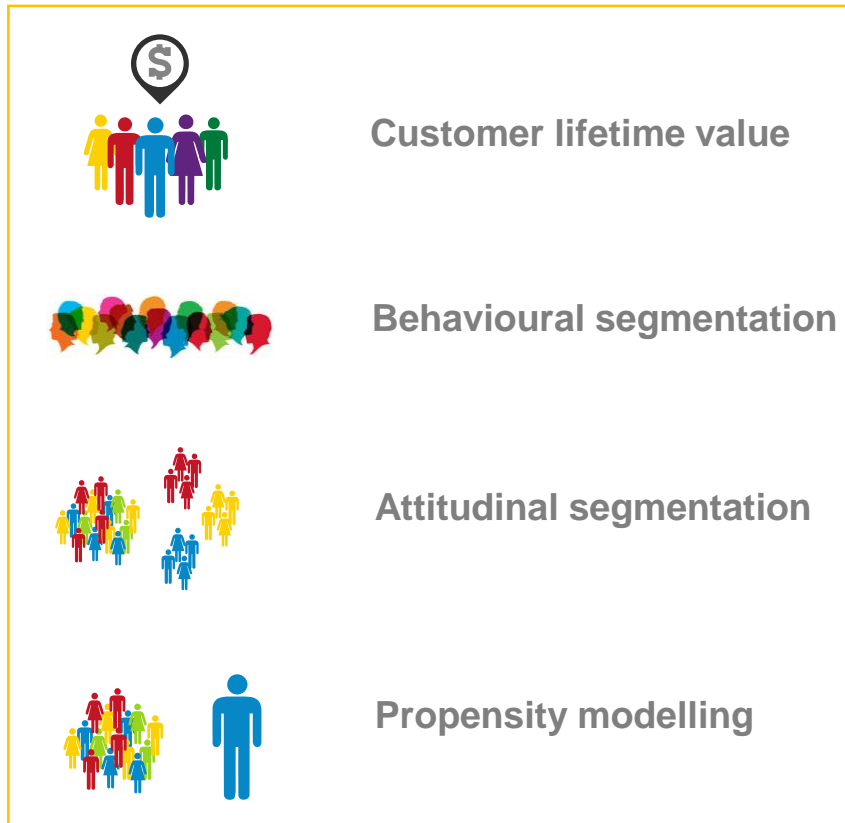
#### Direct Debit accounts up 13%



# Managing for value

## Customer differentiation driving value

### Data and analytics underpinning deep customer knowledge



### Driving value-based customer strategies



# Growth opportunities

## New markets and adjacencies creating new revenue streams

### Centralised Energy Services

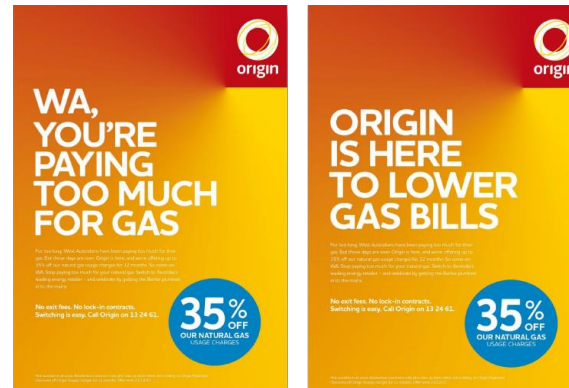
#### Integrated energy solutions for high-rise residential developments

- Serviced hot water
- Embedded electricity
- Smart meters
- Natural gas
- Solar PV
- Plug-in EV charger
- Green Power
- Energy storage system



- Supplying 150k residential developments
- Strong growth track record and pipeline, particularly in NSW

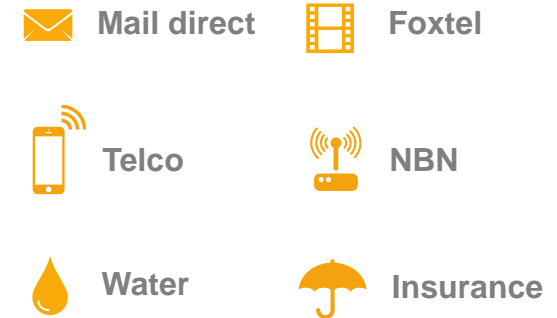
### WA market entry



- Strong start in first four weeks

### Adjacencies

#### Partnering to provide a value-add Moving Services proposition

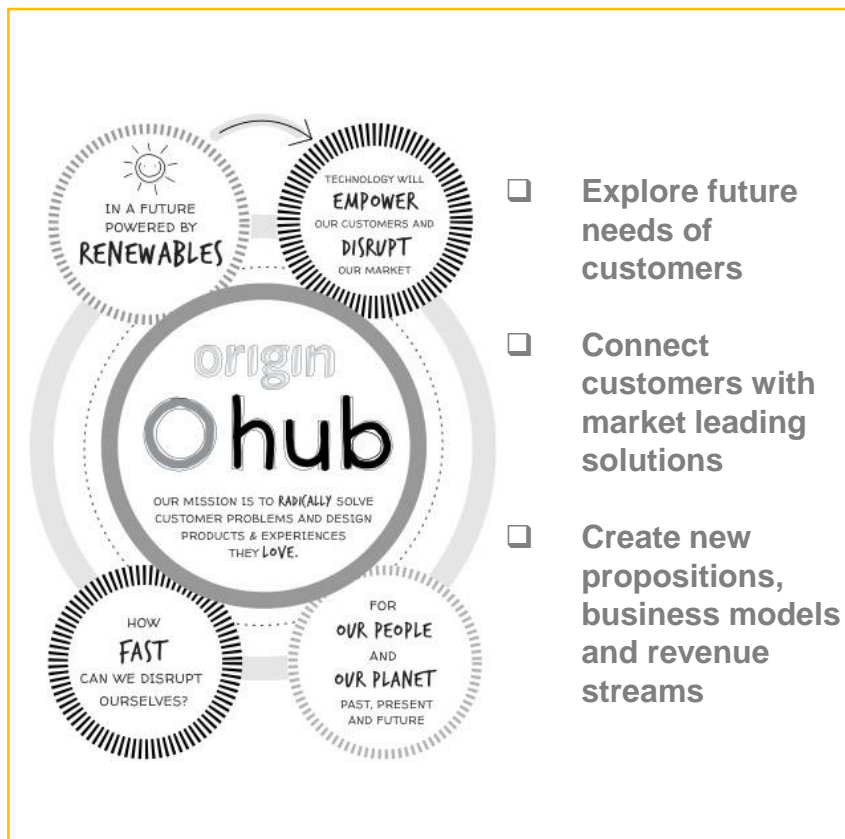


- Small investments with potential to scale-up
- Potential new revenue streams
- Improve customer retention

# Future-focussed innovation

## Pipeline of new solutions

### Incubate new ideas and trial fast



### Focus areas



#### Energy management

Putting customers in the picture on use

Energy breakdown by appliance	
Heating	\$88
Always On	\$84
Refrigeration	\$75
Entertainment	\$57
Lighting	\$55



#### Connected home

Launching into smart home with Home HQ connected home



#### Integrated renewable energy

Trialling new solar purchase models and blockchain energy sharing



#### Electric vehicles



#### Business model innovation

6

WRAP UP / Q&A

# Wrap Up

- ✓ Continuing to deleverage and rebuilding the right to grow
- ✓ Moving to a simpler and leaner operating model
- ✓ Capturing value from our energy market position (Eraring, gas supply, renewables)
- ✓ Step change cost reduction in APLNG
- ✓ Transforming customer experience through digital, innovative products and future energy solutions
- ✓ Growth opportunities in generation, storage and upstream



# APPENDIX

# Important Notices

## **Forward looking statements**

This presentation contains forward looking statements, including statements of current intention, statements of opinion and predictions as to possible future events. Such statements are not statements of fact and there can be no certainty of outcome in relation to the matters to which the statements relate. These forward looking statements involve known and unknown risks, uncertainties, assumptions and other important factors that could cause the actual outcomes to be materially different from the events or results expressed or implied by such statements. Those risks, uncertainties, assumptions and other important factors are not all within the control of Origin and cannot be predicted by Origin and include changes in circumstances or events that may cause objectives to change as well as risks, circumstances and events specific to the industry, countries and markets in which Origin and its related bodies corporate, joint ventures and associated undertakings operate. They also include general economic conditions, exchange rates, interest rates, regulatory environments, competitive pressures, selling price, market demand and conditions in the financial markets which may cause objectives to change or may cause outcomes not to be realised.

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# Important Notices (cont)

## **Reserves and resources**

Disclosures of Origin and APLNG's reserves and resources are as at 30 June 2017. These reserves and resources were announced on 16 August 2017 in the Annual Reserves Report. Origin confirms that it is not aware of any new information or data that materially affects the information included in the Annual Reserves Report and that all material assumptions and technical parameters underpinning the estimates in the Annual Reserves Report continue to apply and have not materially changed.

Petroleum reserves and contingent resources are typically prepared by deterministic methods with support from probabilistic methods. Petroleum reserves and contingent resources are aggregated by arithmetic summation by category and as a result, proved reserves (1P reserves) may be a conservative estimate due to the portfolio effects of the arithmetic summation. Proved plus probable plus possible (3P reserves) may be an optimistic estimate due to the same aforementioned reasons.

The CSG interests that APLNG acquired from Tri-Star in 2002 are subject to reversionary rights. If triggered, these rights will require APLNG to transfer back to Tri-Star a 45% interest in those CSG interests for no additional consideration. The reversion trigger will occur when the revenue from the sale of petroleum from those CSG interests, plus any other revenue derived from or in connection with those CSG interests, exceeds the aggregate of all expenditure relating to those CSG interests plus interest on that expenditure, royalty payments and the original acquisition price. Approximately 21% of APLNG's 3P CSG reserves as of 30 June 2017 are subject to these reversionary rights.

Tri-Star has commenced proceedings against APLNG claiming that reversion has occurred. If Tri-Star's claim is not successfully defended, Tri-Star may be entitled to an order that reversion occurred as early as 1 November 2008 and the reserves and resources that are subject to reversion may not be available for APLNG to sell or use. These events may have a material adverse impact on the financial performance of APLNG and, if unmitigated, may significantly affect the amount and timing of cash flows from APLNG to its shareholders, including Origin. APLNG denies the claim and is defending it.

# Glossary - Non-Financial Terms

Term	Meaning
APLNG	A reference to Australia Pacific LNG or APLNG is a reference to Australia Pacific LNG Pty Limited (and its related entities), an incorporated Joint Venture between Origin, ConocoPhillips and Sinopec in which Origin holds a 37.5% shareholding. Origin's shareholding in Australia Pacific LNG is equity accounted
Bbl	Barrel – An international measure of oil production. 1 barrel = 159 litres
Boe	Barrel of oil equivalent
Btoe	Billion tonnes of oil equivalent
Contingent Resource	Contingent Resources estimates are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations by application of development projects but which are not currently considered to be commercially recoverable due to one or more contingencies. Contingent Resources are a class of discovered recoverable resources.
DQT	Downward Quantity Tolerance
Equivalent reliability factor	Equivalent reliability factor is the availability of the plant after scheduled outages.
FEED	Front End Engineering Design
GJ	Gigajoule = $10^9$ joules
GJe	Gigajoules equivalent = $10^{-6}$ PJe
Joule	Primary measure of energy in the metric system.
kT	kilo tonnes = 1,000 tonnes
kW	Kilowatt = $10^3$ watts
kWh	Kilowatt hour = standard unit of electrical energy representing consumption of one kilowatt over one hour.
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
Mmboe	million barrels of oil equivalent
Mmbtu	million British thermal units
MW	Megawatt = $10^6$ watts
MWh	Megawatt hour = $10^3$ kilowatt hours
PJ	Petajoule = $10^{15}$ joules
PJe	Petajoules equivalent = an energy measurement Origin uses to represent the equivalent energy in different products so the amount of energy contained in these products can be compared. The factors used by Origin to convert to PJe are: 1 million barrels crude oil = 5.8 PJe; 1 million barrels condensate = 5.4 PJe; 1 million tonnes LNG = 55.4 PJe; 1 million tonnes LPG = 49.3 PJe; 1 TWh of electricity = 3.6 PJe.
SPE	Society of Petroleum Engineers
TCF	Trillion cubic feet
TJ/d	Terajoules per day (Terajoule = $10^{12}$ Joules)
TW	Terawatt = $10^{12}$ watts
TWh	Terawatt hour = $10^9$ kilowatt hours
Watt	A measure of power when a one ampere of current flows under one volt of pressure.

## For more information

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