



29 July 2016

Origin Energy 2016 Annual Reserves Report

This Annual Reserves Report provides an update on the reserves and resources of Origin Energy Limited (Origin) and its share of Australia Pacific LNG (APLNG), as at 30 June 2016. The data is compared with and reconciled to the position at 30 June 2015.

Summary of 2P Reserves

Including production, Origin's proved plus probable (2P) reserves increased by 17 PJe to a total of 6,277 PJe, when compared to 30 June 2015. The key changes in 2P reserves include:

- 249 PJe net increase resulting from revisions and extensions with notable increases in the Perth Basin (Waitsia/Senecio field) and offshore NZ (Kupe field), partly offset by decreases in Cooper, Otway and Bass basins.
- 231 PJe decrease due to production

Table 1: Origin 2P reserves (by area)

2P Reserves by area (PJe)	2P 30/06/15	Acquisition/ Divestment	New Booking /Discovery	Revisions/ Extensions	Production	2P 30/06/16
Australia Pacific LNG						
Surat/Bowen (Unconventional)	5,167	-	-	63	(157)	5,073
Cooper Basin						
SA Cooper Basin	187	-	-	(26)	(12)	149
SWQ Cooper Basin	53	-	-	(12)	(6)	35
Other Onshore Australia						
Perth Basin	43	-	-	216	(4)	255
Ironbark (Unconventional)	256	-	-	-	-	256
Australia Offshore						
Otway Basin	313	-	-	(34)	(24)	255 ¹
Bass Basin	90	-	-	(30)	(10)	50
New Zealand						
Onshore Taranaki	-	-	-	1	(1)	-
Offshore Taranaki (Kupe)	151	-	-	71	(18)	204
Total	6,260	-	-	249	(231)	6,277

¹ Includes 78 PJe in Halladale and Speculant fields

During the year, changes were recorded in the following areas:

- Including 157 PJe of production, APLNG 2P reserves decreased by 94 PJe to 5,073 PJe with 63 PJe of 2P reserves added following successful development drilling. Further detail is provided in Appendix A.
- Including 18 PJe of production, Cooper Basin 2P reserves decreased by 56 PJe to 184 PJe with 38 PJe of revisions and extensions due to revised development plans and the impact of lower oil prices.
- Including 4 PJe of production, Perth Basin 2P reserves increased by 212 PJe to 255 PJe with 216 PJe of revisions and extensions in Waitsia field as a result of an integrated reservoir study incorporating well results and data. Waitsia is expected to begin production early in the 2017 financial year.
- Ironbark 2P reserves remained unchanged at 256 PJe. 3P reserves decreased by 1 PJe to 713 PJe and 2C reserves increased by 3 PJe to 329 PJe.
- Including 24 PJe of production, Otway Basin 2P reserves decreased by 58 PJe to 255 PJe with 34 PJe of revisions and extensions due to faster decline in well deliverability resulting in less reserves able to be economically produced. Reservoir studies to identify Otway backfill opportunities are ongoing.
- Including 10 PJe of production, Bass Basin 2P reserves decreased by 40 PJe to 50 PJe with 30 PJe of revisions and extensions due to lower observed reservoir performance from Yolla-5 and Yolla-6 since wells have come online.

- Including 18 PJe of production, New Zealand Offshore (Kupe) 2P reserves increased by 53 PJe to 204 PJe with 71 PJe of revisions and extensions as a result of an updated reservoir model.

Minor revisions to reserves occurred in other areas as additional data and technical studies are incorporated into forward estimates. Around 85% of 2P reserves are unconventional.

Table 2: Origin 2P reserves (by product and development type)

2P Reserves by area (PJe)	Gas	LPG	Condensate	Oil	Total (PJe)		Total (PJe)
	(PJ)	(KT)	(kbbl)	(kbbl)	Developed	Undeveloped	
Australia Pacific LNG							
Surat/Bowen (Unconventional)	5,073	-	-	-	1,969	3,104	5,073
Cooper Basin							
SA Cooper Basin	115	245	1,834	1,959	91	57	149
SWQ Cooper Basin	30	36	370	321	24	11	35
Other Onshore Australia							
Perth Basin	255	-	67	-	81	175	255
Ironbark (Unconventional)	256	-	-	-	-	256	256
Australia Offshore							
Otway Basin	220	393	2,902	-	184	71	255
Bass Basin	38	107	1,264	6	48	2	50
New Zealand							
Onshore Taranaki	-	-	-	-	-	-	-
Offshore Taranaki (Kupe)	147	613	4,975	-	117	87	204
Total	6,133	1,394	11,411	2,287	2,514	3,763	6,277

Table 3: Origin 2P reserve changes (by product)

2P Reserves by area (PJe)	Gas (PJ)	LPG (KT)	Condensate (kbbl)	Oil (kbbl)	Total (PJe)
2P 30/06/15	6,100	1,492	13,029	2,631	6,260
Acquisition/divestment	-	-	-	-	-
New bookings/discoveries	-	-	-	-	-
Revisions/extensions	248	30	(199)	8	249
Production	(215)	(129)	(1,419)	(352)	(231)
2P 30/06/16	6,133	1,394	11,411	2,287	6,277
Change	33	(98)	(1,617)	(344)	17
Change (percentage)	1	(7)	(12)	(13)	0

Summary of 1P Reserves

Proved (1P) reserves increased by 398 PJe (after production) to a total of 3,160 PJe, when compared to previous reporting period, as stated in Table 4. Around 84% of 1P reserves are unconventional.

Table 4: Origin 1P reserves (by area)

1P Reserves by area (PJe)	1P 30/06/15	Acquisition/ Divestment	New Booking /Discovery	Revisions/ Extensions	Production	1P 30/06/16
Australia Pacific LNG						
Surat/Bowen (Unconventional)	2,272	-	-	543	(157)	2,659
Cooper Basin						
SA Cooper Basin	82	-	-	(6)	(12)	64
SWQ Cooper Basin	26	-	-	(4)	(6)	16
Other Onshore Australia						
Perth Basin	15	-	-	55	(4)	67
Ironbark (Unconventional)	-	-	-	-	-	-
Australia Offshore						
Otway Basin	188	-	-	9	(24)	173
Bass Basin	83	-	-	(33)	(10)	39
New Zealand						
Onshore Taranaki	-	-	-	1	(1)	-
Offshore Taranaki (Kupe)	97	-	-	64	(18)	143
Total	2,763	-	-	629	(231)	3,160

Table 5: Origin 1P reserves (by product and development type)

1P Reserves by area (PJe)	Gas	LPG	Condensate	Oil	Total (PJe)		Total (PJe)
	(PJ)	(KT)	(kbbbl)	(kbbbl)	Developed	Undeveloped	
Australia Pacific LNG							
Surat/Bowen (Unconventional)	2,659	-	-	-	1,965	694	2,659
Cooper Basin							
SA Cooper Basin	51	99	739	739	36	28	64
SWQ Cooper Basin	13	17	175	137	11	5	16
Other Onshore Australia							
Perth Basin	66	-	19	-	67	-	67
Ironbark (Unconventional)	-	-	-	-	-	-	-
Australia Offshore							
Otway Basin	149	280	2,053	-	128	46	173
Bass Basin	30	84	989	1	38	1	39
New Zealand							
Onshore Taranaki	-	-	-	-	-	-	-
Offshore Taranaki (Kupe)	100	419	4,108	-	98	45	143
Total	3,067	899	8,083	877	2,341	819	3,160

Table 6: Origin 1P reserve changes (by product)

1P Reserves by area (PJe)	Gas (PJ)	LPG (KT)	Condensate (kbbbl)	Oil (kbbbl)	Total (PJe)
1P 30/06/15	2,666	940	8,207	1,070	2,763
Acquisition/divestment	-	-	-	-	-
New bookings/discoveries	-	-	-	-	-
Revisions/extensions	617	87	1,295	158	629
Production	(215)	(129)	(1,419)	(352)	(231)
1P 30/06/16	3,067	899	8,083	877	3,160
Change	402	(42)	(124)	(194)	398
Change (percentage)	15	(4)	(2)	(18)	14

Appendix A: APLNG Reserves and Resources

Netherland, Sewell & Associates, Inc. (NSAI) has audited and prepared a consolidated report of the reserves and resources held by APLNG. Reserves and resources estimates for each property in this report have either been independently prepared by NSAI or prepared by Origin and audited by NSAI. The reserves and resources data are based on technical, commercial and operational information provided by Origin on behalf of APLNG.

Table 7 provides 1P, 2P and 3P reserves and 2C resources for APLNG (100%). Table 8 shows Origin's 37.5% interest in these APLNG reserves and resources.

Table 7: Reserves/resources held by APLNG (100% share).

Reserves (PJe)	30/06/15 Reserves	Acquisition/ Divestment	New Booking /Discovery	Revisions/ Extensions	Production	30/06/16 Reserves
1P	6,059	-	-	1,448	(418)	7,089
2P	13,778	-	-	169	(418)	13,529
3P	16,174	-	-	(820)	(418)	14,935
Resources (PJe)	Resources					Resources
2C	2,760	-	-	266	-	3,026

Table 8: Reserves/resources held by Origin (37.5% share in APLNG).

Reserves (PJe)	30/06/15 Reserves	Acquisition/ Divestment	New Booking /Discovery	Revisions/ Extensions	Production	30/06/16 Reserves
1P	2,272	-	-	543	(157)	2,659
2P	5,167	-	-	63	(157)	5,073
3P	6,065	-	-	(308)	(157)	5,601
Resources (PJe)	Resources					Resources
2C	1,035	-	-	100	-	1,135

The 1,448 PJe increase in 1P revisions and extensions is due to successful development drilling.

The 169 PJe increase in 2P revisions and extensions is also due to successful development drilling and better than expected performance in some fields.

The 820 PJe decrease in 3P revisions and extensions is primarily due to re-classification of some 3P reserves to contingent resources due to low permeability and other coal properties after detailed review of future field development plans.

The contingent resource range is 774 PJe for 1C to 7,289 PJe for 3C and there are ongoing studies and investigations of all contingent resources to identify future opportunities to progress resources to reserves. The 266 PJe increase in 2C revisions and extensions is largely due to the above mentioned re-classification of some of the 3P reserves to contingent resources. 3C resources also increased in part due to the above reclassification of 3P reserves to 3C resources.

Appendix B: Notes Relating to this Report

a. Methodology regarding Reserves and Resources

The Reserves Report has been prepared to be consistent with the Petroleum Resources Management System (PRMS) 2007 published by Society of Petroleum Engineers (SPE). This document may be found at the SPE website: spe.org/industry/docs/Petroleum_Resources_Management_System_2007.pdf. Additionally, this Reserves Report has been prepared to be consistent with the ASX reporting guidelines.

The conventional (non-CSG) reserves estimates are prepared by employees who are qualified petroleum reserves and resource evaluators working in each of our assets utilising an Origin approved Reserves and Resources Process.

The CSG reserves and resources held within APLNG's properties have either been independently prepared by NSAI or prepared by Origin and audited by NSAI. An independent assessment of our CSG reserves and resources within ATP 788 (Ironbark) permit has been independently undertaken by NSAI. For all assets Origin reports reserves and resources consistent with SPE guidelines as follows: proved reserves (1P); proved plus probable reserves (2P); proved plus probable plus possible reserves (3P); low estimate contingent resources (1C); best estimate contingent resources (2C); high estimate contingent resources (3C).

Origin does not intend to report Prospective or Undiscovered Resources as defined by the SPE in any of its areas of interest on an ongoing basis.

b. Economic test for reserves

The assessment of reserves requires a commercial test to establish that reserves can be economically recovered. Within the commercial test, operating cost and capital cost estimates are combined with fiscal regimes and product pricing to confirm the economic viability of producing the reserves.

In the case of oil, condensate and LPG forward estimates of prices are used in line with the forward curves available through various international benchmarking agencies, appropriately adjusted for local market conditions.

Gas reserves are assessed against existing contractual arrangements, local market conditions, as appropriate. In the case of gas reserves where contracts are not in place a forward price scenario based on monetisation of the reserves through domestic markets has been used, including power generation opportunities, direct sales to LNG and other end users and utilisation of Origin's wholesale and retail channels to market.

For CSG reserves that are intended to supply the APLNG CSG to LNG project, the economic test is based on gas prices calculated using the Residual Pricing Method (RPM). The RPM mechanism is used within the Petroleum Resource Rent Tax (PRRT) regime to determine an appropriate transfer price for integrated gas to liquids projects.

RPM applies the same rate of return to the upstream and downstream businesses of the APLNG project, and divides residual profit equally between the businesses. The residual profit is a function of the upstream "cost plus" and the downstream "net back" prices. The residual price is exposed to changes in the supply/demand balance in the market through the oil price-linked LNG contract, as well as other market forces through the long term bond rate.

c. Reversionary Rights

The CSG interests that Australia Pacific LNG acquired from Tri-Star in 2002 are subject to reversionary rights. If triggered, these rights will require Australia Pacific LNG to transfer back to Tri-Star a 45% interest in those CSG interests for no additional consideration. Origin has assessed the potential impact of these reversionary rights based on economic tests consistent with the reserves and resources referable to the CSG interests and based on that assessment does not consider that the existence of these reversionary rights impacts the reserves and resources quoted in this report. Tri-Star has commenced proceedings against Australia Pacific LNG claiming that reversion has occurred. Australia Pacific LNG denies that reversion has occurred and is defending the claim.

d. Information regarding the preparation of this Reserves Report

The internationally recognised petroleum consultant NSAI has prepared independent assessments of the reserves and resources for the Ironbark asset. The CSG reserves and resources held within APLNG's properties have either been independently prepared by NSAI or prepared by Origin and audited by NSAI. All assessments are based on technical, commercial and operational data provided by Origin on behalf of APLNG.

The statements in this report relating to reserves and resources as of 30 June 2016 for APLNG and the Ironbark asset are based on information in the NSAI reports dated 27 July 2016 and 11 July 2016, respectively. The data has been compiled by Mr. Dan Paul Smith, a full-time employee of NSAI. Mr. Dan Paul Smith has consented to the statements based on this information, and to the form and context in which these statements appear.

The statements in this report relating to reserves and resources for other assets have been compiled by Andrew Mayers, a full-time employee of Origin. Andrew Mayers is a qualified reserves and resources evaluator and has consented to the form and context in which these statements appear.

e. Rounding

Information on reserves is quoted in this report rounded to the nearest whole number. Some totals in tables in this report may not add due to rounding. Items that round to zero are represented by the number 0, while items that are actually zero are represented with a dash "-".

f. Abbreviations

bbl	barrel
Bscf	billion standard cubic feet
CSG	coal seam gas
kbbbls	kilo barrels = 1,000 barrels
ktonnes	kilo tonnes = 1,000 tonnes
mmboe	million barrels of oil equivalent
PJ	petajoule = 1×10^{15} joules
PJe	petajoule equivalent

g. Conversion Factors for PJe

Crude oil	0.00583 PJ/kbbbls = 5.83 PJ / mmboe
Condensate	0.00541 PJ/kbbbls
LPG	0.0493 PJ/ktonnes
CSG	1.038 PJ/Bscf

h. Reference Point

Reference points for Origin's petroleum reserves and contingent resources are defined points within Origin's operations where normal exploration and production business ceases, and quantities of the produced product are measured under defined conditions prior to custody transfer. Fuel, flare and vent consumed to the reference points are excluded.

i. Preparing and Aggregating Petroleum Resources

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

j. Methodology and Internal Controls

The reserves estimates undergo an assurance process to ensure that they are technically reasonable given the available data and have been prepared according to our reserves and resources process, which includes adherence to the PRMS Guidelines. The assurance process includes peer reviews of the technical and commercial assumptions. The annual reserves report is reviewed by management with the appropriate technical expertise, including the Chief Petroleum Engineer and Integrated Gas general managers.

k. Qualified Petroleum Reserves and Resources Evaluators

The material presented in this report is based on, and fairly represents, information and supporting documentation prepared by, or under the supervision of the listed qualified reserves and resources evaluators. These individuals have consented to the statements based on this information, and to the form and context in which these statements appear.

Name	Employer	Professional Organisation*
Andrew Mayers	Origin Energy (Chief Petroleum Engineer)	SPE, APEGA, RPEQ
Chung Chen	Origin Energy	SPE, EA, RPEQ
Samantha Phillips	Origin Energy	APEGA, EA
Simon Smith	Origin Energy	SPE, EA
Jason Billings	Origin Energy	SPE, P.E (Alaska)
Petrina Weatherstone	Origin Energy	SPE
Sarah Bishop	Origin Energy	SPE, EA, RPEQ
Jocelyn Young	Origin Energy	SPE
David MacDougal	Origin Energy	SPE
Alan Mourgues	Origin Energy	SPE, EA, RPEQ
Rowan Wilson	Origin Energy	SPE
Arvo Nagel	Origin Energy	SPE
Nick Allen	Origin Energy	SPE
Graham Sutherland	Origin Energy	SPE, EA, RPEQ
Tim Ogilvie	Origin Energy	SPE
Alistair Jones	Origin Energy	SPE

* SPE: Society of Petroleum Engineers; AAPG: American Association of Petroleum Geologists; APEGA: The Association of Professional Engineers and Geoscientists of Alberta; EA: Engineers of Australia; RPEQ: Board of Professional Engineers Queensland