

## ASX release

2 July 2018

Ref: #034/18

### Reserves and contingent resources as at 30 June 2018

Beach Energy Limited (ASX: BPT, “Beach”) provides the following report in relation to its reserves and contingent resources as at 30 June 2018. Categories presented are 1P reserves (Proved), 2P reserves (Proved and Probable), 3P reserves (Proved, Probable and Possible) and 2C contingent resources. 1P, 2P and 3P reserves have been independently audited by RISC Advisory.

#### Highlights

- 1P reserves increased by 152 MMboe (+405%) to 190 MMboe
- 2P reserves increased by 239 MMboe (+320%) to 313 MMboe
- Beach ‘pre-Lattice acquisition’ assets<sup>1</sup> 2P reserves increased from 75 to 95 MMboe
- Lattice acquired assets<sup>1</sup> 2P reserves increased from 158 to 218 MMboe
- Organic 2P reserves replacement ratio<sup>2</sup> of 368%
- 2P reserves life has increased from 7 years at the end of FY17 to 11 years at the end of FY18<sup>3</sup>

#### Comments from Chief Executive Officer, Matt Kay

Commenting on the reserves and contingent resource report, CEO Matt Kay said “The 320% increase in 2P reserves clearly demonstrates the transformation of Beach over the past year. Importantly, approximately one third of this increase was due to strong underlying performance of the assets and exploration/appraisal success. A comprehensive reserves review of the Lattice assets has delivered a substantial increase in 2P reserves and just as pleasing has been the 14 MMbbl (net of production) increase in Western Flank oil 2P reserves, driven by the successful application of horizontal drilling technology and continued excellent production performance at the Bauer oil field.

“At 30 June 2018 approximately 48% of Beach 2P reserves are classified as undeveloped. We look forward to sharing our FY19 development programme with shareholders in our FY19 guidance statement, to be released in the coming weeks. An overview of our medium term development plans and capital expenditure outlook will be outlined at our investor day, planned for late September.”

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<sup>1</sup> For the purpose of this report, we define the Beach ‘pre-Lattice acquisition’ assets as the Cooper Basin assets ex PEL 91, ex PEL 92, ex PEL 104/111, Tintaburra, ex PEL 106, ex PEL 513/632, PRL135 (Vanessa) and interests in the Cooper Basin JV which range from 12.86 to 40.00%. We define Lattice acquired assets as the Otway Gas Project and HBWS in the Otway Basin, BassGas Project, Waitsia, Beharra Springs, Kupe Gas Project and various interests from 7.9 to 25.0% in the Cooper Basin JV.

<sup>2</sup> Organic reserves replacement ratio calculated as 2P reserves additions, excluding acquisitions and divestments, of 105 MMboe divided by preliminary FY18 pro forma production of 28.5 MMboe, being 17.7 MMboe of preliminary production from Lattice acquired assets (see footnote 8) and 10.8 MMboe of preliminary production from Beach ‘pre-Lattice’ assets.

<sup>3</sup> 2P reserves life calculated as 313 MMboe 2P reserves at 30 June 2018, divided by preliminary FY18 pro forma production of 28.5 MMboe (see footnote 2).

## Beach reserves

Reserves as at 30 June 2018 are summarised below and additional disclosures are provided in the appendices.

Reserves (net)			
	1P	2P	3P
Oil (million barrels "MMbbl")	25	42	73
Gas and gas liquids (million barrels of oil equivalent "MMboe")	165	272	418
<b>Total as at 30 June 2018 (MMboe)</b>	<b>190</b>	<b>313</b>	<b>491</b>
Total as at 30 June 2017	38	75	138
<i>Increase / (decrease)</i>	405%	320%	255%

Developed and undeveloped reserves (net)						
	Developed			Undeveloped		
	1P	2P	3P	1P	2P	3P
Oil (MMbbl)	19	28	46	6	13	27
Gas and gas liquids (MMboe)	84	135	214	81	137	205
<b>Total as at 30 June 2018 (MMboe)</b>	<b>103</b>	<b>163</b>	<b>259</b>	<b>87</b>	<b>150</b>	<b>232</b>
Total as at 30 June 2017	33	60	106	5	14	32
<i>Increase / (decrease)</i>	213%	171%	145%	1,735%	944%	615%

NB. All reserve and resource figures are quoted net of fuel; due to rounding, figures and ratios may not reconcile to totals.

Beach recorded an organic 2P reserves replacement ratio of 368% for the 12 month period ended 30 June 2018, with year-end 2P oil, gas and gas liquids reserves 320% higher than the prior year. Including the impact of acquisitions/divestments, Beach recorded a 2P reserves replacement ratio in FY18 of 938%.

## Beach 2C contingent resources

Net 2C contingent resources increased 35% to 207 MMboe. The table below provides a summary.

2C Contingent Resources (Net)			
	30-Jun-17	Revisions	30-Jun-18
Oil (MMbbl)	29	2	31
Conventional gas and gas liquids (MMboe)	86	65	152
Unconventional gas and gas liquids (MMboe)	38	(14)	24
<b>Total (MMboe)</b>	<b>153</b>	<b>54</b>	<b>207</b>

## Material changes to reserves and contingent resources

Since reporting reserves as at 30 June 2017 there have been material changes to Beach reserves and contingent resources, driven by the Lattice Energy (including Benaris) and Toyota Tsusho acquisitions<sup>4</sup> and drilling, reservoir performance and cost reduction in the Cooper Basin.

The acquisition of Lattice Energy (including Benaris) interests in the Otway Basin, Bass Basin, Perth Basin, Taranaki Basin and Cooper Basin plus Toyota Tsusho's interests in the Bass and Otway basins added 90 MMboe 1P and 162 MMboe 2P reserves. Other material technical changes to 1P and 2P reserves are:

- **Waitsia (Beach 50% interest):** Reserves additions in two blocks following successful appraisal wells Waitsia-3 and -4. This matured 23 MMboe 1P and 29 MMboe 2P reserves;
- **Otway Gas Project (Beach 100% interest):** Maturation of contingent resources to reserves associated with Geographe well G4A and Thylacine wells TN-2 and TW-2 following Beach's commitment to progress the developments. This matured 27 MMboe 1P and 30 MMboe 2P reserves;
- **Halladale/Black Watch/Speculant (Beach 100% interest):** Reclassification of Black Watch Field contingent resources to reserves following Field Development Plan approval. This matured 2 MMboe 1P and 4 MMboe 2P reserves;
- **Cooper Basin JV (various Beach interests):** Addition of 13 MMboe 1P and 17 MMboe 2P reserves due to production performance and movement of contingent resources to undeveloped reserves following project cost reductions by the operator and improved economics;
- **Cooper Basin ex PEL 91 (Beach 100% interest):** Addition of 12 MMboe 1P and 14 MMboe 2P reserves based on existing well performance and new horizontal well locations identified in the McKinlay Formation across various fields. This follows the success of well Bauer-26.

Material changes to Beach 2C contingent resources are:

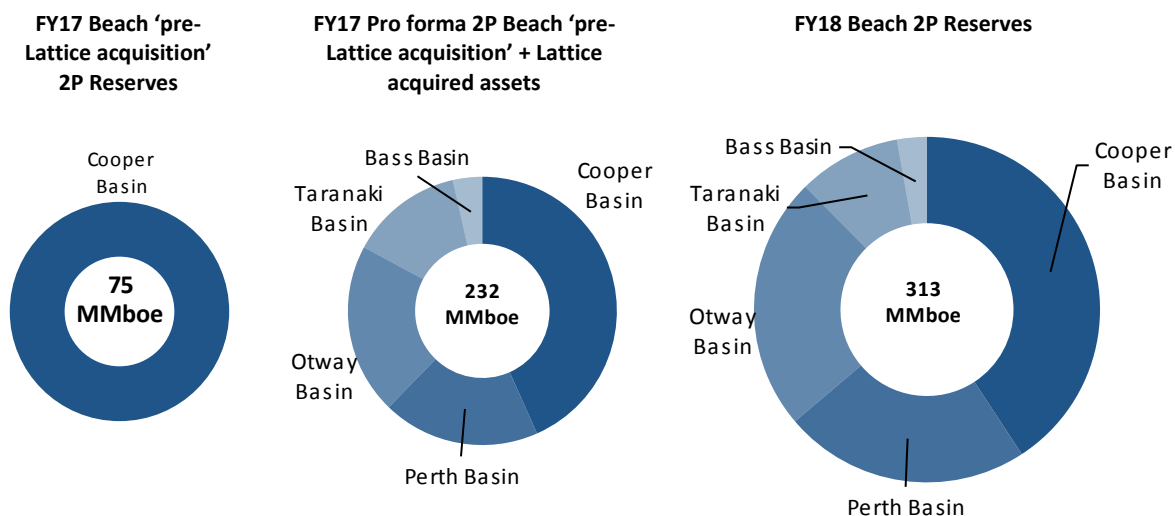
- **Cooper Basin JV** decreased 29MMboe resulting from the transfer from contingent resource to reserves due to improved economics driven by lower costs and a downgrade of a proportion of unconventional resources;
- **Otway Basin** increased 17 MMboe largely resulting from the Haselgrove discovery (15 MMboe) in the South Australian onshore Otway Basin;
- **Bass Basin** increased 29 MMboe as a result of the Lattice and Toyota acquisitions;
- **Bonaparte Basin** increased 20 MMboe due to the Lattice acquisition;
- **Perth Basin** increased 32 MMboe due to the Lattice acquisition.

See Appendix G for further disclosure related to the material changes.

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<sup>4</sup> As discussed in Beach ASX releases dated 28 September 2017 and 21 December 2017.

## Beach 2P reserves

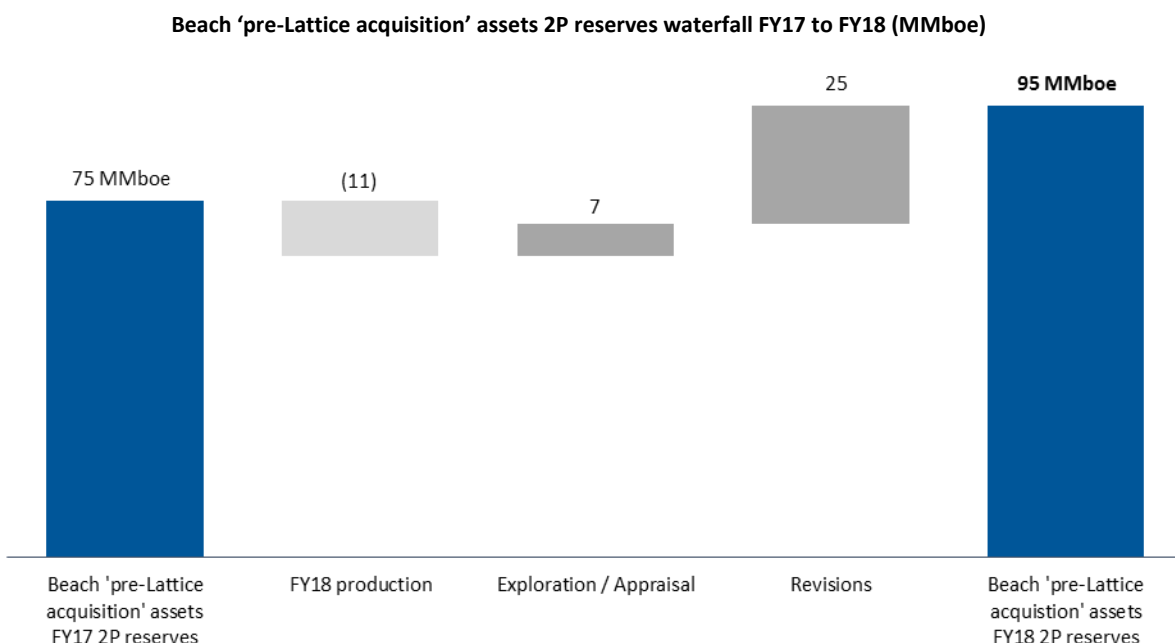


Notes on the charts above:

- FY18 Beach 2P reserves of 313 MMboe represents a 35% increase to FY17 pro forma 2P reserves presented at the announcement of the Lattice acquisition<sup>5</sup> and a 320% increase to FY17 Beach 'pre-Lattice acquisition' assets 2P reserves.
- A more detailed breakdown of Beach 2P reserves as at 30 June 2018 can be found in Appendix A and B.

### Beach 'pre-Lattice acquisition' assets 2P reserves

The following chart summarises the movement in 2P reserves of the Beach 'pre-Lattice acquisition' assets, over the 12 month period to 30 June 2018.



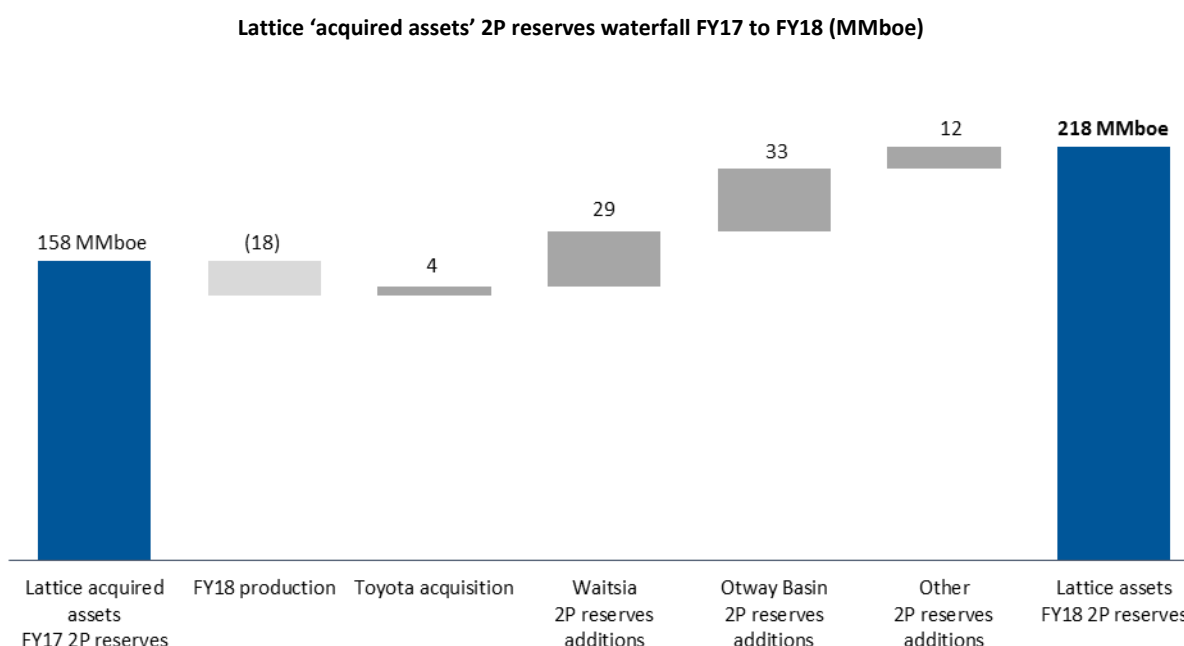
<sup>5</sup> Refer page 11 of Investor Presentation in Beach ASX release dated 28 September 2017.

## Notes on the above chart:

- Beach 'pre-Lattice acquisition' assets 2P reserves of 95 MMboe at 30 June 2018 is calculated after deduction of a preliminary FY18 production estimate of 10.8 MMboe from the Beach 'pre-Lattice' assets.
- Total revisions of 25 MMboe were largely driven by a 17 MMbbl revision of 2P reserves at Beach's Western Flank oil assets<sup>6</sup>. The 17 MMbbl revision (before production of 5 MMbbl) is due to improved well performance (9 MMbbl) and the successful application of horizontal drilling technology in the McKinlay and Birkhead reservoirs (7 MMbbl).

Lattice 'acquired assets' 2P reserves

The following chart summarises the movement in 2P reserves of the Lattice 'acquired assets' over the period from 30 June 2017 (as reported by Origin Energy<sup>7</sup>) to 30 June 2018.



## Notes on the above chart:

- Lattice 'acquired assets' 2P reserves of 218 MMboe at 30 June 2018 is calculated after deduction of a preliminary FY18 production estimate of 17.7 MMboe from the Lattice 'acquired assets'<sup>8</sup>.

<sup>6</sup> Western Flank oil assets: ex PEL 91 (Beach 100%), ex PEL 92 (Beach 75%) and ex PEL 104/111 (Beach 40%).

<sup>7</sup> Refer to Origin Energy's (ASX: ORG, "Origin") 2017 annual reserves report included in Origin's 2017 full year report filed with ASX on 16 August 2017 and 2P reserves estimate and acquisition of Otway Basin reserves extracted from Origin's announcement filed with ASX on 11 September 2017.

<sup>8</sup> For reserves purposes, preliminary FY18 production is calculated on the basis that the ownership interests as at 30 June 2018 were held for the complete 12 month financial year. On this basis, the preliminary FY18 production figure of 17.7 MMboe includes full 12 months' contributions from the Lattice, Benaris and Toyota Tsusho acquisitions. In its quarterly report for the period ended 31 March 2018, Beach provided updated pro forma production guidance in the range of 26.0 to 27.0 MMboe. This pro forma guidance was prepared on the basis of a 12 month contribution of Lattice, six months' contribution from the acquired Benaris interest in the Otway Gas Project and two months' contribution from Toyota Tsusho's interest in Otway Gas Project and BassGas. Calculated on this same basis, preliminary FY18 production from Lattice 'acquired assets' is estimated at 15.7MMboe.

- 29 MMboe of 2P reserves was added at Waitsia following the incorporation of positive drilling and flow testing results from Waitsia-3 and -4 appraisal wells drilled during FY18.
- 33 MMboe of 2P reserves were added in the Otway Basin primarily relating to the reclassification of 2C contingent resources to 2P reserves, as Beach plans to undertake these field development activities over the next five years.
- Other 2P reserves additions relate predominantly to the Cooper Basin JV.

Yours sincerely,



**Matt Kay**  
Chief Executive Officer

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## Notes on the reserves statement

Beach prepares its petroleum reserves and contingent resources estimates in accordance with the Petroleum Resources Management System (PRMS) published by the Society of Petroleum Engineers.

All estimates of petroleum reserves and contingent resources reported by Beach are prepared by, or under the supervision of, a qualified petroleum reserves and resources evaluator. To ensure the integrity and reliability of data used in the reserves estimation process, the raw data is reviewed and quality controlled by senior professional production, reservoir, petrophysical and geological staff at Beach. During each petroleum reserves review, this data is updated, analysed and checked against the previous year's data.

Petroleum reserves and contingent resources are aggregated by arithmetic summation by category and as a result the 1P reserves estimates may be conservative and 3P estimates optimistic due to the portfolio effects of arithmetic summation. Petroleum reserves and contingent resources have been prepared using a combination of deterministic and probabilistic methods. Petroleum reserves replacement ratio is the ratio of the change in petroleum reserves (excluding production and divestments/acquisitions) divided by the last year's annual production.

The reserves and resources information in this report is based on, and fairly represents, information and supporting documentation prepared by, or under the supervision of, Mr Tony Lake (Manager Development Western Flank Gas). Mr Lake is an employee of Beach Energy Ltd and has a BE (Mech) degree from the University of Adelaide and is a member of the Society of Petroleum Engineers. The reserves and resources information in this report has been issued with the prior written consent of Mr Lake in the form and context in which it appears.

Beach has engaged the services of RISC Advisory to independently audit Beach's petroleum reserves estimates prior to Beach reporting any updated estimates. RISC Advisory has provided their prior written consent to being named in this announcement. Beach reviews and updates its oil and gas reserves position on an annual basis and reports the updated estimates as at 30 June each year. The estimates of petroleum reserves and contingent resources contained in this reserves statement are as at 30 June 2018.

Conversion factors used to evaluate oil equivalent quantities are sales gas and ethane: 5.816 TJ per kboe, LPG: 1.389 bbl per boe, condensate: 1.069 bbl per boe and oil: 1 bbl per boe. The reference point for reserves determination is the custody transfer point for the products. Reserves are stated net of fuel and third party royalties.

## Forward looking statements

This ASX release ("Announcement") contains certain "forward-looking statements". The words "expect", "anticipate", "estimate", "intend", "believe", "guidance", "should", "could", "may", "will", "predict", "plan" and other similar expressions are intended to identify forward-looking statements. Indications of, and guidance on, future earnings and financial position and performance are also forward-looking statements. Forward-looking statements, opinions and estimates provided in this Announcement are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions.

Forward-looking statements, including projections, guidance on future earnings and estimates, are provided as a general guide only and should not be relied upon as an indication or guarantee of future performance. This Announcement contains such statements that are subject to risk factors associated with the oil and gas industry. It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a range of variables which could cause actual results or trends to differ materially, including but not limited to the following risks: earnings, capital expenditure, cash flow and capital structure risks and general business risks. No representation, warranty or assurance (express or implied) is given or made in relation to any forward-looking statement by any person (including Beach Energy). In particular, no representation, warranty or assurance (express or implied) is given that the occurrence of the events expressed or implied in any forward-looking statements in this Announcement will actually occur. Actual results, performance or achievement may vary materially from any projections and forward-looking statements and the assumptions on which those statements are based.

The forward-looking statements in this Announcement speak only as of the date of this Announcement. Subject to any continuing obligations under applicable law or any relevant ASX listing rules, Beach Energy and its directors, officers, employees, advisers, agents, and intermediaries disclaim any obligation or undertaking to provide any updates or revisions to any forward looking statements in this Announcement to reflect any change in expectations in relation to any forward-looking statements or any change in events, conditions or circumstances on which any such statement is based. Nothing in this Announcement will under any circumstances create an implication that there has been no change in the affairs of Beach Energy since the date of this Announcement.

**Appendix A – 2P Reserves by segment (Reconciliation)**

2P Reserves (Net)											
	Note	2P 30-Jun-17 (MMboe)	FY18 Production (MMboe)	Revisions			2P 30-Jun-18 (MMboe)	Oil (MMbbl)	Gas (PJ)	LPG (kt)	Condensate (MMbbl)
				Acquisitions / Divestments (MMboe)	Exploration / Appraisal (MMboe)	Other Revisions (MMboe)					
Western Flank Oil	1	20	(5)	–	2	17	34	34	–	–	–
Western Flank Gas	2	8	(1)	–	3	(1)	9	–	34	177	2
Cooper Basin JV	3	46	(7)	26	2	17	84	7	377	754	6
Other Cooper Basin	4	0	(0)	–	–	(0)	0	–	1	5	0
Perth Basin	5	–	(1)	44	29	(0)	72	–	419	–	0
<b>SA / WA</b>		<b>75</b>	<b>(14)</b>	<b>70</b>	<b>37</b>	<b>33</b>	<b>200</b>	<b>42</b>	<b>832</b>	<b>936</b>	<b>8</b>
Otway Basin	6	–	(9)	50	–	33	75	–	375	651	5
Bass Basin	7	–	(2)	10	–	1	9	–	39	104	1
<b>Victoria</b>		<b>–</b>	<b>(11)</b>	<b>61</b>	<b>–</b>	<b>–</b>	<b>83</b>	<b>–</b>	<b>414</b>	<b>755</b>	<b>6</b>
Taranaki Basin (New Zealand)	8	–	(3)	32	–	2	30	–	128	560	4
<b>Total 2P Reserves</b>		<b>75</b>	<b>(28)</b>	<b>162</b>	<b>37</b>	<b>68</b>	<b>313</b>	<b>42</b>	<b>1,374</b>	<b>2,252</b>	<b>18</b>

- Western Flank Oil comprises ex PEL 91 (Beach 100%), ex PEL 92 (Beach 75% and operator) and ex PEL 104/111 (Beach 40% interest, Senex operator). 2P reserves of 34 MMboe as at 30 June 2018 is split 75% ex PEL 91, 17% ex PEL 92 and 8% ex PEL104/111. A mixture of probabilistic and deterministic methodologies is applied.
- Western Flank Gas comprises ex PEL 106 (Beach 100%), PRL 26 (Beach 100%) and the Mokami Field in ex PEL 91 (Beach 100%). 2P reserves of 9 MMboe as at 30 June 2018 is split 77% ex PEL 106, 18% PRL 26 and 5% ex PEL 91. A mixture of probabilistic and deterministic methodologies applied.
- The Cooper Basin JV comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%. Deterministic methodology applied.
- Includes ex PEL 513/632 (SWJV) (Beach 40%, Santos operator) and PRL 135 (Vanessa) (Beach 43% interest, Senex operator). Deterministic methodology applied.
- Perth Basin comprises Waitsia (Beach 50%, AWE operator) and Beharra Springs (Beach 67% and operator). A mixture of probabilistic and deterministic methodologies applied.
- Otway Basin comprises HBWS (Halladale, Black Watch, Speculant) (Beach 100%), Otway Gas Project (Beach 100%) and Haselgrove area (Beach 100%). 2P reserves of 75 MMboe as at 30 June 2018 is split 10% HBWS, 90% Otway Gas Project and 0% Haselgrove area. A mixture of probabilistic and deterministic methodologies applied.
- Bass Basin comprises BassGas producing permits (Beach 53.75% and operator) and BassGas exploration permits (Beach 50.25% and operator). A mixture of probabilistic and deterministic methodologies applied.
- Taranaki Basin comprises Kupe Gas Project (Beach 50% and operator). A mixture of probabilistic and deterministic methodologies applied.



**Appendix B – 2P Reserves by segment (Developed/Undeveloped)**

		2P Reserves (Net)									
Note	Developed Reserves					Undeveloped Reserves					
	Gas (PJ)	LPG (kt)	Condensate (MMbbl)	Oil (MMbbl)	Total (MMboe)	Gas (PJ)	LPG (kt)	Condensate (MMbbl)	Oil (MMbbl)	Total (MMboe)	
Western Flank Oil	1	–	–	–	22	22	–	–	–	12	12
Western Flank Gas	2	34	177	2	–	9	-	-	-	–	-
Cooper Basin JV	3	307	616	5	6	69	71	138	1	1	16
Other Cooper Basin	4	1	4	0	–	0	0	1	0	–	0
Perth Basin	5	89	-	0	–	15	330	-	0	–	57
<b>SA / WA</b>		<b>431</b>	<b>798</b>	<b>6</b>	<b>28</b>	<b>115</b>	<b>401</b>	<b>138</b>	<b>1</b>	<b>13</b>	<b>85</b>
Otway Basin	6	127	232	2	–	25	249	420	3	–	49
Bass Basin	7	39	104	1	–	9	-	-	-	–	-
<b>Victoria</b>		<b>165</b>	<b>336</b>	<b>3</b>	<b>–</b>	<b>34</b>	<b>249</b>	<b>420</b>	<b>3</b>	<b>–</b>	<b>49</b>
Taranaki Basin (New Zealand)	8	59	259	2	–	14	68	300	2	–	16
<b>Total 2P Reserves</b>		<b>656</b>	<b>1,393</b>	<b>11</b>	<b>28</b>	<b>163</b>	<b>718</b>	<b>859</b>	<b>6</b>	<b>13</b>	<b>150</b>

- Western Flank Oil comprises ex PEL 91 (Beach 100%), ex PEL 92 (Beach 75% and operator) and ex PEL 104/111 (Beach 40% interest, Senex operator). 2P reserves of 34 MMboe as at 30 June 2018 is split 75% ex PEL 91, 17% ex PEL 92 and 8% ex PEL104/111. A mixture of probabilistic and deterministic methodologies is applied.
- Western Flank Gas comprises ex PEL 106 (Beach 100%), PRL 26 (Beach 100%) and the Mokami Field in ex PEL 91 (Beach 100%). 2P reserves of 9 MMboe as at 30 June 2018 is split 77% ex PEL 106, 18% PRL 26 and 5% ex PEL 91. A mixture of probabilistic and deterministic methodologies applied.
- The Cooper Basin JV comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%. Deterministic methodology applied.
- Includes ex PEL 513/632 (SWJV) (Beach 40%, Santos operator) and PRL 135 (Vanessa) (Beach 43% interest, Senex operator). Deterministic methodology applied.
- Perth Basin comprises Waitsia (Beach 50%, AWE operator) and Beharra Springs (Beach 67% and operator). A mixture of probabilistic and deterministic methodologies applied.
- Otway Basin comprises HBWS (Halladale, Black Watch, Speculant) (Beach 100%), Otway Gas Project (Beach 100%) and Haselgrove area (Beach 100%). 2P reserves of 75 MMboe as at 30 June 2018 is split 10% HBWS, 90% Otway Gas Project and 0% Haselgrove area. A mixture of probabilistic and deterministic methodologies applied.
- Bass Basin comprises BassGas producing permits (Beach 53.75% and operator) and BassGas exploration permits (Beach 50.25% and operator). A mixture of probabilistic and deterministic methodologies applied.
- Taranaki Basin comprises Kupe Gas Project (Beach 50% and operator). A mixture of probabilistic and deterministic methodologies applied.

**Appendix C – 1P Reserves by segment (Reconciliation)**

1P Reserves (Net)											
	Note	1P 30-Jun-17 (MMboe)	FY18 Production (MMboe)	Revisions			1P 30-Jun-18 (MMboe)	Oil (MMbbl)	Gas (PJ)	LPG (kt)	Condensate (MMbbl)
				Acquisitions / Divestments (MMboe)	Exploration / Appraisal (MMboe)	Other Revisions (MMboe)					
Western Flank Oil	1	9	(5)	–	2	16	22	22	–	–	–
Western Flank Gas	2	3	(1)	–	1	0	3	–	13	70	1
Cooper Basin JV	3	25	(7)	11	1	13	43	4	195	385	3
Other Cooper Basin	4	0	(0)	–	-	0	0	–	1	3	0
Perth Basin	5	–	(1)	22	23	1	45	–	263	–	0
<b>SA / WA</b>		<b>38</b>	<b>(14)</b>	<b>33</b>	<b>27</b>	<b>30</b>	<b>114</b>	<b>25</b>	<b>472</b>	<b>458</b>	<b>4</b>
Otway Basin	6	–	(9)	30	-	30	51	–	258	450	3
Bass Basin	7	–	(2)	7	-	2	7	–	30	82	1
<b>Victoria</b>		<b>–</b>	<b>(11)</b>	<b>36</b>	<b>-</b>	<b>33</b>	<b>58</b>	<b>–</b>	<b>288</b>	<b>532</b>	<b>4</b>
Taranaki Basin (New Zealand)	8	–	(3)	20	-	1	18	–	74	324	3
<b>Total 1P Reserves</b>		<b>38</b>	<b>(28)</b>	<b>90</b>	<b>27</b>	<b>64</b>	<b>190</b>	<b>25</b>	<b>834</b>	<b>1,313</b>	<b>11</b>

1. Western Flank Oil comprises ex PEL 91 (Beach 100%), ex PEL 92 (Beach 75% and operator) and ex PEL 104/111 (Beach 40% interest, Senex operator). 1P reserves of 22 MMboe as at 30 June 2018 is split 75% ex PEL 91, 17% ex PEL 92 and 8% ex PEL104/111. A mixture of probabilistic and deterministic methodologies is applied.
2. Western Flank Gas comprises ex PEL 106 (Beach 100%), PRL 26 (Beach 100%) and the Mokami Field in ex PEL 91 (Beach 100%). 1P reserves of 3 MMboe as at 30 June 2018 is split 78% ex PEL 106, 14% PRL 26 and 9% ex PEL 91. A mixture of probabilistic and deterministic methodologies applied.
3. The Cooper Basin JV comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%. Deterministic methodology applied.
4. Includes ex PEL 513/632 (SWJV) (Beach 40%, Santos operator) and PRL 135 (Vanessa) (Beach 43% interest, Senex operator). Deterministic methodology applied.
5. Perth Basin comprises Waitsia (Beach 50%, AWE operator) and Beharra Springs (Beach 67% and operator). A mixture of probabilistic and deterministic methodologies applied.
6. Otway Basin comprises HBWS (Halladale, Black Watch, Speculant) (Beach 100%), Otway Gas Project (Beach 100%) and Penola Trough (Beach 70-100%). 1P reserves of 51 MMboe as at 30 June 2018 is split 8% HBWS, and 92% Otway Gas Project. A mixture of probabilistic and deterministic methodologies applied.
7. Bass Basin comprises BassGas producing permits (Beach 53.75% and operator) and BassGas exploration permits (Beach 50.25% and operator). A mixture of probabilistic and deterministic methodologies applied.
8. Taranaki Basin comprises Kupe Gas Project (Beach 50% and operator). A mixture of probabilistic and deterministic methodologies applied.

**Appendix D – 1P Reserves by Permit (Developed/Undeveloped)**

		1P Reserves (Net)									
Note	Developed Reserves					Undeveloped Reserves					
	Gas (PJ)	LPG (kt)	Condensate (MMbbl)	Oil (MMbbl)	Total (MMboe)	Gas (PJ)	LPG (kt)	Condensate (MMbbl)	Oil (MMbbl)	Total (MMboe)	
Western Flank Oil	1	–	–	–	16	16	–	–	–	6	6
Western Flank Gas	2	13	70	1	–	3	-	-	-	–	-
Cooper Basin JV	3	164	329	3	3	37	30	55	1	0	7
Other Cooper Basin	4	1	3	0	–	0	0	0	0	–	0
Perth Basin	5	66	-	0	–	11	196	-	0	–	34
<b>SA / WA</b>		<b>245</b>	<b>402</b>	<b>3</b>	<b>19</b>	<b>67</b>	<b>227</b>	<b>56</b>	<b>1</b>	<b>6</b>	<b>46</b>
Otway Basin	6	88	169	1	–	18	170	281	2	–	34
Bass Basin	7	30	82	1	–	7	-	-	-	–	-
<b>Victoria</b>		<b>118</b>	<b>251</b>	<b>2</b>	<b>–</b>	<b>24</b>	<b>170</b>	<b>281</b>	<b>2</b>	<b>–</b>	<b>34</b>
Taranaki Basin (New Zealand)	8	46	200	1	–	11	28	123	1	–	7
<b>Total 1P Reserves</b>		<b>409</b>	<b>853</b>	<b>7</b>	<b>19</b>	<b>103</b>	<b>425</b>	<b>460</b>	<b>4</b>	<b>6</b>	<b>87</b>

- Western Flank Oil comprises ex PEL 91 (Beach 100%), ex PEL 92 (Beach 75% and operator) and ex PEL 104/111 (Beach 40% interest, Senex operator). 1P reserves of 22 MMboe as at 30 June 2018 is split 75% ex PEL 91, 17% ex PEL 92 and 8% ex PEL104/111. A mixture of probabilistic and deterministic methodologies is applied.
- Western Flank Gas comprises ex PEL 106 (Beach 100%), PRL 26 (Beach 100%) and the Mokami Field in ex PEL 91 (Beach 100%). 1P reserves of 3 MMboe as at 30 June 2018 is split 78% ex PEL 106, 14% PRL 26 and 9% ex PEL 91. A mixture of probabilistic and deterministic methodologies applied.
- The Cooper Basin JV comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%. Deterministic methodology applied.
- Includes ex PEL 513/632 (SWJV) (Beach 40%, Santos operator) and PRL 135 (Vanessa) (Beach 43% interest, Senex operator). Deterministic methodology applied.
- Perth Basin comprises Waitsia (Beach 50%, AWE operator) and Beharra Springs (Beach 67% and operator). A mixture of probabilistic and deterministic methodologies applied.
- Otway Basin comprises HBWS (Halladale, Black Watch, Speculant) (Beach 100%), Otway Gas Project (Beach 100%) and Penola Trough (Beach 70-100%). 1P reserves of 51 MMboe as at 30 June 2018 is split 8% HBWS and 92% Otway Gas Project. A mixture of probabilistic and deterministic methodologies applied.
- Bass Basin comprises BassGas producing permits (Beach 53.75% and operator) and BassGas exploration permits (Beach 50.25% and operator). A mixture of probabilistic and deterministic methodologies applied.
- Taranaki Basin comprises Kupe Gas Project (Beach 50% and operator). A mixture of probabilistic and deterministic methodologies applied.

**Appendix E – 2C Contingent Resources by Permit (by Product)**

2C Contingent Resources					
	Note	Oil (MMbbl)	Sales Gas & Ethane (PJ)	Condensate (MMbbl)	Total Oil Equivalent (MMboe)
Western Flank Oil	1	6	-	-	6
Western Flank Gas	2	-	7	2	3
Cooper Basin JV	3	15	202	6	55
Other Cooper Basin	4	11	41	1	19
Perth Basin	5	-	186	0	32
Otway Basin	6	-	100	0	17
Bass Basin	7	-	104	11	29
Taranaki Basin	8	-	11	1	3
Bonaparte Basin	9	-	112	1	20
Carnarvon Basin	10	-	-	-	-
Browse Basin	11	-	-	-	-
<b>Total Conventional 2C Contingent Resources</b>		<b>31</b>	<b>762</b>	<b>21</b>	<b>183</b>
Cooper Basin JV Unconventional	12	0	132	1	24
<b>Total 2C Contingent Resources</b>		<b>31</b>	<b>894</b>	<b>22</b>	<b>207</b>

- Western Flank Oil comprises ex PEL 91 (Beach 100%), ex PEL 92 (Beach 75% and operator) and ex PEL 104/111 (Beach 40% interest, Senex operator).
- Western Flank Gas comprises ex PEL 106 (Beach 100%), PRL 26 (Beach 100%) and the Mokami Field in ex PEL 91 (Beach 100%).
- The Cooper Basin JV comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%.
- Includes ex PEL 513/632 (SWJV) (Beach 40%, Santos operator) and PRL 135 (Vanessa) (Beach 43% interest, Senex operator).
- Perth Basin comprises Waitsia (Beach 50%, AWE operator) and Beharra Springs (Beach 67% and operator).
- Otway Basin comprises HBWS (Halladale, Black Watch, Speculant - Beach 100%), Otway Gas Project (Beach 100%) and Penola Trough (Beach 70-100%).
- Bass Basin comprises BassGas producing permits (Beach 53.75% and operator) and BassGas exploration permits (Beach 50.25% and operator).
- Taranaki Basin comprises Kupe Gas Project (Beach 50% and operator).
- Bonaparte Basin comprises the Petrel field (Beach 5%)
- Carnarvon Basin comprises the Hurricane field (Beach 10%). In Q1 FY18 NOPTA approved the transfer of Beach's interest in WA-48-R to an existing joint venture partner.
- Browse Basin comprises the Lasseter South and Burnside fields (Beach 7.339%)
- Cooper Basin JV unconventional includes contingent resources classified as unconventional and comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%.

**Appendix F – 2C Contingent Resources by Permit (Reconciliation)**

2C Contingent Resources (Net, MMboe)					
	Note	2C 30 June 2017	Acquisitions	Revisions / Discoveries	2C 30 June 2018
Western Flank Oil	1	9	-	(3)	6
Western Flank Gas	2	3	-	-	3
Cooper Basin JV	3	108	73	(102)	79
Other Cooper Basin	4	21	-	(2)	19
Perth Basin	5	-	83	(51)	32
Otway Basin	6	1	25	(9)	17
Bass Basin	7	-	21	7	29
Taranaki Basin	8	-	4	(1)	3
Bonaparte Basin	9	-	10	10	20
Carnarvon Basin	10	1	-	(1)	0
Browse Basin	11	11	-	(11)	0
<b>Total 2C Contingent Resources</b>		<b>153</b>	<b>217</b>	<b>(163)</b>	<b>207</b>

1. Western Flank Oil comprises ex PEL 91 (Beach 100%), ex PEL 92 (Beach 75% and operator) and ex PEL 104/111 (Beach 40% interest, Senex operator).
2. Western Flank Gas comprises ex PEL 106 (Beach 100%), PRL 26 (Beach 100%) and the Mokami Field in ex PEL 91 (Beach 100%).
3. The Cooper Basin JV comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%.
4. Includes ex PEL 513/632 (SWJV) (Beach 40%, Santos operator) and PRL 135 (Vanessa) (Beach 43% interest, Senex operator).
5. Perth Basin comprises Waitsia (Beach 50%, AWE operator) and Beharra Springs (Beach 67% and operator).
6. Otway Basin comprises HBWS (Halladale, Black Watch, Speculant) (Beach 100%), Otway Gas Project (Beach 100%) and Penola Trough (Beach 70-100%).
7. Bass Basin comprises BassGas producing permits (Beach 53.75% and operator) and BassGas exploration permits (Beach 50.25% and operator).
8. Taranaki Basin comprises Kupe Gas Project (Beach 50% and operator).
9. Bonaparte Basin comprises the Petrel field (Beach 5%)
10. Carnarvon Basin comprises the Hurricane field (Beach 10%). In Q1 FY18 NOPTA approved the transfer of Beach's interest in WA-48-R to an existing joint venture partner.
11. Browse Basin comprises the Lasseter South and Burnside fields (Beach 7.339%)

## Appendix G – Material Changes to Reserves and Contingent Resources – additional disclosures

### Project: Western Flank Oil – Namur and McKinlay

#### Disclosure

The Western Flank Oil Project is a significant South Australian asset operated by Beach. Drilling, reservoir performance and transfers from contingent resources have led to a material increase in reserves.

New data affecting estimates include: 1) horizontal well drilling success in the McKinlay reservoir, giving confidence this can allow conversion of contingent resources to additional undeveloped reserve well locations, 2) sustained performance of Namur producers increasing developed reserves, and; 3) results from drilling and production in the Birkhead reservoir providing confidence to include additional undeveloped Birkhead reserve well locations.

The economic assumptions used to evaluate the project are commercially sensitive. The project economics have been determined using discounted cash flow methods in compliance with PRMS guidelines. Costs have been estimated using actual costs and reasonable estimates of forecast future costs. Oil prices have been estimated using actual prices and reasonable estimates of forecast future prices.

Western Flank Oil comprises ex PEL 91 (Beach 100% and operator), ex PEL 92 (Beach 75% and operator) and ex PEL 104/111 (Beach 40% interest, Senex operator).

The Western Flank is currently producing commercial quantities of oil via the Moomba production infrastructure to local and international markets. Reserves have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods. The proved and proved plus probable developed reserves from existing wells and facilities, as well as undeveloped reserves from future investments, are shown in Appendix A and B.

The undeveloped reserves are planned to be drilled commencing FY19. A drilling rig is contracted to continue drilling both Western Flank oil and gas wells. The undeveloped reserves will be connected to the existing infrastructure and produced through Moomba. Environmental approvals are in place. All undeveloped reserves are planned to be developed within 5 years.

The reserves are conventional.

## Project: Cooper Basin Joint Venture (CBJV)

### Disclosure

The Cooper Basin Joint Venture is a significant South Australian and South West Queensland asset operated by Santos. Equity has been increased from Beach's previous ownership to a larger equity position due to purchase of Lattice.

New data affecting estimates include: 1) the acquisition of Lattice, which has increased Beach's equity in the CBJV, 2) contingent resources converted to reserves as a result of decreased costs, and; 3) evaluation of drilling and testing data and exploration success. As a result of decreased costs, a number of projects have become economic resulting in a transfer from contingent resources to reserves. Due an evaluation of the technical and economic merits, a number of projects have been deemed not presently viable and have been removed from the contingent resources.

The economic assumptions used to evaluate the project are commercially sensitive. The project economics have been determined using discounted cash flow methods in compliance with PRMS guidelines. Costs have been estimated using actual costs and reasonable estimates of forecast future costs. Gas prices have been estimated using prevailing contract terms for contracted gas and reasonable estimates of forecast future prices for uncontracted gas. Liquids prices have been estimated using actual prices and reasonable estimates of forecast future prices.

Santos is the operator of the Cooper Basin Joint Venture.

The Cooper Basin JV comprises the South Australian Cooper Basin joint ventures where Beach equity interests are 27.68% and 33.40% and the South West Queensland joint ventures where Beach equity interests range from 20.76% to 45.00%. The interests are held in various production licences and exploration permits.

The Cooper Basin JV is currently producing commercial quantities of oil via Moomba, with gas sold into the East Coast gas markets. Reserves have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods. The proved and proved plus probable developed reserves from existing wells and facilities, as well as undeveloped reserves from future investments, are shown in Appendix A and B.

The undeveloped reserves are planned to be drilled with a process of working through the well seriatum (a seriatum is a list of wells ranked according to a selected criteria – usually value but often reserves or gas rate potential). The gas developed is required for existing contracts. Infrastructure exists to transport hydrocarbons through Moomba. Environmental approvals are in place. A continuous drilling program is ongoing in the CBJV. The undeveloped reserves are planned to be developed over the next 5 years.

The reserves are conventional.

Approximately 30% of the contingent resources are unconventional and cover an area of 200 km<sup>2</sup> to be produced from approximately 600 wells

The contingent resources have been estimated using volumetrics methods. The key contingencies that prevent the contingent resources being classified as reserves are the need to obtain improved economics, either from higher gas prices or lower costs or the success of drilling and evaluation programs which are currently planned. The contingency is not based on technology.

## Project: Otway Gas Project and Halladale, Black Watch and Speculant

### Disclosure

The Otway Gas Project and Halladale, Black Watch and Speculant (hereafter in Appendix G abbreviated to OGP) is a significant Victorian asset acquired by Beach with the purchase of Lattice. It comprises a number of offshore Victoria fields in the Otway Basin. Reserves include Geographe, Thylacine, Halladale, Black Watch and Speculant fields.

The economic assumptions used to evaluate the project are commercially sensitive. The project economics have been determined using discounted cash flow methods in compliance with PRMS guidelines. Costs have been estimated using actual costs and reasonable estimates of forecast future costs. Gas prices have been estimated using prevailing contract terms for contracted gas and reasonable estimates of forecast future prices for uncontracted gas. Liquids prices have been estimated using actual prices and reasonable estimates of forecast future prices.

Beach is the operator of the OGP.

The OGP is held under Production Licences T/L1, T/L3, Vic/L23, Vic/P42(V) and Vic/L1(V).

The OGP is currently producing commercial quantities of sales gas and liquids via the OGP production infrastructure which includes existing offshore platform and subsea production infrastructure and onshore gas processing, conditioning and compression facilities to the SE Australian gas markets. Reserves have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods. The proved and proved plus probable developed reserves from existing wells and facilities and undeveloped reserves from future investments are shown in Appendix A and B.

The undeveloped reserves are classified as Justified for Development under PRMS guidelines. The development projects include the drilling of the Black Watch well from an existing onshore location and additional offshore wells and flowlines to be developed in three phases. The projects are included in Beach's 5 year outlook and the company is working toward a series of phased final investment decisions over a five year period. The undeveloped reserves are to be sold under existing gas sales and purchase agreements. The undeveloped reserves will be connected to the existing OGP production infrastructure. Onshore environmental approvals will require renewal. New offshore environmental approvals will be required.

The reserves and resources are conventional.

Contingent resources are associated with extended production beyond the estimated minimum plant throughput.

Contingent resources have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods.

The key contingency is ascertaining a method to turndown the gas plant to allow further reduced throughput (or further discoveries increasing the gas throughput).

Beach will evaluate alternative plant options to extend the field life once development drilling is completed.

The contingency is not based on technology.



## **Project: Bass Gas Project (BassGas)**

### **Disclosure**

The BassGas Project is a significant Victorian asset acquired by Beach with the purchase of Lattice. It comprises a number of offshore Victoria fields in the Bass Basin. Reserves comprise the Yolla Gas Field. Contingent resources are from discovered but as yet undeveloped fields, including the Trefoil field.

The economic assumptions used to evaluate the project are commercially sensitive. The project economics have been determined using discounted cash flow methods in compliance with PRMS guidelines. Costs have been estimated using actual costs and reasonable estimates of forecast future costs. Gas prices have been estimated using prevailing contract terms for contracted gas and reasonable estimates of forecast future prices for uncontracted gas. Liquids prices have been estimated using actual prices and reasonable estimates of forecast future prices.

Beach is the operator of BassGas Project.

The BassGas Project is held under Production Licence T/L1 and retention licences T/RL2, T/RL3, T/RL/4 and T/RL5

The BassGas Project is currently producing commercial quantities of sales gas via the production infrastructure which includes an existing offshore platform, wells and pipeline, onshore gas processing and conditioning facilities to the SE Australian gas markets. Reserves have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods. The proved and proved plus probable developed reserves from existing wells and facilities are shown in Appendix A and B.

There are no undeveloped reserves.

The reserves and contingent resources are conventional.

Contingent resources discovered marginal assets including Trefoil, discovered with the drilling and testing of an exploration well.

Resources have been estimated using volumetric methods.

The key contingency relates to economics. Current rig rates result in an economic valuation which is marginal and close to commercially attractive.

Further appraisal may be conducted after development.

The contingency is not based on technology.

## Project: Waitsia Gas Project (WGP)

### Disclosure

The Waitsia Gas Project is a significant Western Australian asset acquired by Beach with the purchase of Lattice. The reserves comprise a large onshore gas field in the Perth Basin with economically producible gas in the Kingia and High Cliff Formations. Contingent resources are contained within the High Cliff Sandstone

The economic assumptions used to evaluate the project are commercially sensitive. The project economics have been determined using discounted cash flow methods in compliance with PRMS guidelines. Costs have been estimated using actual costs and reasonable estimates of forecast future costs. Gas prices have been estimated using prevailing contract terms for contracted gas and reasonable estimates of forecast future prices for uncontracted gas.

AWE is the operator of the WGP.

The WGP is held under Production Licence L1 FO.

The WGP is currently producing commercial quantities of sales gas via the Xyris production infrastructure, which includes existing onshore gas processing and conditioning facilities to the Western Australian domestic gas markets. Wells which are not presently connected have been subject to extended production testing which has demonstrated commercial producibility of the reservoir. Reserves have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods. The proved and proved plus probable developed reserves from existing wells and facilities and undeveloped reserves from future investments are shown in Appendix A and B.

The undeveloped reserves are classified as Justified for Development under PRMS guidelines. The project involves connection of existing wells, drilling and connection of new wells and a new gas processing facility. The project is included in Beach's 5 year outlook and the company and the Joint Venture is working toward a final investment decision. The undeveloped reserves will be sold to the WA domestic gas market under new gas sales and purchase agreements. The Joint Venture has had and continues to have active engagement with the market and is confident of securing gas sales agreements to underpin the project. The undeveloped reserves will be connected to new gas processing facilities and pipeline infrastructure. New environmental approvals will be required.

The reserves and resources are conventional.

Contingent resources are in lower productivity Waitsia (High Cliff sandstone) reservoirs which have been discovered and evaluated by six wells.

Resources have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods.

The key contingency is ascertaining a method to increase well production without fracture stimulation (as there is a moratorium in place), and demonstration of economically viable production through further testing

Further appraisal will be conducted as the main reservoir is developed.

The contingency is not based on technology.

### Project: Kupe Gas Project (Kupe)

#### Disclosure

The Kupe Gas Project is a significant New Zealand asset acquired by Beach with the purchase of Lattice. The reserves comprise a large offshore gas field in the Taranaki Basin.

The economic assumptions used to evaluate the project are commercially sensitive. The project economics have been determined using discounted cash flow methods in compliance with PRMS guidelines. Costs have been estimated using actual costs and reasonable estimates of forecast future costs. Gas prices have been estimated using prevailing contract terms for contracted gas and reasonable estimates of forecast future prices for uncontracted gas. Liquids prices have been estimated using actual prices and reasonable estimates of forecast future prices.

Beach is the operator of the Kupe Project.

The Kupe Project is held under Production Licence PML38146.

The Kupe Project is currently producing commercial quantities of sales gas via the production infrastructure which includes an existing offshore platform, wells and pipeline, onshore gas processing and conditioning facilities to the New Zealand gas markets. Reserves have been estimated using a combination of reservoir simulation, material balance, reservoir performance analysis and volumetric methods. The proved and proved plus probable developed reserves from existing wells and facilities and undeveloped reserves from future investments are shown in Appendix A and B.

The undeveloped reserves are classified as Justified for Development under PRMS guidelines. The undeveloped reserves will be produced through two projects: the Kupe Compression Project and an additional Kupe development well. Both of these projects are included in Beach's 5 year outlook and the company and the Joint Venture is working toward a final investment decision for the compression project. The development well project timing will depend on the performance of the existing wells, compression project and gas market demand, but is expected to commence within 5 years. The undeveloped reserves will be sold to the New Zealand domestic gas market under new gas sales and purchase agreements. The Joint Venture has had and continues to have active engagement with the market and is confident of securing gas sales agreements to underpin the project. The undeveloped reserves will be produced using existing gas processing facilities and pipeline infrastructure. The project will operate under existing environmental approvals and a revised land use consent variation.

The reserves are conventional.

### Project: Bonaparte Basin (Petrel)

#### Disclosure

The Petrel discovery in the Bonaparte Basin is a significant Western Australian asset acquired by Beach with the purchase of Lattice. The resource comprise a large offshore gas field. The Petrel Field is within retention licences WA-6-R and NT/RL 1.

The field was discovered by the Petrel-1 well drilled in 1969 by ARCO Exploration. The Contingent Resources are defined by a total of seven appraisal wells drilled on the field.

Resources have been estimated using volumetric methods and reservoir simulation.

The key contingency relates to establishment of an economically viable project and gas markets.

The Joint Venture is carrying out feasibility and gas marketing studies to evaluate the economic viability of alternative development concepts Further development activity will depend on the results of these studies.

The contingency is not based on technology.

The resource is conventional.