

H. Oil and Gas Reserves

Overview of New Zealand's Oil and Gas Reserves

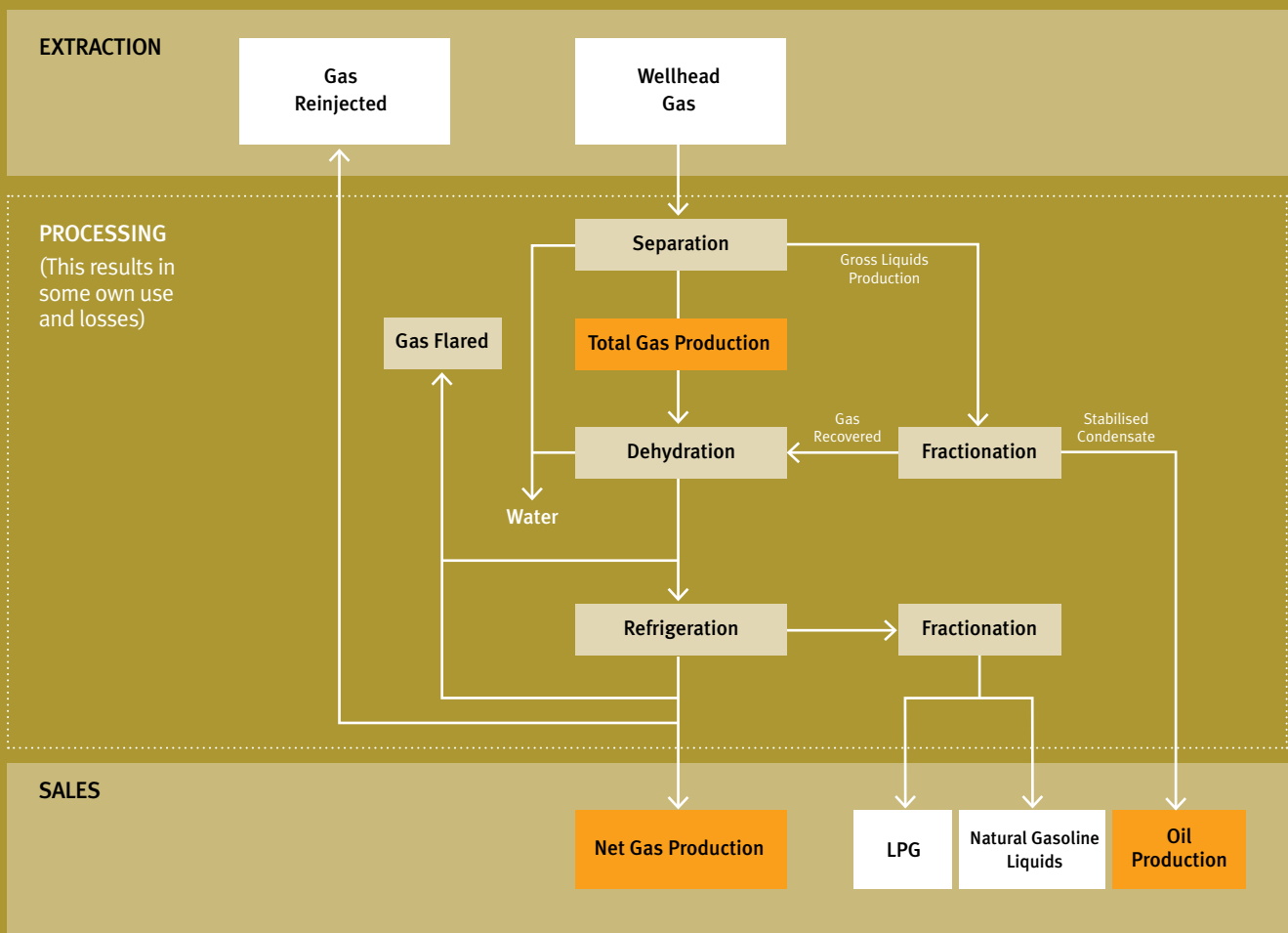
The oil and gas reserves reported in this section apply to figures as at 1 January 2009.

The reserve figures are based on information from field operators and are estimates of “proven and probable” (P50) reserves on a Society of Petroleum Engineers (SPE) basis.

The gas at the wellhead of a gas or oilfield is a mixture of methane (the main component

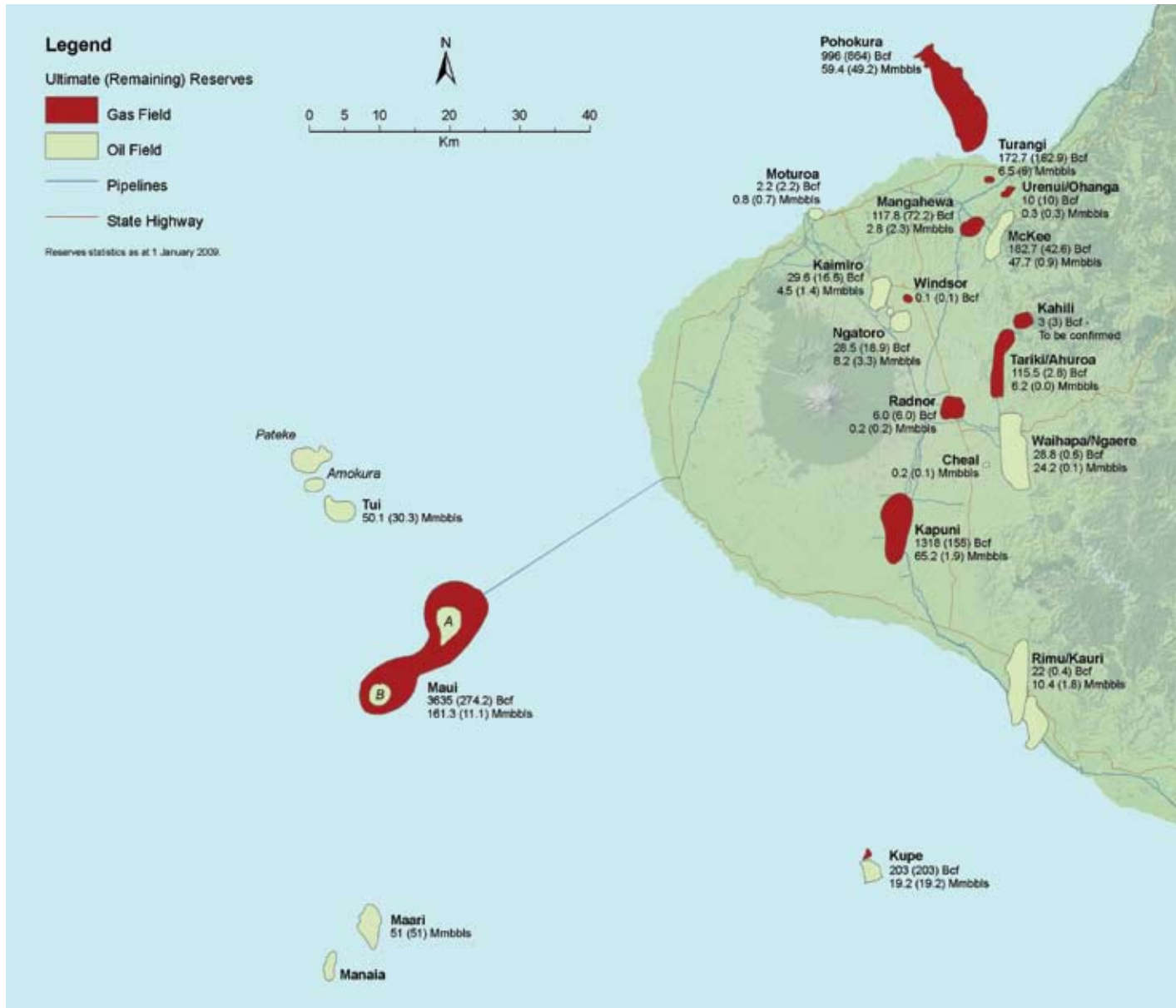
of natural gas), ethane, propane and butane (which together comprise LPG) and larger hydrocarbon molecules (which are components of natural gasoline and condensate). This raw gas must be separated into its components to give the maximum value. Figure H.1 is a generalised illustration of the major steps in the separation of gas and condensate.

Figure H.1: Gas/Condensate Separation Process (Generalised)



H. Oil and Gas Reserves

Figure H.2: Oil and Gas Fields in the Taranaki Basin



All New Zealand's producing fields are in the Taranaki region, as outlined in Figure H.2. Reserve information for oil, condensate and naphtha is provided in Table H.2 and Figure H.3, with the equivalent gas information in Table H.4 and Figure H.4. These tables detail the ultimate recoverable reserves, and the estimated remaining reserves, for the 2008 calendar year. They include producing fields and non-producing fields (fields that have been permitted and are expected to be producing within the next few years).

Total oil reserves remaining from producing and non-producing fields decreased by 16.2% on the previous year, and total gas reserves remaining from producing and non-producing fields decreased by 16.3%. These decreases are the result of ongoing production in Pohokura and other onshore fields. Maui and Kapuni field reserves decreased after in-depth geological studies were carried out.

Netherland Sewell of Texas, an independent expert (IE), carried out a re-determination of the Maui gas reserves, releasing its final report in early February 2003. It estimated that total economically recoverable gas under the Maui contract terms was 3,562 PJ, which implies 367 PJ of Maui contract gas remained as at 1 January 2003. The estimate is not on a comparable basis with other reserve figures quoted in this section as it only relates to Maui contract gas.

H. Oil and Gas Reserves

Overview of New Zealand's Oil and Gas Reserves continued

As a result of Petroleum Mining Permits (PMPs) granted in late 2005, two offshore fields – Kupe and Maari – are currently in the final stages of development and are being completed for production. Origin Energy have finished drilling the Kupe South development wells and are currently completing offshore to onshore production facilities before beginning production in Q3 2009. The Maari mining permit began production in February 2009, and development drilling continues as the field progresses towards full production.

Maari field operators, as indicated in mining permit documents, anticipate the production of 20,000 bbls of oil per day to begin from the Maari field in Q1 of 2009, with peak production of 35,000 bbls of oil per day expected in Q3 of 2009. OMV will also drill the Manaia structure and hope to increase the reserves of the mining permit.

Tui was developed over 2006 and 2007 and began production in August 2007. To December 2008, Tui has produced 19.5 mmbbls of oil. Thanks to periscope drilling, the Tui operators increased their ultimate recoverable reserves from 27.9 mmbbls to 50.1 mmbbls of oil. Tui field operators AWE plan to drill at least two near field development wells within the mining permit, potentially increasing the reserves of the permit. AWE has said that there are potential reservoir areas to the north, south and east of the current Tui pool.

The medium-term outlook for production is the best it has been since the decision was made to develop the Maui B accumulation. Production from the Pohokura field has increased from the indicated production estimates in mining permit documents of 8,200 bbls per day to 12,410 bbls per day of condensate. Gas production followed a similar trend, an increase of 30 million cubic feet (mmscf) per day over the indicated production figures. Anticipated production levels from the Kupe field, as forecast recently by permit operator Origin Energy, will initially reach approximately 4,650 bbls per day of oil and 55 mmscf per day of gas. Production from the Tui Field initially reached 50,000 bbls of oil per day; however, current production rates have dropped to the expected ongoing level of 30–35,000 bbls of oil per day. If this level is maintained, it represents an increase of 7,500 bbls of oil per day over the original production figures forecasted in the Tui mining permit document.

Anticipated production from the Maari field, as indicated on mining permit documents, will initially reach approximately 35,000 bbls of oil per day.

The current and expected production from these four offshore fields, in different stages of development, have substantially improved New Zealand's self-sufficiency. The combined ongoing development of these four offshore fields, as well as various onshore developments, should continue to increase New Zealand's domestic liquids production.

Permitting

Crown Minerals granted 15 Petroleum Exploration Permits (PEPs) in 2008, a decrease on the 19 PEPs that were granted in 2007. Currently, there are 89 PEPs at granted status. The number of PMPs remains the same as 2007, at 23.

In May 2008, the Onshore Taranaki Block Offer closed. Nine permits were granted in what has been considered one of Crown Minerals' most successful block offers. PEP 51156 covers 90.4 sq km and was awarded to Todd Exploration Limited (100%). PEP 51149 was awarded to Todd Exploration Limited (operator) (70%) and Mighty River Power Gas Investments (30%). PEPs 51152, 51154 and 51157 were awarded to Greymouth Petroleum Taranaki Limited (operator) (50%) and Greymouth Petroleum 2008 Limited (50%). PEPs 51153 and 51155 were awarded to new entrants Kea Petroleum Limited (operator) (40%), Hardie Energy New Zealand Limited and Rawson Taranaki Limited. PEP 51150 was awarded to Green Gate Limited (operator) (33.3%) and GB Energy Limited (66.7%), and PEP 51151 was awarded to a joint venture between L&M Petroleum Limited (operator) (50%) and Mosiac Oil NL (50%). For more details, please visit www.crownminerals.govt.nz.

One PEP was granted over the East Coast Basin on 30 January 2008. PEP 50189 is an onshore permit covering 2,481 sq km and operated by Discovery Geo Corporation as sole operator.

Two onshore PEPs were awarded in the Waikato Coal region in 2008. PEP 50280 was awarded to Chartwell New Zealand Pty Limited as sole operator on 7 April 2008 and covers 3,667 sq km. PEP 50348 was awarded to L&M Coal Seam Gas Limited as sole operator on 25 May 2008 and covers 3,920 sq km.

Three further PEPs were granted over the West Coast Basin in 2008. PEP 50558 was awarded to L&M Petroleum Limited as sole operator on 19 May 2008 and covers 649 sq km, while PEP 50439, operated by Widespread Energy Limited, again as sole operator, was awarded on 4 May 2008 and covers 1,279 sq km. PEP 50279 was granted to operator Chartwell New Zealand Pty Limited (60%) and MacDonald Investments Limited (40%) on 7 April 2008 and covers 8,722 sq km.

Onshore Taranaki was the most active area for the award of permits in 2008, due to the closing of the Onshore Taranaki Block Offer.

Following the close of the Great South Basin and Onshore Taranaki Block Offers, two new block offers were opened in 2008.

The Offshore Northland Block Offer was opened for the first time since 2005 on 10 December 2008 and offers almost 50,000 sq km of offshore acreage. Exploration by Origin Energy Limited in southern Offshore Northland continues to create growing interest in the region, which has an estimated generation potential of 1 trillion barrels of oil equivalent.

More than 17,000 sq km of the Raukumara Basin has also been released for block offer. This is considered one of New Zealand's most prospective frontier basins. Primary interest in the basin has been stimulated through the Crown's acquisition and processing of more than 1,200 km of 2D marine seismic data, which are freely available for interested exploration parties.

Crown Minerals continues to promote New Zealand's offshore frontier acreage. In a bid to spearhead exploration interest in the Offshore Reinga Basin, almost 5,000 km of new 2D seismic data have been acquired by CGG Veritas using the *Pacific Titan* seismic vessel. Of this 5,000 km, Crown Minerals has obtained 1,500 km on an exclusive basis, while the remainder will be available for licence from CGG Veritas.

H. Oil and Gas Reserves

Overview of New Zealand's Oil and Gas Reserves continued

Table H.1: National Summary of Activity and Expenditure (All Petroleum Exploration and Mining Permits/Licences)

National Totals – Activity Statistics Combined for PPPs, PEPs, PMPs and PMLs	2000	2001	2002	2003	2004	2005	2006	2007	2008
Wells Drilled	28	17	21	16	33	34	30	43	34
Metres Made	55,164	48,541	36,958	35,201	78,237	87,533	112,369	99,854	51,037
2D Seismic Data Acquired (km)	3,219	7,518	141	2,455	5,466	3,764	13,240	14,424	25,749
2D Seismic Data Reprocessed (km)	1,254	1,504	9,927	10,829	23,808	14,707	30,627	20,019	11,411
3D Seismic Data Acquired (sq-km)	453	50	483	444	39	3,120	2,360	935	991
3D Seismic Data Reprocessed (sq-km)	-	-	566	961	410	247	2,147	407	432
PEPs & PPPs Granted	4	14	29	18	29	5	16	19	15
PMPs Granted	-	1	1	-	2	5	2	2	-
Total Permits Granted	4	15	30	18	31	10	18	21	15
PEPs and PPPs Surrendered, Revoked, Relinquished or Expired	7	7	14	10	6	14	25	20	13
Number of PEPs and PPPs at Granted Status	53	59	82	86	105	104	79	76	89
Number of PMPs and PMLs at Granted Status	10	11	12	12	14	19	21	23	23
PEP and PPP National Expenditure (Million NZD) ¹	\$173	\$203	\$186	\$159	\$280	\$186	\$133	\$200	\$314
PMP/PML National Expenditure (Million NZD)	\$189	\$128	\$218	\$195	\$182	\$553	\$574	\$1,359	\$963
Expenditure, All Permits – National Total (Million NZD)	\$361	\$331	\$404	\$355	\$462	\$738	\$707	\$1,559	\$1,277

Summary of activities and expenditure from information lodged by permit operators under Sections 26, 27 and 28 of the Crown Minerals (Petroleum) Regulations 1999.

PEPs = Petroleum Exploration Permits.
 PPPs = Petroleum Prospecting Permits.
 PMPs = Petroleum Mining Permits (production permits).
 PMLs = Petroleum Mining Licences (production permits).

Note to Table H.1: ¹ PEP and PPP expenditure not complete due to delays in reporting from 9 permits.

H. Oil and Gas Reserves

Overview of New Zealand's Oil and Gas Reserves continued

Exploration and Developments

2008 saw the first phase of an underground gas storage project commence, a first in New Zealand's mining history. Origin Energy Resources Limited (100% operator) has targeted the depleted Tariki Sandstone reservoir of the Ahuroa gas condensate field as a medium for gas storage.

Exploration and development activity remained high by New Zealand standards in 2008 with 34 wells drilled. This was a decrease from the number of wells drilled in 2007, but still contributed to a high drilling rate in New Zealand when combined with the 33 drilled in 2006, totalling 104 wells in the past three years.

Wells were drilled in a number of basins including Onshore and Offshore Taranaki, Onshore East Coast Basin and the West Coast and Western Southland Basins. Offshore well drilling remained at a high level, with 18 wells drilled offshore in 2008, an increase of one offshore well from 2007.

A total of 51,036.96 m was made in oil and gas wells in 2008. This is a decrease from the 2007 figure (99,845 m) of 48,808.04 m. Although New Zealand well-drilling activity remains high, this represents the second consecutive decrease in metres made by well drilling since 2006. For comparison, in 2006, 30 wells were drilled, totalling approximately 112,369 m.

Of the 34 wells drilled in 2008, eight were exploration wells and 26 were appraisal or development wells.

Highlights of drilling campaigns in 2008 included the development drilling of the Maari mining permit (PMP 38160) through OMV New Zealand Limited's sequence drilling campaign, which kicked off at the end of 2008. Currently 12 offshore wells have either been spudded or kicked off, and oil production began from MR4P9 and MR5P12 in late February 2009. Greymouth Petroleum continued the ongoing development of the Turangi mining permit (PMP 38161) through the drilling of Turangi-2 and Turangi-3. Another highlight was the ongoing development drilling of the Shell Exploration NZ Limited operated (48%) Pohokura field (PMP 38154). POB-02A was the final development well drilled in the Pohokura field in 2008, which continued the 2007 drilling campaign that saw an increase in Pohokura reserves from 791.2 Bcf to 864 Bcf of gas and from 44 mmbbls to 49.2 mmbbls of oil.

Ranui-1 was drilled on the East Coast of New Zealand in PEP 38342 by Discovery Geo Corporation (sole operator). Green Gate, as sole operator of PEP 38260, also spudded exploration well Kate-1, Onshore Canterbury. Niagara-3 was also drilled in 2008 on the West Coast by Ocean Harvest International Limited (sole operator) in PEP 38512. Finally, L&M Petroleum as (32.5% share) operator of PEP 38521 drilled Fireball Creek-1 on the West Coast.

In coal seam gas operations, L&M Coal Seam Gas completed a production pilot of five wells in early 2009 in their Kaitangata well drilling programme for PEP 38219, Onshore Southland. L&M Petroleum continues to explore the Western Southland Basin. In 2008, it spudded two exploration wells; Wairaki-1 and Goodwin-1 in PEP 38238 (sole operator) and 38226 (50% operator). Chartwell NZ Pty Limited, as (60%) operator of PEP 50279 and 50280, drilled a well in each permit in early 2009 as it continues to develop its exploration interests.

Accompanying this high level of drilling activity was a continued increase in the number and size of 2D seismic data acquisition surveys carried out in 2008. A large seismic survey was carried out in PEPs 50119, 50120 and 50121 by the joint venture OMV New Zealand Limited (36%, permits operator), PTTEP Offshore Investment Company Limited (36%) and Mitsui E&P Australia Pty Limited (28%). Approximately 17,000 km of 2D marine seismic data were acquired at the beginning of 2008 by the seismic vessel *Discoverer 2*. Exxon Mobil (permit operator 90%) and Todd Exploration Limited (10%) acquired some 611 km of 2D marine seismic data in PEP 50117. AWE New Zealand Pty Limited (44% and 50% permit operator) acquired 1,214 km and 831 km of 2D seismic data over PEP 38384 and PEP 38401 respectively, while Global Resource Holdings (50% operator) acquired some 3,129 km of marine 2D seismic data in PEP 38451, significantly increasing the seismic cover of deepwater Taranaki.

3D seismic data acquisition was limited to one permit in 2008. In spite of this, figures rose slightly on 2007. ExxonMobil New Zealand Exploration Limited (90%) in PEP 50117 acquired 990 sq kms of 3D seismic data over the Offshore Great South Basin. A total 240.3 km of 3D seismic data were reprocessed in exploration permits in 2008, while a further 192 km of 3D seismic data were reprocessed in Petroleum Mining Permits and licences.

As a result of continued onshore and offshore exploration activity, surveying and the progression of numerous offshore developments, total expenditure attributed to all petroleum exploration and mining permits/licences remained high from 2007. Table H.1 provides aggregated national summary statistics between 2000 and 2008.

H. Oil and Gas Reserves

Overview of New Zealand's Oil and Gas Reserves continued

Table H.2: Oil and Condensate Reserves¹

Field	Ultimate Recoverable (P50) ²			Remaining Reserve (P50) as at 1 January 2009 ³		
	Mm ³	mmbbls	PJ	Mm ³	mmbbls	PJ
Maui	25.6	161.3	974.3	1.8	11.1	67.3
Kapuni	10.4	65.2	287.5	0.3	1.9	8.4
Pohokura	9.5	59.4	n.a.	7.8	49.2	309.5
Maari	7.8	51.0	320.0	7.8	51.0	320.0
Tui	7.7	50.1	318.0	4.8	30.3	192.7
Kaimiro/Moturoa	0.8	5.2	33.4	0.2	1.8	9.0
Ngatoro ³	1.3	8.2	52.1	0.5	3.3	20.9
Tariki/Ahuroa	1.0	6.2	38.5	0.0	0.0	0.2
Waihapa/Ngaere	3.8	24.2	147.8	0.0	0.1	0.5
Rimu ⁴	1.6	10.4	63.8	0.3	1.8	10.1
McKee	7.6	47.7	308.8	0.1	0.9	5.4
Mangahewa	0.4	2.8	17.9	0.4	2.3	13.8
Others ⁵	1.4	8.9	53.6	1.3	8.4	50.6
Total	78.9	500.6	2,615.6	25.3	162.1	1,008.4

Notes to Table H.2: ¹ Reserves are estimated as "proven and probable" or P50 by the field operators.

² Includes LPG.

³ Includes Goldie well.

⁴ Includes Kauri well.

⁵ Includes Cheal, Turangi and Surrey fields.

n.a. = Not available.

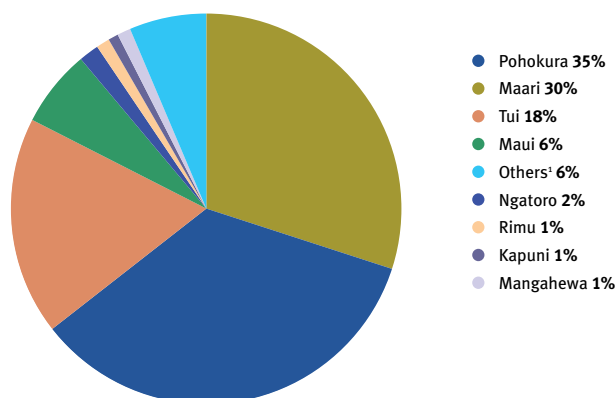
Table H.3: Reserves from Non-producing Fields (Oil and Condensate)

Field	Estimated Recoverable Reserves ¹			Date Petroleum Mining Permit Granted
	Mm ³	mmbbls	PJ	
Kupe ¹ (PML 38146)	3.1	19.2	95.4	24 October 1992
Urenui/Ohanga (PMP 38161)	0.1	0.3	n.a.	28 April 2006
Radnor (PMP 38157)	0.0	0.2	0.9	19 May 2005
Total	3.2	19.7	96.3	

Notes to Table H.3: ¹ Includes LPG.

n.a. = Not available.

Figure H.3: Oil Reserves from Producing Wells at 1 January 2009



Note to Figure H.3: ¹ Includes Tariki/Ahuroa, Kaimiro/Moturoa, Waihapa/Ngaere, McKee, Cheal, Turangi and Surrey fields.

H. Oil and Gas Reserves

Overview of New Zealand's Oil and Gas Reserves continued

Table H.4: Gas Reserves¹

Field	Ultimate Recoverable (P50) ²			Remaining Reserve (P50) as at 1 January 2009 ³		
	Mm ³	Bcf	PJ	Mm ³	Bcf	PJ
Maui	102,866.0	3,635.0	4,051.0	7,761.0	274.2	306.6
Kapuni	37,300.0	1,318.0	996.0	4,399.0	155.0	118.0
Pohokura	28,192.0	996.0	1,167.0	24,451.0	864.0	1,012.0
Kaimiro/Moturoa	897.6	31.7	33.3	515.4	18.2	19.1
Ngatoro ³	807.0	28.5	29.9	535.2	18.9	19.8
Tariki/Ahuroa	3,270.7	115.5	128.8	80.6	2.8	3.0
Waihapa/Ngaere	816.6	28.8	32.1	17.6	0.6	0.7
Rimu ⁴	623.0	22.0	25.8	10.5	0.4	0.4
McKee	5,173.5	182.7	208.0	1,206.6	42.6	44.7
Mangahewa	3,335.7	117.8	129.8	2,044.5	72.2	75.8
Others ⁵	4,898.8	173.0	181.6	4,615.6	163.0	171.1
Total	188,180.9	6,649.0	6,983.3	45,636.9	1,611.9	1,771.2

Notes to Table H.2: ¹ Reserves are estimated as "proven and probable" or P50 by the field operators.

³ Includes Goldie well.

⁵ Includes Cheal, Turangi and Surrey fields.

² Excludes LPG.

⁴ Includes Kauri well.

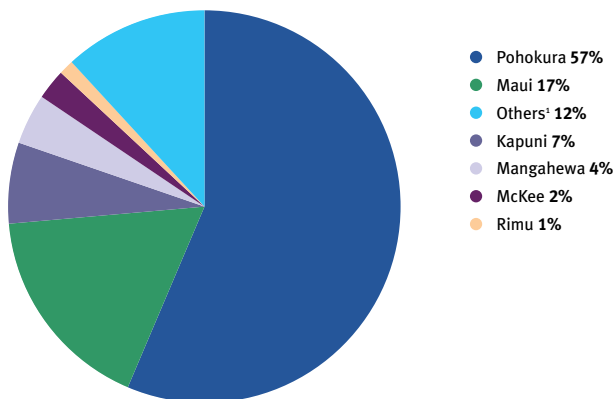
Table H.5: Reserves from Non-producing Fields (Gas)

Field	Estimated Recoverable Reserves ¹			Date Petroleum Mining Permit Granted
	Mm ³	Bcf	PJ	
Kupe ¹ (PML 38146)	5,784.3	203.0	188.1	24 October 1992
Urenui/Ohanga (PMP 38161)	n.a.	10.0	10.5	28 April 2006
Radnor (PMP 38157)	152.4	6.0	5.0	19 May 2005
MacDonald (PMP 50100)	n.a.	171.3	n.a.	27 July 2007
Windsor (PMP 38152)	2.8	0.1	0.1	22 September 2005
Total	5,939.5	390.4	203.7	

Notes to Table H.5: ¹ Excludes LPG.

n.a. = Not available.

Figure H.4: Gas Reserves from Producing Wells at 1 January 2009



Note to Figure H.4: ¹ Includes Tariki/Ahuroa, Kaimiro/Moturoa, Ngatoro, Waihapa/Ngaere, Cheal, Turangi and Surrey fields.