Maui Development Limited

Disclosure of pipeline capacity

11 December 2015

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This document covers our disclosure of transmission system capacity for the 12-month period ended on 30 September 2015. Such disclosure is required annually by the Gas Transmission Information Disclosure Determination 2012 consolidating all amendments as of 24 March 2015 issued by the Commerce Commission. The terms "MDL", "we", "us" and "our" in this document refer to the Gas Transmission Business of Maui Development Limited.

Our assessment of the extent to which our physical pipeline capacity is adequate to address the current and anticipated future needs of our consumers, taking into account our expected demands and investment plans, is presented below.

1. Analysis of available capacity

An analysis of the available capacity for each offtake point with a throughput of gas during the System Peak Flow Period (in respect of the 12 months ended 30 September 2015) of 2,000 GJ or more is set out below. Information for that System Peak Flow period has already been presented in our Peak Flow Information Disclosure dated 20 October 2015. It was the period of 24 consecutive hours beginning at 0000 hours (New Zealand Standard Time) on 30 July 2015.

	System Peak Flow Period		
GJ / Offtake Point	Peak Throughput	Maximum Capacity	Factor
South of Mokau			
Bertrand Road (Waitara Valley)	48,690	325,412	6.7
Faull Road	44,004	320,781	7.3
Ngatimaru Road (Delivery)	142,805	419,895	2.9
North of Mokau			
Pokuru	26,243	57,374	2.2
Rotowaro	177,368	222,398	1.3
Huntly Power Station	66,304	101,246	1.5

This analysis presents peak throughput and maximum throughput capacity for each relevant Welded Point, and the multiplication factor between them.

The analysis was prepared by Beca Limited using IDEAS™ software Version 6.00 licensed to them by Andritz Automation Inc. USA. Details of the Maui pipeline and its intake points and offtake points are presented in the attached Schedule A. The input assumptions used for the capacity modelling were as follows.

- Demand for the Huntly Power Station was based on the actual recorded flow profile on the peak day. Demand for other offtake points, including the Frankley Road bi-directional point, was based on actual flows during the peak hour from 2100 to 2200 NZST on the peak day.
- An average pressure value of 46.08 bar(g) at Bertrand Road was used as a starting point to determine steady state pressures at specific welded points.
- Failure trigger points for every scenario were:
    - pressure drops below 42 bar(g) at Bertrand Road,

- pressure drops below 32 bar(g) at Frankley Road or any other point on the pipeline,
- pressure increases above 52 bar(g) at any Maui Pipeline point South of Mokau.

- Flows through the Mokau compressor station were set to a maximum daily rate of 330 TJ, with a 3 MW power threshold and maintaining an output pressure of 58 bar(g). This was based on an assumption of using only one compressor unit (of two available). The 330 TJ constraint was not converted to an hourly flow limit (i.e. 330/24), but was used in aggregate for the full day of the System Peak Flow Period.
- The model assumed a 15 °C inlet gas temperature and a calorific value of 40.1 MJ/scm. The gas composition was based on values obtained from metering at Frankley Road.
- All modelling was based on physical gas flows. The Maui Pipeline operating regime does not provide for fixed capacity reservations. All flows are interruptible.

Throughputs at each intake point (including the gross intake quantity for the bi-directional point at Frankley Road) for the System Peak Flow Period were as set out in the table below.

intake point	**system peak throughput (GJ)**
Oaonui	128,640
Frankley Road (gross intake)	20,295
Tikorangi Mixing Station	27,153
Tikorangi #2	15,318
Kowhai Mixing Station	0
Ngatimaru Road (Receipt)	171,559
Tikorangi #3 (Receipt)	70,248
Turangi Mixing Station	37,740

In all cases, the maximum capacity for an offtake point was modelled by allowing one of the intake points to increase its flow to a possible maximum until one of the failure triggers was reached (and keeping all other points at the same flow patterns). The maximum capacity presented for an offtake point is the minimum result obtained from all modelled cases. (Turangi was not modelled separately due to its close proximity to Ngatimaru Road, and results for an increase in flow from Turangi can be considered as similar to those obtained to the runs using Ngatimaru Road as the flow variable.) This leads to the following key results.

1. For all offtake points south of the Mokau compressor station, the limiting intake point is Oaonui. In other words, if additional gas were taken from other intake points (which are closer by), the maximum offtake capacity would be higher than presented above. In all those cases, the failure trigger was a pressure drop below 42 bar(g) at Bertrand Road.
2. For all offtake points north of Mokau, the intake point is irrelevant. In other words, results are the same for all intake points. In all those cases, the limiting constraint was the assessed maximum throughput at the Mokau compressor station.

2. Constraints and planned investments

South of Mokau

Results of the modelling indicate that for expected receipt and delivery patterns the Maui Pipeline does not have any significant capacity constraints for offtake points south of the Mokau compressor station. Modelling results show that for gas coming from Oaonui, the pipeline could have delivered at least 276 TJ more on the day of the System Peak Flow Period. Maximum offtakes could even be several times larger for gas coming from intake points further North. For example, modelling results show that net offtakes could have increased by at least 1,033 TJ for gas from intake points other than Oaonui.

We are not aware of any potential consumption patterns south of the Mokau compressor station that will reach such levels. As a result, we do not see any potential need for, and have not considered, capacity investments south of the Mokau compressor station.

North of Mokau

For more northern offtake points, the maximum throughput of the Mokau compressor station itself becomes the constraint on delivery capacity. The assessed throughput constraint of 330 TJ at Mokau was exceeded on 6 days in 2007. Flows north of Mokau have been lower since then and the constraint has not been exceeded again in later years. The North of Mokau peak for the 12-month period ended on 30 September 2015 was on 30 July 2015. (The same as the overall System Peak Flow Period.) The North of Mokau throughput peak was 272 TJ.

It is relevant to note that the assessed throughput limit of 330 TJ per day at Mokau is based on actual performance in 2007 and is a reasonable estimate of delivery capacity under normal pipeline conditions using only the lowest-rated unit of 2 available compressors.

With the closure of the Otahuhu B and the Southdown power stations, peak gas demand North of Mokau is expected to decline further. Accordingly, MDL does not have plans for capital investment to increase throughput capacity at Mokau.

3. Impact of constraints on consumers

We do not believe that transmission system constraints on the Maui Pipeline are impacting upon the quality of service provided to any existing consumer of MDL's gas transmission services.

Schedule A Maui Pipeline Intake and Offtake Points

Details of the intake and offtake points on the Maui Pipeline as per 30 September 2015 are presented below.

Welded Point	Type	Distance from Oaonui (km)	Location		NZ Topo50 grid reference
Oaonui	Intake	0	S.H.45	Oaonui	BJ28 703 383
Opunake	Offtake	0.1	S.H.45	Oaonui	BJ28 705 383
Pungarehu	Offtake	13.2	Parihaka Rd	Pungarehu	BJ28 747 504
Okato	Offtake	23.1	Oxford Rd	Okato	BH28 776 594
Oakura	Offtake	35.1	Wairau Rd	Oakura	BH28 833 684
Frankley Road	Bi-directional	43.9	Frankley Rd	New Plymouth	BH29 911 686
Bertrand Road (Waitara Valley)	Offtake	65.3	Bertrand Rd	Tikorangi	BH30 094 773
Faull Road	Offtake	65.3	Bertrand Rd	Tikorangi	BH30 094 773
Tikorangi Mixing Station	Intake	66.8	Ngatimaru Rd	Tikorangi	BH30 108 776
Tikorangi #2	Intake	66.8	Ngatimaru Rd	Tikorangi	BH30 108 776
Kowhai Mixing Station	Intake	66.8	Ngatimaru Rd	Tikorangi	BH30 108 776
Ngatimaru Road (Receipt)	Intake	66.97	Ngatimaru Rd	Tikorangi	BH30 108 776
Ngatimaru Road (Delivery)	Offtake	66.97	Ngatimaru Rd	Tikorangi	BH30 108 776
Tikorangi #3 (Receipt)	Intake	70.26	Tikorangi Rd East	Tikorangi	BH30 134 769
Tikorangi #3 (Delivery)	Offtake	70.26	Tikorangi Rd East	Tikorangi	BH30 134 769
Turangi Mixing Station	Intake	70.98	Tikorangi Rd East	Tikorangi	BH30 145 794
Te Kuiti South	Offtake	194.1	Mangatea Rd	Te Kuiti	BF33 852 545
Te Kuiti North	Offtake	197.5	Oparure Rd	Te Kuiti	BF33 861 575
Otorohanga	Offtake	213.5	Waitomo Valley Rd	Otorohanga	BE33 918 714
Pokuru	Offtake	230.8	Candy Rd	Te Awamutu	BE33 938 872
Pirongia	Offtake	237.4	Pirongia Rd	Pirongia	BE33 946 934
Ngaruawahia	Offtake	275.3	Hakarimata Rd	Ngaruawahia	BD33 888 295
Rotowaro	Offtake	290.6	Rotowaro Rd	Rotowaro	BC33 825 411
Huntly Town	Offtake	299.2	Rotowaro Rd	Huntly	BC33 898 423
Huntly Power Station	Offtake	299.3	Rotowaro Rd	Huntly	BC33 899 424

Points listed in the table are Physical Welded Points as per the definition in the Maui Pipeline Operating Code, except for the Mokau Compressor Station point which has not been included.