



Maui Development Limited

Disclosure of pipeline capacity

December 2014

## Disclosure of pipeline capacity

This document covers our disclosure of transmission system capacity for the 12-month period ended on 30 September 2014. Such disclosure is required annually by the Gas Transmission Information Disclosure Determination 2012 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 2014) 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 3 November 2014. It was the period of 24 consecutive hours beginning at 0000 hours (New Zealand Standard Time) on the 17th of September 2014.

GJ / Offtake Point	Peak Throughput	Maximum Capacity	Factor
<b>South of Mokau</b>			
Frankley Road	-19,435	509,533	N/A
Bertrand Road offtake*	101,776	432,026	4.2
Ngatimaru Road (Delivery)	143,120	473,324	3.3
<b>North of Mokau</b>			
Pirongia	2,376	40,045	16.9
Pokuru	30,360	68,029	2.2
Rotowaro	187,776	225,445	1.2
Huntly Power Station	70,848	108,517	1.5

*\*Bertrand Road offtake includes Bertrand Road (Waitara Valley) and Faull Road Welded Points.*

This analysis presents throughput and maximum capacity, 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 are as follows.

- Pipeline pressure measured at the Bertrand Road Welded Point was above Taranaki Target Pressure<sup>1</sup> during the peak day (48.1 barg) however this is not thought to be a capacity limit as the Mokau Compressor was not operating at full capacity on the peak day and could have been ramped up to draw down the pressure in the southern section of the pipeline.
- Net throughput is displayed as a negative value for the Frankley Road bi-directional point because Frankley Road was operating as a net intake point during each hour of the System Peak Flow Period.<sup>2</sup>
- Failure triggers for every scenario are:
  - pressure drops below 42 bar(g) at Bertrand Road, and
  - Mokau compressor power limit.
- Flows through the Mokau compressor station are constrained to a maximum of 330 TJ per day. This is based on an assumption of using only one compressor unit (of two available), with a 3 MW power threshold and maintaining an output pressure of 58 bar(g). It also allows for the system line pack required for flexibility and survival time. The 330 TJ constraint has not been converted to an hourly flow limit (i.e. 330/24), but is used in aggregate for the full day of the System Peak Flow Period.
- The model assumed a 15 °C inlet gas temperature. The gas composition was based on values obtained from Frankley Road.
- All modelling is 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 net intake quantity for the bi-directional point at Frankley Road) for the System Peak Flow Period are as set out in the table below.

Intake Point	Throughput (GJ)
Oaonui	171,000
Frankley Road	19,435
Tikorangi Mixing Station	27,186
Tikorangi #2	11,680
Kowhai Mixing Station	-
Ngatimaru Road (Receipt)	151,420
Tikorangi #3 (Receipt)	68,344
Turangi Mixing Station	45,192

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<sup>1</sup> MDL have a reasonable endeavours obligation to maintain Target Taranaki Pressure as low as possible but in any case between 42 and 48 Barg.

<sup>2</sup> Section 8.1.1 of the 2012 Gas Information Disclosure Determination 2012 requires MDL to disclose information on all offtake points with a throughput of gas during the system peak flow period of 2,000 GJ or more. Frankley Road is included because it generally meets this criterion.

In all cases, the maximum capacity for an offtake point is modelled by allowing one of the intake points to increase its flow to a possible maximum until one of the failure triggers is 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 is 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 is the assessed maximum throughput of 330 TJ at the Mokau compressor station.

## **2. Constraints and planned investments**

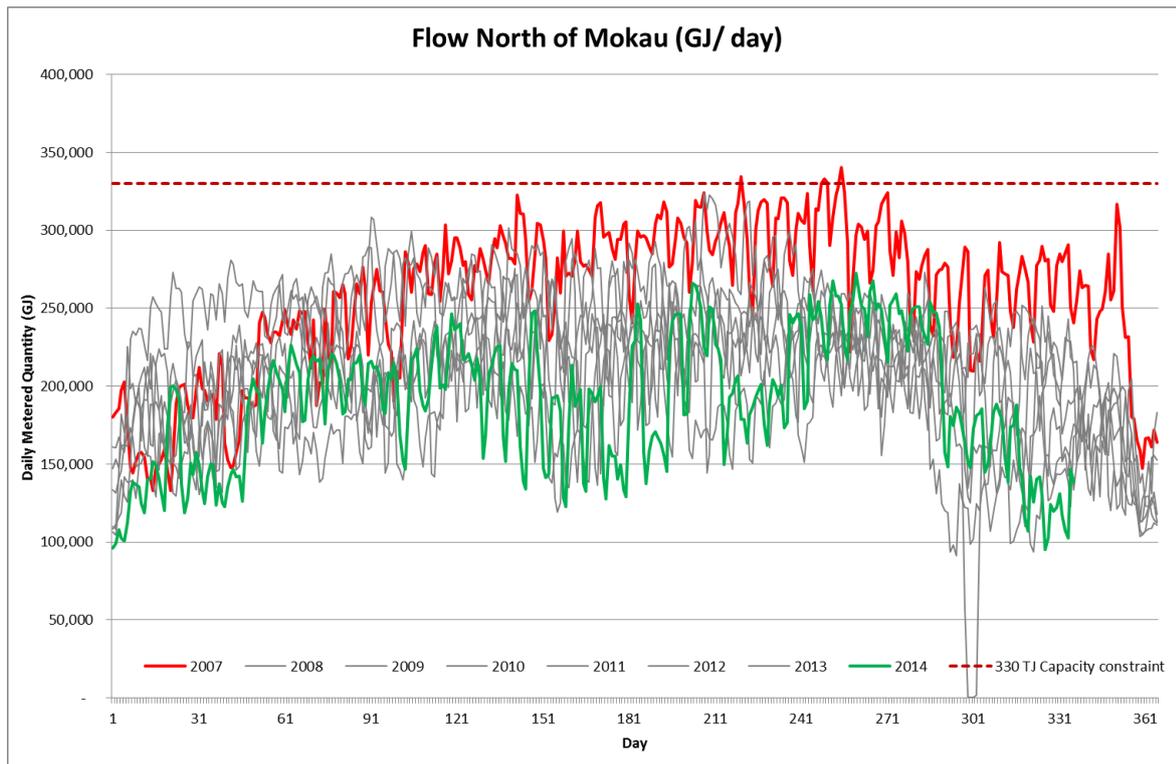
### **South of Mokau**

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 330 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 at Frankley Road could have increased to at least 1,228 TJ for gas from intake points other than Oaonui. Bertrand Road and the Ngatimaru Road Delivery Point could have supported even greater increases. Nevertheless caution needs to be exercised in interpreting modelling results for very large capacity increases.

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. A chart presenting aggregate offtakes north of Mokau is presented below.



The assessed capacity constraint of 330 TJ at Mokau was exceeded on 6 days in 2007. Flows north of Mokau have been lower since then and the assumed constraint has not been exceeded again in later years. The North of Mokau peak during the disclosure period was 273 TJ on the 17<sup>th</sup> of September.

It is important 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 Unit 2 compressor.

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 2014 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	67.0	Ngatimaru Rd	Tikorangi	BH30 108 776
Ngatimaru Road (Delivery)	Offtake	67.0	Ngatimaru Rd	Tikorangi	BH30 108 776
Tikorangi #3 (Receipt)	Intake	70.28	Tikorangi Rd East	Tikorangi	BH30 134 769
Tikorangi #3 (Delivery)	Offtake	70.28	Tikorangi Rd East	Tikorangi	BH30 134 769
Turangi Mixing Station	Intake	71.0	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

Note: This table lists Physical Welded Points as per the definition in the Maui Pipeline Operating Code.