



PIPELINE CAPACITY DISCLOSURE

**Relating to
Gas (Information Disclosure) Regulations 1997**

Year Ending 30 June 2012

August 2012

1. INTRODUCTION

This document comprises the Pipeline Capacity Disclosure of Vector Gas Limited ("Vector") [formerly NGC New Zealand Limited] pursuant to the Gas (Information Disclosure) Regulations 1997 (the "Regulations"), Schedule 1, PART 5, for the year ending 30 June 2012.

As far as practicable main section headings mirror those of Schedule 1, PART 5 of the Regulations. For additional clarity the relevant clause number of Schedule 1 PART 5 is given alongside each main section heading, and some sub-section headings.

Inquiries in relation to this disclosure in particular and system capacity generally, should be directed to:

Transmission Development Manager
Vector Gas Limited
42 Connett Road East
Bell Block
New Plymouth
Taranaki 4373

Ph. 06 769 8205
Email David.Innes@vector.co.nz

Terminology

In this report terminology generally matches that in the Regulations. Some terms differ from those currently used in Vector's Transmission System Information Memorandum and transmission services agreements. For example:

Term in this Report:	Equivalent Vector Term:
Intake Point	Receipt Point
Offtake Point	Delivery Point
transmission system	pipeline (ie <i>part of</i> the "Transmission System")

Exclusions

This report covers the transmission pipeline systems specified in the Regulations. Some parts of Vector's Transmission System, specifically minor laterals off the Maui pipeline, are not covered. These include the Te Awamutu North lateral, the Te Kuiti South and the Te Kuiti North laterals.

Disclaimer

Except in the case of a pipeline with a single Intake Point supplying a single Offtake Point it is difficult to describe a pipeline's capacity in simple terms. Vector's pipelines serve multiple Offtake Points most of which are entirely independent of each other notwithstanding that they may supply similar loads, for example dairy factories, or be subject to similar influences, such as the weather.

In addition, since gas is a compressible fluid the quantity of energy stored within a pipeline ("line pack") may change significantly over time as pressures within the pipeline change. As a consequence the flow at a pipeline's Intake Point need not necessarily equate to the sum of the offtakes at any given time. This has a significant bearing on a pipeline's ability to supply the various Offtake Points.

It is the interaction of all the time-varying offtakes along its length that determines a pipeline's capacity to transport gas from the Intake Point to a given Offtake Point. Therefore capacity must generally be defined as the ability to transport gas from the Intake Point to a given Offtake Point *subject to* what is happening at other Offtake Points at the same time. Where there are multiple large Offtake Points a significant change at any one of them may materially affect the capacity available to the others.

Information contained in this report is presented in good faith in order to comply with the Regulations and to give an overview of the capacity of Vector's transmission systems.

However, shippers or potential shippers should not base their business decisions on the information contained in this report without consulting Vector.

Vector will accept no responsibility for the consequences of any misunderstanding, misinterpretation or misuse of information contained in this report.

While reasonable care has been taken in the preparation of this report, Vector takes no responsibility for the consequences of any errors that may be contained herein.

TABLE OF CONTENTS

1.	INTRODUCTION	2
2.	TRANSMISSION SYSTEMS.....	5
	<i>TABLE 2.1 NORTH SYSTEM</i>	<i>7</i>
	<i>Table 2.2 Central (North) System.....</i>	<i>7</i>
	<i>Table 2.3 Central (South) System.....</i>	<i>7</i>
	<i>Table 2.4 Bay of Plenty System</i>	<i>8</i>
	<i>Table 2.5 South System.....</i>	<i>8</i>
	<i>Table 2.6 Frankley Rd to Kapuni System.....</i>	<i>8</i>
3.	INTAKE POINTS (REF. SCHEDULE 1 PART 5, CLAUSE3)	9
4.	OFFTAKE POINTS (REF. SCHEDULE 1 PART 5, CLAUSE 4)	10
5.	FURTHER DISCLOSURE: OFFTAKE POINTS WITH THROUGHPUT LESS THAN 2,000 GJ/WEEK.....	11
6.	CRITICAL POINTS OF TRANSMISSION SYSTEMS.....	12
7.	METHODOLOGIES (REF. SCHEDULE 1 PART 5, CLAUSE 7)	13
	INTAKE POINTS (REF. CLAUSE 3).....	13
	OFFTAKE POINTS (REF. CLAUSE 4)	13
	THROUGHPUT INCREASE IN SYSTEM PEAK WEEK	14
	(REF. CLAUSE 4 (4) (C))	14
	FURTHER DISCLOSURE RELATING TO TRANSMISSION SYSTEMS (REF. CLAUSE 5)	17
	CRITICAL POINTS OF TRANSMISSION SYSTEMS.....	17
	(REF. CLAUSE 6 (2)).....	17
	TRANSIENT FLOW (CAPACITY SIMULATION) MODEL.....	18
	(REF. CLAUSE 7 (2)).....	18
8.	GAS (CAPACITY) RESERVED IN TRANSMISSION SYSTEMS (REF. SCHEDULE 1 PART 5, CLAUSE 8)	19
	APPENDIX 1	20

2. TRANSMISSION SYSTEMS

(Ref. Schedule 1 Part 5, Clause 1)

The attached map and pipeline schematics (sheets 01 to 06) depict Vector's high-pressure gas transmission pipelines dealt with in this disclosure. They show all Intake and Offtake Points, other pipeline stations including compressor stations, pressure reductions stations and main line (ie line-break isolation) valves, pipe sizes and other information.

Distances between any two stations on the same pipeline (at the time of construction) can be calculated from the respective station numbers shown on the schematics, as follows:

The last 4 digits of each station number give the distance in km (ie wxy.z km) of that station from the origin of the particular pipeline or lateral on which it is located.

Example 1: Gisborne Sales Gate has the station number 5052013. This means that this station is on the 505 lateral, which starts at the Gisborne Offtake Station near Kawerau, and is 201.3 km downstream of that point.

Example 2: The distance between the Southdown and Henderson Delivery Points (on the North System) is found by subtracting the upstream station number from the downstream, ie:

Henderson station number	=	4300355
Southdown station number	=	4300015
Distance between these points	=	34.0 km

Tables 2.7.1, 2.7.2 and 2.7.3 show the station number, location and map grid reference of each Intake and Offtake Point.

Clause 23 (4) of the Regulations requires Vector to treat the following four transmission pipelines as separate transmission systems:

- North (ie north of Rotowaro)
- Central (ie Kapuni to Rotowaro including the Morrinsville sub-system)
- Bay of Plenty (ie east of Pokuru)
- South (ie south of Kapuni)

The Central System is currently divided into two sections, the Central (North) and Central (South). There is an interconnection between the Central (South) System and the Bay of Plenty System at Pokuru (No.2).

This report also includes the Frankley Rd to Kapuni transmission pipeline.

Therefore the transmission pipelines presented in this disclosure are:

- **North:** extending from the end of the Maui pipeline at Rotowaro (near Huntly) to Auckland, then through to Kauri north of Whangarei;
- **Central (North):** extending from Rotowaro to Hamilton (Temple View) and including the Morrinsville sub-system;

- **Central (South):** extending from the Kapuni Gas Treatment Plant to the interconnection to the Bay of Plenty System at Pokuru (“Pokuru No.2 Offtake”);
- **Bay of Plenty:** extending east from Pokuru (near Te Awamutu) on the Maui line to Tauranga, Taupo and Gisborne, etc;
- **South:** extending south from the Kapuni Gas Treatment Plant to Wellington and Hastings;
- **Frankley Rd to Kapuni:** extending from the Frankley Rd Offtake Station on the Maui pipeline near New Plymouth to the Kapuni Gas Treatment Plant, including laterals to the TCC Power Station and the Ammonia-Urea Plant.

For convenience a certain amount of information has been extracted from the attached schematics and presented in the following tables. Note that “MAOP” means the maximum allowable operating pressure of the pipeline.

Table 2.1 North System

The pipeline consists of the following main sections (ie excluding minor laterals):

Pipeline Segment	Nominal Bore (mm)	Length (km)	MAOP (bar g)
Rotowaro - Papakura East Pressure Reducing Station	350	60.8	86
Papakura East Pressure Reducing Station - Southdown	350	28.4	66
Rotowaro - Papakura West	200	60.8	86
Ingram Rd - Glenbrook	150	23.0	86
Westfield - Henderson	200	35.5	66
Henderson - Whangarei Offtake	150	145.4	86
Whangarei - Kauri	100	21.5	86

Table 2.2 Central (North) System

This pipeline consists of the following main sections

Pipeline Segment	Nominal Bore (mm)	Length (km)	MAOP (bar g)
Rotowaro - Te Kowhai	200	25.8	86
Te Kowhai - Te Rapa Offtake	150	6.3	86
Te Rapa lateral	200	1.3	86
Te Rapa Offtake - Horotiu East	150	1.0	86
Horotiu East - Kuranui Rd	100	24.8	86
Kuranui Rd - Cambridge	80	22.7	86
Kuranui Rd - Morrinsville	150	8.5	86
Morrinsville - Waitoa	100	9.4	86
Te Kowhai – Temple View	200	9.7	86

Table 2.3 Central (South) System

This pipeline consists of the following main sections

Pipeline Segment	Nominal Bore (mm)	Length (km)	MAOP (bar g)
Kapuni - New Plymouth Offtake	200	52.9	86
New Plymouth lateral	80	10.5	86
New Plymouth - Mahoenui Compressor.	200	81.7	86
Mahoenui Compressor – Pokuru No.2 Offtake	200	84.0	86
Pokuru No.2 Offtake – Temple View	200	24.5	86

Table 2.4 Bay of Plenty System

This pipeline consists of the following main sections.

Pipeline Segment	Nominal Bore (mm)	Length (km)	MAOP (bar g)
Pokuru - Kinleith	300	78.8	86
Kinleith - Kawerau	200	103.1	86
Kawerau - Whakatane	100	13.7	86
Kawerau - Gisborne	100/200	184/17.3	86
Lichfield - Mt Maunganui Offtake	150/100	34.3/43.7	86
Taupo lateral	100/150	18.2/20.7	86
Rotorua lateral	80	18	86

Table 2.5 South System

This pipeline consists of the following main sections. This system is extensively looped. Loops are tabulated separately.

Pipeline Segment	Nominal Bore (mm)	Length (km)	MAOP (bar g)
Kapuni GTP – Hawera	200	17.8	86
Hawera – Wanganui	200	79.9	86
Wanganui – Himatangi	200	51.4	86
Himatangi - Palmerston North O/T	150/80	23.8/23.8	86
Palmerston North – Hastings	150/200	5.8/123.5	86
Himatangi – Wellington	200	104.1	86

The looped sections of the system are:

Pipeline Segment	Nominal Bore (mm)	Length (km)	MAOP (bar g)
Hawera – Kaitoke Compressor	300	87.3	86
Otaki Tie-In – Belmont	300	55.7	86

Table 2.6 Frankley Rd to Kapuni System

This pipeline consists of the following main sections.

Pipeline Segment	Nominal Bore (mm)	Length (km)	MAOP (bar g)
Frankley Rd - Derby Rd Compressor	500	22.3	66
Derby Rd – Pembroke Rd	500	5.5	66
Pembroke Rd – TCC Power Station	500	8.6	66
Pembroke Rd – Kapuni GTP	500	18.8	66
Kapuni – Ammonia Urea Offtake	100	0.5	86
Ammonia Urea Offtake - Lactose	100/200	1.5/1.3	86

TABLE 2.7.1 LOCATION OF INTAKE AND OFFTAKE POINTS

Ref. Schedule 1 Part 5, Clause 1 (1)

SYSTEM	INTAKE POINT	OFFTAKE POINT	STATION NUMBER	LOCATION	NZMS 260 GRID REFERENCE	
North	Rotowaro		4002907	Waikokowai Rd	Huntly	S13 928027
		Alfriston	4190001	Phillip Rd	Manukau City	R11 842626
		Bruce McLaren	4380001	Bruce McLaren Rd	Glen Eden	R11 548763
		Drury 1 & 2	4003503	Waihoehoe Rd	Drury	R12 848533
		Flat Bush	4003677	131 Murphy's Rd	Flat Bush	R11 815670
		Glenbrook	4050230	Mission Bush Rd	Glenbrook	R12 642422
		Harrisville	2003197	Harrisville Rd	Harrisville	R12 838385
		Henderson	4300356	110 Amriens Rd	Taupaki	Q11 487837
		Hunua	4180001	Hunua Rd	Papakura	R12 848570
		Kauri	4350215	SH 1 (near Vinegar Hill Rd)	Kauri	Q06 283174
		Kingseat	4050141	Kingseat Rd	Patumahoe	R12 717453
		Marsden 1	4370069	Mair Rd	Marsden Point	Q07 459943
		Marsden 2	4370069	Mair Rd	Marsden Point	Q07 459943
		Maungaturoto DF	4330133	SH 12	Maungaturoto	Q08 343654
		Oakleigh	4301681	Whittle Rd	Oakleigh	Q07 316927
		Otahuhu B	4420025	Hellabys Rd	Otara	R11 762708
		Papakura	2003394	Hingaia Rd	Papakura	R12 817570
		Pukekohe	4050059	Butcher Rd	Pukekohe	R12 790452
		Ramarama	4170001	Ararimu Rd	Ramarama	R12 850489
		Southdown	4300015	Hugo Johnston Drive	Penrose	R11 731732
		Tuakau	2003168	Bollard Rd	Tuakau	R12 839356
		Waitoki	4310001	Kahikatea Flat Rd	Rodney	Q10 468064
		Warkworth 2	4320063	Woodcocks Rd	Warkworth	R09 585313
		Wellsford	4301075	Farmers Lime Rd	Wellsford	Q09 495466
		Westfield	4003810	Mt Wellington Highway	Westfield	R11 744738
		Whangarei	4340091	Dyer St	Whangarei	Q07 294040

Central (North)	Rotowaro		4002907	Waikokowai Rd	Huntly	S13 928027
		Cambridge	4070227	Bruntwood Rd	Cambridge	S15 269689
		Hamilton (Te Kowhai)	2080001	Limmer Rd	Hamilton	S14 008817
		Hamilton (Temple View)	2002431	Foster Rd	Temple View	S14 049733
		Horotiu	4020071	Horotiu Bridge Rd	Te Rapa	S14 048869
		Kiwitahi	4090014	Morrinsville - Walton Rd	Morrinsville	T14 348887
		Matangi	4080039	Tauwhare Rd	Matangi	S14 213747
		Morrinsville	4020406	Railway Yards	Morrinsville	T14 340907
		Morrinsville DF	4020406	Railway Yards	Morrinsville	T14 340907
		Tatuanui	4020470	SH 26	Tatuanui	T14 391942
		Tauwhare	4070131	Tauwhare Rd	Tauwhare	S14 237773
		Te Rapa	4100022	SH 1	Te Rapa	S14 054852
		Te Rapa Cogeneration	4100022	SH 1	Te Rapa	S14 054852
		Waitoa	4020500	Wood Rd	Waitoa	T14 422943

Central (South)	Kapuni		1000001	Palmer Rd	Kapuni	Q20 110918
		Eltham	2060076	North St	Eltham	Q20 213964
		Kaponga	2070053	Manaia Rd	Kaponga	P20 089976
		Inglewood	2010041	Tarata Rd	Inglewood	Q19 153267
		New Plymouth	2030105	195a Connett Rd East	New Plymouth	Q19 111409
		Stratford	2000192	Pembroke Rd	Stratford	Q20 157083
		Waitara	2030046	Waitara Rd	Waitara	Q19 168402

TABLE 2.7.2 LOCATION OF INTAKE AND OFFTAKE POINTS

Ref. Schedule 1 Part 5, Clause 1 (1)

SYSTEM	INTAKE POINT	OFFTAKE POINT	STATION NUMBER	LOCATION		NZMS 260 GRID REFERENCE	
Bay of Plenty	Pokuru		4002308	Candy Rd	Te Awamutu	S15 040487	
		Broadlands	5100001	Broadlands Rd	Reporoa	U17 003944	
		Edgecumbe	5020192	Awakeri Rd	Edgecumbe	V15 470509	
		Edgecumbe DF	5020192	Awakeri Rd	Edgecumbe	V15 470509	
		Gisborne	5052013	Back Ormond Rd	Gisborne	Y18 442740	
		Kawerau	5001820	East Bank Rd	Kawerau	V15 361407	
		Kawerau (Caxton mill)	5001820	East Bank Rd	Kawerau	V15 361407	
		Kawerau (Tasman mill)	5001820	East Bank Rd	Kawerau	V15 361407	
		Kihikihi (Te Awamutu)	5000113	Brill Rd, Kihikihi	Te Awamutu	S15 148481	
		Kinleith	5010004	Off Old Taupo Rd	Kinleith	T16 618218	
		Kinleith (mill)	5000789	Off Old Taupo Rd	Kinleith	T16 618218	
		Lichfield DF	5090005	SH 1	Lichfield	T16 572370	
		Mt Maunganui	8040049	Truman Rd	Mt Maunganui	U14 951854	
		Okoroire Springs	8000175	Somerville Rd	Okoroire	T15 568568	
		Opotiki	5060044	Factory Rd	Opotiki	W15 848440	
		Papamoa	8000805	SH 2	Te Puke	U14 997818	
		Pyes Pa	8070001	Lakes Boulevard	Pyes Pa, Tauranga	U14 842802	
		Putaruru	8000044	SH 1	Putaruru	T15 549458	
		Rangiuru	8050083	SH 2	Te Puke	U14 083734	
		Reporoa	5040182	SH 5	Parekarangi	U17 995034	
		Rotorua	5030180	SH 5	Rotorua	U16 948308	
		Taupo	5080389	269 Rakaunui Rd	Taupo	U18 812776	
		Tauranga	8030079	Birch Ave	Tauranga	U14 872843	
		Te Puke	8000888	Washer Rd	Te Puke	U14 023749	
		Te Teko	5020093	Matahina Rd	Te Teko	V15 432442	
		Tirau	8020020	Okoroire Rd	Tirau	T15 529549	
		Tirau DF	8020020	Okoroire Rd	Tirau	T15 529549	
		Tokoroa	5000720	Baird Rd	Tokoroa	T16 583270	
		Waikeria	5000176	Higham Rd	Kihikihi	S15 205474	
		Whakatane	5070137	Mill Rd	Whakatane	W15 580533	
	Frankley Rd to Kapuni	Frankley Rd	Frankley Rd	4000439	Frankley Rd	New Plymouth	P19 012304
		Kaimiro Mixing Stn		3000357	686A Egmont Road	Kaimiro	Q19 086229
		Norfolk Mixing Stn		3000302	Durham Road Upper	Norfolk	Q20 121189
		Kupe		7590117	Palmer Road	Kapuni	Q20 113914
			Ammonia-Urea Plant	3070002	Palmer Rd	Kapuni	Q20 105914
			Kapuni (Lactose plant)	3060034	Manaia Rd	Kapuni	P20 079915
			Kapuni Gas Treatment Plant	1000001	Palmer Rd	Kapuni	Q20 110918
			Stratford Power Stn	3030086	189 East Road	Stratford	Q20 237074
			TCC Power Station	3010002	189 East Rd	Stratford	Q20 237074

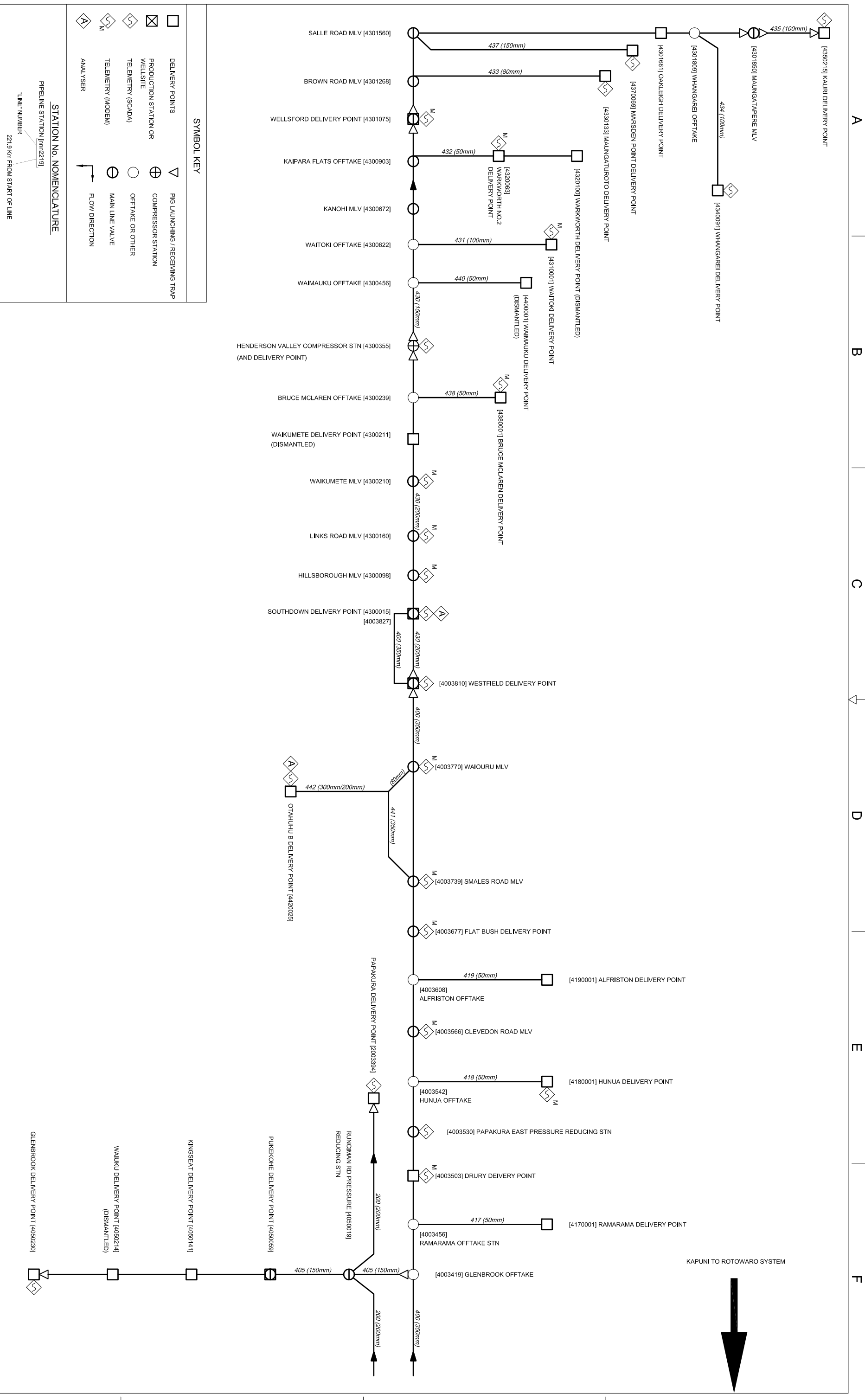
TABLE 2.7.3 LOCATION OF INTAKE AND OFFTAKE POINTS

Ref. Schedule 1 Part 5, Clause 1 (1)

SYSTEM	INTAKE POINT	OFFTAKE POINT	STATION NUMBER	LOCATION	NZMS 260 GRID REFERENCE	
South	Kapuni		1000001	Palmer Rd	Kapuni	Q20 110918
	Mokoia Mixing Stn		1000266	Mokoia Rd	Mokoia	Q21 258715
		Ashhurst	7050001	Saddle Rd	Ashhurst	T24 448993
		Belmont	1100028	Belmont Rd	Lower Hutt	R27 698033
		Dannevirke	7000503	Rule Rd	Dannevirke	U23 721077
		Feilding	1140087	Campbell Rd	Feilding	S23 044295
		Flockhouse	1001420	Parewanui Rd	Bulls	S23 018001
		Foxton	1001629	Foxton Beach Rd	Foxton	S24 021799
		Hastings	7001531	Karamu Rd South	Hastings	V21 394660
		Hawera	1000178	Fairfield Rd	Hawera	Q21 193769
		Kairanga	1070244	Gillespies Line	Palmerston North	S24 278939
		Kaitoke	1050041	Pauri Rd	Kaitoke	R22 055344
		Kakariki	1150001	Cnr Makirikiri Rd & Goldings Line	Marton	S23 137200
		Kuku	1160001	Kuku Beach Rd	Kuku	S25 934579
		Lake Alice	1060013	Lake Alice Rd	Lake Alice	S23 093170
		Levin	1090052	Hokio Beach Rd	Levin	S25 009621
		Longburn	1080068	Reserve Rd	Longburn	S24 262889
		Manaia	1010016	Kohiti Rd	Okaiawa	Q21 122857
		Mangaroa	7001469	Bridge Pa Rd	Mangaroa	V21 339463
		Mangatainoka	7030004	Kohinui Rd	Mangatainoka	T24 531832
		Marton	1040212	Wings Line	Marton	S23 144208
		Matapu	1000013	Skeet Rd	Kapuni	Q20 119907
		Okaiawa	1010016	Kohiti Rd	Okaiawa	Q21 122857
		Oroua Downs	1130051	SH 1 near Omanuka Rd	Oroua Downs	S24 087939
		Otaki	1002005	off SH 1 next to Otaki River	Otaki	R25 892475
		Pahiatua	7020212	Mangahao Rd	Pahiatua	T24 491806
		Palmerston North	1070272	Rangitikei Line	Palmerston North	T24 304934
		Paraparaumu	1002236	Valley Rd	Paraparaumu	R26 793289
		Patea	1000422	Victoria Rd	Patea	Q22 368589
		Pauatahanui 1	1002455	Paekakariki Hill Rd	Paekakariki	R26 707117
		Pauatahanui 2	1002423	Paekakariki Hill Rd	Pauatahanui	R26 730140
		Takapau	7000844	SH 2 (Nancy St)	Takapau	U23 958266
		Tawa A	1110077	Takapu Rd	Tawa	R27 635007
		Tawa B	1190001	SH1	Tawa	R27 636008
		Te Horo	1170001	Te Horo Beach Rd	Te Horo	R25 866438
		Waikanae	1002164	Kauri Rd	Waikanae	R26 807347
		Waitangirua	1002532	Track off Waihora Crescent	Porirua East	R27 684057
		Waitotara	1000692	Wainu Beach Rd	Waitotara	R22 586492
	Wanganui	1000977	Karoro Rd	Wanganui	R22 824377	
	Waverley	1030058	Lower Okotuku Rd	Waverley	R22 536577	

Transmission Pipelines





SYMBOL KEY

	DELIVERY POINTS		PIG LAUNCHING / RECEIVING TRAP
	PRODUCTION STATION OR WELL SITE		COMPRESSOR STATION
	TELEMETRY (SCADA)		OFFTAKE OR OTHER
	TELEMETRY (MODEM)		MAIN LINE VALVE
	ANALYSER		FLOW DIRECTION

STATION NO. NOMENCLATURE

PIPELINE STATION [mm2219]

LINE NUMBER
221.9 km FROM START OF LINE

REV	AMENDMENT	DRAWN	CHKD	ENG	APPR	DATE
4	STATION NAMES & NUMBERS CHANGED	SKH	SKH			02/99
3	MURPHY'S RD REMOVED TO FLAT BUSH	SKH	SKH			09/99
6	WAITOKI LATERAL ADDED	SKH	SKH			08/99
8	430 LINE SIZE CORRECTED	SKH	SKH			02/2004
9	REMOVED FOR VECTOR RE-BRANDING	SKM	SKM			08/2006
10	MAUNGATAPERE DELIVERY POINT REMOVED	RH	SKM			10/2006
11	WARKWORTH NO.2 DP ADDED	SKM	AWJ			12/2007
12	GENERAL REVISION	SKM	AWJ			12/2007
13	GENERAL REVISION	SKM	AWJ			08/2009
14	ADDITIONAL SECTION OF 400 LINE ADDED	SKM	AWJ			07/2010

COPYRIGHT:

The copyright in this document is vested in Vector Gas Limited.

The contents of this document may not be reproduced either in whole or in part, by any means whatsoever without the prior written consent of Vector Gas Limited.

VECTOR GAS LIMITED
PRIVATE BAG 2020
NEW PLYMOUTH 4342
PHONE 0800 734 567

ACTUAL DRAWING SIZE : A1 FRAME A1-ENGFR

REFERENCE DRAWINGS

BY	DATE
KCT	

DISCLOSURE REGULATIONS

GENERAL

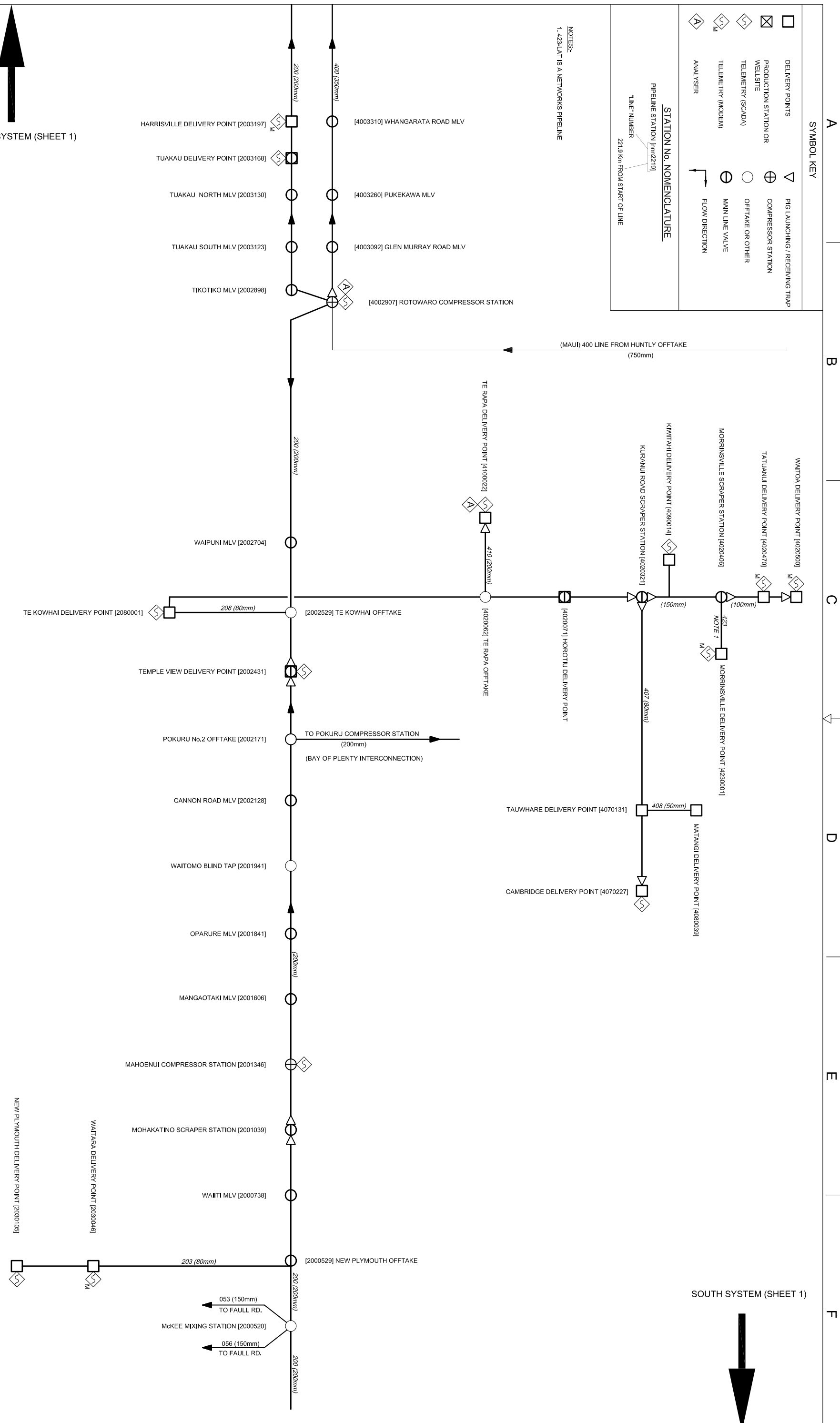
PIPELINE SCHEMATIC - NORTH SYSTEM 200, 400, 430 LINES

SCALES:	JOB NO.	SERIES	DRG NO.	SHT 01 OF 06 SHTS	REV
NTS	DIS-REG	0000	001	06	14

SYMBOL KEY	
	DELIVERY POINTS
	PRODUCTION STATION OR WELL SITE
	TELEMETRY (SCADA)
	TELEMETRY (MODEM)
	ANALYSER
	PIG LAUNCHING / RECEIVING TRAP
	COMPRESSOR STATION
	OFFTAKE OR OTHER
	MAIN LINE VALVE
	FLOW DIRECTION

STATION NO. NOMENCLATURE
 PIPELINE STATION [mm2219]
 LINE NUMBER
 22.19 km FROM START OF LINE

NOTES:
 1. 423-LAT IS A NETWORKS PIPELINE



NORTH SYSTEM (SHEET 1)

SOUTH SYSTEM (SHEET 1)

REV	AMENDMENT	DRAWN	CHKD	ENG	APPR	DATE
12	HOROTIU EAST MLV REMOVED	SKM	AJW	SFI	DI	08/2012
11	GENERAL REVISION	SKM	AJW	DT	DI	07/2010
10	GENERAL REVISION	SKM	AJW	*	DI	08/2009
9	GENERAL REVISION	SKM	AJW	HD	DI	12/2007
8	MODEM ADDED TO WAITARA DP	SKM	AJW	DT	DI	10/2007
7	REVISED FOR VECTOR RE-BRANDING	SKM	AJW	SFI	DI	08/2006
6	FLOW DIRECTIONS CORRECTED	AJW	SKM	.	SFI	08/2006
5	STATION NAMES CORRECTED	AJW	SKM	RDA	SFI	02/2004
4	TE RAPA SCADA REFERENCE ADDED	SKM	SKM	SKM	OHM	11/2003
3	POKURU No. 2 OFFTAKE ADDED	SKH	SKH	AJW		09/2000
2	STATION NAMES & NUMBERS CHANGED	SKH				02/99
	AMENDMENT	DRAWN	CHKD	ENG	APPR	DATE

COPYRIGHT:
 The copyright in this document is vested in Vector Gas Limited.

The contents of this document may not be reproduced either in whole or in part, by any means whatsoever without the prior written consent of Vector Gas Limited.



VECTOR GAS LIMITED
 PRIVATE BAG 2020
 NEW PLYMOUTH 4342
 PHONE 0800 734 567

ACTUAL DRAWING SIZE : A1 FRAME A1-ENGFR

REFERENCE DRAWINGS

BY	DATE
DRAWN	
CHECKED	
ENGINEER	
APPROVED	

DISCLOSURE REGULATIONS

GENERAL

PIPELINE SCHEMATIC - KAPUNI TO ROTOWARO & MORRINSVILLE SYSTEM

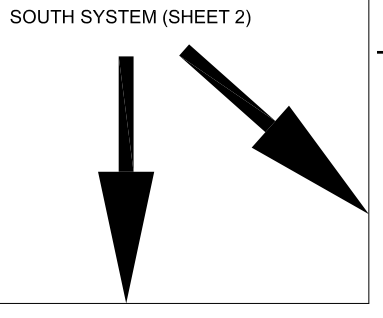
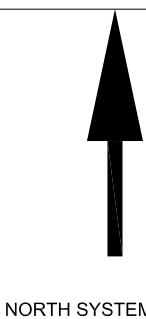
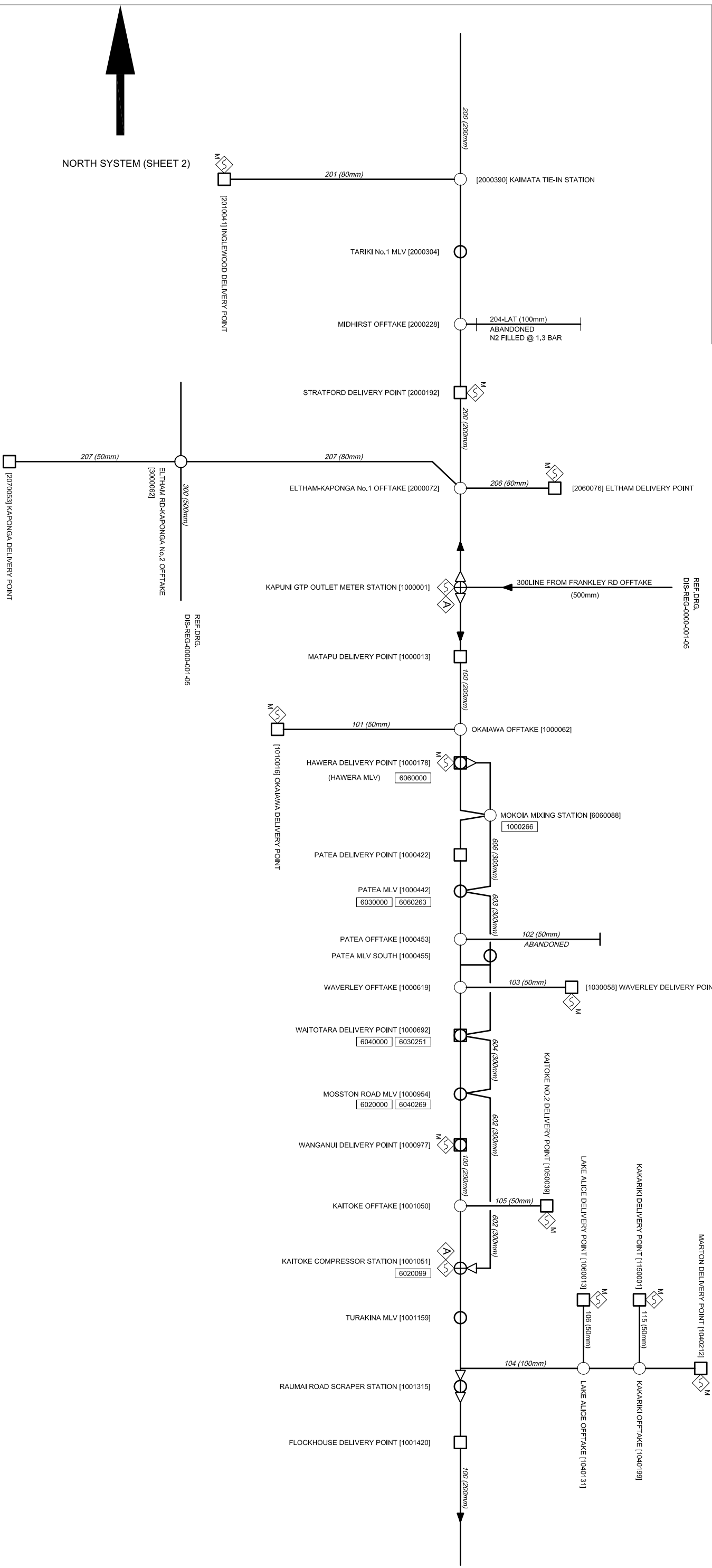
SCALES:	JOB NO.	SERIES	DRG NO.	SHT OF	REV
NTS		0000	001	02	12
DO NOT SCALE OFF DRG				06	

A B C D E F

SYMBOL KEY

	DELIVERY POINTS		PIG LAUNCHING / RECEIVING TRAP
	PRODUCTION STATION OR WELL SITE		COMPRESSOR STATION
	TELEMETRY (SCADA)		OFFTAKE OR OTHER
	TELEMETRY (MODEM)		MAIN LINE VALVE
	ANALYSER		FLOW DIRECTION

STATION NO. NOMENCLATURE
 PIPELINE STATION [mm2219]
 *LINE NUMBER
 22.19 km FROM START OF LINE



REV	AMENDMENT	DRAWN	CHKD	ENG	APPR	DATE
A	ISSUED FOR APPROVAL	SKH				07/06/96
1	TELEMETRY MODEM SITES INDICATED	SKH				09/98
2	STATION NAMES UPDATED	SKH				09/2000
3	NOTES ADDED	SKH				02/2004
4	MOKOIA MIXING STATION ADDED	AWJ	SKM	RD/A	SFI	08/2005
5	INGLEWOOD OT CHANGED TO KAIMATA T/I	SKM	SKM			08/2006
6	REVISED FOR VECTOR RE-BRANDING	SKM	AWJ	DT	SFI	10/2007
7	MODEMS ADDED	SKM	AWJ	HD	DI	12/2007
8	GENERAL REVISION	SKM	AWJ	DT	DI	08/2009
9	GENERAL REVISION	SKM	AWJ	DT	DI	07/2010
10	GENERAL REVISION	SKM	AWJ	DT	DI	07/2010

COPYRIGHT:
 The contents of this document may not be reproduced either in whole or in part, by any means whatsoever without the prior written consent of Vector Gas Limited.

VECTOR GAS LIMITED
 PRIVATE BAG 2020
 NEW PLYMOUTH 4342
 PHONE 0800 734 567

ACTUAL DRAWING SIZE : A1 FRAME A1-ENGFR

REFERENCE DRAWINGS

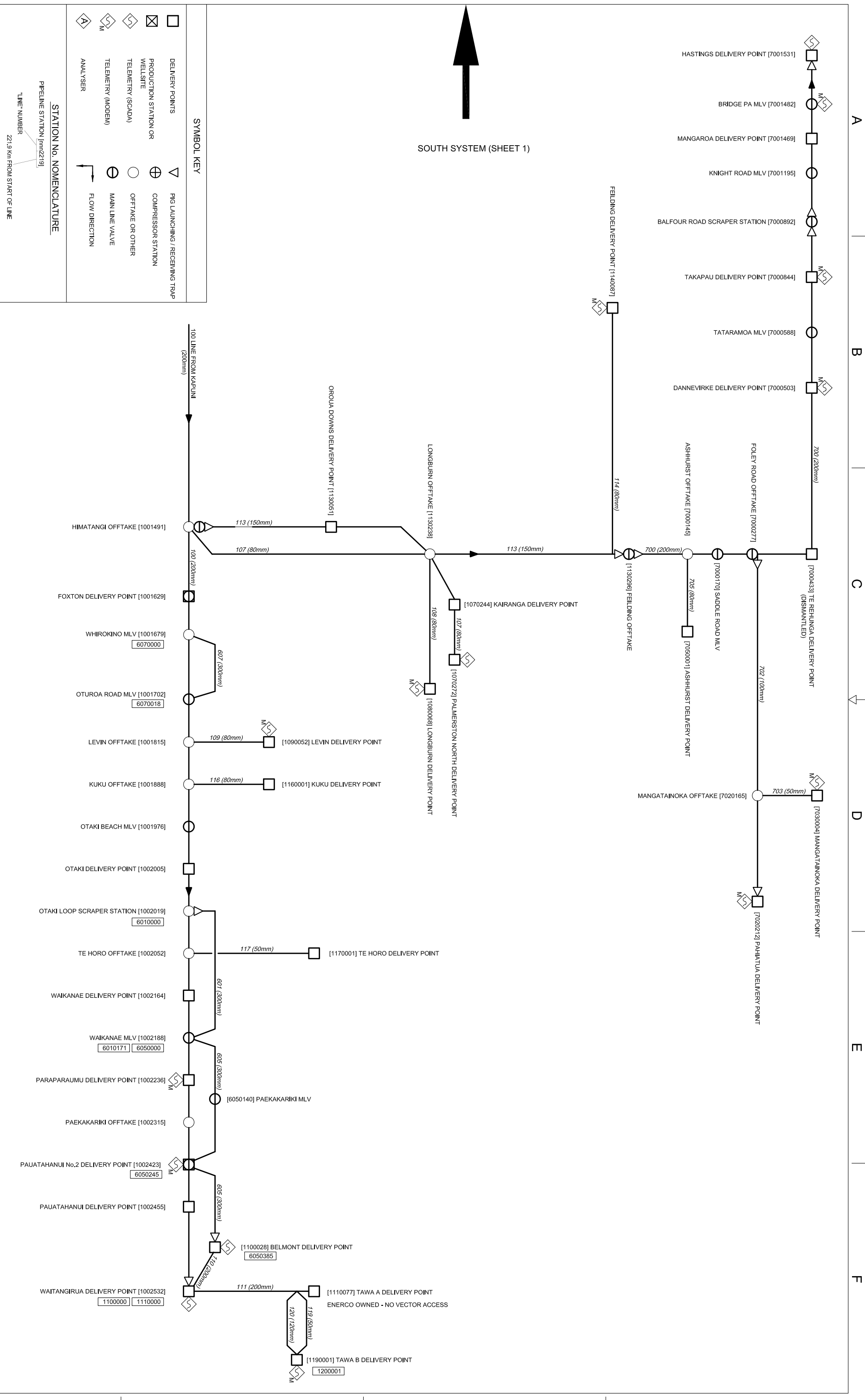
BY	DATE
SKH	
KCT	

DISCLOSURE REGULATIONS

GENERAL
 PIPELINE SCHEMATIC - SOUTH SYSTEM (SHEET 1)

SCALES:	JOB NO.	SERIES	DRG NO.	SHT 03	REV
NTS	DIS-REG	0000	001	OF 06	10

DO NOT SCALE OFF DRG



REV	AMENDMENT	DRAWN	CHKD	ENG	APPR	DATE
10	PAEKAKARIKI DELIVERY POINT REMOVED	SKM	AWW	SFI	DI	08/2012
9	GENERAL REVISION	SKM	AWW	DT	DI	07/2010
8	GENERAL REVISION	SKM	AWW	*	DI	08/2009
7	GENERAL REVISION	SKM	AWW	HD	DI	12/2007
6	REVISED FOR VECTOR RE-BRANDING	SKM	AWW	SFI	DI	08/2006
5	120 LATERAL ADDED TO TAWA B	SKM	AWW	BS	DI	01/2003
4	STATION NAMES UPDATED	SKH				09/2000
3	STATION NAMES UPDATED	SKH				02/98
2	TELEMETRY MODERN SITES INDICATED	SKH				09/98
1	WHIRRY BLIND TAP REMOVED, TAWA B SALES SKH GATE ADDED	SKH				07/98

COPYRIGHT:
 The copyright in this document is vested in Vector Gas Limited.
 The contents of this document may not be reproduced either in whole or in part, by any means whatsoever without the prior written consent of Vector Gas Limited.

VECTOR GAS LIMITED
 PRIVATE BAG 2020
 NEW PLYMOUTH 4342
 PHONE 0800 734 567
 ACTUAL DRAWING SIZE : A1 FRAME A1-ENGFR

REFERENCE DRAWINGS		BY	DATE
DRAWN		KCT	
CHECKED			
ENGINEER			
APPROVED			

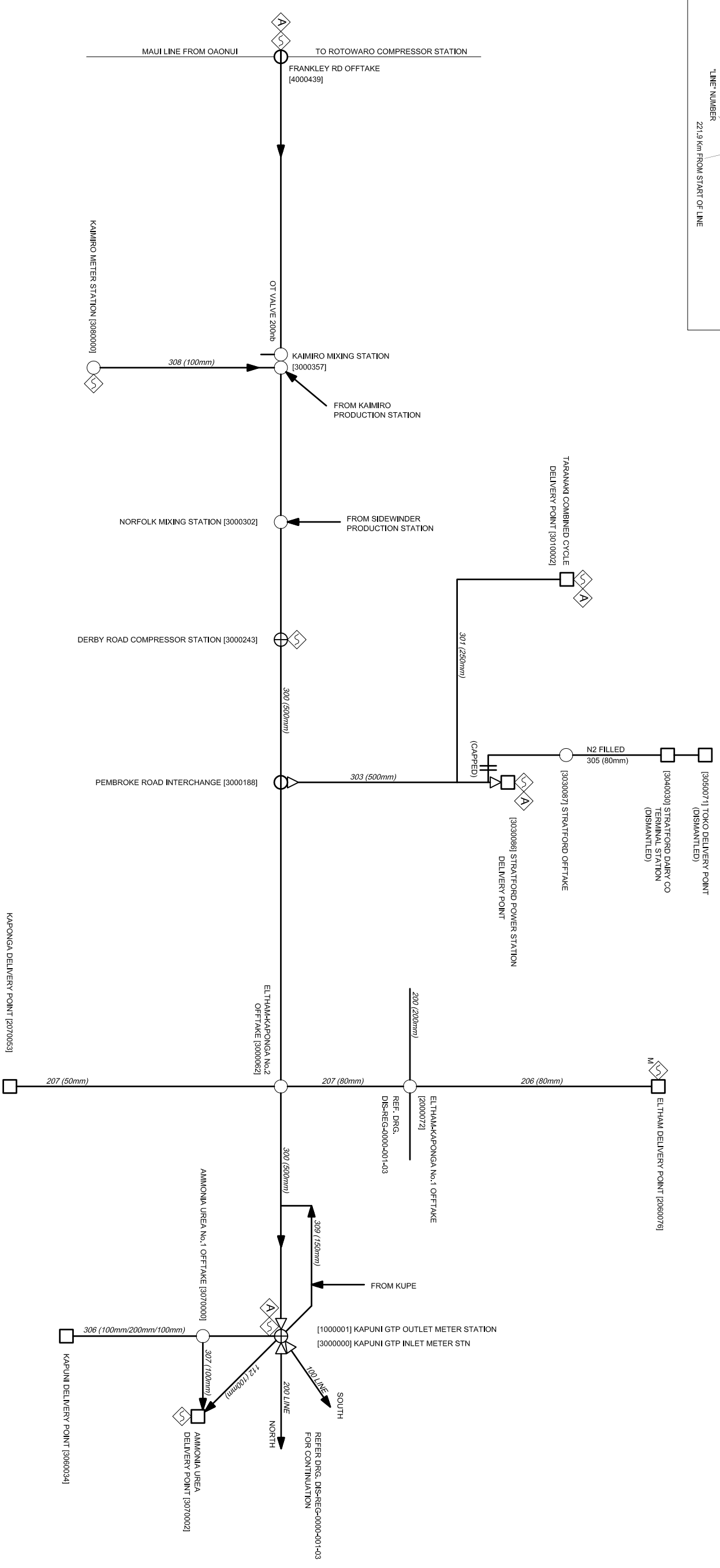
DISCLOSURE REGULATIONS		GENERAL	
PIPELINE SCHEMATIC - SOUTH SYSTEM (SHEET 2)		SCALES:	JOB NO.
DO NOT SCALE OFF DRG		NTS	DIS-REG
		SERIES	0000
		DRG NO.	001
		SHT OF	04
		REV	10

A B C D E F

SYMBOL KEY

	DELIVERY POINTS		PIG LAUNCHING / RECEIVING TRAP
	PRODUCTION STATION OR WELL SITE		COMPRESSOR STATION
	TELEMETRY (SCADA)		OFFTAKE OR OTHER
	TELEMETRY (MODEM)		MAIN LINE VALVE
	ANALYSER		FLOW DIRECTION

STATION NO. NOMENCLATURE
 PIPELINE STATION [mm2219]
 LINE NUMBER
 22.19 km FROM START OF LINE



REV	AMENDMENT	DRAWN	CHKD	ENG	APPR	DATE
A	ISSUED FOR APPROVAL	KCT	.	.	.	07/08/95
1	T.O.C. ADDED	SKH	.	.	.	02/2/99
2	STATION NAMES & NUMBERS CHANGED	SKH	.	.	.	09/9/98
3	FRANKLEY RD OFFTAKE ADDED	SKH	.	.	.	02/2/04
4	KAPUNI COMPRESSOR STATION ADDED	AWJ	SKM	RD/A	SFI	08/2/06
5	REVISED FOR VECTOR RE-BRANDING	SKM	AWJ	.	SFI	12/2/07
6	GENERAL REVISION	SKM	AWJ	HD	DI	08/2/09
7	GENERAL REVISION	SKM	AWJ	DT	DI	07/2/10
8	KUPE CONNECTION ADDED	SKM	AWJ	.	DI	08/2/12
9	KAIMIRO & SIDEWINDER ADDED	SKM	AWJ	SFI	DI	08/2/12

COPYRIGHT:
 The copyright in this document is vested in Vector Gas Limited.
 The contents of this document may not be reproduced either in whole or in part, by any means whatsoever without the prior written consent of Vector Gas Limited.

VECTOR GAS LIMITED
 PRIVATE BAG 2020
 NEW PLYMOUTH 4342
 PHONE 0800 734 567

REFERENCE DRAWINGS

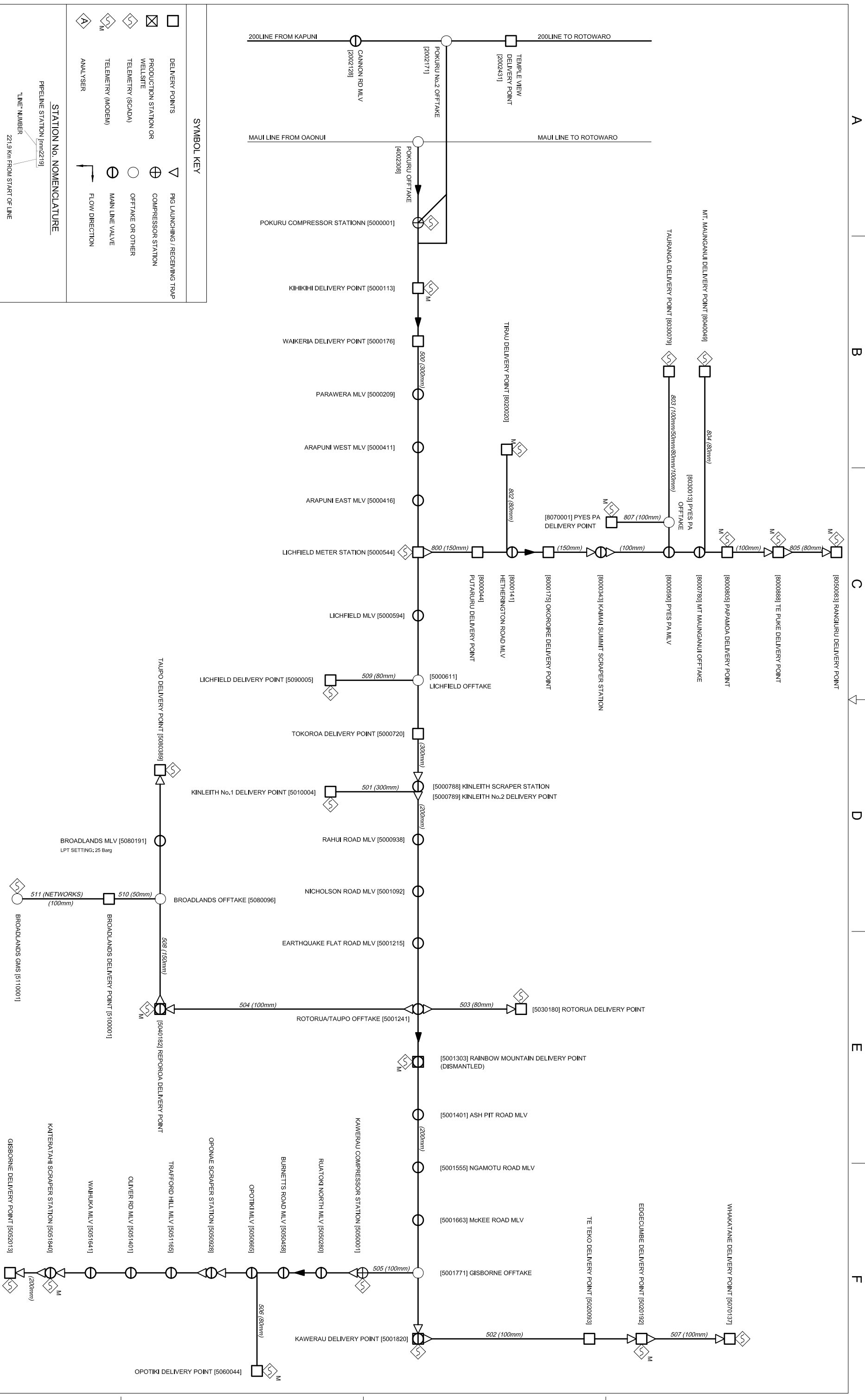
DRAWN	BY	DATE
SKH	KCT	
CHECKED		
ENGINEER		
APPROVED		

DISCLOSURE REGULATIONS

GENERAL
 PIPELINE SCHEMATIC - FRANKLEY ROAD TO KAPUNI

SCALES:	JOB NO.	SERIES	DRG NO.	SHT OF	REV
NTS		0000	001	06 OF 05	9

DO NOT SCALE OFF DRG



SYMBOL KEY

	DELIVERY POINTS		FIG LAUNCHING / RECEIVING TRAP
	PRODUCTION STATION OR WELL SITE		COMPRESSOR STATION
	TELEMETRY (SCADA)		OFFTAKE OR OTHER
	TELEMETRY (MODEM)		MAIN LINE VALVE
	ANALYSER		FLOW DIRECTION

STATION NO. NOMENCLATURE

PIPELINE STATION [mm2219]

LINE NUMBER
221.9 km FROM START OF LINE

REVISIONS

REV	AMENDMENT	DRAWN	CHKD	ENG	APPR	DATE
10	RAINBOW MOUNTAIN STATUS CHANGED	SKM	AWJ	SFI	DI	08/2012
9	GENERAL REVISION	SKM	AWJ	DT	DI	07/2010
8	GENERAL REVISION	SKM	AWJ	*	DI	08/2009
7	GENERAL REVISION	SKM	AWJ	HD	DI	12/2007
6	REVISED FROM SITE MARKUP W/O 980204	SKM	AWJ	DT	PIR	05/2007
5	REVISED FOR VECTOR RE-BRANDING	SKM	AWJ	SFI	SFI	08/2006
4	BROADLANDS OFFTAKE, DP & GMS ADDED	SKM	AWJ	*	*	08/2005
3	200 LINE TIE-IN ADDED	SKH				09/2005
2	STATION NAMES CHANGED	SKH				02/99
1	TELEMETRY MODEM SITES INDICATED	SKH				09/98
A	ISSUED FOR APPROVAL	KCT		*	*	/ /

COPYRIGHT:

The copyright in this document is vested in Vector Gas Limited.

The contents of this document may not be reproduced either in whole or in part, by any means whatsoever without the prior written consent of Vector Gas Limited.

VECTOR GAS LIMITED

PRIVATE BAG 2020
NEW PLYMOUTH 4342
PHONE 0800 734 567

ACTUAL DRAWING SIZE : A1 FRAME A1-ENGFR

DISCLOSURE REGULATIONS

GENERAL PIPELINE SCHEMATIC - BAY OF PLENTY SYSTEM

SCALES:	JOB NO.	SERIES	DRG NO.	SHT OF	REV
NTS		0000	001	06	10

DO NOT SCALE OFF DRG

3. INTAKE POINTS (Ref. Schedule 1 Part 5, Clause3)

In the year ending 30 June 2012 the Intake Points for Vector's transmission pipelines were as follows:

North System

In normal operation there is only a single Intake Point, at Rotowaro Compressor Station. All gas entering the North System there was received from the Maui Pipeline.

South System

There were two major Intake Points for the South System, namely the Kapuni Compressor Station and the Mokoia Mixing Station, South of Hawera. Mokoia has not been included in the analysis as a sole intake point due to its low injection volume into the system i.e. it cannot meet the peak week system demand by itself.

Central System

Rotowaro Compressor Station was the sole Intake Point for the Central (North) System.

The sole Intake Point for the Central (South) System was at the Kapuni Gas Treatment Plant.

Bay of Plenty System

Gas entered the Bay of Plenty System either through the Pokuru No.1 Intake Point (from the Maui pipeline) or the Pokuru No.2 Intake Point (from the Central (South) System).

The Pokuru No.1 and Pokuru No.2 Intake Points are located within a hundred metres or so of each other, adjacent to the Pokuru compressor station.

Frankley Rd System

Frankley Rd interchange is both an Intake Point and an Offtake Point as Frankley Rd has "bi-directional" two-way flow metering.

An additional injection point named Kupe now exists as a significant intake point for this system.

There are minor intake points at Kaimiro and Norfolk Road which inject very low volumes. These have not been included in the analysis as sole injection points i.e. they cannot meet the peak week system demand by themselves individually.

Gas from the KGTP may be able to enter the Frankley Rd system, on an interruptible basis.

4. OFFTAKE POINTS (Ref. Schedule 1 Part 5, Clause 4)

Tables 4.1 to 4.6, respectively, give the following information for each pipeline:

- Date of the system peak week
- The throughput of each Offtake Point in the system peak week
- For each Offtake Point with a throughput in the system peak week greater than 2,000 GJ, the dates of the Offtake Point's peak week
- For each Offtake Point with a throughput in the system peak week greater than 2,000 GJ, the Offtake Point's peak week throughput
- The average throughput in the system peak week of all Offtake Points with a throughput in the system peak week less than 2,000 GJ
- Total system throughput in the system peak week
- The theoretical numerical factor (ie multiplier) by which the throughput of each Offtake Point with a throughput in the system peak week greater than 2,000 GJ could have been increased, assuming:
 - the same load profile at each Offtake Point; and
 - no capital expenditure (ie no system expansion); and
 - no change in throughput at other Offtake Points
- The *increase* in weekly throughput after applying the above factor. (NB: If the factor is "x" the *increase* is $(x-1) \times$ weekly throughput.)

TABLE 4.1 NORTH TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 4 (4) (a) (b) and (c)

INTAKE POINT	OFFTAKE POINTS	SYSTEM PEAK WEEK		INCREASE WITH NO CAPEX ¹		OFFTAKE PEAK WEEK	
		Week Ending	Throughput (GJ)	(Factor)	(GJ)	Week Ending	Throughput (GJ)
Rotowaro		21-Aug-11	n/a	n/a	n/a	n/a	n/a
	<i>offtakes > 2,000 GJ per week</i>						
	Otahuhu B power station	21-Aug-11	410,026	1.0	0	20-May-12	412,064
	Southdown power station	21-Aug-11	203,058	1.1	20,306	21-Aug-11	203,058
	Westfield	21-Aug-11	191,008	1.0	0	21-Aug-11	191,008
	Papakura	21-Aug-11	92,970	1.6	55,782	31-Jul-11	114,565
	Glenbrook	21-Aug-11	43,118	1.5	21,559	26-Feb-12	52,600
	Henderson	21-Aug-11	38,050	1.4	15,220	21-Aug-11	38,050
	Marsden ²	21-Aug-11	35,744	n/a	n/a	10-Jul-11	64,948
	Kauri	21-Aug-11	16,971	2.0	16,971	02-Oct-11	17,059
	Harrisville	21-Aug-11	12,882	5.8	61,834	21-Aug-11	12,882
	Flat Bush	21-Aug-11	10,430	3.2	22,945	04-Dec-11	10,984
	Drury	21-Aug-11	8,817	5.8	42,320	21-Aug-11	8,817
	Maungaturoto	21-Aug-11	8,005	2.0	8,005	25-Sep-11	15,926
	Bruce McClaren	21-Aug-11	7,734	3.3	17,788	21-Aug-11	7,734
	Hunua	21-Aug-11	7,729	5.2	32,463	11-Dec-11	9,064
	Warkworth	21-Aug-11	6,826	1.5	3,413	21-Aug-11	6,826
	Whangarei	21-Aug-11	3,846	5.6	17,692	21-Aug-11	3,846
	Waitoki	21-Aug-11	3,201	5.7	15,043	21-Aug-11	3,201
	Tuakau	21-Aug-11	3,008	20.9	59,865	06-May-12	4,646
			1,103,424				

<i>offtakes < 2,000 per week</i>		
Pukekohe	21-Aug-11	1,272
Rama Rama	21-Aug-11	995
Alfriston	21-Aug-11	517
Kingseat	21-Aug-11	42
Wellsford	21-Aug-11	25
Oakleigh	21-Aug-11	0
		2,852

ie Average per Offtake < 2,000 GJ = 475

TOTAL THROUGHPUT 1,106,276

Notes:

- Theoretical capacity assuming all other offtake points remain unchanged with no provision for operational 'headroom'. Factors do not take account of potential coincident peak flows from dominant generation load namely Otahuhu B & Southdown.
- As this is an interruptible load it is not included in the modelling to determine the factors for other Offtake Points.

TABLE 4.2 CENTRAL (NORTH) TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 4 (4) (a) (b) and (c)

INTAKE POINT	OFFTAKE POINTS	SYSTEM PEAK WEEK		INCREASE WITH NO CAPEX ¹		OFFTAKE PEAK WEEK	
		Week Ending	Throughput (GJ)	(Factor)	(GJ)	Week Ending	Throughput (GJ)
Rotowaro		25-Sep-11	n/a	n/a	n/a	n/a	n/a
	<i>offtakes > 2,000 GJ per week</i>						
	Te Rapa Cogeneration ²	25-Sep-11	99,782	2.4	139,695	04-Mar-12	103,135
	Hamilton Temple View	25-Sep-11	21,408	4.9	83,490	21-Aug-11	33,725
	Hamilton Te Kowhai	25-Sep-11	11,769	8.6	89,444	17-Jun-12	17,189
	Morrinsville DF	25-Sep-11	11,100	3.6	28,859	25-Sep-11	11,100
	Cambridge	25-Sep-11	15,045	1.9	13,540	25-Sep-11	15,045
	Tatuanui DF	25-Sep-11	6,740	5.4	29,658	16-Oct-11	7,137
	Waitoa	25-Sep-11	6,379	3.9	18,499	17-Jun-12	9,056
	Kiwitahi (Peroxide)	25-Sep-11	6,146	6.0	30,730	17-Jul-11	6,653
			178,368				
	<i>offtakes < 2,000 per week</i>						
	Morrinsville	25-Sep-11	1,014				
	Horotiu	25-Sep-11	292				
	Kiwitahi	25-Sep-11	139				
	Matangi	25-Sep-11	17				
			1,461				
							ie Average per Offtake<2,000 GJ = 365
	TOTAL THROUGHPUT		<u>179,829</u>				

Note:

1. Theoretical capacity assuming all other offtake points remain unchanged with no provision for operational 'headroom'.
2. Actual Te Rapa Cogeneration load has dominant impact on available capacity

TABLE 4.3 CENTRAL (SOUTH) TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 4 (4) (a) (b) and (c)

INTAKE POINT	OFFTAKE POINTS	SYSTEM PEAK WEEK		INCREASE WITH NO CAPEX ¹		OFFTAKE PEAK WEEK	
		Week Ending	Throughput	(Factor)	(GJ)	Week Ending	Throughput
			(GJ)				(GJ)
Kapuni		21-Aug-11	n/a	n/a	n/a	n/a	n/a
	<i>offtakes > 2,000 GJ per week</i>						
	<i>Pokuru 2</i> ²	21-Aug-11	93,506	1.5	46,753	24-Jun-12	119,004
	New Plymouth	21-Aug-11	23,568	1.7	16,497	21-Aug-11	23,568
	Eltham	21-Aug-11	2,971	11.4	30,897	13-May-12	3,734
	Waitara	21-Aug-11	2,672	12.2	29,926	21-Aug-11	2,672
	Stratford	21-Aug-11	2,266	13.3	27,868	21-Aug-11	2,266
			124,982				
	<i>offtakes < 2,000 per week</i>						
	Inglewood	21-Aug-11	905				
	Kaponga	21-Aug-11	67				
			972				
	TOTAL THROUGHPUT		125,954				

ie Average per Offtake < 2,000 GJ = 486

Notes:

1. Theoretical capacity assuming all other offtake points remain unchanged with no provision for operational 'headroom'.
2. The throughput for Pokuru 2 represents a flat profile during the Central South peak week.
This has been calculated from the average of the Pokuru#2 flow load at the time of the Central South System Peak Week.

TABLE 4.4 BAY OF PLenty TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 4 (4) (a) (b) and (c)

INTAKE POINT	OFFTAKE POINTS	SYSTEM PEAK WEEK		INCREASE WITH NO CAPEX ¹		OFFTAKE PEAK WEEK	
		Week Ending	Throughput	(Factor)	(GJ)	Week Ending	Throughput
			(GJ)				(GJ)
Pokuru		13-Nov-11	n/a	n/a	n/a	n/a	n/a
	<i>offtakes > 2,000 GJ per week</i>						
	Kinleith (Mill)	13-Nov-11	85,565	1.9	77,008	22-Jan-12	98,190
	Edgecumbe DF	13-Nov-11	32,530	1.8	26,024	02-Oct-11	33,243
	Reporoa	13-Nov-11	16,031	3.4	38,475	13-Nov-11	16,031
	Whakatane ²	13-Nov-11	15,191	2.4	21,268	02-Oct-11	17,010
	Lichfield DF	13-Nov-11	12,360	12.4	140,907	02-Oct-11	12,716
	Kawerau (Tasman)	13-Nov-11	11,607	9.0	92,853	02-Oct-11	12,661
	Mt Maunganui	13-Nov-11	10,102	2.7	17,173	07-Aug-11	11,521
	Tirau DF	13-Nov-11	9,652	10.5	91,690	02-Oct-11	10,825
	Rotorua	13-Nov-11	5,823	3.8	16,306	21-Aug-11	12,564
	Gisborne	13-Nov-11	4,211	4.6	15,160	01-Apr-12	15,627
	Kawerau (Caxton)	13-Nov-11	3,520	28.1	95,379	31-Jul-11	3,886
	Tauranga	13-Nov-11	2,859	5.6	13,153	21-Aug-11	5,891
			209,452				

<i>offtakes < 2,000 per week</i>		
Papamoia	13-Nov-11	1,766
Putaruru	13-Nov-11	1,624
Taupo	13-Nov-11	1,583
Rangiorua	13-Nov-11	1,291
Tokoroa	13-Nov-11	1,268
Pyes Pa	13-Nov-11	911
Broadlands	13-Nov-11	800
Kihikihi	13-Nov-11	674
Te Puke	13-Nov-11	283
Waikeria	13-Nov-11	237
Kinleith	13-Nov-11	231
Kawerau	13-Nov-11	113
Tirau	13-Nov-11	76
Opotiki	13-Nov-11	55
Okoroire Springs	13-Nov-11	12
Edgecumbe	13-Nov-11	6
Te Teko	13-Nov-11	1
		10,931

ie Average per Offtake < 2,000 GJ = 643

TOTAL THROUGHPUT 220,383

Note:

1. Theoretical capacity assuming all other offtake points remain unchanged with no provision for operational 'headroom'.
2. The throughput for Whakatane offtake includes the Whakatane Board Mills as they are downstream of the offtake point.

TABLE 4.5.1 FRANKLEY RD TO KAPUNI TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 4 (4) (a) (b) and (c)

INTAKE POINT	OFFTAKE POINTS	SYSTEM PEAK WEEK		INCREASE WITH NO CAPEX ¹		OFFTAKE PEAK WEEK	
		Week Ending	Throughput (GJ)	(Factor)	(GJ)	Week Ending	Throughput (GJ)
Frankley Rd		27-May-12		n/a	n/a	n/a	n/a
	<i>offtakes > 2,000 GJ per week</i>						
	TCC Power Station	27-May-12	327,576	1.1	32,758	05-Feb-12	412,907
	Kapuni GTP/Maui Bypass	27-May-12	290,841	1.0	0	30-Oct-11	348,095
	Stratford Storage	27-May-12	161,596	1.2	32,319	01-Jan-12	251,704
	Ammonia-Urea Plant	27-May-12	142,226	1.3	42,668	10-Jun-12	145,265
	Kapuni Treatment Plant	27-May-12	4,528	1.3	1,358	02-Oct-11	42,387
			926,767				

<i>offtakes < 2,000 per week</i>		
Lactose	27-May-12	221
Frankley Rd Offtake	27-May-12	6
Stratford Power Station	27-May-12	0
		227

ie Average per Offtake < 2,000 GJ = 76

TOTAL THROUGHPUT 926,994

Notes:

1. Theoretical capacity assuming all other offtake points remain unchanged with no provision for operational 'headroom'.

TABLE 4.5.2 FRANKLEY RD TO KAPUNI TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 4 (4) (a) (b) and (c)

INTAKE POINT	OFFTAKE POINTS	SYSTEM PEAK WEEK		INCREASE WITH NO CAPEX ¹		OFFTAKE PEAK WEEK	
		Week Ending	Throughput (GJ)	(Factor)	(GJ)	Week Ending	Throughput (GJ)
Kupe		27-May-12		n/a	n/a	n/a	n/a
	<i>offtakes > 2,000 GJ per week</i>						
	TCC Power Station	27-May-12	327,576	1.1	32,758	05-Feb-12	412,907
	Kapuni GTP/Maui Bypass	27-May-12	290,841	1.1	29,084	30-Oct-11	348,095
	Stratford Storage	27-May-12	161,596	1.4	64,638	01-Jan-12	251,704
	Ammonia-Urea Plant	27-May-12	142,226	1.3	42,668	10-Jun-12	145,265
	Kapuni Treatment Plant	27-May-12	4,528	1.3	1,358	02-Oct-11	42,387
			926,767				

<i>offtakes < 2,000 per week</i>		
Lactose	27-May-12	221
Frankley Rd Offtake	27-May-12	6
Stratford Power Station	27-May-12	0
		227

ie Average per Offtake < 2,000 GJ = 76

TOTAL THROUGHPUT 926,994

Notes:

1. Theoretical capacity assuming all other offtake points remain unchanged with no provision for operational 'headroom'.

TABLE 4.6 SOUTH TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 3 and Clause 4 (4) (a) (b) and (c)

INTAKE POINT	OFFTAKE POINTS	SYSTEM PEAK WEEK		INCREASE WITH NO CAPEX ¹		OFFTAKE PEAK WEEK	
		Week Ending	Throughput (GJ)	(Factor)	(GJ)	Week Ending	Throughput (GJ)
Kapuni + Mokoia		21-Aug-11		n/a	n/a		
	<i>offtakes > 2,000 GJ per week</i>						
	Tawa A+B	21-Aug-11	91,805	1.2	18,361	8/21/2011	91,805
	Belmont	21-Aug-11	53,484	1.4	21,394	8/21/2011	53,484
	Hastings	21-Aug-11	35,265	1.6	21,159	7/10/2011	44,945
	Palmerston Nth	21-Aug-11	32,608	1.6	19,565	8/21/2011	32,608
	Wanganui	21-Aug-11	23,276	1.9	20,949	8/21/2011	23,276
	Waitangurua (AGL)	21-Aug-11	10,620	2.9	20,178	8/21/2011	10,620
	Pahiatua	21-Aug-11	8,943	4.2	28,619	9/25/2011	10,380
	Levin	21-Aug-11	7,696	3.7	20,779	8/21/2011	7,696
	Hawera	21-Aug-11	7,118	4.6	25,624	10/23/2011	16,457
	Okaiawa	21-Aug-11	6,346	3.8	17,770	5/20/2012	8,847
	Paraparumu	21-Aug-11	5,379	5.1	22,052	8/21/2011	5,379
	Longburn	21-Aug-11	4,939	5.4	21,732	10/9/2011	8,860
	Feilding	21-Aug-11	4,657	5.5	20,955	6/17/2012	5,241
	Marton	21-Aug-11	4,466	4.4	15,186	6/17/2012	5,350
	Pauatahanui 1	21-Aug-11	2,489	10.3	23,150	8/21/2011	2,489
	Takapau	21-Aug-11	2,329	9.0	18,634	12/18/2011	2,886
	Waikanae	21-Aug-11	2,095	11.7	22,415	8/21/2011	2,095
			303,517				

<i>offtakes < 2,000 per week</i>		
Dannevirke	21-Aug-11	1,613
Kakariki	21-Aug-11	1,019
Patea	21-Aug-11	882
Foxton	21-Aug-11	757
Lake Alice	21-Aug-11	700
Manaia	21-Aug-11	693
Mangaroa	21-Aug-11	663
Otaki	21-Aug-11	657
Kaitoke	21-Aug-11	613
Waverley	21-Aug-11	591
Waitotara	21-Aug-11	561
Ashhurst	21-Aug-11	296
Mangatainoka	21-Aug-11	235
Pauatahanui 2	21-Aug-11	27
Kuku	21-Aug-11	25
Te Horo	21-Aug-11	20
Matapu	21-Aug-11	16
Flockhouse	21-Aug-11	5
Oroua Downs	21-Aug-11	1
Kairanga	21-Aug-11	1
Rimu Start-up	21-Aug-11	0
		9,376

ie Average per Offtake < 2,000 GJ = 446

TOTAL THROUGHPUT 312,892

Notes:

1. Theoretical capacity assuming all other offtake points remain unchanged with no provision for operational 'headroom'.
2. Mokoia intake maximum assumed at 27,852 GJ/week.

5. FURTHER DISCLOSURE: OFFTAKE POINTS WITH THROUGHPUT LESS THAN 2,000 GJ/WEEK

(Ref. Schedule 1 Part 5, Clause 5)

Tables 4.1 to 4.6, respectively, also show for each pipeline the following information in respect of each Offtake Point with a throughput in the system peak week less than 2,000 GJ:

- Throughput of each such Offtake Point in the system peak week
- Total throughput of all such Offtake Points in the system peak week
- Average throughput of all such Offtake Points in the system peak week

6. CRITICAL POINTS OF TRANSMISSION SYSTEMS

(Ref. Schedule 1 Part 5, Clause 6)

Tables 6.1 to 6.6, respectively, show for each pipeline the following information in relation to each Offtake Point with a throughput in the system peak week greater than 2,000 GJ:

- The factor by which the throughput of the Offtake Point could have been increased in the system peak week assuming no capital expenditure on the Offtake Point for the increased throughput.
- The critical point or section of pipeline providing the first or principal constraint on increased throughput at the Offtake Point in the system peak week.
- A brief statement of a possible means to remove the constraint.
- An estimate of the increase in throughput at the Offtake Point given the removal of the constraint.
- An estimate of the capital cost to remove the system constraint on the estimated increased throughput excluding upgrade of the intake or offtake points.

TABLE 6.1 NORTH TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 6 (2) (a) (b) and (c)

SYSTEM PEAK WEEK: Week Ending 21 August 2011

OFFTAKE POINTS	INCREASE WITH NO CAPEX		CRITICAL POINT(S) LIMITING THROUGHPUT	MEANS TO REMOVE LIMITATION	CAPITAL COST ¹ (\$000)	INCREASE (Limit removed)	
	(Factor)	(GJ)				(Factor)	(GJ)
Otahuhu B power station	1.0	-	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	1.4	164,010
Southdown power station	1.1	20,306	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	1.7	142,141
Westfield	1.0	-	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	1.6	114,605
Papakura	1.6	55,782	Runciman Rd to Papakura pipeline	Runciman Rd to Papakura pipeline loop (11.8 km)	13,300	1.7	65,079
Glenbrook	1.5	21,559	Runciman Rd to Glenbrook DP	Loop Runciman Rd to Glenbrook DP	22,000	2.4	60,366
Henderson	1.4	15,220	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	3.2	83,711
Marsden ²	n/a	n/a					
Kauri	2.0	16,971	Kauri Delivery Point	Loop Papakura East to Smales Rd MLV	40,000	2.5	25,456
Harrisville	5.8	61,834	Runciman Rd to Glenbrook DP	Loop Runciman Rd to Glenbrook DP	22,000	6.2	66,987
Flat Bush	3.2	22,945	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	16.7	163,746
Drury	5.8	42,320	Ingram to papakura East	Ingram to papakura East Loop (10 km)	11,000	16.9	140,185
Maungaturoto	2.0	8,005	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	2.6	12,808
Bruce McClaren	3.3	17,788	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	9.1	62,646
Hunua	5.2	32,463	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	24.0	177,773
Warkworth	1.5	3,413	Warkworth lateral pipeline	Loop Warkworth Lateral	5,300	2.2	8,192
Whangarei	5.6	17,692	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	9.2	31,538
Waitoki	5.7	15,043	Papakura East to Smales Rd pipeline	Loop Papakura East to Smales Rd MLV	40,000	17.1	51,530
Tuakau	20.9	59,865	Runciman Rd to Glenbrook DP	Loop Runciman Rd to Glenbrook DP	22,000	22.9	65,882

Note:

1. Capital Cost estimates exclude the cost of upgrading the Intake or Offtake Points (if required) for the increased throughput.

Reinforcement unit costs have been updated based on recent studies.

2. As this is an interruptible load it is not included in the modelling.

TABLE 6.2 CENTRAL (NORTH) TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 6 (2) (a) (b) and (c)

SYSTEM PEAK WEEK: Week Ending 25 September 2011

OFFTAKE POINTS	INCREASE WITH NO CAPEX		CRITICAL POINT(S) LIMITING THROUGHPUT	MEANS TO REMOVE LIMITATION	CAPITAL COST ¹ ((\$000))	INCREASE (Limit removed)	
	(Factor)	(GJ)				(Factor)	(GJ)
Te Rapa Cogeneration	2.4	139,695	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	2.6	159,651
Hamilton Temple View	4.9	83,490	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	5.0	85,630
Hamilton Te Kowhai	8.6	89,444	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	8.8	91,798
Morrinsville DF	3.6	28,859	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	4.0	33,299
Cambridge	1.9	13,540	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	2.1	16,549
Tatuanui DF	5.4	29,658	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	6.2	35,050
Waitoa	3.9	18,499	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	4.4	21,689
Kiwitahi (Peroxide)	6.0	30,730	Te Kowhai to Te Rapa pipeline	Loop Te Kowhai to Te Rapa pipeline	7,900	7.0	36,876

Note:

1. Capital Cost estimates exclude the cost of upgrading the Intake or Offtake Points (if required) for the increased throughput.

TABLE 6.3 CENTRAL (SOUTH) TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 6 (2) (a) (b) and (c)

SYSTEM PEAK WEEK: Week Ending 21 August 2011

OFFTAKE POINTS	INCREASE WITH NO CAPEX		CRITICAL POINT(S) LIMITING THROUGHPUT	MEANS TO REMOVE LIMITATION	CAPITAL COST ¹ (\$000)	INCREASE (Limit removed)	
	(Factor)	(GJ)				(Factor)	(GJ)
Pokuru 2	1.5	46,753	Kapuni compressor	Upgrade Kapuni compressor	8,800	1.9	84,155
New Plymouth	1.7	16,497	New Plymouth lateral	Loop New Plymouth lateral (10.5 km)	9,623	2.3	30,638
Eltham	11.4	30,897	Kapuni compressor	Upgrade Kapuni compressor	8,800	20.6	58,229
Waitara	12.2	29,926	New Plymouth lateral	Loop New Plymouth lateral (4.6 km)	4,216	13.0	32,063
Stratford	13.3	27,868	Kapuni compressor	Upgrade Kapuni compressor	8,800	44.9	99,465

Note:

1.Capital Cost estimates exclude the cost of upgrading the Intake or Offtake Points (if required) for the increased throughput.

TABLE 6.4 BAY OF PLENTY TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 6 (2) (a) (b) and (c)

SYSTEM PEAK WEEK: Week Ending 13 November 2011

OFFTAKE POINTS	INCREASE WITH NO CAPEX		CRITICAL POINT(S) LIMITING THROUGHPUT	MEANS TO REMOVE LIMITATION ²	CAPITAL COST ¹	INCREASE (Limit removed)	
	(Factor)	(GJ)				(Factor)	(GJ)
Kinleith (Mill)	1.9	77,008	Pokuru compression	Upgrade Pokuru	16,555	2.7	145,460
Edgecumbe DF	1.8	26,024	Pokuru compression	Upgrade Pokuru	16,555	2.1	35,783
Reporoa	3.4	38,475	Pokuru compression	Upgrade Pokuru	16,555	3.9	46,491
Whakatane 2	2.4	21,268	Pokuru compression	Upgrade Pokuru	16,555	2.9	28,863
Lichfield DF	12.4	140,907	Pokuru compression	Upgrade Pokuru	16,555	19.7	231,137
Kawerau (Tasman)	9.0	92,853	Pokuru compression	Upgrade Pokuru	16,555	11.6	123,030
Mt Maunganui	2.7	17,173	Pokuru compression	Upgrade Pokuru	16,555	3.1	21,214
Tirau DF	10.5	91,690	Pokuru compression	Upgrade Pokuru	16,555	12.0	106,167
Rotorua	3.8	16,306	Rotorua lateral + Pokuru compression	Loop Rotorua lateral and upgrade Pokuru	24,450	8.1	41,346
Gisborne	4.6	15,160	Gisborne lateral + Pokuru compression	Loop Gisborne and Upgrade Pokuru (10km)	28,555	5.6	19,372
Kawerau (Caxton)	28.1	95,379	Pokuru compression	Upgrade Pokuru	16,555	36.4	124,591
Tauranga	5.6	13,153	Tauranga lateral	Loop Tauranga lateral and upgrade Pokuru	21,745	13.4	35,456

Notes:

1. Capital Cost estimates exclude the cost of upgrading the Intake or Offtake Points (if required) for the increased throughput.
2. The increased flow through some laterals would approach the limit of acceptable velocity. If the laterals were to be looped even larger increases would be possible, provided also that Pokuru compression was upgraded accordingly.

TABLE 6.5.1 FRANKLEY RD TO KAPUNI TRANSMISSION SYSTEM (Frankley Intake)

Ref. Schedule 1 Part 5, Clause 6 (2) (a) (b) and (c)

SYSTEM PEAK WEEK: Week Ending 27 May 2012

OFFTAKE POINTS	INCREASE WITH NO CAPEX		CRITICAL POINT(S) LIMITING THROUGHPUT	MEANS TO REMOVE LIMITATION ²	CAPITAL COST ¹	INCREASE (Limit removed)	
	(Factor)	(GJ)				(Factor)	(GJ)
TCC Power Station	1.1	32,758	Pressure at Kapuni	Build new compressor station at Frankley Rd	35,000	6.2	1,703,395
Kapuni GTP/Maui Bypass	1.0	-	Pressure at Kapuni	Build new compressor station at Frankley Rd	35,000	4.9	1,134,281
Stratford Storage	1.2	32,319	Pressure at Kapuni	Build new compressor station at Frankley Rd	35,000	8.8	1,260,449
Ammonia-Urea Plant	1.3	42,668	Pressure at Kapuni	Build new compressor station at Frankley Rd	35,000	5.2	597,348
Kapuni Treatment Plant	1.3	1,358	Pressure at Kapuni	Build new compressor station at Frankley Rd	35,000	15.8	67,014

Notes:

1. Capital Cost estimates exclude the cost of upgrading the Intake or Offtake Points (if required) for the increased throughput.
2. Additional throughput would be obtainable with larger compressors at Frankley Rd, ie the pipeline would not be the constraint with the increased throughput.

TABLE 6.5.2 FRANKLEY RD TO KAPUNI TRANSMISSION SYSTEM (Kupe Intake)

Ref. Schedule 1 Part 5, Clause 6 (2) (a) (b) and (c)

SYSTEM PEAK WEEK: Week Ending 27 May 2012

OFFTAKE POINTS	INCREASE WITH NO CAPEX		CRITICAL POINT(S) LIMITING THROUGHPUT	MEANS TO REMOVE LIMITATION ¹	CAPITAL COST (\$000)	INCREASE (Limit removed)	
	(Factor)	(GJ)				(Factor)	(GJ)
TCC Power Station	1.1	32,758	Kupe contractual flow capacity	No reinforcement identified	n/a	n/a	n/a
Kapuni GTP/Maui Bypass	1.1	29,084	Kupe contractual flow capacity	No reinforcement identified	n/a	n/a	n/a
Stratford Storage	1.4	64,638	Kupe contractual flow capacity	No reinforcement identified	n/a	n/a	n/a
Ammonia-Urea Plant	1.3	42,668	Kupe contractual flow capacity	No reinforcement identified	n/a	n/a	n/a
Kapuni Treatment Plant	1.3	1,358	Kupe contractual flow capacity	No reinforcement identified	n/a	n/a	n/a

Note:

1. No reinforcement is identified because the Kupe flow capacity is contractually capped and physical upgrades do not change this condition.

TABLE 6.6 SOUTH TRANSMISSION SYSTEM

Ref. Schedule 1 Part 5, Clause 6 (2) (a) (b) and (c)

SYSTEM PEAK WEEK: Week Ending 21 August 2011

OFFTAKE POINTS	INCREASE WITH NO CAPEX		CRITICAL POINT(S) LIMITING THROUGHPUT ²	MEANS TO REMOVE LIMITATION	CAPITAL COST ¹	INCREASE (Limit removed)	
	(Factor)	(GJ)				(Factor)	(GJ)
Tawa A+B	1.2	18,361	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	2.1	100,986
Belmont	1.4	21,394	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	3.0	106,968
Hastings	1.6	21,159	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	3.5	88,164
Palmerston Nth	1.6	19,565	Palmerston North Lateral	Upgrade Kaitoke + Kapuni compressor and loop Palmerston North Lateral	20,727	2.7	55,433
Wanganui	1.9	20,949	Kapuni to Hawera (unlooped) pipeline	Loop Kapuni to Hawera and upgrade Kapuni compressor	26,400	8.8	181,556
Waitangurua (AGL)	2.9	20,178	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	10.7	103,013
Pahiatua	4.2	28,619	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	7.3	56,343
Levin	3.7	20,779	Levin Lateral	Upgrade Kaitoke + Kapuni compressor and loop Levin Lateral	19,985	7.5	50,023
Hawera	4.6	25,624	Kapuni to Hawera (unlooped) pipeline	Loop Kapuni to Hawera and upgrade Kapuni compressor	26,400	21.3	144,493
Okaiawa	3.8	17,770	Okaiawa Lateral	Upgrade Kapuni compressor and loop Okaiawa Lateral	9,735	11.1	64,098
Paraparaumu	5.1	22,052	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	21.8	111,875
Longburn	5.4	21,732	Longburn Lateral	Upgrade Kaitoke + kapuni compressor and loop Longburn Lateral (6.6 km)	18,830	14.5	66,678
Feilding	5.5	20,955	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	8.6	35,390
Marton	4.4	15,186	Marton Lateral	Upgrade Kaitoke + Kapuni compressor and loop Marton Lateral	37,770	21.1	89,775
Pauatahanui 1	10.3	23,150	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	47.9	116,747
Takapau	9.0	18,634	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	43.4	98,760
Waikanae	11.7	22,415	Kaitoke to Himatangi pipeline	Upgrade Kaitoke + Kapuni compressor and loop from Kaitoke to Himatangi	49,700	53.9	110,816

1. Capital Cost estimates exclude the cost of upgrading the Intake or Offtake Points (if required) for the increased throughput.

7. METHODOLOGIES (Ref. Schedule 1 Part 5, Clause 7)

Intake Points (Ref. Clause 3)

In past disclosures, the model used default values for temperatures and compositions. This year, gas temperatures and compositions were taken into account for each system to increase modelling accuracy.

In calculating the numerical factor for throughput increase, each system's peak week average gas temperature was used for modelling. Modelling was carried out based on the assumption that no heat was lost to the surroundings by the gas flow in the pipeline.

Each of the six systems had their own composition associated with the gas flow into those systems.

South System

The actual flow rates in the system peak week for Kapuni was not used in the modelling, instead a fixed pressure replaced the load profile. When determining the numerical factors for possible throughput increases with Kapuni as the Intake Point, the Kapuni supply pressure was fixed at 84barg, and the Mokoia flow intake was set at the actual profile during the system peak week.

Offtake Points (Ref. Clause 4)

Information disclosed as required by Clause 4 (4) of the Regulations was determined as set out below.

Peak Week Dates (Ref. Clause 4 (4) (a))

For Systems

For all Offtake Points with metering incorporating electronic data storage capability (the vast majority) reports are available showing the daily throughput at each Offtake Point.

For each transmission system a spreadsheet was compiled showing the daily throughput of all Offtake Points for the whole year. Aggregate daily and weekly throughputs were then calculated.

In all cases, the system peak week was taken to be the week, ie 00:00 hours on Monday to 24:00 hours on Sunday, in which the aggregate offtake was greatest.

For Individual Offtake Points

The date of each Offtake Point's *individual* peak week was obtained from the spreadsheets of daily throughput for each system referred to above.

Peak Week Throughput (Ref. Clause 4 (4) (b))

For the System

In all cases, system peak week throughputs were obtained from the spreadsheets of daily throughput for each system referred to above.

For the Offtake Points

Individual Offtake Point peak throughputs were obtained from the spreadsheets of daily throughputs for each system referred to above.

Throughput Increase in System Peak Week

(Ref. Clause 4 (4) (c))

General Considerations

The numerical factor (theoretical multiplier) by which the throughput of each Offtake Point could have been increased in the system peak week was determined using Vector's transient flow model (the "Model", as defined below). In accordance with the requirements of the Regulations this was done (i) assuming no capital investment to increase existing system capacity and (ii) no change in throughput at other Offtake Points on the system (iii) in addition there is no provision for operational headroom necessary to ensure reliability of supply.

- Using data from SCADA/OATIS or metering as applicable, flow rates (in standard m³/s) were calculated for each hour of the system peak week for each Offtake Point. The data was assembled into "flow profiles" of the form required by the Model, then loaded into the model. (A hard copy of each flow profile is included in Appendix 1).
- For the few Offtake Points for which hourly data was not available (those having metering without electronic data storage capability, ie generally sites with very small throughput) an average flow rate was calculated from meter readings and entered into the Model.
- Each of the defined transmission systems was modelled separately. The Model was first run with actual loads in the system peak week to generate appropriate starting conditions for subsequent simulations.
- An Offtake Point was then selected and a multiplier applied to its flow profile. This factor affected only the hourly flow rates for the chosen Offtake Point.
- Each simulation was continued until it became evident either that the increased load was unsustainable or conversely a larger factor could be applied. A new factor was selected and the simulation repeated. This process was continued until the maximum factor consistent with the relevant limiting criterion (see below) was identified.
- The above process was applied in turn to each Offtake Points on the system with a throughput greater than 2,000 GJ in the system peak

week.

- The limiting criterion applied to determine whether the increased throughput would have been achievable or not was whether the pipeline pressure at the most critical point of the system remained above the minimum acceptable value. For the Northland section of the North System, this was taken as 25 bar g. A lower pressure criterion would have resulted in only an insignificant increase in throughput. No account was taken of the rate of pressure decay to the minimum acceptable value or the “volatility” of the pressure at the critical point resulting from the increased throughput or other provision for operational headroom necessary to ensure reliability of supply.
- Where the pressure drop in a lateral or section of pipeline was observed to be exceptionally high given the increased throughput the maximum velocity of gas in the pipeline was checked. In some cases this constituted the limit on increased throughput.
- Where compression at the Intake Point was not modelled (see below) the maximum flow rate through the Intake Point during each simulation was noted. This was later checked against the known capacity of the existing compression to verify the adequacy of such compression.
- The Model is set up to model only high pressure pipelines. Offtake Points are not modelled. Attempting to simulate flow through the heater, regulators or control valves, piping and meter of each Offtake Point on the system would result in an unwarranted increase in complexity and simulation running time. As a consequence no account was taken of the ability of an existing Offtake Point to handle increased throughput. It was assumed that an Offtake Point could be upgraded if required. *(This is a significant assumption in view of the possibility of additional land being required and/or more stringent operating restrictions being imposed by statutory authorities as a condition of any significant upgrade being permitted. Readers of this report should take note.)*
- Modelling was undertaken without regard to shippers’ current capacity reservations or the probability of the increased capacity ever being required at any particular Offtake Point.

System Specific Considerations

North System

- Capacity of the Rotowaro compressor station, Intake Point for the North System, is directly proportional to the pressure available from the Maui pipeline. The Rotowaro compressor station comprises two gas turbine-driven centrifugal units plus two gas engine-driven 4-cylinder reciprocating units. These units are able to run with a suction pressure corresponding to the minimum contractual Maui delivery pressure, ie 30 bar g, and depending on the magnitude of the flow required, are still able to achieve a discharge pressure up to the maximum working pressure of the downstream pipelines (86 bar g).
- For the sake of simplicity compression at Rotowaro was not modelled. Instead a fixed pressure of 84 bar g was assumed in all simulations.

The peak throughput of the Rotowaro Intake Point was noted in each simulation. This was added to the peak throughput of the Central (North) System for which Rotowaro is also the Intake Point. The total peak Rotowaro throughput was compared to the capacity of the compression installed there to check that the latter would have been sufficient.

- Additional criteria applied in the case of the North System were that pipeline pressures at the Otahuhu B and Southdown Offtake Points be not less than 35 and 49 bar g, respectively, in order that contractual delivery pressure obligations could be met.
- In the system peak week, NZ Refinery Company was using gas. However, because the supply to NZRC is interruptible, the refinery's load was removed from the system while modelling other offtake points.

Central (North) System

- Rotowaro is the Intake Point for the Central (North) System. As noted above, compression at Rotowaro was not modelled. A fixed pressure of 84 bar g at the Intake Point was assumed in all simulations.

Central (South) System

- Installed compression at the Kapuni Gas Treatment Plant, Intake Point for the Central (South) System, is adequate to meet current requirements but could limit pipeline capacity at flows above 560,000GJ/week. Therefore for simplicity compression at Kapuni was not modelled. A fixed pressure of 84 bar g at the Intake Point was assumed in all simulations albeit that available suction pressure may constrain the compressor discharge pressure/capacity.
- The only existing "Offtake Point" north of New Plymouth is the interconnection to the Bay of Plenty System, ie Pokuru. Compression at Mahoenui was modelled and a fixed pressure of 84 bar g was assumed. A flat load profile was assumed for the interconnection to BOP. This BOP flat load was calculated from the average value of Pokuru #2 flow load at the time of Central South system peak week.
- The Pokuru Offtake incorporates piping connections to both the suction side and the discharge side of the Pokuru compressors. Simulations to determine the maximum throughput were based on a discharge-side connection.

Bay of Plenty System

- For simplicity compression at Pokuru was not modelled but could limit pipeline capacity at flows above 260,000GJ/week. A fixed pressure of 74 bar g at the system Intake Point was assumed in all simulations.

South System

- As noted in Central South above, installed compression capacity at the Kapuni Gas Treatment Plant is adequate for current requirements but could limit pipeline capacity at flows above 560,000GJ/week. Therefore for simplicity compression at Kapuni was not modelled. A fixed

pressure of 84 bar g at the Intake Point was assumed in all simulations albeit that available suction pressure may constrain compressor discharge pressure/capacity.

- In simulations of the existing system requiring compression at Kaitoke, the smaller (No.1) unit was modelled with an outlet pressure of 84 bar.
- The Offtake Points that supply Wellington city are Tawa A (for Powerco's distribution network) and Tawa B (for Nova's distribution network). However many years ago the South transmission system was reconfigured to end at Waitangirua, some 7.7 km north of Tawa. Since then the section of the original (200 mm) transmission pipeline from Waitangirua to Tawa has operated at a nominal pressure of 19bar. Factors for Tawa A and B, respectively, therefore technically apply at Waitangirua.

Frankley Rd to Kapuni System

- A fixed pressure of 44 bar g was assumed to be available from the Maui pipeline at the Frankley Rd Intake Point. This pressure is typical of pressure available from the Maui line, which operates to maintain a Taranaki target pressure between 42 and 48 bar g. Currently Derby Rd compressor station is not operational and will require significant work to enable it to be brought back to service.
- An additional criterion in all simulations was to maintain a minimum delivery pressure of 41 bar g to the Kapuni Gas Treatment Plant.

Further Disclosure Relating to Transmission Systems

(Ref. Clause 5)

Throughputs for Offtake Points with a throughput less than 2,000 GJ in the system peak week were determined in the same way as those for Offtake Points with throughputs greater than 2,000 GJ. (See above.)

Critical Points of Transmission Systems

(Ref. Clause 6 (2))

- During modelling pursuant to Clause 4 (4) (c) of the Regulations the critical point or section of each system constraining further increases in throughput at each Offtake Point was noted.
- For each Offtake Point in turn a reinforcement option was selected capable of removing the constraint. The appropriate Model files were then amended accordingly.
- For each Offtake Point in turn further simulations were carried out to determine the increased throughput deliverable from the reinforced

system. Essentially the same methodology as described earlier (see “Throughput Increase in System Peak Week (Ref. Clause 4 (4) (c))” above) was followed.

- In all simulations a fixed pressure was modelled at the Rotowaro, Pokuru, and Kapuni Intake Points, respectively. The throughput displayed by the Model for each of these Intake Points was noted. In the case of Rotowaro the *existing* flow into the Central (North) System was added to the *increased* flow into the North System. In the case of Kapuni the *existing* flow into the Central (South) System was added to the *increased* flow into the South System. Additional compression requirements (if any) were then calculated from the flow, suction and discharge pressure.

- Estimates of the cost to remove the constraint affecting each Offtake Point contained in Tables 6.1 to 6.6 were developed using historic average construction rates for pipelines and other facilities. Please note: on no account does Vector wish to imply that the means of increasing system capacity identified in these tables would necessarily be the optimum, taking into account the requirements of the system as a whole, or that Vector would necessarily employ such means. The costs are “order of magnitude” only; Vector does not warrant their accuracy.

- No account was taken of RMA-related issues in identifying means to remove constraints on the transmission system. Vector does not have any special rights of access to private land for the purposes of constructing new pipelines and related facilities.

- Values for the numerical factor by which the throughput of each Offtake Point could have been increased are set out in Tables 6.1 to 6.6 respectively, which were in all cases determined through further modelling.

Transient Flow (Capacity Simulation) Model

(Ref. Clause 7 (2))

Modelling of pipeline systems undertaken pursuant to this disclosure was carried out using SynerGEE Gas version 4.4.2 software, written by Germanischer Lloyd Group This new software replaced the previous Stoner Pipeline Simulator software during 2010.

A hard copy of the input data (a flow profile for each Offtake Point) is provided in Appendix 1 of this disclosure. This data will be provided on request in Microsoft Excel spreadsheet format.

8. GAS (CAPACITY) HELD OR RESERVED IN TRANSMISSION SYSTEMS (Ref. Schedule 1 Part 5, Clause 8)

Tables 8.1 to 8.6, respectively, show transmission capacity information relating to Intake and Offtake Points on each pipeline for the first, third and fifth financial years after the financial year to which this report refers, as follows:

- *Aggregate* MDQ held or reserved at each Offtake Point for Vector-owned, and non-Vector companies, respectively.
- *Aggregate* MHQ held or reserved at each Offtake Point for Vector-owned and non-Vector companies, respectively. (*NB: Standard transmission contracts currently define MHQ as MDQ ÷ 16; non-standard contracts define the MHQ individually.*)
- Delivery pressures, where non-standard.

Data for standard transmission contracts has been extracted from OATIS. Data for non-standard contracts has been taken from the relevant non-standard contracts.

Shippers reserve capacity under standard transmission contracts annually prior to the start of the contract year. They are under no obligation to reserve the same capacity the following year. During any year a Shipper may also:

- (a) transfer capacity between Offtake Points;
- (b) trade capacity with other shippers (for periods as short as a day);
- (c) purchase additional capacity from Vector; and/or
- (d) apply to cancel capacity it no longer needs,

subject to the terms and conditions of the Vector Transmission Code.

While Vector's financial year ends on 30th June, the contract year for transmission services ends on 30th September annually. As at the date of this report shippers have not yet confirmed their capacity requirements for the next contract year. Therefore capacity held or reserved under both standard and non-standard transmission contracts in the next financial year has been taken as the actual capacity held or reserved by shippers as at the end of the financial year to which this report refers.

The same assumption has been made in respect of the third and the fifth financial years after the financial year to which this report refers.

TABLE 8.1 NORTH TRANSMISSION SYSTEM CAPACITY RESERVATIONS

Ref. Schedule 1 Part 5, Clause 8 (2)

INTAKE POINT	OFFTAKE POINTS		y/e 30 June 2012		y/e 30 June 2014		y/e 30 June 2016		NON-STD DELIVERY PRESSURE
			CAPACITY RESERVED BY:						
			Vector	Others	Vector	Others	Vector	Others	
Rotowaro	Over 2,000 GJ per week		- all numbers are GJ -						bar g
	Drury 2	MDQ	800	108	800	108	800	108	Nominal 48 Minimum 49
		MHQ	50	7	50	7	50	7	
	Flat Bush	MDQ	-	1,826	-	1,826	-	1,826	
		MHQ	-	114	-	114	-	114	
	Glenbrook	MDQ	7,650	-	7,650	-	7,650	-	
		MHQ	478	-	478	-	478	-	
2	Greater Auckland	MDQ	12,432	39,002	12,432	39,002	12,432	39,002	
		MHQ	777	2,438	777	2,438	777	2,438	
	Harrisville	MDQ	1,600	16	1,600	16	1,600	16	
		MHQ	100	1	100	1	100	1	
3	Hunua	MDQ	140	2,154	140	2,154	140	2,154	
		MHQ	9	135	9	135	9	135	
	Kauri DF & Maungaturoto DF	MDQ	2,500	-	2,500	-	2,500	-	
		MHQ	125	-	125	-	125	-	
	Otahuhu B Power Station	MDQ	-	60,000	-	60,000	-	60,000	
		MHQ	-	2,727	-	2,727	-	2,727	
	Southdown Power Station	MDQ	-	37,800	-	37,800	-	37,800	
		MHQ	-	1,784	-	1,784	-	1,784	
	Tuakau	MDQ	240	680	240	680	240	680	
		MHQ	15	43	15	43	15	43	
	Waitoki	MDQ	-	581	-	581	-	581	
		MHQ	-	36	-	36	-	36	
	Warkworth	MDQ	1,750	86	1,750	86	1,750	86	
		MHQ	73	5	73	5	73	5	
	Whangarei	MDQ	183	381	183	381	183	381	
		MHQ	11	24	11	24	11	24	
	TOTAL	MDQ	27,295	142,632	27,295	142,632	27,295	142,632	
		MHQ	1,638	7,313	1,638	7,313	1,638	7,313	
4	Under 2,000 GJ per week	MDQ	380	527	380	527	380	527	
		MHQ	24	33	24	33	24	33	

Notes:

- 1 Firm transmission capacity only: interruptible capacity excluded
- 2 Includes Bruce McClaren, Henderson, Papakura, Papakura 3 & Westfield
- 3 Includes Hunua, Hunua (Nova) & Hunua 3
- 4 Includes Alfriston, Drury 1, Kingseat, Marsden 1, Marsden 2, Maungaturoto DF, Oakleigh, Pukekohe, Ramarama & Wellsford

TABLE 8.2 CENTRAL (NORTH) TRANSMISSION SYSTEM CAPACITY RESERVATIONS

Ref. Schedule 1 Part 5, Clause 8 (2)

INTAKE POINT	OFFTAKE POINTS		y/e 30 June 2012		y/e 30 June 2014		y/e 30 June 2016		NON-STD DELIVERY PRESSURE
			CAPACITY RESERVED BY:						
			Vector	Others	Vector	Others	Vector	Others	
Rotowaro	Over 2,000 GJ per week		- all numbers are GJ -						bar g
	Cambridge	MDQ	-	2,315	-	2,315	-	2,315	Nominal 22.5
		MHQ	-	145	-	145	-	145	
2	Greater Hamilton	MDQ	1,600	7,563	1,600	7,563	1,600	7,563	
		MHQ	100	473	100	473	100	473	
	Kiwitahi (Peroxide)	MDQ	-	1,025	-	1,025	-	1,025	
		MHQ	-	64	-	64	-	64	
	Morrinsville DF	MDQ	-	1,780	-	1,780	-	1,780	
		MHQ	-	111	-	111	-	111	
	Tatuanui DF	MDQ	-	1,004	-	1,004	-	1,004	
		MHQ	-	63	-	63	-	63	
	Te Rapa Cogeneration	MDQ	-	25,500	-	25,500	-	25,500	
		MHQ	-	1,200	-	1,200	-	1,200	
	Waitoa	MDQ	142	1,822	142	1,822	142	1,822	
		MHQ	9	125	9	125	9	125	
	TOTAL	MDQ	1,742	41,009	1,742	41,009	1,742	41,009	
		MHQ	109	2,181	109	2,181	109	2,181	
3	Under 2,000 GJ per week	MDQ	30	1,093	30	1,093	30	1,093	
		MHQ	2	68	2	68	2	68	

Notes:

- 1 Firm transmission capacity only: interruptible capacity excluded
- 2 Includes Hamilton Te Kowhai & Hamilton Temple View
- 3 Includes Horotiu, Kiwitahi 2, Matangi, Morrinsville

TABLE 8.3 CENTRAL (SOUTH) TRANSMISSION SYSTEM CAPACITY RESERVATIONS

Ref. Schedule 1 Part 5, Clause 8 (2)

INTAKE POINT	OFFTAKE POINTS		y/e 30 June 2012		y/e 30 June 2014		y/e 30 June 2016		NON-STD DELIVERY PRESSURE bar g
			CAPACITY RESERVED BY:						
			Vector	Others	Vector	Others	Vector	Others	
Kapuni	Over 2,000 GJ per week		- all numbers are in GJ -						
	Eltham	MDQ	225	439	225	439	225	439	
		MHQ	14	27	14	27	14	27	
	New Plymouth	MDQ	600	3,041	600	3,041	600	3,041	
		MHQ	38	190	38	190	38	190	
	Stratford	MDQ	-	343	-	343	-	343	
		MHQ	-	21	-	21	-	21	
	Waitara	MDQ	90	377	90	377	90	377	
		MHQ	6	24	6	24	6	24	
	TOTAL	MDQ	915	4,200	915	4,200	915	4,200	
		MHQ	57	263	57	263	57	263	
2	Under 2,000 GJ per week	MDQ	-	154	-	154	-	154	
		MHQ	-	10	-	10	-	10	

Notes:

- 1 Firm transmission capacity only: interruptible capacity excluded
- 2 Includes Inglewood & Kaponga

TABLE 8.4 BAY of PLENTY TRANSMISSION SYSTEM CAPACITY RESERVATIONS

Ref. Schedule 1 Part 5, Clause 8 (2)

INTAKE POINT	OFFTAKE POINTS		y/e 30 June 2012		y/e 30 June 2014		y/e 30 June 2016		NON-STD DELIVERY PRESSURE
			CAPACITY RESERVED BY:						
			Vector	Others	Vector	Others	Vector	Others	
Pokuru 1, Pokuru 2	Over 2,000 GJ per week		- all numbers are in GJ -						bar g
	Edgecumbe DF	MDQ	-	2,010	-	2,010	-	2,010	
		MHQ	-	126	-	126	-	126	
	Gisborne	MDQ	1,555	1,255	1,555	1,255	1,555	1,255	
		MHQ	83	78	83	78	83	78	
2	Greater Mt Maunganui	MDQ	55	2,616	55	2,616	55	2,616	
		MHQ	3	163	3	163	3	163	
3	Greater Tauranga	MDQ	250	959	250	959	250	959	
		MHQ	16	60	16	60	16	60	
	Kawerau (ex-Caxton)	MDQ	1,940	-	1,940	-	1,940	-	
		MHQ	121	-	121	-	121	-	
	Kawerau (ex-Tasman)	MDQ	1,813	-	1,813	-	1,813	-	
		MHQ	113	-	113	-	113	-	
	Kinleith (paper mill)	MDQ	13,218	-	13,218	-	13,218	-	
		MHQ	826	-	826	-	826	-	
	Lichfield DF	MDQ	-	588	-	588	-	588	
		MHQ	-	37	-	37	-	37	
	Reporoa	MDQ	-	1,085	-	1,085	-	1,085	
		MHQ	-	68	-	68	-	68	
	Rotorua	MDQ	450	1,512	450	1,512	450	1,512	
		MHQ	28	94	28	94	28	94	
	Tirau DF	MDQ	-	81	-	81	-	81	
		MHQ	-	5	-	5	-	5	
	Whakatane	MDQ	2,394	202	2,394	202	2,394	202	
		MHQ	150	13	150	13	150	13	
	TOTAL	MDQ	21,676	10,308	21,676	10,308	21,676	10,308	
		MHQ	1,341	644	1,341	644	1,341	644	
4	Under 2,000 GJ per week	MDQ	1,629	3,978	1,629	3,978	1,629	3,978	
		MHQ	82	249	82	249	82	249	

Notes:

- 1 Firm transmission capacity only: interruptible capacity excluded
- 2 Includes Mt Maunganui & Papamoa
- 3 Includes Pyes Pa & Tauranga
- 4 Includes Broadlands, Edgecumbe, Kawerau, Kihikihi, Kinleith, Okoroire Springs, Opotiki, Putaruru, Rangiuuru, Taupo, Te Puke, Te Teko, Tirau, Tokoroa & Waikeria

TABLE 8.5 FRANKLEY RD TRANSMISSION SYSTEM CAPACITY RESERVATIONS

Ref. Schedule 1 Part 5, Clause 8 (2)

INTAKE POINT	OFFTAKE POINTS		y/e 30 June 2012		y/e 30 June 2014		y/e 30 June 2016		NON-STD DELIVERY PRESSURE
			CAPACITY RESERVED BY:						
			Vector	Others	Vector	Others	Vector	Others	
Frankley Rd, Kupe, Kaimiro, TAW, Kapuni	Over 2,000 GJ per week		- all numbers are in GJ -						bar g
	2 Ammonia-Urea Plant	MDQ	-	22,500	-	22,500	-	22,500	Nominal 31
		MHQ	-	1,010	-	1,010	-	1,010	
	Kapuni GTP	MDQ	-	35,958	-	35,958	-	35,958	
		MHQ	-	1,935	-	1,935	-	1,935	
	Stratford 2	MDQ	-	50,000	-	50,000	-	50,000	
		MHQ	-	2,500	-	2,500	-	2,500	
	TCC Powerstation	MDQ	-	64,000	-	64,000	-	64,000	
		MHQ	-	2,840	-	2,840	-	2,840	
	TOTAL	MDQ	-	172,458	-	172,458	-	172,458	
		MHQ	-	8,285	-	8,285	-	8,285	
	3 Under 2,000 GJ per week	MDQ	-	175,179	-	175,179	-	175,179	
		MHQ	-	7,886	-	7,886	-	7,886	

Notes:

- 1 Firm transmission capacity only; interruptible capacity excluded
- 2 Includes Ballance 8201 & Ballance 9626
- 3 Includes Frankley Road-Bi, Kapuni Lactose, Kupe & Stratford 3

TABLE 8.6 SOUTH TRANSMISSION SYSTEM CAPACITY RESERVATIONS

Ref. Schedule 1 Part 5, Clause 8 (2)

INTAKE POINT	OFFTAKE POINTS	CAPACITY RESERVED BY:						NON-STD DELIVERY PRESSURE
		y/e 30 June 2012		y/e 30 June 2014		y/e 30 June 2016		
		Vector	Others	Vector	Others	Vector	Others	
Kapuni & Mokoia	Over 2,000 GJ per week	- all numbers are in GJ -						bar g
	Belmont	MDQ	785	6,306	785	6,306	785	6,306
		MHQ	49	394	49	394	49	394
	Feilding	MDQ	11	867	11	867	11	867
		MHQ	1	54	1	54	1	54
2	Greater Waitangirua	MDQ	120	1,323	120	1,323	120	1,323
		MHQ	8	83	8	83	8	83
3	Hastings	MDQ	5,942	6,048	5,942	6,048	5,942	6,048
		MHQ	372	378	372	378	372	378
4	Hawera	MDQ	835	1,060	835	1,060	835	1,060
		MHQ	52	66	52	66	52	66
	Levin	MDQ	404	1,127	404	1,127	404	1,127
		MHQ	25	70	25	70	25	70
	Longburn	MDQ	356	499	356	499	356	499
		MHQ	22	31	22	31	22	31
	Marton	MDQ	721	288	721	288	721	288
		MHQ	45	18	45	18	45	18
	Okaiawa	MDQ	-	1,680	-	1,680	-	1,680
		MHQ	-	70	-	70	-	70
	Pahiatua	MDQ	842	44	842	44	842	44
		MHQ	53	3	53	3	53	3
	Palmerston North	MDQ	849	4,009	849	4,009	849	4,009
		MHQ	53	251	53	251	53	251
	Paraparaumu	MDQ	40	633	40	633	40	633
		MHQ	3	40	3	40	3	40
	Takapau	MDQ	-	590	-	590	-	590
		MHQ	-	37	-	37	-	37
5	Tawa	MDQ	1,150	11,803	1,150	11,803	1,150	11,803
		MHQ	72	738	72	738	72	738
	Waikanae	MDQ	-	256	-	256	-	256
		MHQ	-	16	-	16	-	16
	Wanganui	MDQ	100	4,649	100	4,649	100	4,649
		MHQ	6	291	6	291	6	291
	TOTAL	MDQ	12,156	41,182	12,156	41,182	12,156	41,182
		MHQ	760	2,539	760	2,539	760	2,539
6	Under 2,000 GJ per week	MDQ	626	2,011	626	2,011	626	2,011
		MHQ	39	126	39	126	39	126

Notes:

- 1 Firm transmission capacity only: interruptible capacity excluded
- 2 Includes Waitangirua & Pauatahanui 1
- 3 Hastings includes Hastings (Nova)
- 4 Hawera includes Hawera (Nova)
- 5 Tawa includes Tawa A and Tawa B (Nova)
- 6 Includes Ashhurst, Dannevirke, Flockhouse, Foxton, Kairanga, Kaitoke, Kakariki, Kuku, Lake Alice, Manaia, Mangaroa, Mangatainoka, Matapu, Mokoia, Oroua Downs, Otaki, Pahiatua, Patea, Pauatahanui 2, Te Horo, Waikanae Waitotara & Waverley

APPENDIX 1

FLOW PROFILES

Note: All figures are in standard cubic meters.

CENTRAL (NORTH) SYSTEM

Date	Time	Cambridge	Hamilton Te Kowhai	Hamilton Temple View	Kiwitahi (Degussa)	Kiwitahi (Kiwifert)	Morrinsville	Morrinsville DF	Tatuanui DF	Waitoa	Te Rapa	Mataangi
22 Sep 2011	18:00	2404	2179	4213	860	8	211	1454	967	1075	14612	2
22 Sep 2011	19:00	2565	2548	5285	840	39	244	1538	957	1241	14936	2
22 Sep 2011	20:00	2726	2634	5334	840	52	232	1623	929	1367	15248	2
22 Sep 2011	21:00	2655	2411	4832	839	9	232	1664	920	1392	14716	2
22 Sep 2011	22:00	2309	2181	4273	839	61	200	1633	831	1480	15084	2
22 Sep 2011	23:00	2002	1735	2938	839	30	167	1635	733	1441	14812	2
22 Sep 2011	0:00	2148	1318	1757	859	9	133	1668	873	1443	14804	2
23 Sep 2011	1:00	1875	1180	1240	859	82	134	1648	928	1641	14840	2
23 Sep 2011	2:00	1747	1097	1208	898	13	90	1585	968	1676	15576	2
23 Sep 2011	3:00	2092	1073	1133	899	9	68	1238	896	1768	15076	2
23 Sep 2011	4:00	2073	1083	1275	899	5	102	952	1003	1621	15256	2
23 Sep 2011	5:00	2018	1157	1207	879	4	91	1062	1018	1462	15180	2
23 Sep 2011	6:00	2201	1233	2180	899	5	102	1485	937	1487	15132	2
23 Sep 2011	7:00	2166	2229	5075	899	31	190	1592	910	1354	15544	2
23 Sep 2011	8:00	2129	3037	6603	879	36	287	1479	926	1306	14900	2
23 Sep 2011	9:00	1840	2160	4873	899	39	297	1455	1289	1215	14232	2
23 Sep 2011	10:00	1750	1539	3747	880	35	208	1673	1233	1161	14000	2
23 Sep 2011	11:00	1586	1500	3421	841	34	228	1671	1210	1049	13652	2
23 Sep 2011	12:00	1861	1341	3244	861	38	207	1640	1254	975	13764	2
23 Sep 2011	13:00	2023	1294	3104	844	13	119	1645	1228	1050	13832	2
23 Sep 2011	14:00	1953	1259	2692	863	8	141	1634	1134	1064	13576	2
23 Sep 2011	15:00	2205	1256	2460	863	4	99	1669	1082	1066	13704	2
23 Sep 2011	16:00	2116	1159	2352	823	4	110	1659	962	1122	14112	2
23 Sep 2011	17:00	1967	1284	2763	861	5	132	1542	989	1105	13952	2
23 Sep 2011	18:00	1933	1431	2954	861	4	145	1426	849	1162	14132	2
23 Sep 2011	19:00	2188	1797	3604	841	4	133	1500	884	1216	14868	2
23 Sep 2011	20:00	2094	1893	3737	841	9	144	1703	996	1322	14520	2
23 Sep 2011	21:00	1912	1857	3379	860	5	122	1726	1042	1279	15204	2
23 Sep 2011	22:00	1966	1722	3010	840	9	101	1895	1061	1463	15404	2
23 Sep 2011	23:00	2145	1576	2240	860	4	133	2000	984	1591	14928	2
23 Sep 2011	0:00	2219	1252	1439	878	5	78	1981	958	1516	14872	2
24 Sep 2011	1:00	1840	1145	953	840	4	89	1874	1017	1467	14884	2
24 Sep 2011	2:00	1891	1060	740	898	5	57	1811	982	1411	15268	2
24 Sep 2011	3:00	2165	1123	609	899	9	78	1759	971	1309	14828	2
24 Sep 2011	4:00	2313	1110	608	879	4	56	1726	1006	935	13980	2
24 Sep 2011	5:00	2404	1025	675	880	5	45	1718	991	840	14240	2
24 Sep 2011	6:00	2328	974	1141	899	9	33	1825	878	747	14552	2
24 Sep 2011	7:00	2257	1149	2318	880	4	79	1782	852	690	14288	2
24 Sep 2011	8:00	2276	1513	3346	881	5	122	1619	993	653	14508	2
24 Sep 2011	9:00	2114	1715	4351	862	8	133	1542	1094	560	14528	2
24 Sep 2011	10:00	1824	1606	3830	843	5	109	1542	1035	415	14308	2
24 Sep 2011	11:00	1549	1453	3100	843	0	110	1477	1052	416	14204	2
24 Sep 2011	12:00	1586	1260	2564	844	13	87	1509	1040	432	14236	2
24 Sep 2011	13:00	1882	1109	2222	825	4	109	1468	1034	413	14296	2
24 Sep 2011	14:00	1662	1037	2060	845	4	131	1511	1021	524	14372	2
24 Sep 2011	15:00	1772	957	1869	864	8	131	1631	981	524	14616	2
24 Sep 2011	16:00	1773	1091	1537	825	0	99	1655	956	525	14696	2
24 Sep 2011	17:00	1953	1314	1912	844	5	88	1678	964	618	14148	2
24 Sep 2011	18:00	2483	1441	2534	845	9	110	1741	751	767	14040	2
24 Sep 2011	19:00	2624	1844	2914	844	4	122	1697	581	859	14308	2
24 Sep 2011	20:00	2625	1842	3035	843	4	122	1663	688	802	14484	2
24 Sep 2011	21:00	2498	1514	2662	843	9	111	1241	707	709	14476	2
24 Sep 2011	22:00	2385	1281	2215	843	5	90	1241	1017	579	15100	2
24 Sep 2011	23:00	2258	1199	1902	863	4	68	1242	1057	431	14116	2
24 Sep 2011	0:00	2041	1130	1167	844	9	57	1021	1039	283	14308	2
25 Sep 2011	1:00	2026	1073	724	845	0	57	1429	1014	133	14464	2
25 Sep 2011	2:00	1936	1172	330	845	9	45	1167	960	151	14616	2
25 Sep 2011	3:00	2026	1085	297	845	5	45	1451	958	151	14604	2
25 Sep 2011	4:00	2119	976	354	845	4	44	1419	924	151	14924	2
25 Sep 2011	5:00	2227	1013	592	845	9	45	1538	924	133	14752	2
25 Sep 2011	6:00	2025	998	789	845	4	45	1548	1004	151	14080	2
25 Sep 2011	7:00	1898	1141	1422	844	5	79	1537	1003	134	14320	2
25 Sep 2011	8:00	2062	1356	2654	845	4	101	1503	1016	151	14404	2
25 Sep 2011	9:00	2225	1480	3565	864	5	134	1492	1088	152	14688	2
25 Sep 2011	10:00	2551	1385	3672	844	4	123	1414	1080	114	14724	2
25 Sep 2011	11:00	2573	1227	3245	863	9	122	1425	1058	114	14232	2
25 Sep 2011	12:00	2281	1278	3047	825	4	122	1511	1064	95	14232	2
25 Sep 2011	13:00	2315	1243	2982	863	5	122	1768	1023	150	14200	2
25 Sep 2011	14:00	2243	1451	2879	864	9	134	1801	935	131	15032	2
25 Sep 2011	15:00	2313	1358	3188	824	4	134	1736	847	132	15080	2
25 Sep 2011	16:00	2368	1287	3269	863	5	144	1831	1024	148	14228	2
25 Sep 2011	17:00	2151	1488	3197	843	8	144	1928	1069	186	14108	2
25 Sep 2011	18:00	2059	1909	4084	863	5	200	1906	1118	204	14672	2
25 Sep 2011	19:00	2256	2271	5090	842	9	210	1862	1136	205	15044	2
25 Sep 2011	20:00	2785	2344	5085	861	0	211	1830	1146	225	14592	2
25 Sep 2011	21:00	2672	2069	4246	840	9	178	1754	978	260	14288	2
25 Sep 2011	22:00	2474	1643	3014	859	4	123	1744	1066	298	14660	2
25 Sep 2011	23:00	2149	1211	1986	859	5	78	1832	923	336	14928	2
26 Sep 2011	0:00	2185	1481	1042	843	9	68	1784	758	319	15148	2

CENTRAL (SOUTH) SYSTEM

Date	Time	Eltham	Inglewood	Kaponga	New Plymouth	Stratford	Maitara	Pokuru 2
15 Aug 2011	1:00	500	24	4	1893	163	225	14400
15 Aug 2011	2:00	475	14	4	1805	140	259	14400
15 Aug 2011	3:00	546	19	0	1787	162	236	14400
15 Aug 2011	4:00	435	18	4	1962	161	282	14404
15 Aug 2011	5:00	370	24	4	2085	173	290	14404
15 Aug 2011	6:00	526	80	8	2527	228	344	14404
15 Aug 2011	7:00	540	196	8	3527	420	446	14404
15 Aug 2011	8:00	591	324	9	5256	616	589	14404
15 Aug 2011	9:00	503	321	8	5926	555	583	14408
15 Aug 2011	10:00	487	285	12	5084	519	516	14400
15 Aug 2011	11:00	508	258	12	4804	449	471	14408
15 Aug 2011	12:00	472	205	8	4231	392	392	14400
15 Aug 2011	13:00	445	143	4	3903	322	382	14408
15 Aug 2011	14:00	478	146	8	3317	298	579	14404
15 Aug 2011	15:00	438	105	7	3230	253	526	14404
15 Aug 2011	16:00	448	93	8	3116	266	576	14408
15 Aug 2011	17:00	476	134	12	3378	345	455	14404
15 Aug 2011	18:00	506	213	15	4884	438	607	6060
15 Aug 2011	19:00	508	245	16	5749	473	680	5388
15 Aug 2011	20:00	489	240	16	5931	461	674	5336
15 Aug 2011	21:00	496	213	16	5567	404	635	5228
15 Aug 2011	22:00	435	159	12	4874	323	536	5228
15 Aug 2011	23:00	107	88	8	3664	233	419	5228
15 Aug 2011	0:00	99	51	8	2587	168	331	5232
16 Aug 2011	1:00	81	29	0	2369	132	297	8632
16 Aug 2011	2:00	70	28	4	2297	157	309	8992
16 Aug 2011	3:00	103	24	4	2096	146	300	8996
16 Aug 2011	4:00	158	29	5	2120	160	313	8996
16 Aug 2011	5:00	263	58	4	2355	160	313	8992
16 Aug 2011	6:00	602	104	4	2234	192	367	8992
16 Aug 2011	7:00	597	178	8	3050	445	471	8992
16 Aug 2011	8:00	639	307	8	5308	631	604	8988
16 Aug 2011	9:00	739	343	12	6245	618	606	8988
16 Aug 2011	10:00	688	262	23	5624	549	569	8992
16 Aug 2011	11:00	711	194	15	4529	469	440	8988
16 Aug 2011	12:00	643	189	8	3848	539	390	8992
16 Aug 2011	13:00	548	177	8	3377	448	330	8988
16 Aug 2011	14:00	677	170	7	3188	348	312	796
16 Aug 2011	15:00	638	157	8	3023	414	260	0
16 Aug 2011	16:00	524	158	8	2911	350	324	0
16 Aug 2011	17:00	502	165	11	3262	405	396	2036
16 Aug 2011	18:00	528	223	12	4224	554	551	4328
16 Aug 2011	19:00	568	242	20	5458	553	657	4320
16 Aug 2011	20:00	568	237	19	5763	635	679	4204
16 Aug 2011	21:00	553	208	12	5376	515	616	4048
16 Aug 2011	22:00	525	158	12	4904	354	538	4044
16 Aug 2011	23:00	480	89	12	3629	276	405	4048
16 Aug 2011	0:00	177	37	8	2761	189	345	4048
17 Aug 2011	1:00	186	23	4	2149	163	298	13196
17 Aug 2011	2:00	155	24	4	1959	162	310	13316
17 Aug 2011	3:00	164	23	4	1955	161	327	13324
17 Aug 2011	4:00	224	28	0	2062	161	327	13316
17 Aug 2011	5:00	348	61	4	2146	184	340	13320
17 Aug 2011	6:00	651	105	4	2504	216	394	13316
17 Aug 2011	7:00	624	197	8	3400	507	437	13316
17 Aug 2011	8:00	655	308	8	5240	705	581	13316
17 Aug 2011	9:00	645	310	16	5980	671	605	13316
17 Aug 2011	10:00	659	266	20	5444	637	462	13312
17 Aug 2011	11:00	678	208	12	4611	564	421	13308
17 Aug 2011	12:00	619	238	16	4007	524	348	13312
17 Aug 2011	13:00	661	219	16	3738	544	297	13320
17 Aug 2011	14:00	652	222	19	3660	566	275	13316
17 Aug 2011	15:00	641	154	16	3326	488	302	13312
17 Aug 2011	16:00	567	129	12	3400	568	360	13320
17 Aug 2011	17:00	585	180	12	3947	578	435	13320
17 Aug 2011	18:00	588	226	15	5076	581	567	13316
17 Aug 2011	19:00	582	257	20	6046	556	694	12900
17 Aug 2011	20:00	565	235	12	6183	476	658	10624
17 Aug 2011	21:00	563	211	19	5931	442	609	10632
17 Aug 2011	22:00	555	166	12	5157	350	523	10624
17 Aug 2011	23:00	504	94	8	3899	246	424	10624
17 Aug 2011	0:00	463	47	4	2666	180	330	10632
18 Aug 2011	1:00	211	28	4	2310	157	324	14128
18 Aug 2011	2:00	154	28	4	2147	160	288	16176
18 Aug 2011	3:00	185	18	4	2016	159	303	16172
18 Aug 2011	4:00	244	28	4	2179	160	289	16176
18 Aug 2011	5:00	370	51	4	2236	161	302	16172
18 Aug 2011	6:00	674	61	8	2583	202	342	16172
18 Aug 2011	7:00	691	171	4	3517	506	442	16172
18 Aug 2011	8:00	673	280	12	5441	667	575	16172
18 Aug 2011	9:00	679	281	16	6142	701	550	16168
18 Aug 2011	10:00	649	230	15	5238	598	451	16168
18 Aug 2011	11:00	690	186	16	4377	530	390	16168
18 Aug 2011	12:00	612	209	15	3887	485	372	16164
18 Aug 2011	13:00	630	190	16	3395	428	344	16164
18 Aug 2011	14:00	623	173	15	3506	462	360	16164
18 Aug 2011	15:00	597	165	12	3195	404	332	16204
18 Aug 2011	16:00	470	131	16	2905	393	353	16192

CENTRAL (SOUTH) SYSTEM

Date	Time	Eltham	Inglewood	Kaponga	New Plymouth	Stratford	Maitara	Pokuru 2
18 Aug 2011	17:00	548	151	15	3306	392	383	20908
18 Aug 2011	18:00	586	207	16	4231	471	536	21072
18 Aug 2011	19:00	554	240	19	5309	503	618	21076
18 Aug 2011	20:00	566	229	16	5636	458	636	21072
18 Aug 2011	21:00	534	214	15	5437	435	572	21072
18 Aug 2011	22:00	476	173	12	4876	357	534	21068
18 Aug 2011	23:00	327	101	8	3912	256	457	21068
18 Aug 2011	0:00	212	46	8	2744	188	350	21072
19 Aug 2011	1:00	184	23	4	2383	165	305	21068
19 Aug 2011	2:00	174	18	4	2006	165	293	19444
19 Aug 2011	3:00	165	19	0	2056	154	286	13316
19 Aug 2011	4:00	153	27	4	2209	153	299	13316
19 Aug 2011	5:00	238	47	4	2181	153	285	13316
19 Aug 2011	6:00	656	94	4	2445	209	294	13312
19 Aug 2011	7:00	590	183	7	3429	410	422	13304
19 Aug 2011	8:00	638	288	12	5303	578	494	13308
19 Aug 2011	9:00	639	294	16	5659	602	540	13308
19 Aug 2011	10:00	621	213	19	4523	511	389	13304
19 Aug 2011	11:00	554	213	15	3758	367	315	13312
19 Aug 2011	12:00	368	170	12	3439	391	297	13320
19 Aug 2011	13:00	387	117	11	3042	367	272	13316
19 Aug 2011	14:00	404	91	20	2901	346	240	13308
19 Aug 2011	15:00	219	104	15	2668	313	209	13316
19 Aug 2011	16:00	196	72	12	2537	347	225	13316
19 Aug 2011	17:00	207	110	19	2786	380	281	13312
19 Aug 2011	18:00	214	175	16	3694	448	402	16944
19 Aug 2011	19:00	230	215	19	5014	458	522	28072
19 Aug 2011	20:00	210	210	19	5231	434	543	28252
19 Aug 2011	21:00	198	180	15	4776	398	497	28352
19 Aug 2011	22:00	186	148	16	4349	353	451	28344
19 Aug 2011	23:00	187	86	11	3696	250	383	28340
19 Aug 2011	0:00	147	50	8	2838	184	316	28332
20 Aug 2011	1:00	130	32	4	2380	138	287	15520
20 Aug 2011	2:00	141	18	4	2215	150	267	14372
20 Aug 2011	3:00	124	23	4	2025	139	257	14376
20 Aug 2011	4:00	133	18	4	1966	140	268	14368
20 Aug 2011	5:00	171	23	4	2053	162	269	14372
20 Aug 2011	6:00	253	32	4	2116	163	268	14372
20 Aug 2011	7:00	289	56	4	2280	208	311	14368
20 Aug 2011	8:00	552	118	8	3241	320	361	14372
20 Aug 2011	9:00	560	147	7	3975	375	434	14364
20 Aug 2011	10:00	552	128	12	3880	352	367	14372
20 Aug 2011	11:00	515	99	8	3317	320	323	14368
20 Aug 2011	12:00	498	83	7	2713	252	274	14364
20 Aug 2011	13:00	567	87	8	2386	208	273	14368
20 Aug 2011	14:00	488	67	8	2197	186	252	14368
20 Aug 2011	15:00	409	54	7	1960	174	224	14372
20 Aug 2011	16:00	466	63	8	2006	187	209	14368
20 Aug 2011	17:00	478	94	8	2060	232	254	14372
20 Aug 2011	18:00	487	158	11	2941	314	367	14376
20 Aug 2011	19:00	525	203	16	4133	369	508	14368
20 Aug 2011	20:00	318	198	16	4169	368	499	14368
20 Aug 2011	21:00	328	171	16	4036	334	434	14368
20 Aug 2011	22:00	378	137	12	3694	278	436	14368
20 Aug 2011	23:00	262	100	8	3146	221	379	14368
20 Aug 2011	0:00	125	55	8	2489	164	339	14372
21 Aug 2011	1:00	136	37	4	1984	130	311	17368
21 Aug 2011	2:00	117	23	4	1798	118	305	17480
21 Aug 2011	3:00	127	24	4	1736	131	294	17476
21 Aug 2011	4:00	118	33	4	1956	132	304	17480
21 Aug 2011	5:00	282	33	0	1876	144	313	17484
21 Aug 2011	6:00	502	34	4	2046	143	320	17484
21 Aug 2011	7:00	534	92	4	2364	177	322	17480
21 Aug 2011	8:00	564	154	8	2962	269	377	17480
21 Aug 2011	9:00	610	198	12	3909	347	442	17480
21 Aug 2011	10:00	581	174	11	4302	359	374	17492
21 Aug 2011	11:00	584	155	8	3771	370	330	17588
21 Aug 2011	12:00	545	120	11	3043	299	289	16380
21 Aug 2011	13:00	465	65	8	2927	254	253	13860
21 Aug 2011	14:00	443	44	7	2700	175	237	13864
21 Aug 2011	15:00	453	44	4	2038	152	191	13860
21 Aug 2011	16:00	371	44	4	1844	163	188	13860
21 Aug 2011	17:00	403	67	8	2117	188	217	13864
21 Aug 2011	18:00	459	124	15	2911	276	354	14084
21 Aug 2011	19:00	494	177	16	4012	358	464	14316
21 Aug 2011	20:00	426	176	11	4244	368	484	14312
21 Aug 2011	21:00	483	159	12	4074	334	450	14312
21 Aug 2011	22:00	494	118	8	3723	289	412	14316
21 Aug 2011	23:00	472	75	8	2810	221	343	14316
22 Aug 2011	0:00	443	41	5	2204	152	327	14312

FRANKLEY RD SYSTEM

Date	Time	Ammonia-Urea Plant	Lactose	Stratford Storage	Stratford Power Station	TCC Power Station	Kappuni Treatment Plant	Kappuni GTP/MauI Bypass
21 May 2012	1:00	21478	43	7656	0	62888	0	31050
21 May 2012	2:00	21386	35	13528	0	65136	0	31056
21 May 2012	3:00	20830	35	12128	0	56544	0	31069
21 May 2012	4:00	20597	36	13664	0	58880	0	31060
21 May 2012	5:00	20344	36	13984	0	66800	0	31062
21 May 2012	6:00	20282	42	14248	0	66060	0	32512
21 May 2012	7:00	20117	36	32488	0	66484	0	34198
21 May 2012	8:00	19987	43	40736	0	66584	0	34676
21 May 2012	9:00	19958	42	40560	0	66868	0	34652
21 May 2012	10:00	19991	36	40056	0	66776	0	34658
21 May 2012	11:00	20374	27	38416	0	65864	0	34650
21 May 2012	12:00	20660	35	35008	0	61404	0	34642
21 May 2012	13:00	20849	35	38488	0	66704	0	34585
21 May 2012	14:00	20987	26	36176	0	66472	0	37516
21 May 2012	15:00	21161	33	36536	0	65656	0	35130
21 May 2012	16:00	20930	33	35456	0	65876	0	35318
21 May 2012	17:00	20604	34	37688	0	66404	0	39142
21 May 2012	18:00	20646	36	40664	0	64184	0	38899
21 May 2012	19:00	20810	42	40376	0	56372	0	40738
21 May 2012	20:00	20804	43	35216	0	33004	0	44830
21 May 2012	21:00	20780	44	35312	0	22708	74	47729
21 May 2012	22:00	21674	43	22920	0	33332	18611	67810
21 May 2012	23:00	21647	44	14448	0	68052	22369	76228
21 May 2012	0:00	21673	43	14952	0	53380	10214	75968
22 May 2012	1:00	21653	44	20464	0	20696	122	68798
22 May 2012	2:00	21094	43	22072	0	23920	0	60376
22 May 2012	3:00	21052	44	21912	0	25072	0	60475
22 May 2012	4:00	21042	50	20168	0	35080	0	61944
22 May 2012	5:00	20917	43	21032	0	65568	0	61940
22 May 2012	6:00	20858	51	22512	0	60064	0	61966
22 May 2012	7:00	20893	44	31968	0	61192	0	61946
22 May 2012	8:00	20894	50	44000	0	59496	0	61936
22 May 2012	9:00	20717	51	45776	0	55968	0	61924
22 May 2012	10:00	20395	36	46792	0	52692	0	61811
22 May 2012	11:00	20251	35	47720	0	55840	0	54648
22 May 2012	12:00	19990	41	47688	0	40236	0	45520
22 May 2012	13:00	19782	33	47736	0	25372	0	38809
22 May 2012	14:00	19722	33	47432	0	19324	0	36698
22 May 2012	15:00	19664	33	47584	0	17136	0	33466
22 May 2012	16:00	19686	32	46648	0	20416	0	29241
22 May 2012	17:00	19739	27	42608	0	22200	0	29233
22 May 2012	18:00	19760	35	39400	0	25528	0	29233
22 May 2012	19:00	19790	42	38552	0	20956	0	29257
22 May 2012	20:00	19815	43	29208	0	24896	0	32840
22 May 2012	21:00	19834	42	23376	0	31000	0	38928
22 May 2012	22:00	19893	43	23464	0	24812	0	51892
22 May 2012	23:00	19876	44	23488	0	23640	0	58556
22 May 2012	0:00	19827	35	23544	0	18104	0	61442
23 May 2012	1:00	19841	36	20512	0	63284	0	61040
23 May 2012	2:00	20030	43	21816	0	61480	0	61254
23 May 2012	3:00	20037	35	18744	0	62380	0	61961
23 May 2012	4:00	20053	36	17760	0	68700	0	61979
23 May 2012	5:00	19993	35	15424	0	68776	0	62051
23 May 2012	6:00	19994	36	17008	0	67084	0	65502
23 May 2012	7:00	20036	36	33480	0	68780	0	65026
23 May 2012	8:00	20352	35	47749	0	61324	0	64546
23 May 2012	9:00	20491	43	46738	0	65508	0	63044
23 May 2012	10:00	20316	27	32920	0	68028	0	63042
23 May 2012	11:00	20290	35	32560	0	42696	0	61281
23 May 2012	12:00	20211	27	57333	0	26388	0	57432
23 May 2012	13:00	20225	26	43740	0	24376	0	55561
23 May 2012	14:00	20179	32	30616	0	29612	0	48169
23 May 2012	15:00	20167	27	37600	0	21156	0	44456
23 May 2012	16:00	20111	26	37512	0	25860	0	43735
23 May 2012	17:00	20091	27	39760	0	23024	0	43719
23 May 2012	18:00	20262	35	42800	0	25984	0	43735
23 May 2012	19:00	20394	27	38696	0	21280	0	43744
23 May 2012	20:00	20436	35	37744	0	18032	0	43740
23 May 2012	21:00	20478	36	45320	0	25028	0	43800
23 May 2012	22:00	20421	35	32576	0	26572	0	47400
23 May 2012	23:00	20311	36	27216	0	24264	0	47873
23 May 2012	0:00	20513	27	23240	0	19920	0	50300
24 May 2012	1:00	20473	36	14184	0	61816	0	51774
24 May 2012	2:00	20494	35	13808	0	62984	0	52738
24 May 2012	3:00	20498	36	13792	0	67224	0	52912
24 May 2012	4:00	20479	35	13664	0	60380	0	52955
24 May 2012	5:00	20458	36	14472	0	59672	0	52037
24 May 2012	6:00	20492	35	14440	0	68364	0	52567
24 May 2012	7:00	20497	35	28240	0	65064	0	51616
24 May 2012	8:00	20481	35	37968	0	58952	0	51093
24 May 2012	9:00	20442	27	46296	0	55764	0	51121
24 May 2012	10:00	20389	36	41568	0	67856	0	51085
24 May 2012	11:00	20481	27	34304	0	64476	0	51075
24 May 2012	12:00	20679	26	35072	0	64172	0	50414
24 May 2012	13:00	20856	27	29400	0	67716	0	50658
24 May 2012	14:00	20857	27	26152	0	67600	0	51004
24 May 2012	15:00	20861	26	24808	0	50112	0	48808
24 May 2012	16:00	20880	27	24664	0	25332	0	40552

FRANKLEY RD SYSTEM

Date	Time	Ammonia Urea Plant	Lactose	Stratford Storage	Stratford Power Station	TCC Power Station	Kappuni Treatment Plant	Kappuni GTP/Maul Bypass
24 May 2012	17:00	20930	33	28536	0	21380	0	26774
24 May 2012	18:00	20945	27	32400	0	15896	0	22019
24 May 2012	19:00	20954	27	34632	0	9712	0	22484
24 May 2012	20:00	21003	27	34024	0	15840	0	22726
24 May 2012	21:00	21021	28	42272	0	14116	0	22734
24 May 2012	22:00	20954	27	29992	0	7648	0	22732
24 May 2012	23:00	21066	28	21408	0	17068	0	22716
24 May 2012	0:00	21061	27	20936	0	20696	0	22718
25 May 2012	1:00	21128	35	13920	0	58748	0	22694
25 May 2012	2:00	21228	27	14608	0	56244	0	22718
25 May 2012	3:00	21267	27	13720	0	58288	0	22718
25 May 2012	4:00	21252	28	13664	0	58420	0	22718
25 May 2012	5:00	21272	35	14632	0	62820	0	22712
25 May 2012	6:00	21252	27	16752	0	64336	0	25233
25 May 2012	7:00	21231	28	33320	0	64512	0	29239
25 May 2012	8:00	21259	34	41968	0	68148	0	29239
25 May 2012	9:00	21254	27	42104	0	68780	0	29231
25 May 2012	10:00	21224	27	39296	0	64404	0	29235
25 May 2012	11:00	21214	21	44872	0	63760	0	29227
25 May 2012	12:00	21216	26	42760	0	67356	0	29231
25 May 2012	13:00	21242	26	38576	0	67064	0	29231
25 May 2012	14:00	21236	20	38920	0	67040	0	29217
25 May 2012	15:00	21234	26	39992	0	66832	0	31404
25 May 2012	16:00	21226	27	41128	0	66924	0	34913
25 May 2012	17:00	21290	20	37800	0	66868	0	36471
25 May 2012	18:00	21319	27	41696	0	63040	0	39265
25 May 2012	19:00	21367	35	39232	0	61800	0	40121
25 May 2012	20:00	21470	27	37256	0	59040	0	40093
25 May 2012	21:00	21530	28	40200	0	67456	0	40097
25 May 2012	22:00	21653	35	32568	0	67544	0	40170
25 May 2012	23:00	21669	36	23832	0	67980	0	40168
25 May 2012	0:00	21690	36	23304	0	66080	0	40150
26 May 2012	1:00	21691	36	14120	0	61864	0	37428
26 May 2012	2:00	21710	36	15424	0	61828	0	40873
26 May 2012	3:00	21708	35	13968	0	57484	0	40586
26 May 2012	4:00	21724	37	14992	0	56880	0	40848
26 May 2012	5:00	21701	36	16704	0	56720	0	41945
26 May 2012	6:00	21719	42	14216	0	56740	0	41037
26 May 2012	7:00	21728	36	9752	0	47236	0	40599
26 May 2012	8:00	21704	43	10568	0	51120	0	40575
26 May 2012	9:00	21717	36	13544	0	57428	0	40586
26 May 2012	10:00	21692	35	16832	0	55692	0	40586
26 May 2012	11:00	21683	27	13504	0	60004	0	40571
26 May 2012	12:00	21607	27	13536	0	54316	411	43072
26 May 2012	13:00	21594	26	13896	0	54312	6125	54013
26 May 2012	14:00	21576	27	10312	0	53668	6124	54069
26 May 2012	15:00	21628	26	9696	0	49560	5975	54045
26 May 2012	16:00	21589	27	9912	0	50244	5986	54056
26 May 2012	17:00	21654	27	9416	0	54036	5458	53373
26 May 2012	18:00	21531	27	16024	0	66032	4172	51299
26 May 2012	19:00	21529	27	10152	0	62132	4161	50702
26 May 2012	20:00	21654	35	9776	0	49216	4267	50698
26 May 2012	21:00	21628	28	7552	0	46716	4359	50691
26 May 2012	22:00	21639	27	1120	0	36304	4073	50707
26 May 2012	23:00	21757	27	0	0	34564	3884	50696
26 May 2012	0:00	21679	27	0	0	34668	4150	50709
27 May 2012	1:00	21687	28	0	0	41764	237	41336
27 May 2012	2:00	21650	27	616	0	35344	0	36492
27 May 2012	3:00	21753	27	0	0	32196	0	35079
27 May 2012	4:00	21685	27	0	0	32212	0	32066
27 May 2012	5:00	21738	27	0	0	32460	0	28116
27 May 2012	6:00	21794	28	0	0	37312	0	27405
27 May 2012	7:00	21781	27	0	0	36076	0	25312
27 May 2012	8:00	21781	27	0	0	38596	0	23786
27 May 2012	9:00	21622	27	8768	0	42520	0	23778
27 May 2012	10:00	21367	20	9680	0	42508	0	23784
27 May 2012	11:00	21314	27	5720	0	43756	0	23772
27 May 2012	12:00	21327	27	0	0	46820	0	30831
27 May 2012	13:00	21321	27	0	0	52156	1389	37733
27 May 2012	14:00	21307	20	0	0	50284	159	39580
27 May 2012	15:00	21338	27	0	0	50224	0	39360
27 May 2012	16:00	21423	20	0	0	55288	0	39364
27 May 2012	17:00	21100	26	0	0	55236	0	39382
27 May 2012	18:00	21099	21	0	0	58368	0	39370
27 May 2012	19:00	21177	27	0	0	47904	0	39923
27 May 2012	20:00	21108	20	0	0	42540	0	40073
27 May 2012	21:00	21089	27	4888	0	47932	0	40085
27 May 2012	22:00	21126	27	16408	0	45172	0	40755
27 May 2012	23:00	21162	28	8016	0	50620	0	41544
28 May 2012	0:00	21086	27	15288	0	46188	0	41467

