Annexure 1

DBNGP System:

Description of the Gas Transmission System

Access Arrangement Information for the Dampier to Bunbury Natural Gas Pipeline

Economic Regulation Authority
WESTERN AUSTRALIA

15 December 2005

Proposed Revised Access Arrangement Information
21 January 2005

Annexure A : Description of the Gas Transmission System

DAMPIER TO BUNBURY NATURAL GAS PIPELINE

PUBLIC VERSION

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1. REFERENCE TO ANY STATUTORY LAW EXTENDS TO AND INCLUDES ANY AMENDMENT OF

The DBNGP is described in Section 2 in terms of the boundaries of the transmission pipeline system between Dampier and Bunbury. These boundaries are defined by the system's receipt points, delivery points and notional gate points.

At receipt points ownership of gas transfers from shippers to the Operator. Facilities upstream of the receipt points are owned by shippers or by parties other than the Operator .

At delivery points ownership of gas transfers from Operator to shippers. Facilities downstream of the delivery points are owned by shippers or by parties other than the Operator .

Section 3 describes the major component parts of the DBNGP.

Section 4 provides the route map for the DBNGP.

2. DESCRIPTION OF THE GAS TRANSMISSION SYSTEM: RECEIPT POINTS, DELIVERY POINTS AND NOTIONAL GATE POINTS

The schematic on the following page describes the DBNGP in terms of its receipt and delivery points.

"Receipt point" means a flange or joint or other point specified in an access contract as the point at which the shipper delivers gas to the Operator under the contract. Table 1 defines each of the receipt points in the DBNGP.

"Delivery point" means a flange or joint, notional gate point or other point specified in an access contract as a point at which the Operator delivers gas to the shipper under the contract. Table 2 defines each of the delivery points.

"Notional gate point" means the point for a distribution sub-network at which all grants of capacity in respect of that sub-network are to be made. Each notional gate point is defined in Table 3 which also shows the associated delivery points.

The following designations are used in the schematic and tables:

▭		Gas source
■	Ix-xx	Receipt point x-xx
■	Oy-yy	Delivery point y-yy
■	BP-zz	Branching point zz Branching points have no regulatory significance but service to identify points of branch from the main pipeline
▭		Inline metering facility KJ-A Kwinana Junction Meter Station M2A KJ-B Kwinana Junction Meter Station M2b
●	CSn	Compressor Station n
	PS	Power Station

Number of receipt points	= 4
Number of branching points	= 29
Number of delivery points	= 39
Number of notional gate points	= 12

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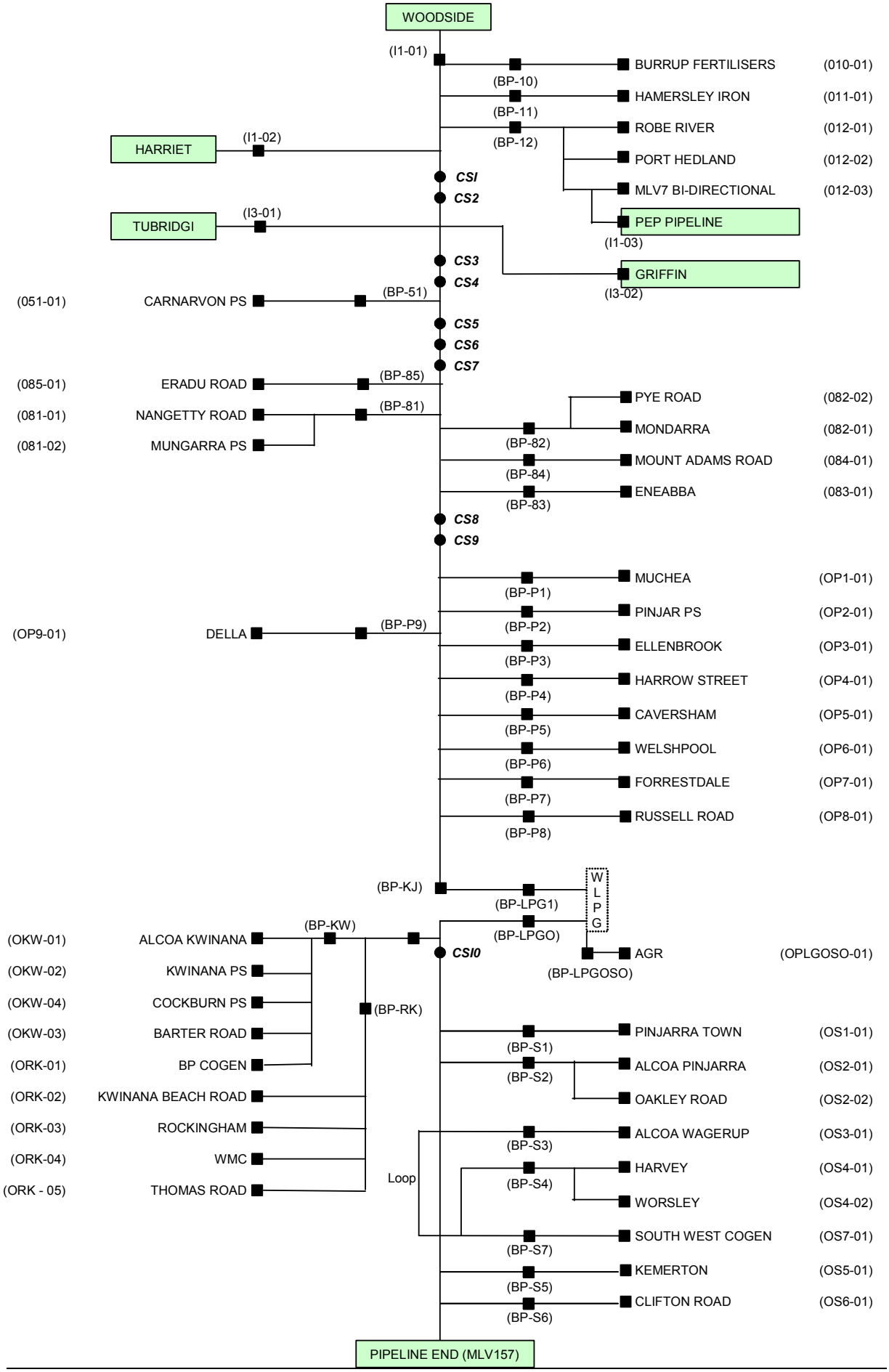

TABLE 1 - GAS TRANSMISSION SYSTEM: RECEIPT POINTS

LOCATION	POINT DESIGNATION	DISTANCE FROM DAMPIER (Pipeline Kilometres)	DESCRIPTION
DOMGAS Dampier Plant	I1-01	0.000	Receipt point is at the upstream flange of the flange joint upstream of the monolithic insulation joint on the main gas pipeline just inside the fence of the Dampier facilities compound.
Harriet	I1-02	136.924	Receipt point is at the second insulation gasket upstream of valve ZV1 between the Harriet meter station and the mainline interconnecting pipe. This gasket is located inside the Harriet meter compound.
PEP Pipeline	I1-03	21.968	Receipt point is at the PEP side flange of isolation valve HV5020 located on the meter run 3/4 within MLV7 compound
Tubridgi	I3-01	272.694	Receipt point is at the second insulation gasket upstream of valve ZV1 between the Tubridgi meter station and the mainline interconnecting pipe. This gasket is located inside the Tubridgi meter compound.
Griffin	I3-02	272.729	Receipt point is at the second insulation gasket upstream of valve ZV2 between the Griffin meter station and the mainline interconnecting pipe. This gasket is located inside the Griffin meter compound.

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TABLE 2 - GAS TRANSMISSION SYSTEM: BRANCHING POINTS AND DELIVERY POINTS

LOCATION	POINT DESIGNATION	DISTANCE FROM DAMPIER (Pipeline Kilometres)	DESCRIPTION
Branching Point Burrup Fertilisers	BP-10	3.574	This is a branching point located at the insulation gasket downstream of the hot-tap valve within the Burrup Fertilisers metering compound
Burrup Fertilisers	O10-01	3.574	Delivery point is at the insulation gasket downstream of the venturi nozzle RO019 located within the Burrup Fertilisers metering compound
Branching Point MLV6	BP-11	8.845	This is a branching point located at the first tee downstream of HV100A and HV100B valves located inside the MLV6 compound.
Hamersley Iron	O11-01	9.440	Delivery point is on the upstream side of the insulation joint located 0.5km downstream of the odorant facilities.
Branching Point MLV7	BP-12	21.933	This is a branching point located at the first reducer downstream of HV100A and HV100B valves located inside the MLV7 compound.
Robe River	O12-01	22.083	Delivery point is at the reducer on the downstream side of the odorant injection facility at the delivery of Cajaput Well meter station.
Port Hedland	O12-02	21.968	Delivery point is at the spectacle-blind upstream joint located downstream of the meter station.
MLV7 Bi-directional meter	O12-03	21.968	Delivery point is at the PEP side flange of isolation valve HV5020 located on the meter run 3/4 within MLV7 compound
Branching Point MLV55	BP-51	578.858	This is a branching point located at the first flanged joint downstream of HV100A and HV100B located at the MLV55 compound.
Carnarvon Power Station	O51-01	748.583	Delivery point is at the insulation joint downstream of the pig receiver located at the Carnarvon Power Station.
Branching Point MLV90	BP-85	967.096	This is a branching point located at the pipeline junction between valve HV205C and HV206 inside the MLV90 compound.
Eradu Road	O85-01	967.116km	Delivery point is at the first isolation joint located downstream of Eradu Road meter station located inside the MLV90 compound.
Branching Point MLV91	BP-81	996.544	This is a branching point located at the first reducer downstream of HV100A and HV100B located at the MLV91 compound.
Nangetty Road	O81-01	996.851	Delivery point is at the first insulation flange located downstream of the injection line of the odorant facility. This insulating flange is located inside the Nangetty Road compound.
Mungarra Power Station	O81-02	999.126	Delivery point is on the upstream side of the isolation valves on each gas turbine generating unit located downstream of pressure relief valves.
Branching Point Pye Road	BP-82	1043.730	This is a branching point located on the downstream flange of valve HV001 located inside the Pye Road meter station compound.
Mondarra	O82-01	1043.740	Delivery point is at the insulating gasket downstream of Mondarra meter station. This gasket is located inside the Mondarra compound.
Pye Road	O82-02	1043.765	Delivery point is at the insulating flange upstream of the odorant injection point, located inside the Boral compound at the Pye Road meter station.
Branching Point MLV93	BP-84	1054.211	This is a branching point located at the first insulating joint on the supply line to the meter station. The insulating joint is located in the MLV93 compound.
Mount Adams Road	O84-01	1054.216	Delivery point is at the first insulation joint located downstream of Mount Adams Road meter station located inside the MLV 93 compound.

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TABLE 2 - GAS TRANSMISSION SYSTEM: BRANCHING POINTS AND DELIVERY POINTS *(Cont)*

LOCATION	POINT DESIGNATION	DISTANCE FROM DAMPIER (Pipeline Kilometres)	DESCRIPTION
Branching Point CS8	BP-83	1113.551	This is a branching point located on the downstream side of HV105B. The branching point is located in the MLV95 and Eneabba meter station compound.
Eneabba	O83-01	1113.621	Delivery point is at the insulation joint downstream of the launcher isolating valve.
Branching Point Muchea	BP-P1	1307.000	This is a branching point located at the downstream flange of HV1 located in the Muchea meter station compound.
Muchea	OP1-01	1307.036	Delivery point is at the reducer located downstream of the odorant injection facility.
Branching Point MLV116	BP-P2	1311.157	This is a branching point located on the downstream side of the HV 100A valve located inside the MLV116 compound.
Branching Point MLV117	BP-P9	1323.931	This is a branching point comprising the downstream flanges of valves HV100A and HV100B located inside the MLV117 compound.
Della Road Meter Station (MLV117)	OP9-01	1323.996	Delivery point is at the insulating joint upstream of the distribution system valve pit located outside the MLV117 compound.
Pinjar Power Station	OP2-01	1326.157	Delivery point is on the upstream side of isolation valves on each gas turbine generating unit located downstream of pressure relief valves.
Branching Point MLV118	BP-P3	1336.740	This is a branching point located at the first insulation joint on the supply line to the Ellenbrook meter station. This insulation joint is located inside the MLV118 compound.
Ellenbrook	OP3-01	1336.750	Delivery point is at the first insulation joint located downstream of valve HV010.
Branching Point Harrow Street	BP-P4	1343.510	This is a branching point located at the first tee upstream of HV100A on the 350mm receipt header to the Harrow Street meter station.
Harrow Street	OP4-01	1343.610	Delivery point is on the upstream side of the second delivery valve located downstream of odorant injection facility.
Branching Point MLV119	BP-P5	1347.339	This is a branching point located at the first reducer downstream of valves HV100A and HV100B located inside the MLV119 compound.
Caversham	OP5-01	1347.434	Delivery point is at the insulation joint located downstream of the odorant injection facility.
Branching Point MLV120	BP-P6	1359.664	This is a branching point located at the first reducer downstream of valves HV100A and HV100B inside the MLV120 compound.
Welshpool	OP6-01	1359.714	Delivery point is on the upstream side of the second delivery valve located downstream of the odorant injection facility.
Branching PointMLV122	BP-P7	1379.695	This is a branching point located at the first reducer downstream of valves HV100A and HV100B inside the MLV122 compound.
Forrestdale	OP7-01	1379.750	Delivery point is on the upstream side of the second delivery valve located downstream of the odorant injection facility.
Branching Point MLV129	BP-P8	1398.638	This is a branching point located on the downstream side of valve HV700 located on the receipt side of the Russell Road pre-regulation set. The point is adjacent to the Kwinana Junction scrubber bypass.
Thomas Road	ORK-05	1407.620	Delivery point is on the upstream side of the TiWest valve located inside the TiWest cogeneration facility.

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TABLE 2 - GAS TRANSMISSION SYSTEM: BRANCHING POINTS AND DELIVERY POINTS *(Cont)*

LOCATION	POINT DESIGNATION	DISTANCE FROM DAMPIER (Pipeline Kilometres)	DESCRIPTION
Russell Road	OP8-01	1408.183	Delivery point is on the upstream side of the second delivery valve located downstream of the odorant injection facility.
Branching Point Receipt to WLPG	BP-LPGI	1401.997	This branching point is at the first insulating flange located downstream of the pressure reducing valve PV035.
WLPG	OPLPGI-01	1402.025	Delivery point is at the second insulating flange located downstream of the pressure reducing valve PV035.
Branching Point Kwinana Junction	BP-KJ	1399.000	This is a branching point located at the centreline of the valve HV401A, located in the Kwinana Junction compound.
Branching Point Delivery from WLPG	BP-LPGO	1402.066	This branching point is at the first insulating flange upstream of valve V14 located on the return line from the WLPG plant.
Branching Point Second Delivery from WLPG	BP-LPGOSO	1401.997	This branching point is at the insulating gasket upstream of the AGR metering facility located at the second return line from the WLPG plant.
AGR	OPLPGOSO-01	1402.297	Delivery point is at the spectacle blind located on the downstream side of the restriction nozzle/blind located downstream of the AGR meter skid.
Branching Point KLV1	BP-RK	1405.327	This is a branching point located at the downstream side of valve VB11 located upstream of the TiWest Cogen meter station offtake.
BP Cogen	ORK-01	1407.716	Delivery point is at the upstream flange of the second isolation valve (HV017) located downstream of the meter skid.
Kwinana Beach Road	ORK-02	1409.647	Delivery point comprises the upstream flange of the second valve located downstream of the pig receiver of the BP Kwinana lateral and the first insulation gasket downstream of the first valve located downstream of the pig receiver of the BP Kwinana lateral.
Rockingham	ORK-03	1410.857	Delivery point comprises the: i) upstream flange of the meter station delivery valve located downstream of the odorant injection facilities. ii) upstream flange of the second valve located downstream of the CSBP pipe.
WMC	ORK-04	1410.837	Delivery point comprises the upstream side of the second isolating valve located on the WMC boundary for the high pressure line and the insulation joint located upstream of the second isolation valve for the low pressure line.
Branching Point Kwinana West	BP-KW	1405.217	This is a branching point located at 500 to 300 reducer located upstream of valves KLV3 and KLV4.
Alcoa Kwinana	OKW-01	1410.557	Delivery point comprises the delivery flanges on the downstream side of the meter station delivery valves HV601A and HV601B.
Kwinana Power Station	OKW-02	1409.651	Delivery point is at the insulating gasket on the downstream side of the meter station delivery valve HV501A.
Cockburn Power Station	OKW-04	1409.651	Delivery point is at the insulation gasket on the downstream side of the sonic nozzle (F0439).
Barter Road	OKW-03	1409.751	Delivery point comprises the upstream flange of the second meter station delivery valve downstream of the insulation joint and the upstream flange of the valve located downstream of the insulation joint.
Branching Point South 1	BP-S1	1449.456	This is a branching point located at the first insulating flange downstream of valve HV001 located upstream of the MLV143 compound.

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TABLE 2 - GAS TRANSMISSION SYSTEM: BRANCHING POINTS AND DELIVERY POINTS *(Cont)*

LOCATION	POINT DESIGNATION	DISTANCE FROM DAMPIER (Pipeline Kilometres)	DESCRIPTION
Pinjarra Town	OS1-01	1449.476	Delivery point is on the upstream side of the second delivery valve located downstream of the odorant injection facility.
Branching Point South 2	BP-S2	1458.106	This is a branching point located at the anchor flange located downstream of valve PLV1 located inside the MLV143 compound.
Alcoa Pinjarra	OS2-01	1463.426	Delivery point comprises the delivery flanges on the downstream side of the meter station delivery valves HV601A and HV601B
Oakley Road	OS2-02	1462.592	Delivery point is at the insulation gasket located downstream of valve HV105.
Branching Point South 3	BP-S3	1489.329	This is a branching point located at the first tee upstream of MLV150 located inside the Wagerup West compound.
Alcoa Wagerup	OS3-01	1498.857	Delivery point comprises the delivery flanges on the downstream side of the meter station delivery valves HV601A and HV601B.
Branching Point South 4	BP-S4	1513.630	This is a branching point located at the first tee upstream of the insulation joint adjacent to MLV154 located inside the MLV154 compound.
Harvey	OS4-01	1522.096	Delivery point is at the upstream flange of the isolation valve located downstream of the odorant injection facility.
Worsley	OS4-02	1546.620	Delivery point is at the flange downstream of the insulation joint located downstream of the meter station delivery valve.
Branching Point South 7	BP-S7	1513.635	This is a branching point located on the tee at the junction of the SW loop and the Worsley Cogeneration lateral, below ground in the MLV154/155 compound.
South West Cogeneration	OS7-01	1546.000	Delivery point is at the first insulating flange located downstream of the meter skids.
Branching Point South 5	BP-S5	1525.104	This is a branching point located on the downstream side of the offtake valve HV1 located inside the Kemerton meter station.
Kemerton	OS5-01	1525.124	Delivery point is at the upstream flange of the valve located downstream of the insulation joint.
Branching Point South 6	BP-S6	1530.439	This is a branching point located at the first reducer downstream of MLV156 and situated in the Clifton Road compound.
Clifton Road	OS6-01	1530.457	Delivery point is at the first insulating joint located downstream of the odorant injection facility.

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TABLE 3 - GAS TRANSMISSION SYSTEM: NOTIONAL GATE POINTS

NOTIONAL GATE POINT	ASSOCIATED DELIVERY POINT/S	TRANMISSION DELIVERY POINT/S DESIGNATION
NGP - Nangetty Rd	Nangetty Road	O81-01
NGP - Eneabba	Eneabba	O83-01
NGP - Muchea	Muchea	OP1-01
NGP - Ellenbrook	Ellenbrook	OP3-01
NGP - North Metro	Harrow Street Caversham	OP4-01 OP5-01
NGP - South Metro	Welshpool Forrestdale Russell Road	OP6-01 OP7-01 OP8-01
NGP - Barter Road	Barter Road	OKW-03
NGP - Rockingham	Rockingham	ORK-03
NGP - Pinjarra	Pinjarra Town Oakley Road	OS1-01 OS2-02
NGP - Harvey	Harvey	OS4-01
NGP - Kemerton	Kemerton	OS5-01
NGP - Clifton Road	Clifton Road	OS6-01

NGP - “name” Notional gate point - “name”

3. DESCRIPTION OF THE DBNGP: COMPONENT PARTS

The principal component parts of the DBNGP are:

(a) the main line between Dampier and Bunbury;

(b) gas turbine driven centrifugal compressor units and associated facilities including aftercoolers;

(c) main line valves;

(d) laterals;

(e) delivery stations;

(f) Kwinana Junction metering station;

(g) supervisory control and data acquisition (SCADA) system and the associated microwave communications facility; and

(h) odorising facilities.

3.1 General Description

The DBNGP comprises 1,845.3km of high pressure gas transmission pipeline, including laterals, and associated compression plant, and valves, linking gas suppliers in the north west of Western Australia with markets principally in the South West.

The DBNGP is not a single continuous entity, and consists of the following major parts.

The Dampier to Kwinana section is 1,398.6km of 660mm (26 inch) diameter pipe, and is rated and operates at 8.48MPa. It delivers gas to all part haul delivery points, and to all full haul delivery points between Compressor Station 9 (CS9) and Kwinana Junction. Five laterals with a total length of 195.6km ranging in diameter from 350mm (14 inches) to 150mm (6 inches) are connected to this pipeline section. The main line loops to Wesfarmers LPG Plant at Kwinana Junction. This loop is 6.4km of 660mm (26 inch) diameter pipe. Under an arrangement with Wesfarmers LPG Pty Ltd, gas leaves the system at a point immediately upstream of the company's LPG extraction plant at Kwinana and is returned to the system immediately downstream of the plant.

Kwinana Junction, 1,399km downstream of Dampier, is a major junction in the DBNGP. Two inline metering facilities are located at Kwinana Junction. One measures the quantity of gas delivered into the Kwinana West and Rockingham laterals, and the other measures the quantity of gas delivered into the Pipeline South. Facilities for gas quality measurement upstream and downstream of the LPG plant are also located at Kwinana Junction.

The main line branches immediately downstream of Wesfarmers LPG Plant into three independent sections:

(a) Kwinana West Lateral

This section is rated at 6.89MPa and operates at approximately 4.5MPa. It consists of three different pipes with a total length of 6.3km, ranging in diameter from 500mm (20 inches) to 200mm (8 inches). The Kwinana West Lateral delivers gas to delivery points at Alcoa Kwinana, Kwinana Power Station, and to the delivery point at Barter Road.

(b) Rockingham Lateral

A 180m long, 600mm (18 inches) pipeline provides a link between the suction of CS10 and Rockingham lateral. The Rockingham lateral and the link are rated at 6.89MPa and operates at approximately 4.5MPa. It consists of three different pipes

with a total length of 8.9m, ranging in diameter from 300mm (12 inches) to 150mm (6 inches). The Rockingham Lateral delivers gas to delivery points at the BP/Mission Energy Cogeneration Plant, Mason Road, Western Mining Corporation, and the Rockingham delivery point supplying the distribution system serving Rockingham and Mandurah.

(c) Pipeline South

Compressor Station Number 10 (CS10) is located at the beginning of Pipeline South. Pipeline South MAOP is equal to 6.89MPa. It consists of three different pipes with a total length of 125.1km, ranging in diameter from 500mm (20 inches) down to 200mm (8 inches). It terminates at MLV157 located at Clifton Road, north of Bunbury. Four laterals with a total length of 79.7km ranging in diameter from 450mm (14 inches) to 250mm (10 inches) are connected to this pipeline section. The pipeline section between MLV150 and MLV154 is looped. The 18" loop length is equal to 24.3km. The Pipeline South delivers gas to delivery points at Alcoa Pinjarra, Alcoa Wagerup and Worsley Alumina, South West Cogen, and to delivery points supplying the distribution systems at Pinjarra Town, Oakley Road, Harvey, Kemerton and south of Clifton Road.

The main line between Dampier and Bunbury is externally coated with a fusion bonded epoxy powder coating. Between Dampier and Wagerup West, the pipe is internally coated with a two-part epoxy paint. The pipeline section between Wagerup West (MLV150) and the end of the pipeline (MLV157), and all laterals, are not internally coated. Further corrosion protection is provided by an impressed current cathodic protection system. The physical characteristics of the main line are set out in Table 4.

Laterals for supply of gas from the Dampier to Bunbury main line are listed in Table 5. The major laterals are shown on the Pipeline Route Maps of Section 6.

The locations of the main line valves which control gas flow through the Dampier to Bunbury main line are shown on the Pipeline Route Maps of Section 6. Areas through which the main line passes are classified (in accordance with Australian Standard 2885) as broad rural R1 and suburban T1. In areas classified as R1, main line valves are spaced approximately 30km apart. They are approximately 10km apart in areas classified as T1. The majority of the mainline valves can be remotely actuated from the control centre.

"MAOP" denotes maximum allowable operating pressure.

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TABLE 4 - MAIN LINE: PHYSICAL CHARACTERISTICS

SECTION:	DAMPIER TO KWINANA JUNCTION	
Length	1,311.2km	87.4km
Nominal size	660mm	660mm
Wall thickness	8.74mm	12.7mm
Steel type	API 5LX 65 DSAW	API 5LX 65 DSAW
MAOP	8,480kPa (gauge)	8,480kPa (gauge)

SECTION:	KWINANA JUNCTION - WLPG PLANT - KWINANA JUNCTION
Length	6.4km
Nominal size	660mm
Wall thickness	14.27mm
Steel type	API 5LX 65 DSAW
MAOP	8,480kPa (gauge)

SECTION:	KWINANA JUNCTION TO MAIN LINE VALVE 141
Length	10.8km
Nominal size	500mm
Wall thickness	7.94mm
Steel type	API 5LX 65 DSAW
MAOP	6,890kPa (gauge)

SECTION:	MAIN LINE VALVE 141 TO MAIN LINE VALVE 150
Length	73.5km
Nominal size	500mm
Wall thickness	5.56mm
Steel type	API 5LX 65 DSAW
MAOP	6,890kPa (gauge)

SECTION:	MAIN LINE VALVE 150 TO MAIN LINE VALVE 154
Length	23.9km
Nominal size	250mm
Wall thickness	4.80mm
Steel type	API 5LX 52 ERW
MAOP	6,890kPa (gauge)

SECTION:	MAIN LINE VALVE 154 TO MAIN LINE VALVE 157
Length	16.9km
Nominal size	200mm
Wall thickness	4.80mm
Steel type	API 5LX 52 ERW
MAOP	6,890kPa (gauge)

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TABLE 5 – GAS TRANSMISSION SYSTEM LATERALS

SECTION: MAIN LINE VALVE 150 TO MAIN LINE VALVE 154 (LOOPLINE)	
Length	24.3km
Nominal size	450mm
Wall thickness	6.35mm
Steel type	API 5LX 60 ERW
MAOP	8,280kPa (gauge)

SECTION: CS10 TO ROCKINGHAM LATERAL PIPELINE (ROCKINGHAM LATERAL LINK)	
Length	0.18km
Nominal size	600mm
Wall thickness	12.65mm
Steel type	API 5LX 70 ERW
MAOP	6,890kPa (gauge)

HAMERSLEY IRON	
Length	0.5km
Nominal size	200mm
Wall thickness	6.4mm
Steel type	API 5LX 52 ERW
MAOP	8,480kPa (gauge)

CARNARVON		
Length	163.7km	7.4km
Nominal size	150mm	150mm
Wall thickness	4.8mm	6.4mm
Steel type	API 5LX 42 ERW	API Grade B ERW
MAOP	8,480kPa (gauge)	1,900kPa (gauge)

MUNGARRA	
Length	2.5km
Nominal size	150mm
Wall thickness	6.4mm
Steel type	API 5L Grade B ERW
MAOP	8,480kPa (gauge)

PINJAR	
Length	14.2km
Nominal size	350mm
Wall thickness	7.1mm
Steel type	API 5LX 52 ERW
MAOP	8,480kPa (gauge)

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TABLE 5 - GAS TRANSMISSION SYSTEM LATERALS (CONTINUED)

RUSSELL ROAD	
Length	7.3km
Nominal size	300mm
Wall thickness	9.5mm
Steel type	API 5LX 46 ERW
MAOP	6,890kPa (gauge)

KWINANA WEST			
Length	2.0km	2.8km	1.5km
Nominal size	500mm	350mm	200mm
Wall thickness	7.9mm	9.5mm	8.7mm
Steel type	API 5LX 65DSAW	API 5LX 52 ERW	API Grade B ERW
MAOP	6,890kPa (gauge)	6,890kPa (gauge)	6,890kPa (gauge)

ROCKINGHAM		
Length	3.2km	2.6km
Nominal size	300mm	150mm
Wall thickness	9.5mm	6.4mm
Steel type	API 5LX 46 ERW	API 5L Grade B ERW
MAOP	6,890kPa (gauge)	6,890kPa (gauge)

KNC/BP (Part of Rockingham Lateral Located Downstream of Mason Road Delivery Station)	
Length	1.6km
Nominal size	250mm
Wall thickness	9.3mm
Steel type	API 5LX 42 ERW
MAOP	6,890kPa (gauge)

COGEN (Part of Rockingham Lateral Located Downstream of Cogen Delivery Station)	
Length	0.9km
Nominal size	200mm
Wall thickness	8.2mm
Steel type	API 5LX 42 ERW
MAOP	6,890kPa (gauge)

TIWEST COGENERATION LATERAL (Part of Rockingham Lateral)	
Length	0.58km
Nominal size	150mm
Wall thickness	7.1mm
Steel type	API 5LX 42 ERW
MAOP	6,890kPa (gauge)

TABLE 5 - GAS TRANSMISSION SYSTEM LATERALS *(Continued)*

ALCOA PINJARRA		
Length	2.5km	2.9km
Nominal size	300mm	300mm
Wall thickness	7.1mm	9.5mm
Steel type	API 5L Grade B ERW	API 5LX 52 ERW
MAOP	6,890kPa (gauge)	6,890kPa (gauge)

ALCOA WAGERUP		
Length	8.0km	1.5km
Nominal size	350mm	350mm
Wall thickness	7.1mm	9.5mm
Steel type	API 5L Grade B ERW	API 5LX 42 ERW
MAOP	6,890kPa (gauge)	6,890kPa (gauge)

WORSLEY	
Length	32.9km
Nominal size	250mm
Wall thickness	4.8mm
Steel type	API 5LX 52 ERW
MAOP	6,890kPa (gauge)

SOUTH WEST COGENERATION LATERAL	
Length	32.9km
Nominal size	250mm
Wall thickness	6.35mm
Steel type	API 5LX 60 ERW
MAOP	8,280kPa (gauge)

3.2 Compressor Stations

Nine compressor station sites are spaced at intervals of about 140km along the main line. Gas turbine driven centrifugal compressors at eight of these stations are used to maintain pipeline pressure to meet natural gas demand in the Perth metropolitan area and at the receipt to Wesfarmers LPG Plant.

A ninth compressor station has been built at a site which was established and partially developed when the Dampier to Bunbury Pipeline was constructed. Compressor Station Number 10 comprising two units has been built at the beginning of Pipeline South. A summary of compression plant is presented in Table 6.

TABLE 6 – COMPRESSOR STATIONS

COMPRESSOR STATION	DISTRANCE FROM DAMPIER (KM)	GAS TURBINE DRIVER
1	137.2	Solar Mars 12600hp (9MW)
2	272.1	Unit 1: General Electric Model LM500 (4MW) Unit 2: Solar Mars 15000hp (10MW)
3	409.3	Unit 1: Solar Mars 15000hp (10MW) Unit 2: General Electric Model LM500 (4MW)
4	546.9	Unit 1: General Electric Model LM500 (4MW) Unit 2: Solar Mars 15000hp (10MW)
5	684.8	Unit 1: Solar Mars 12600hp (9MW) Unit 2: Solar Mars 12600hp (9MW)
6	824.9	Unit 1: General Electric Model LM500 (4MW) Unit 2: Nuovo Pignone PGT10 (10MW)
7	966.6	Unit 1: General Electric Model LM500 (4MW) Unit 2: Solar Mars 15000hp (10MW)
8	1114.1	Unit 1: Solar Mars 12600hp (9MW) Unit 2: Solar Mars 15000hp (10MW)
9	1256.8	Nuovo Pignone PGT10 (10MW)
10	1402.3	Unit 1: Solar Centaur 4000hp (3.0MW) Unit 2: Solar Centaur 4000hp (3.0MW)

3.3 Aftercoolers

Aftercoolers are installed immediately downstream of the Domgas Dampier Plant receipt point, and immediately downstream of CS1 to CS9 compressor stations. The aftercoolers have been designed to control the downstream gas temperature below 45°C.

3.4 Delivery and Receipt Stations

Operator owns and operates delivery stations on the Dampier to Bunbury Natural Gas Pipeline.

"Delivery station" means *either a gate station or the metering equipment site associated with a transmission delivery point, and includes all facilities installed at the site to perform overpressure protection, reverse flow protection, excessive flow protection, gas metering and measurement, and telemetry, and all standby, emergency and safety facilities, and all ancillary equipment and services.*

Receipt stations are located upstream of the receipt points to the DBNGP and are owned and operated by parties other than Operator. "Receipt station" means the metering equipment site associated with an receipt point and includes any facilities installed at the site to perform overpressure protection, reverse flow protection, excessive flow protection, Gas quality monitoring, Gas metering and measurement, any telemetry, and all standby, emergency and safety facilities and all ancillary equipment and services.

3.5 SCADA System

The SCADA system is a micro-computer facility located at the control centre. The master station is a network of nineteen stations interconnected by a local area network, and consists of four operator stations, two logging stations, seven communication stations, three remote stations and three remote operator stations. Over one hundred Field Remote Terminal Units

(RTUs) are polled by the communication stations for data and respond to commands from the master station.

The communication link to stations north of Perth is a microwave system. There are microwave antennas and repeater stations at main line valve stations and at compressor stations. SCADA communications south of Perth make use of a UHF radio system.

3.6 Odorising

Gas in the main pipeline between Dampier and the Wesfarmers LPG plant at Kwinana is not odorised. Upstream of Kwinana Junction, gas is odorised at delivery stations with the exception of those stations serving the Port Hedland Pipeline and the Geraldton area. Gas into the Geraldton area is odorised at the Nangetty Road delivery station. Downstream from Kwinana Junction, gas is odorised in accordance with the Gas Standards Act sufficient for commercial/industrial use. The level of odorant is increased at delivery stations delivering gas into the distribution system and at Clifton Road delivery station.

4. DBNGP MAPS

For security reasons, copies of these documents are available to bona fide prospective users and can be obtained by contacting DBNGP's Manager, Commercial on 9492 3800.