

# Jemena Northern Gas Pipeline Pty Ltd

## Northern Gas Pipeline

### Draft Environmental Impact Statement

#### APPENDIX N – WATER AVAILABILITY STUDY

Public

August 2016



**Jemena Northern Gas Pipeline Pty Ltd**

ABN 12 607 728 790

Level 16, 567 Collins Street

Melbourne VIC 3000

**Postal Address**

PO Box 16182

Melbourne VIC 3000

Ph: (03) 9713 7000

Fax: (03) 9173 7516

McConnell Dowell Constructors (Aust) Pty Ltd  
MCD Management System  
ABN No. #ABN\_NUMBER#

# WATER AVAILABILITY STUDY

**Doc No:** 300-PR-EV-015  
**Client:** JEMENA  
**Project:** NORTHERN GAS PIPELINE  
**Location:** Northern Territory/Queensland  
**Project No:** 1717

## Revision History

Rev	Date	Details	Author	Reviewer	Approver
A	14/04/2016	NT EIS Issue for review	K U	LR	AW
B	21/06/2016	NT EIS Issue	KU	LR	AW

This document remains the property of McConnell Dowell Corporation. Its contents are confidential and shall not be reproduced, destroyed or given away without the express, written permission of McConnell Dowell Corporation. The electronic version of this document in MMS Database on designated server(s) is the Master Copy and is a controlled document. Unless specifically noted thereon, other copies of this document are uncontrolled. Based on MMS Template# 010-J018-000 Rev1 02Oct2014.

# TABLE OF CONTENTS

1	Scope.....	3
2	Objectives .....	3
3	Targets.....	3
4	References .....	3
4.1	FEDERAL LEGISLATION .....	3
4.2	STATE LEGISLATION .....	3
4.3	APPROVALS .....	4
4.4	STANDARDS / CODES.....	4
4.5	LOCAL GOVERNMENT LAWS .....	4
5	Water Requirements.....	5
5.1	POTABLE WATER FOR CAMP SUPPLY .....	5
5.2	CONSTRUCTION WATER.....	5
5.3	HYDROTEST WATER .....	5
5.4	LOW CONSEQUENCE DAMS .....	5
6	Water Availability and Sourcing.....	6
6.1	EXISTING WATER USERS .....	6
6.1.1	<i>Mt Isa.....</i>	6
6.1.2	<i>Tennant Creek.....</i>	6
6.1.3	<i>Camooweal and Barkly Roadhouse.....</i>	6
6.1.4	<i>Pastoral leases, homesteads and outstations.....</i>	6
6.2	POTABLE WATER FOR CAMP SUPPLY .....	6
6.3	CONSTRUCTION WATER.....	7
6.4	HYDROTEST WATER.....	8
7	Water Monitoring .....	8
8	Records .....	8
	Appendix A-Water Availability .....	8

# 1 SCOPE

This study is applicable to water resourcing for the Northern Gas Pipeline (NGP) Project.

# 2 OBJECTIVES

- Establish water quantities required for the construction phase of the project.
- Establish a strategy for obtaining water for camp use (potable) and construction purposes including hydrotesting.

# 3 TARGETS

- Compliance with all legislative requirements relating to water, approvals and/or permits.

# 4 REFERENCES

## 4.1 FEDERAL LEGISLATION

- *Environmental Protection and Biodiversity Conservation Act 1999*

## 4.2 STATE LEGISLATION

### Northern Territory

- *Environmental Assessment Act(EA Act) & Environmental Assessment Administrative Procedures(EAAP)*
- *Northern Territory of Australia Water Act 2013*
- *Public and Environmental Health Act 2015*

### Queensland

- *Environmental Protection Act 1994*
- *Environmental Protection Regulation 2008*
- *Environmental Protection (Water) Policy 2009*
- *Environmental Protection (Waste Management) Policy 2000*
- *Environmental Protection (Waste Management) Regulation 2000*

- *Sustainable Planning Act 1999*
- *Water Act 2000*
- *Workplace Health and Safety Act 1995*
- *Water Resource (Georgina and Diamantina) Plan 2004*

### 4.3 APPROVALS

**Project:**

- *EPBC Approval (TBC)*
- *QLD EA Permit Number: EPPG03497815 issued 23/12/2015*
- *NT EIS(TBC)*

**Water bores and licences:**

**Northern Territory;**

Water Act s57-Water bore construction-obtained by registered bore contractor, if required.

Water Act s44-Licence to take or use surface water

Water Act s59-Licence to take or use ground water

**Queensland:**

Sustainable Planning Act 1999- Development Permit to construct a water bore construction-obtained by registered bore contractor, if required.

Water Act 2000-permit to take water.

### 4.4 STANDARDS / CODES

- Australian Pipeline Industry Association (APIA) Code of Environmental Practice for Onshore Pipelines 2009
- Australian Water Quality Guidelines for Fresh and Marine Waters, ANZECC 2000
- Australian Drinking Water Guidelines 2011
- Guidelines for Drinking Water Transport

### 4.5 LOCAL GOVERNMENT LAWS

All local laws for regional councils and shires can be found online at

<http://www.dlqp.qld.gov.au/local-laws-online.html>

<http://www.dlqcs.nt.gov.au/local-government/legislation>

## 5 WATER REQUIREMENTS

### 5.1 POTABLE WATER FOR CAMP SUPPLY

Water will be required for the operation of 6 temporary camps plus 2 mobile fly camps. The 6 camps will accommodate up to 300 personnel at any one time and the fly camp will accommodate up to 50 personnel. Construction Personnel will be approximately evenly spread across the 6 camps.

Total man days across all camps is approximately 80,000. Water allowance per person per day is 250 litres which includes supplementary camp uses such as vehicle washdowns.

Total potable water requirement is approximately 20ML.

### 5.2 CONSTRUCTION WATER

Construction water will be required for dust suppression, access track construction and maintenance, dam construction and other construction purposes.

Total construction water requirements based on a maximum of 350,000 litres per day is approximately 69ML

### 5.3 HYDROTEST WATER

Hydrotest water will be required to pressure test the pipeline prior to use. Water will be reused through hydrotest sections where possible.

Total hydrotest water requirements is approximately 22ML.

### 5.4 LOW CONSEQUENCE DAMS

Low consequence dams will be required to hold construction water and hydrotest water. Exact sizes and locations of dams will be known once the hydrotesting strategy and test section breaks are finalised and construction water locations and flow rates are known.

Hydrotest dams will be constructed at the start and end of the pipeline and at test section breaks in between as required.

Construction water may use hydrotest dam locations for water storage or new dams may be constructed near the water source.

Low consequence dams will be constructed in accordance with accepted engineering standards.

# 6 WATER AVAILABILITY AND SOURCING

## 6.1 EXISTING WATER USERS

### 6.1.1 *Mt Isa*

Mt Isa has water available at Lake Moondarra (currently at 71.9% capacity) and lake Julius (currently at 98.2% capacity). Water is treated before distribution through the town supply. Blue green algae is an issue for raw water in the lakes. Water is available to support the project.

### 6.1.2 *Tennant Creek*

Tennant Creek has water available at the Cabbage Gum/Kelly Well bore fields. Water is treated before distribution through the town supply. Water is available to support the project.

### 6.1.3 *Camooweal and Barkly Roadhouse*

The small settlements at Camooweal and Barkly Roadhouse have limited water supplies for their own use. Availability for the project is limited.

### 6.1.4 *Pastoral leases, homesteads and outstations*

Surface water flows are limited through the dry season and pastoral leases, homesteads and outstations are generally reliant on water from bores. Locations are scattered across the pipeline alignment. Use is generally only for stock and domestic. Water quality/quantity is variable across the pipeline alignment. Water is available to support the project at a number of locations.

## 6.2 POTABLE WATER FOR CAMP SUPPLY

Potable water will be sourced from town supplies at Mt Isa and Tennant Creek.

Access to the Mt Isa supply has been discussed with the Mt Isa Water Board and potable water supply is available to the project through the construction phase from the Mt Isa town supply.

Access to the Tennant Creek supply has been discussed with Power Water Corporation and potable water supply is available to the project through the construction phase via the Tennant Creek town supply.

Water will be accessed through standpipes and transported with dedicated potable water tankers to temporary water storage tanks at each camp.



### 6.3 CONSTRUCTION WATER

Construction water will be provided from existing overland flow sources, existing water bores and new water bores. Water will be accessed with landholder approval and water access agreements negotiated for each source. Any required approvals will be obtained for each source.

Potential water sources will be assessed on the basis of;

- Approvals required;
- Water quality;
- Water flow;
- Impact on other users;
- Access conditions;
- Timing of availability;
- Infrastructure upgrade requirements;
- Distance from end use.

Construction is planned for the dry season and there are limited overland flow sources along the pipeline alignment. The main source of water will be from existing bores and where there are no existing bores new bores will be constructed if required. New bores may remain for landholder's beneficial use.

Access to water sources will be negotiated with landholders by the McConnell Dowell Land Liaison Representative. This process will progress through the planning phase and into the construction phase of the project.

Jemena have included access to water for construction purposes during landholder discussions and development of the Landholder Line List (LLL). The LLL captures all landholder requirements including water availability. A summary of these discussions has been captured on the Landholder Line List and is included in **Attachment A**. A number of landholders have indicated they have water available for project use.

From discussions with landholders, initial survey and desktop studies, a number of existing bores have been identified that may be available for construction. These will be progressively assessed against the above requirements. Any new bores to be constructed will take into consideration construction requirements, gaps in available supplies and likely water quality/flow/success rates.

Bore water quality, depths of ground water and flow rates are variable across the project area.

The Mt Isa basin bores are typically 30-54 meters deep- up to 108 meters, flow rates average approx. 2.0 litres/s-up to 5 litres/s, salinity is fresh to variable, PH is typically alkaline due to quartz formations.

The Georgina basin bores are typically 50-80 meters deep, flow rates average approx. 1.5 litres/s-up to >10litres/s, salinity is variable.

The Tennant Creek basin bores typically average 50meters-to a maximum of 120meters deep, flow rates average approx. 1.5 litres/s-up to 10litres/s, salinity is variable, PH is slightly alkaline.

From desk top studies and consultation with water bore contractors flow rates can vary considerably and range from 0.1 to 10 litres/second. An average flow rate from bores achievable across the pipeline is considered to be around 1.5-2.0 litres per second. Bore depths are typically 30-100 meters.

Based on an average flow rate of 1.5 litres per second a bore would provide 0.13ML per day.

Average daily use of construction water is estimated at 0.35ML per day.

Three operational bores at these flow rates across the construction spread will provide sufficient water to support construction activities. Dams or temporary storage will be provided at bore locations to reduce fill times and ensure water is available when required. Dams required for hydrotest purposes may be used for construction water storage as well if timing, size and location permits. A summary of potential bore locations is included in **Appendix A**.

## 6.4 HYDROTEST WATER

Water is available from both the Mt Isa Water Board at Mt Isa and Power Water Corporation at Tennant Creek to support Hydrotesting activities. Water would be drawn down over 2 months and either supplied direct to the pipeline or to holding dams. Water drawdown rates will be agreed with water authorities to ensure there is no impact on town supplies. Current discussions are progressing with water authorities with respect to timing of water drawdown and infrastructure required to provide water to support hydrotest activities.

# 7 WATER MONITORING

Water monitoring will be undertaken in accordance with all approval requirements.

Water quantities will be recorded for each approved source.

# 8 RECORDS

Records of all water monitoring data, water access agreement details and quantities will be maintained.

# APPENDIX A-WATER AVAILABILITY

## NGP: Construction Water for 12 inch Pipeline

KP	Owner
	<b>Northern Territory near Tennant Creek</b>
0-10	Philip Creek Station(KP0-38.7)      Camp 6 KP0.0
10-20	Philip Creek Station(KP0-38.7)
20-30	Philip Creek Station(KP0-38.7)
30-40	Philip Creek Station(KP0-38.7)
40-50	Warumungu ALT(KP38.9-63.2)      Camp 5 KP49.0
50-60	Warumungu ALT(KP38.9-63.2)
60-70	Tennant Ck STN(63.2-92.2)
70-80	Tennant Ck STN(63.2-92.2)
80-90	Tennant Ck STN(63.2-92.2)
90-100	VCL (92.2-171.9)
100-110	VCL (92.2-171.9)
110-120	VCL (92.2-171.9)
120-130	VCL (92.2-171.9)
130-140	VCL (92.2-171.9)
140-150	VCL (92.2-171.9)
150-160	VCL (92.2-171.9)
160-170	VCL (92.2-171.9)      Camp 4 KP169.1
170-180	Dalmore Downs STN(171.9-210.3)
180-190	Dalmore Downs STN(171.9-210.3)
190-200	Dalmore Downs STN(171.9-210.3)
200-210	Dalmore Downs STN(171.9-210.3)
210-220	Wakaya ALT (210.4-261.2)
220-230	Wakaya ALT (210.4-261.2)
230-240	Wakaya ALT (210.4-261.2)
240-250	Wakaya ALT (210.4-261.2)
250-260	Wakaya ALT (210.4-261.2)
260-270	Arruwurra AC (261.2-303.7)
270-280	Arruwurra AC (261.2-303.7)
280-290	Arruwurra AC (261.2-303.7)
290-300	Arruwurra AC (261.2-303.7)
300-310	West Rankin STN (303.7-312.1)      Camp 3 KP311.4
310-320	Arruwurra AC (312.1-342.4)
320-330	Arruwurra AC (312.1-342.4)
330-340	Arruwurra AC (312.1-342.4)
340-350	Soudan STN (342.4-368.6)
350-360	Soudan STN (342.4-368.6)
360-370	Soudan STN (342.4-368.6)
370-380	Avon Downs STN (368.6-420.5)
380-390	Avon Downs STN (368.6-420.5)
390-400	Avon Downs STN (368.6-420.5)
410-420	Avon Downs STN (368.6-420.5)
410-420	Avon Downs STN (368.6-420.5)
420-430	Austral Downs STN (420.5-455.9)
430-440	Austral Downs STN (420.5-455.9)
440-450	Austral Downs STN (420.5-455.9)

450-460	Austral Downs STN (420.5-455.9) Camp 2 KP435.6
<b>455.9</b>	<b>NT/QLD Border</b>
460-470	Austal Downs STN (455.9-479.1
470-480	Austal Downs STN (455.9-479.1
480-490	Barkly Downs STN (479.1-560.4)
490-500	Barkly Downs STN (479.1-560.4)
500-510	Barkly Downs STN (479.1-560.4)
510-520	Barkly Downs STN (479.1-560.4)
520-530	Barkly Downs STN (479.1-560.4)
530-540	Barkly Downs STN (479.1-560.4)
540-550	Barkly Downs STN (479.1-560.4)
550-560	Barkly Downs STN (479.1-560.4)
560-570	Ardmore STN (560.4-580.5)
570-580	Ardmore STN (560.4-580.5) Camp 1 KP573.7
580-590	May Downs STN (580.5-605.3)
590-600	May Downs STN (580.5-605.3)
600-610	MD STN (580.5-605.3)/Royton(605.3-611.7)
610-620	Glencoe STN(611.7-616.6) DNRM(616.6-622.7)
620-623	DNRM(616.6-622.7)

Landholder Line List info	Bores and Overland Flow Water
Have water availble. Terms to be agreed. Open to new bores	
	KP29 Large dam supply 5km to ROW
	Further investigation required.
	Bore available. Open to new bores.
	KP39 TC Reservoir 15km from ROW
Have water available. Terms to be agreed. Open to new bores	
TBA	Further discussions with VCL reqd.
	KP102 Bore Barkly HWY 24km to ROW
Good supplies of water available. Terms to be agreed. Open to bores.	Check locations with Landholder
	Further discussions with Landholder reqd.
Have water availble. Terms to be agreed. Open to new bores. May construct new dams	
	KP277 Bore 6KM from ROW
	KP282 Bore 10km from ROW
Have water availble. Terms to be agreed. Open to new bores. May construct new dams	
May have water available.Terms to be agreed.	Discuss Barkly HWY bores KP299-362 with DoT.
Small volumes of water may be available. Terms to be agreed. Open to new new bores.	Further discussions with Landholder reqd.
Small volumes of water may be available. Terms to be agreed. Open to new new bores. Water at approx 80m depth.	Further discussions with Landholder reqd.

Small volumes of water may be available. Terms to be agreed. Open to new new bores.	
Good supplies of water available. Terms to be agreed. Open to new bores.	KP479 Bore 12 km from ROW
	10 litres/s
	access track upgrade reqd
	goes into Austral Downs
Water may be available. Terms to be agreed. New Bore may be located adjacent KP565.	
Water available. Terms to be agreed. Open to new bores.	KP587 Bore 1km from ROW
Landowner has advised that no water is available.	
TBA	Town Supply available

**New Bores:**

A strategy for any new bores will be developed after further landholder consultations have been undertaken.