April 1, 2011

BY RESS and COURIER

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
Suite 2700, 2300 Yonge Street
Toronto, Ontario
M4P 1E4

Dear Ms. Walli:

Re: Union Gas Limited ("Union")
London Reinforcement Project
Board File # EB-2010-0381

Enclosed please find two copies of Union's revised evidence. The revision is as noted below:

- Schedule 17 has now been updated by providing a table of Summary Comments
- All relevant comments and responses are attached to Schedule 17.

Sincerely,

Mary Jane Patrick
Administrative Analyst, Regulatory Projects
:mjp
Encl.

cc: Neil McKay, Manager Facilities Applications
Zora Crnojacki, Project Advisor

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APPLICATION

PREFILED EVIDENCE

Application

ONTARIO ENERGY BOARD

IN THE MATTER OF The Ontario Energy Board Act, 1998, S.O. 1998, c.15, Schedule B, and in particular, s.90 thereof;

AND IN THE MATTER OF an Application by Union Gas Limited for an Order granting leave to construct a natural gas pipeline and ancillary facilities in the City of London and the Municipality of Middlesex Centre, in the County of Middlesex,

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UNION GAS LIMITED

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1. Union Gas Limited (the "Applicant") hereby applies to the Ontario Energy Board (the "Board"), pursuant to Section 90.(1) of the Ontario Energy Board Act (the "Act"), for an Order granting leave to construct approximately 6.6 kilometres of NPS 8 and 0.6 kilometres of NPS 12 natural gas pipeline (the "proposed pipeline"), in the City of London and the Municipality of Middlesex Centre, County of Middlesex.

2. Attached hereto as Schedule "A" is a map showing the general location of the proposed pipeline and the municipalities, highways, railways, utility lines and navigable waters through, under, over, upon or across which the proposed pipeline will pass.

3. The construction of the proposed pipeline will allow the Applicant to meet the future growth demands on the London system.

4. The Applicant requests that this Application be dealt with in accordance with Section 34 of the Board's Rules of Practice and Procedure for written hearings.

5. The Applicant now therefore applies to the Board for an Order granting leave to construct the proposed pipeline as described above.

Dated at Municipality of Chatham-Kent this 16th day of December, 2010.

Per: Dan Jones
Assistant General Counsel for
Union Gas Limited

Comments respecting this Application should be directed to:

Mark Murray
Manager, Regulatory Projects & Lands Acquisition
Union Gas Limited
50 Keil Drive North
Chatham, Ontario
N7M 5M1
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Email:
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UNIONregulatoryproceedings@uniongas.com

Dan Jones
Assistant General Counsel
Union Gas Limited
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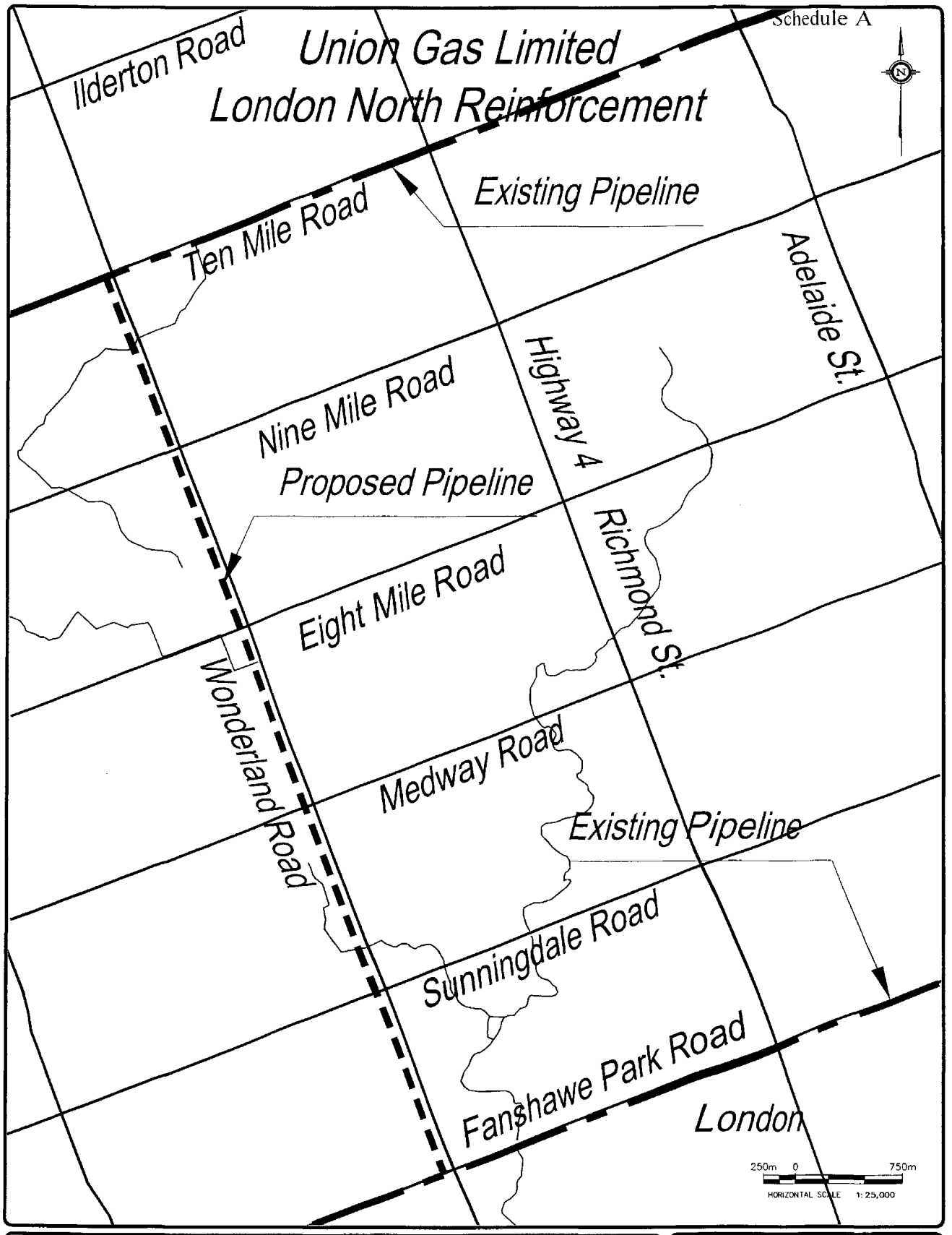
N7M 5M1
Telephone: 519-436-5396
Fax: 519-436-5218

Email:
dxjones1@uniongas.com

Schedule A

Schedule A



LEGEND:

- – – – *Preferred Pipeline Route*
- —·— *Existing Pipeline*

DAYSTAMP: M:\10 Projects\10-223 Wonderland Rd Pipeline Project\Drafting\dwg\10-223.dwg

Plotted by: JMCCARNEY on December 15, 2010 at 11:22am
File: M:\10 Projects\10-223 Wonderland Rd Pipeline Project\Drafting\dwg\10-223.dwg Layout: Newspaper Plotscale: 10

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Preferred Route

London North Reinforcement Project
London, ON

DATE ISSUED:	December 2010	Figure No.
CREATED BY:	JLM	
PROJECT NO.:	10-223	
REFERENCE:	First Base Solutions	

Prefiled Evidence

PROJECT SUMMARY

1. Union Gas Limited ("Union"), pursuant to Section 90 of the Ontario Energy Board Act, requests approval from the Ontario Energy Board ("OEB") for Leave to Construct 6.6 km of NPS 8 and 0.6 km of NPS 12 hydrocarbon (natural gas) pipeline ("proposed pipeline") in order to increase capacity of the existing London System in the County of Middlesex. The proposed pipeline will extend from Lot 21, Concession 5, City of London to Lot 20, Concession 9, Municipality of Middlesex Centre, County of Middlesex.

2. The total project cost of the proposed pipeline is estimated to be $2,335,000.00, including interest during construction ("IDC").

3. An economic analysis has been completed in accordance with the recommendations of the Ontario Energy Board E.B.O. 188 report on *Natural Gas Expansion* and the project is economically justified.

4. An Environmental Report ("ER") has been prepared for the proposed pipeline. There will be minimal environmental impacts related to the construction of the pipeline given Union's standard construction procedures, the mitigation measures recommended in the ER, and the fact that the majority of the pipeline will be located within road allowance.

5. Construction of the proposed pipeline is scheduled to commence at the beginning of summer, 2011 to utilize the favourable summer construction weather and environmental windows. The proposed latest in-service date for the project is November 1, 2011. In order to adhere to such a schedule, OEB approval is requested by June, 2011.

DESCRIPTION AND OPERATION OF EXISTING LONDON SYSTEM

6. A map showing the existing London System can be found at Schedule 1.

7. The current London distribution system is mainly fed from the London North Gate Transmission and the Byron Transmission stations. These two stations regulate the high pressure gas from the Dawn-Trafalgar lines to supply the London distribution system.

FACILITIES BUSINESS PLAN APPROACH

8. The Facilities Business Plan ("FBP") is an internal planning process used by Union for the identification of reinforcement facilities required to support forecasted growth over a specific geographic area.

9. The FBP is developed for a study area which provides an overall business case for the long range system expansion for the study area. A study area represents the geographic area for which an FBP will cover.

10. Union's franchise area has been divided into a number of specific FBP study areas based on operational areas, pipeline system configuration and geographical features. The London FBP covers the City of London in the County of Middlesex. A map illustrating this FBP study area is found in Schedule 2.

11. FBPs provide a complete analysis of the study area based on a 10-year customer forecast ("FBP forecast"). A summary of this forecast can be found at Schedule 3.

12. Based on the FBP forecast, future facilities, both new and reinforcement, can be identified, economically evaluated, optimized and scheduled to meet the future growth demands on the system.

13. The advantages of this FBP long range planning approach can be summarized as follows:

    a) through the identification of future growth areas, Union can be more responsive to customer needs;
    b) optimum, least cost facilities can be identified to service the growth; and
    c) long-term security of supply to the overall system can be achieved.

14. The timing of the facilities is based on current customer attachments and load forecasts which determine the need for additional facilities. Union updates each FBP on an "as required basis" to monitor the development of the system and to determine if the plan should be modified in any way.

MARKET DEMAND

15. It is Union's objective to provide adequate capacity to serve both current customers and new customers being added to the system. A specific objective of the London FBP is to maintain adequate system pressure and provide additional capacity for the London System to accommodate forecasted growth.

16. In recent years, areas served by the London System have experienced growth in the number of customers requesting natural gas service to their home or business. This growth includes new residential and commercial/industrial customers using natural gas as their primary energy source, existing residential homes converting from other fuels to natural gas, and commercial/industrial businesses converting to natural gas for their energy needs.

17. As seen in Schedule 3, residential customers are forecasted to increase by approximately 17,919 attachments (10,070 single-detached, 7,795 multi-family and 54 apartment buildings) between 2008 and 2017. Over this same period, commercial customers are forecasted to increase by approximately 556 attachments and industrial customers are forecasted to increase by approximately 60 attachments.

18. Union is requesting approval to build the proposed pipeline in 2011, in order to increase system capacity to meet demand for Winter 2011/2012 and beyond.

NEED FOR ADDITIONAL CAPACITY

19. It is necessary to increase the capacity of the London System in order to meet existing and forecasted loads during the Winter 2011/2012.

20. A computer simulation of the London System was performed for the Winter 2011/2012 using the forecasted market demand. Schedules 4 and 5 show the projected Winter 2011/2012 pressures at various locations on the London System during a design day without and with the proposed facilities, respectively.

21. The distribution system in London has a minimum of 140 kPa that is required to provide sufficient gas to all customers off the distribution system. Schedule 4 shows that a large area in the north-west part in the City of London will experience unacceptable pressures on a design day during Winter 2011/2012.

22. With the proposed pipeline, Schedule 5 shows the low pressure areas will be above minimum pressure during Winter 2011/2012 design day conditions.

23. The forecasted regular growth will exceed existing capacity on the London System. In order to avoid failure of natural gas service, it will be necessary to increase the capacity of the London System by installing the proposed pipeline in 2011.

PROPOSED FACILITIES

24. Union proposes to construct 6.6 km of NPS 8 pipeline with a MOP of 3450 kPa and 0.6 km of NPS 12 pipeline with an MOP of 420 kPa. These proposed facilities will extend from the 3450 kPa line at Ten Mile Road and Wonderland Road North. The proposed pipeline will travel southward Wonderland Road North to tie into existing facilities at Fanshawe Park Road. The proposed pipeline is shown at Schedule 6.

10 YEAR FACILITIES PLAN

25. Attached at Schedule 7 is the London 10 year facilities plan which outlines potential reinforcements. The overall plan currently consists of 125 m of NPS 2, 13,600 m of NPS 4, 1,835 m of NPS 6, 1,300 m of NPS 8, three new distribution stations and five existing distribution stations rebuilt.

26. The system will be continuously monitored to better determine when and what reinforcement will be needed to keep the system above the required minimum pressure to serve our customers.

ALTERNATIVES CONSIDERED

27. Attached at Schedule 8 is a document titled System Design Criteria for Reinforcement of the London System. This document:

    a) outlines the design methodology and process Union uses for reinforcement of system laterals;
    b) provides a description of current London facilities and system configuration; and
    c) outlines the alternatives considered and the rationale for choosing the preferred alternative.

DESIGN AND PIPE SPECIFICATIONS

28. The design and pipe specifications are outlined in Schedule 9. All the design specifications are in accordance with the *Ontario Regulations210/01, Oil and Gas Pipeline Systems* under the *Technical Standards and Safety Act 2000,* . This is the regulation governing the installation of pipelines in the Province of Ontario.

29. The proposed pipeline is within Class 1 to Class 3 locations. Since the majority of the pipeline is located on road allowance and in consideration for future potential development along the route, the proposed pipeline is designed to meet Class 3 location requirements.

30. The NPS 8 pipe has an outside diameter of 219.1 millimetres and a wall thickness of 8.2 millimetres. The pipe is to be manufactured by the electric resistance weld process and will

have specified minimum yield strength of 290 MPa. The pipe will be manufactured to the *CSA Z245.1-07 Steel Line Pipe Standard for Pipeline Systems and Materials*.

31. The NPS 12 pipe has an outside diameter of 323.9 millimetres and a wall thickness of 5.6 millimetres. The pipe is to be manufactured by the electric resistance weld process and will have specified minimum yield strength of 290 MPa. The pipe will be manufactured to the *CSA Z245.1-07 Steel Line Pipe Standard for Pipeline Systems and Materials*.

32. The pipeline will be hydrostatically tested in accordance with the Ontario Regulation requirements.

33. The minimum depth of cover specified is 1.2 metre to the top of the pipe. Additional depth will be provided to accommodate existing or planned underground facilities, or in specific areas in compliance with the applicable regulated standards.

CONSTRUCTION PROCEDURES AND SCHEDULE

34. Schedule 10 describes the general techniques and methods of construction that will be employed in the construction of the proposed pipeline. Detailed are such activities as clearing, stringing of pipe, trenching, welding, backfill, tile repair, and clean up. Union's construction procedures have been continually updated and refined in order to be responsive to landowner concerns and mitigate potential environmental effects related to pipeline construction.

35. No blasting is anticipated along the route. When the project is constructed, Union's most up-to-date construction specifications will be followed.

36. Material is readily available for this project and Union foresees no problem in obtaining a contractor to complete the proposed construction.

37. Schedule 11 indicates the proposed schedule for 2011 construction. Construction of the proposed pipeline is scheduled to commence July 1, 2011, with the pipeline placed in service by November 1, 2011.

38. The ER will be provided to the construction contractor.

PROJECT COSTS

39. The total estimated cost of the proposed pipeline is $2,335,000.00 as shown in Schedule 12. This covers all costs related to material, construction and labour, environmental protection measures, land acquisitions, contingencies, and interest during construction.

40. The total estimated material cost of $351,023.00 covers the cost of all pipe, valves, fittings, coatings, miscellaneous items and stores overhead. These costs are based on historical values and current market conditions. The percentages for stores overheads cover all warehousing and handling costs of the material. The total estimated construction and labour cost amounting to $1,450,000.00 relates to the installation of the pipeline. This total includes the cost of all miscellaneous company and contract labour. Land rights are estimated at $30,000.00.

ECONOMIC FEASIBILITY

41. Union has employed an economic feasibility test in accordance with the OEB's recommendations in the E.B.O 188 report on *Natural Gas System Expansion* to assess the economics of this project.

42. The Board has found that new distribution facilities are in the public interest if no undue burden is placed on existing customers. When the proposed facilities are included in Union's 2011 new business investment portfolio, the resulting Profitability Index ("P.I.") would be 1.23. Similarly including the proposed facilities in Union's rolling portfolio as at November, 2010 would result in a P.I. of 1.62.

43. To provide the Board with additional information, a stand alone Discounted Cash Flow ("DCF") analysis has been completed. It can be found at Schedule 13. This schedule indicates that the proposed facilities have a Net Present Value ("NPV") of $8,185,388 and P.I. of 1.35.

44. Union therefore submits that this project is economically feasible and in the public interest.

Public Interest Considerations

45. There are a number of public interest factors for consideration as a result of the proposed facilities. These public interest considerations include the following:

Energy Cost Savings

Energy cost savings result as the Project Area residents and businesses are able to use lower cost natural gas that otherwise could not be delivered.

Reduced Air Emissions

Natural gas, because of its clean-burning properties, has an increasingly important role to play in reducing the environmental impacts of energy use. Emissions from the combustion of natural gas are less than other fossil fuels on a per unit of energy basis.

Utility Taxes

Income, property capital and provincial sales taxes paid by Union as a direct result of the project are included as costs in the economic analyses.

46. These taxes are not true economic costs of the project, but rather represent transfer payments within the economy as they are available for redistribution by the federal, provincial and municipal governments. Since these taxes have been included as a cost in the analyses, they must also be considered as a benefit in order to reflect the appropriate economic benefit on an overall basis.

LAND REQUIREMENTS

47. The majority of the proposed pipeline will be located within road allowance in the County of Middlesex.

48. At this time, Union has negotiated all of the permanent easements required for this project. Temporary land rights to facilitate installation along some road allowances will be required. A

description of the fee simple, permanent and temporary easement lands required for this project are provided in Schedule 14.

49. A copy of Union's easement form is attached as Schedule 15. Union will purchase a regulating station site in fee simple as part of this project. An option purchase this property has been signed with Forest City Bible Church.

ENVIRONMENTAL MATTERS

50. Azimuth Environmental Consulting Inc. has completed an ER to evaluate possible environmental and socio-economic effects of the proposed pipeline facility. The results of this ER indicate that the location of the proposed pipeline is environmental acceptable. Mitigation measures to reduce the effects of construction are included in the ER.

51. Union believes that by following its standard construction practices and adhering to the mitigation measures proposed in the ER, construction of this project will have negligible impacts on the environment. No significant environmental or cumulative effects are anticipated from development of the proposed pipeline. A copy of the ER can be found at Schedule 16.

52. The ER has been prepared to meet the intent of the Ontario Energy Board's document "Environmental *Guidelines for Locating, Constructing and Operating Hydrocarbon Pipelines in Ontario [2003]*". Union will comply with all mitigation measures recommended in the ER.

53. The objectives of the ER were to:

a) document existing environmental features;

b) identify agency and public concerns;

c) identify potential environmental impacts as a result of construction;

d) present mitigation techniques to minimize environmental impacts; and

e) Provide the pipeline contractor and company inspectors involved in the construction of the pipeline with general and site-specific guidelines for environmental protection that

supplement Union's construction specifications.

54. Copies of the ER were submitted to the Ontario Pipeline Coordination Committee ("OPCC") on December 15, 2010. Copies of the ER were also provided to the local Conservation Authority and local municipalities. A summary of the comments regarding the ER and Union's responses will be provided in Schedule 17.

55. To solicit input from the general public with respect to the project, a public information session was held. The session was used as a forum to identify the preferred pipeline route and provided the public an opportunity to review the details of the proposal and comment on the environmental information collected to date, as part of the ER process. The public information session was advertised in the local newspaper. In addition letters were mailed to home owners along Wonderland Road informing them of the information session. The session was held on November 2, 2010, at the Forest City Bible Church on Wonderland Road. Attendees asked general questions concerning the location of the facility and pipeline construction methods as well as questions concerning natural gas service from the pipeline. There were no major environmental concerns raised by the attendees of this session.

56. The City of London and the County of Middlesex have plans to expand and upgrade Wonderland Road. Union is working with the Municipalities to ensure that the proposed pipeline and the future road expansions do not conflict.

57. Union also met on site with each road superintendent from the City of London and the County of Middlesex, to solicit input on the alignment of the proposed pipeline. Following these discussions, each road superintendent was in agreement with Union's proposal. Union will continue to work with road superintendents until the project is completed.

58. During construction of the proposed pipeline, Union will implement an environmental inspection program. This program will ensure that the recommendations in the ER are followed. A company inspector will monitor pipeline construction activities and ensure that all activities comply with the mitigation measures found in the ER.

59. The total estimated environmental mitigation costs associated with the construction of the

proposed pipeline are $60,000.00. These costs as shown in Schedule 18 are identified as preconstruction, construction and post-construction related.

60. Union will obtain all required permit approvals, including any environmental permit approvals prior to the start of construction.

SUMMARY

61. Union has experienced growth on the London System and now requires additional facilities in order to serve the needs of the residents and businesses served by the London System.

62. Union has completed a detailed review of facility alternatives and selected the most economical method for supplying additional supplies of natural gas to the London area.

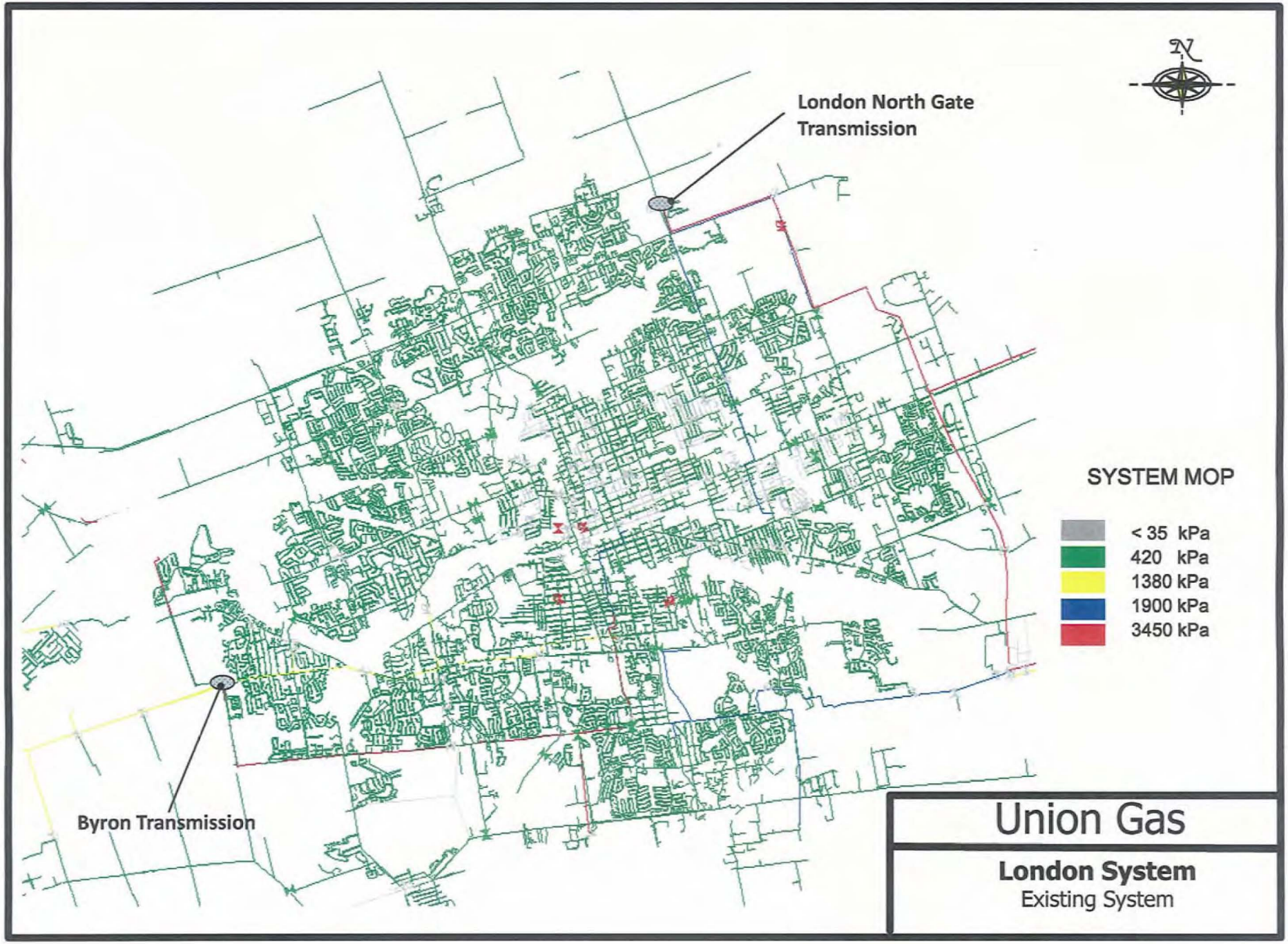
63. The proposed route of the pipeline is primarily along existing road allowances which will result in minimal impacts to the natural environment.

64. Union has completed an environmental assessment for the proposed pipeline and the results of the assessment show there will be no significant long term environmental impacts associated with the construction of the proposed facilities.

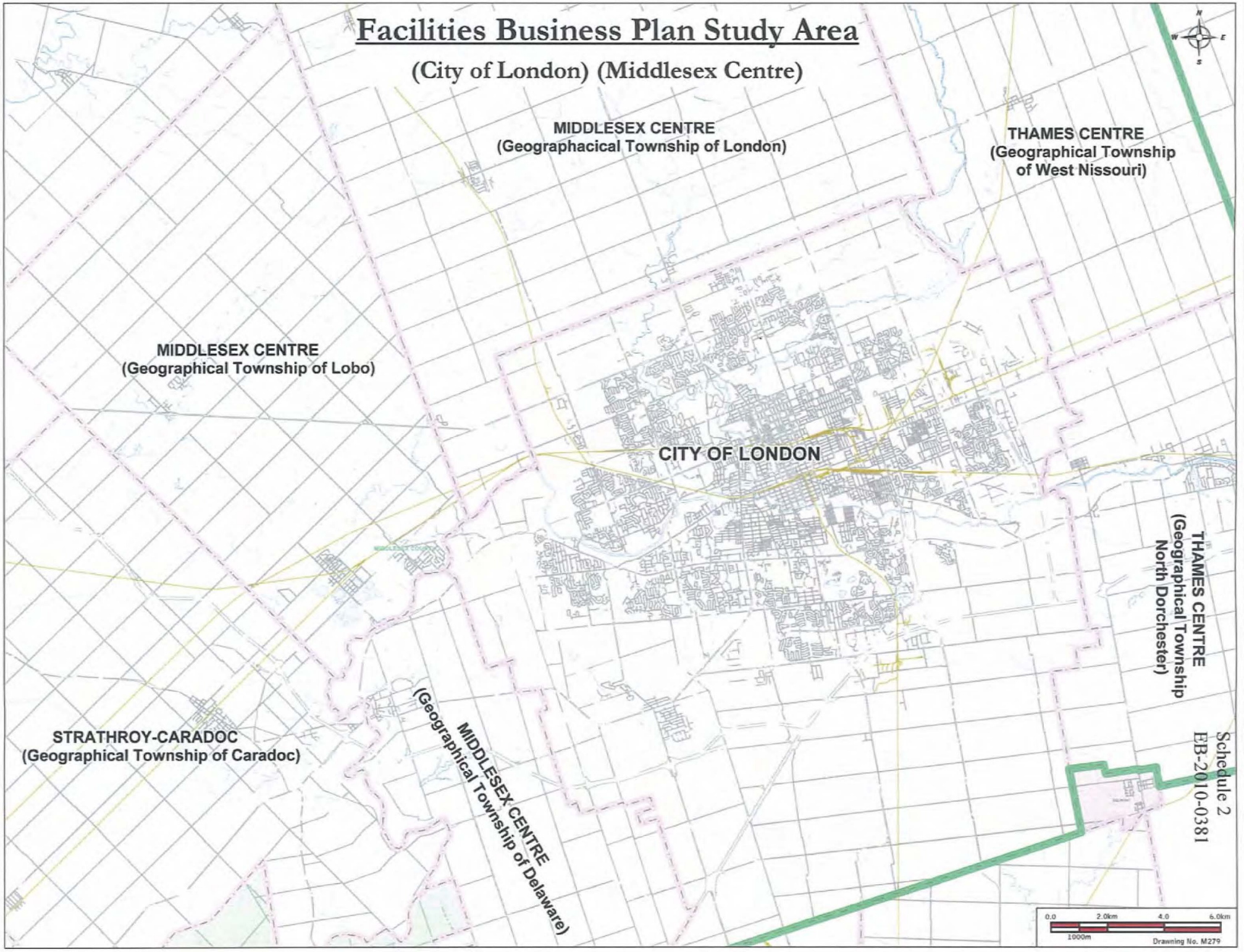
65. Union will construct the pipeline using experienced pipeline construction contractors following construction specifications which have been accepted in past projects and updated to reflect the site specific conditions found on this project.

66. Union will implement a lands relations program that will allow residents in the area of construction access to Union personnel so that in the event that there are landowner issues they may be resolved quickly.

Schedule 1


N
London North Gate
Transmission
Byron Transmission
SYSTEM MOP
< 35 kPa
420 kPa
1380 kPa
1900 kPa
3450 kPa
Union Gas
London System
Existing System

Schedule 2

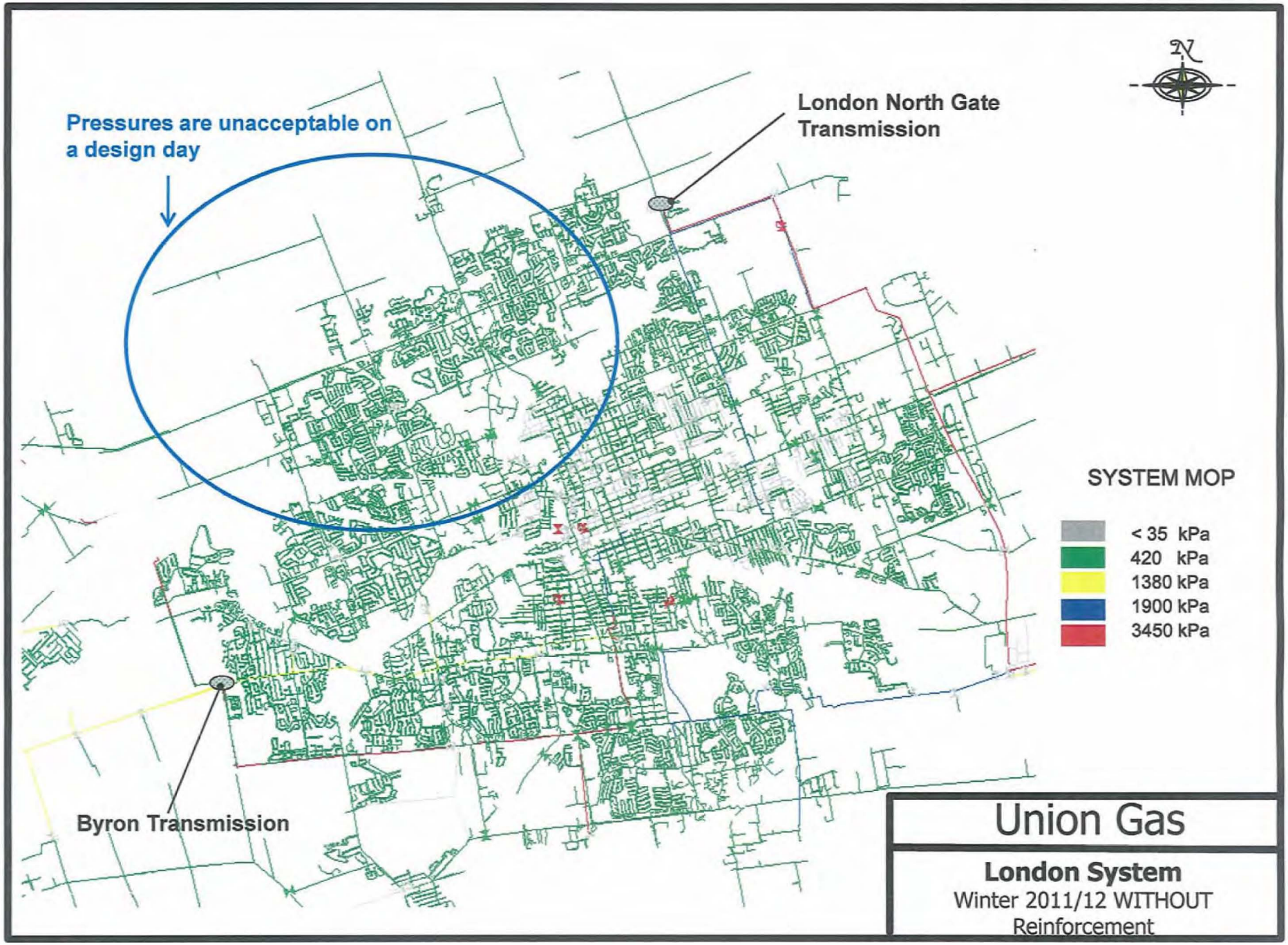

Facilities Business Plan Study Area
(City of London) (Middlesex Centre)
MIDDLESEX CENTRE
(Geographacical Township of London)
THAMES CENTRE
(Geographical Township
of West Nissouri)
MIDDLESEX CENTRE
(Geographical Township of Lobo)
CITY OF LONDON
THAMES CENTRE
(Geographical Township
North Dorchester)
STRATHROY-CARADOC
(Geographical Township of Caradoc)
MIDDLESEX CENTRE
(Geographical Township of Delaware)
Schedule 2
EB-2010-0381
0.0
2.0km
4.0
6.0km
1000m
Drawning No. M279

Schedule 3

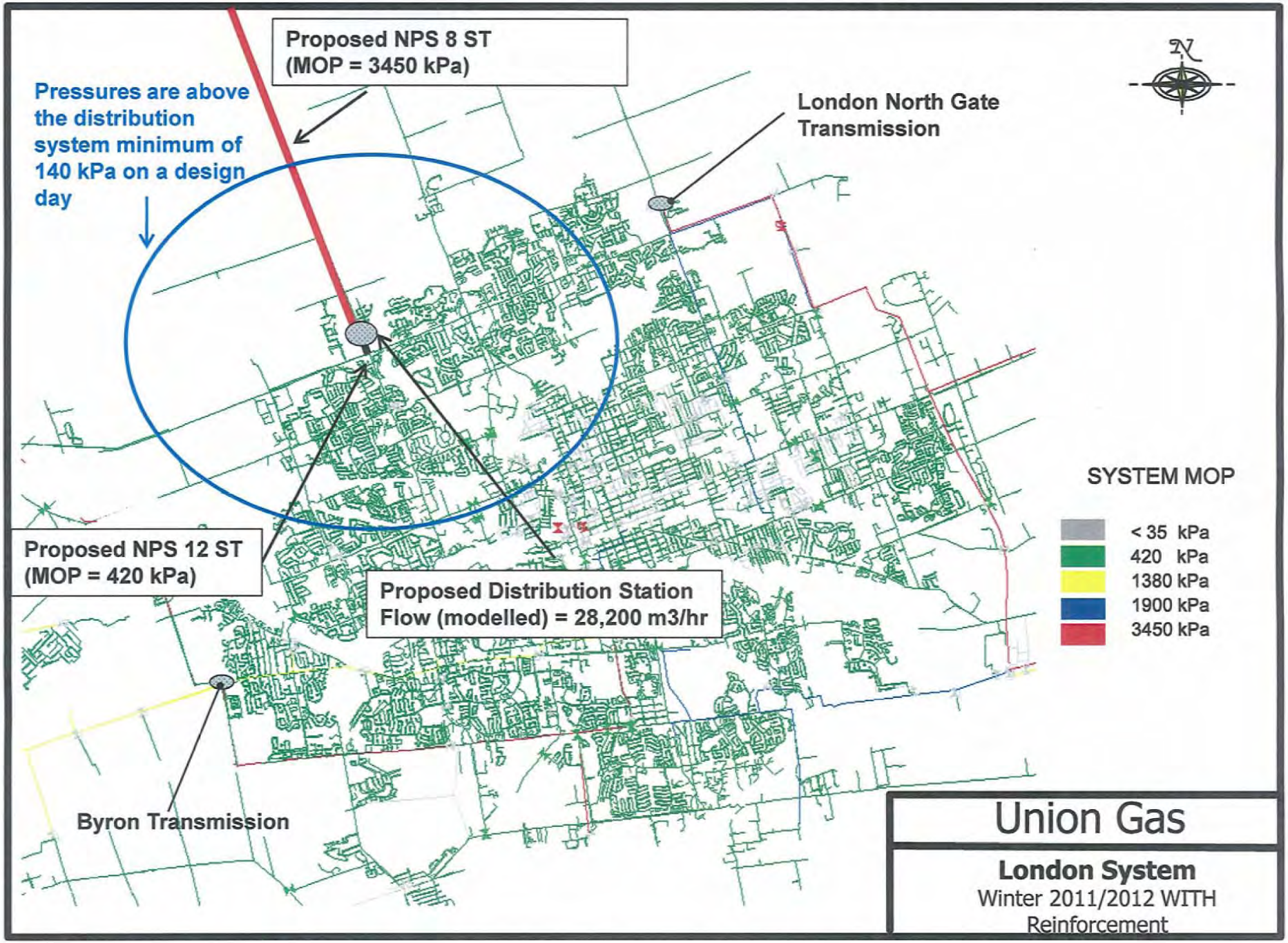
Summary of FBP Forecast

	2011	2012	2013	2014	2015	2016	2017	Total
New Single Detached	977	1005	1050	1050	1050	1050	1050	10070
New Townhouses	601	619	829	829	829	829	829	7795
New Apartments	6	6	6	6	6	6	6	54
Commercial	12	21	24	24	24	24	24	183
Office Business Park	4	5	5	5	5	5	5	40
Urban Reserve Industrial Growth	22	39	43	43	43	43	43	333
Light Industrial	5	6	6	6	6	6	6	50
General Industrial	1	1	1	1	1	1	1	10
Total	1628	1702	1964	1964	1964	1964	1964	18535

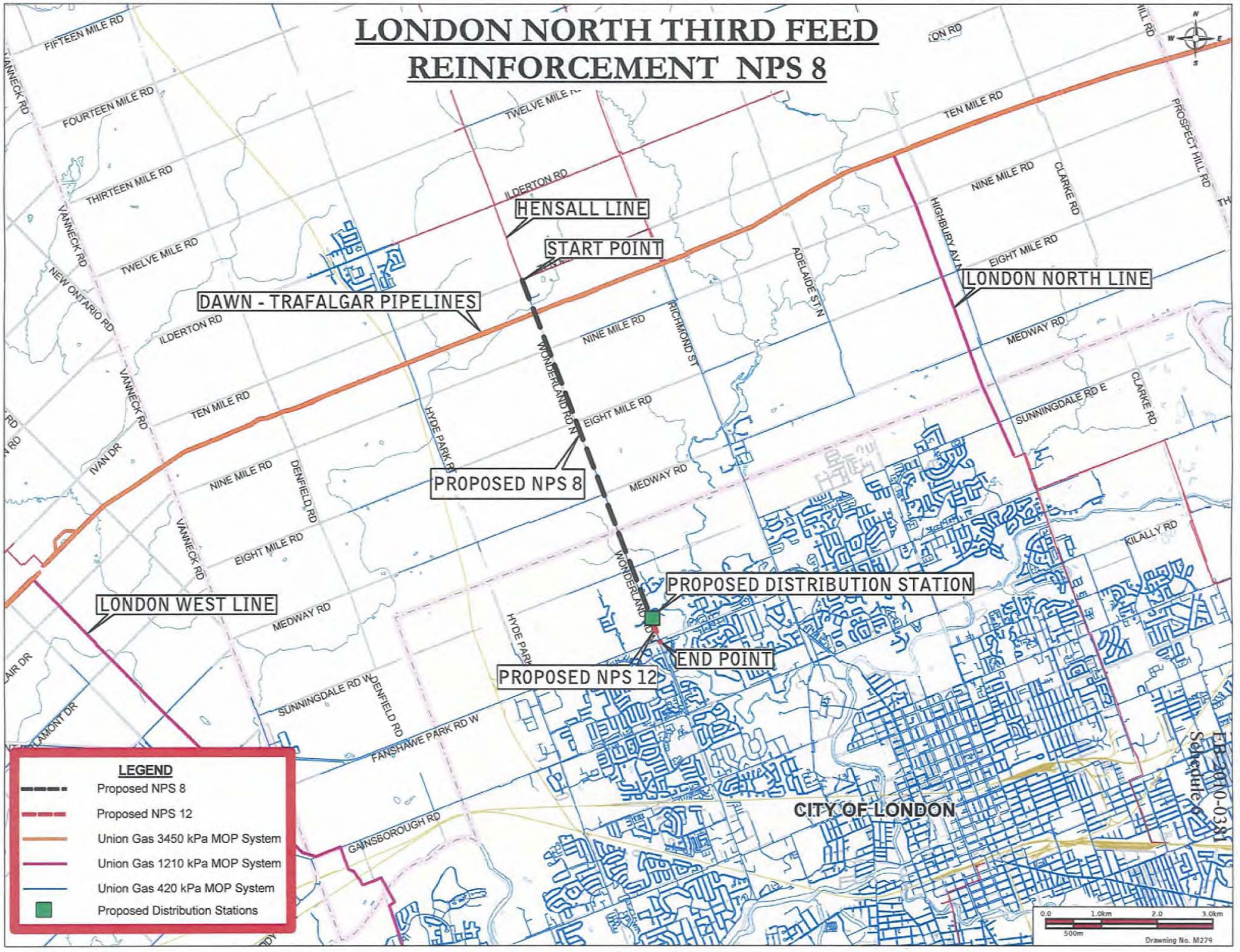
Schedule 4


Pressures are unacceptable on a design day
London North Gate Transmission
Byron Transmission
N
SYSTEM MOP
< 35 kPa
420 kPa
1380 kPa
1900 kPa
3450 kPa
Union Gas
London System
Winter 2011/12 WITHOUT Reinforcement

Schedule 5


Proposed NPS 8 ST
(MOP = 3450 kPa)
Pressures are above the distribution system minimum of 140 kPa on a design day
London North Gate Transmission
N
SYSTEM MOP
< 35 kPa
420 kPa
1380 kPa
1900 kPa
3450 kPa
Proposed NPS 12 ST
(MOP = 420 kPa)
Proposed Distribution Station
Flow (modelled) = 28,200 m3/hr
Byron Transmission
Union Gas
London System
Winter 2011/2012 WITH Reinforcement

LONDON NORTH THIRD FEED REINFORCEMENT NPS 8



EB-2010-0381
Schedule 6

Schedule 7

Forecasted Ten-Year New Facilities

Year	Area	Facilities	Length (m)
2011-2012	Hamilton Road 1	2" PE	100
2013-2018	Airport	New Distribution Station	
		8" ST	500
	Bostwick	4" PE	2,700
	Brockley & Westminster	6" ST	150
		4" PE	650
	Hamilton Road 2	4" PE	1,250
		6" ST	400
	Highbury	New Distribution Station	
	Huron Heights	4" PE	650
	Jackson	4" PE	2,450
	Lambeth	2" PE	25
	Riverbend	New Distribution Station	
	Stoney Creek	4" PE	2,000
	Talbot	6" ST	1,250
		4" PE	2,750
	Uplands	4" PE	600
	West London	8" ST	800
2013-2018	Various Areas	5 Existing Distribution Stations Rebuild	

Schedule 8

System Design Criteria for Reinforcement

on the

London Natural Gas Delivery System

Union Gas Ltd.

Table of Contents

1.0 Document Purpose

This document sets out the guidelines, process and criteria used to review the need for reinforcement of the London Natural Gas Delivery System, and to select the option that best meets the system demands.

The process involves examining existing facilities, forecasting system demand, understanding system operating constraints, identifying a range of reinforcement alternatives and selecting the best alternative.

2.0 Assessment Guidelines

The process of developing a facilities reinforcement plan for the London Natural Gas Delivery System is summarized below.

1. Validate Model
2. Establish current and future system operating criteria
3. Forecast design day demands
4. Assess existing system demands and capacity
5. Identify alternative ways of creating additional capacity
6. Select the best alternative

2.1. Validate Model

The hydraulic model for the system in question is validated against actual flow conditions to ensure it properly reflects the current demands and system operation.

2.2. Establish Current and Future System Operating Criteria

The London Natural Gas Delivery System has a number of operating criteria to ensure the system can operate within its constraints:

- Maximum Operating Pressures (MOP) - by code, a pipeline cannot operate in excess of its MOP.
- Minimum Delivery Pressure - the system must meet all required delivery pressures for the customers it services.
- Minimum Inlet Pressure - the upstream transmission laterals must be able to maintain their minimum pressure to supply the downstream demands.
- Peak Hourly Demands – the distribution system must meet the peak hour demands from our customers under a design day condition.
- Weather - the majority of the customers served in Union South Area are heat sensitive and their peak demand occurs on a very cold winter day. Union designs its facilities to meet the demands on a very cold day, defined to be the design day. In this case, the design day temperature is -26 degrees Celsius, which is equivalent to a 44 degree day (DD). The probability of a 44 DD occurring is between 1% and 2 %, thus reasonably ensuring Union's customers can continue to be served during the coldest winters.

Current operating criteria may not be the same as future ones. For instance, flow patterns, looping or compression changes on the Dawn-Trafalgar system can impact the inlet pressures available to laterals off that system. Large customers may require higher minimum delivery pressure, adding a constraint to the system.

2.3. Forecast Peak Hourly Demand

The design demand is the peak hourly demand of the customers served by the delivery system. Future design hourly demands for a 10-year period are determined using the customer attachment forecast from the Facilities Business Plan (FBP).

The FBP is an internal planning process used by Union for the identification of reinforcement facilities required to support forecasted growth over a specific geographic area. The FBP includes a year-by year customer attachment forecast of demands and their locations on the system. Based on this forecast, future design hourly demands are used to develop long term reinforcement plans.

Based on the FBP forecast, future facilities requirements both new business and reinforcement, can be identified, economically evaluated based on the Board's E.B.O. 188 guidelines, optimized and scheduled to meet the future demands on the system.

2.4. Assess Existing Demands and Capacity

The existing system is reviewed to determine the ability of the existing facilities to meet the demands of current customers. If forecasted demands are not expected to exceed existing capacity, no further action is required within this guideline. If forecasted demands are expected to exceed existing capacity within 2 to 3 years (the lead time required to assess, design, obtain approval and construct facilities if required) the process continues through the following steps.

2.5. Identify Alternatives

If the existing facilities do not have sufficient capacity to meet the future demands, then a wide range of alternatives is generated. These may include, but are not limited to:

- upgrading existing laterals;
- upgrading existing stations;
- looping (reinforcing along the existing route) existing pipelines;
- reinforcing through an entirely different pipeline;
- joining two previously independent distribution systems;
- installing compression;
- obtaining supply from nearby non-Union pipelines.

2.6. Select Best Alternative

The above alternatives are established during the early stages of a reinforcement plan. All alternatives are given preliminary review for feasibility, and promising ones are organized into a key alternatives list.

Each alternative on the key alternatives list is further evaluated in detail to make a final recommendation for reinforcement.

Criteria for selecting the best alternative include, but are not limited to:

- economics;
- cost;
- construction feasibility;
- number of years of capacity created;
- reliability of supply;
- system integrity benefits;
- other benefits or shortcomings.

The resulting best alternative is carried forward for internal and external approvals. Schedule 8.1 provides a visual representation of the process described above.

2.7. Summary

Although each situation brings its own unique characteristics, the above guidelines set out the principles to be used for assessing the need for reinforcement of a lateral servicing a distribution system at Union Gas.

3.0 CURRENT APPLICATION

This section applies the assessment guidelines as discussed in Section 2.0 of the current OEB application for reinforcement of the London System.

3.1. Facilities

The following section will describe the facilities of the London system, including the pipelines and delivery locations. A schematic of the London system can be found in Schedule 1 of the evidence.

3.1.1. Transmission Pipelines

The London system is mainly fed by two transmission lines with a MOP of 6160 kPa off Union's Dawn-Trafalgar system. The London North line (NPS 10) that feeds into the London North Gate Transmission Station was installed in 1957. The London West line (NPS 12) that supplies the Byron Transmission station was installed in 1968.

3.1.2. Pressure Reducing Stations

At the London North Gate Transmission Station there are three pressure reductions. One pressure reduction is to an outlet MOP of 3450 kPa which supplies high pressure lines feeding the east branch of the London system. Another pressure reduction is an outlet MOP of 1900 kPa which supplies other high pressure lines that feed the central and northeast parts of the London system via additional pressure reducing stations. The last pressure reduction is an outlet MOP of 420 kPa which directly supplies a portion of the City of London's distribution network.

There are also three pressure reductions at the Byron Transmission Station. One pressure reduction is to an outlet MOP of 3450 kPa which supplies high pressure lines feeding the south branch of the London system. Another pressure reduction is an outlet MOP of 1380 kPa that supplies other high pressure lines feeding the central and southwest parts of the London system via additional pressure reducing stations. The last pressure reduction is an outlet MOP of 420 kPa which directly supplies a portion of the City of London's distribution network.

3.1.3. Distribution Network

The London distribution network consists of pipelines of different diameters that operate at a MOP of 420 kPa. This system has minimum delivery pressure of 140 kPa.

3.2. Validate Model

The London distribution hydraulic model was validated for Dec 30th, 2009, which was a 25 DD. The system was also validated for Jan 16th, 2009 which was a 37DD. Both validations demonstrated that the system is accurately modelled.

3.3. Operating Criteria

The following section will describe the operating criteria of the London distribution system.

3.3.1. Maximum Operating Pressure

The maximum operating pressure (MOP) of the London distribution system is 420 kPa. The MOP of the proposed NPS 8 is 3450 kPa.

3.3.2. Minimum Delivery Pressure

The minimum delivery pressure in the London distribution system is 140 kPa and must be maintained above 140 kPa to ensure gas delivery to our customers. The London facilities business plan forecasts that a large area in the northwest part of London would not see pressure above 140 kPa on a design day in Winter 2011/12.

3.4. Identify Reinforcement Alternatives

Union considers a broad range of alternatives during the development of a reinforcement plan. These alternatives are investigated at varying levels of detail depending upon their likely feasibility. The following alternatives were identified and assessed for the London System Reinforcement:

3.4.1. Install a Different Diameter Pipeline

Union reviewed whether a NPS 6 and NPS 12 pipeline was adequate to serve the forecasted growth in the city of London. This option was not hydraulically feasible, due to the pressure drop that would result between the start and end points and was therefore rejected. There is not sufficient growth proposed in the London area for Union to justify a pipeline greater than NPS 8 and NPS 12.

3.4.2. New Dawn-Trafalgar Lines Connection

Union reviewed whether a new Dawn-Trafalgar connection was a viable alternative. Given the close proximity of an existing 3450 kPa MOP system, the incremental cost for a new Dawn-Trafalgar connection was deemed economically unjustifiable.

3.4.3. New lateral from London North Gate Transmission Station

Union reviewed building a new 3450 kPa MOP lateral out of the existing 3450 kPa regulation at London North Gate Transmission Station. This new lateral would be of similar length to the proposed facility in this filing. However, this option was eliminated because significant looping of the upstream transmission line with a MOP of 6160 kPa would be required to provide the extra capacity.

3.4.4. New lateral from the London West Transmission Line

Union reviewed building a new lateral from the London West Transmission Line. This new lateral would be longer in length, would require another pressure regulating station, and would require reinforcements to the upstream transmission system. Therefore this option was eliminated.

3.4.5. Joining Two Previously Independent Distribution Systems

There are no other independent distribution systems nearby that are large enough to help accommodate the current and future demands in the city of London. This option was therefore deemed inadequate and eliminated as a viable alternative.

3.4.6. Installing Compression

Maintenance cost for a compressor is significantly higher than a new high pressure line due to its complex mechanical nature. Some upstream reinforcements will also be required to deliver more gas to the compressor station, which will also increase the cost considerably. The distribution system will need to be isolated to prevent gas from backfeeding into the compressor station and the low pressure area will most likely be relocated to the inlet of the compressor station. With the above scenarios considered, this option was not chosen as a suitable alternative.

3.4.7. Obtaining Supply from Nearby Non-Union Pipelines

There are currently no nearby non-Union pipelines with a capacity large enough to accommodate the present needs and future growth in London. The closest non-Union supply is located in Pt. Stanley and it is too far to sufficiently feed into the London Natural Gas Delivery system under a design day condition. The production rate also is not sufficient to accommodate the current and future demands in the city of London. This alternative was therefore eliminated.

3.4.8. Selection of Best Alternative

Union proposes that the best alternative, of all considered, is to build 6.6 km of NPS 8 with a MOP of 3450 kPa and 0.6 km of NPS 12 with a MOP of 420 kPa to feed into the London distribution system. Union proposes to construct the pipeline from Ten Mile Rd to Fanshawe Park Rd along Wonderland Rd.

3.4.9. Summary

Union reviewed a number of alternatives mentioned in section 3.5. The alternative Union proposes will enable Union to connect all forecasted loads, maintain the minimum delivery pressure in the London distribution system, as well as assist the upstream transmission system to meet downstream demands.

4.0 CONCLUSION

Union used a number of criteria to review the need for reinforcement of the London Natural Gas Delivery system.

The process involves examining existing facilities, forecasting system demand, and understanding system operating criteria in order to identify a number of reinforcement alternatives. These alternatives are then investigated at varying levels of detail depending upon project feasibility including engineering, cost, and environmental considerations, and security of supply.

Schedule 9

LONDON 3RD FEED PROJECT

DESIGN AND PIPE SPECIFICATIONS

Design Specifications – NPS 8

Class Location	-	Class 3
Design Factor	-	0.800
Location Factor (General)	-	0.7
Location Factor (Roads)	-	0.625
Maximum Design Pressure	-	6160 kPa
Maximum Operating Pressure	-	3450 kPa
Test Medium	-	Water
Test Pressure	-	8624 kPa min.
Valves/ Fittings	-	PN 100
Minimum Depth of Cover	-	1.2 m

Pipe Specifications

Size	-	NPS-8
Wall thickness	-	6.4 mm
Type	-	Electric Resistance Weld
Description	-	C.S.A. Standard Z245.1-07
Grade	-	290 MPa
Category	-	I
Coating	-	Extruded Polyethylene (Yellow Jacket)

Design Specifications – NPS 12

Class Location	-	Class 3
Design Factor	-	0.800
Location Factor (General)	-	0.7
Location Factor (Roads)	-	0.625
Maximum Design Pressure	-	420 kPa
Maximum Operating Pressure	-	420 kPa
Test Medium	-	Water
Test Pressure	-	588 kPa min.
Valves/ Fittings	-	PN 20
Minimum Depth of Cover	-	1.2 m

Pipe Specifications

Size	-	NPS-12
Wall thickness	-	5.6 mm
Type	-	Electric Resistance Weld
Description	-	C.S.A. Standard Z245.1-07
Grade	-	290 MPa
Category	-	I
Coating	-	Extruded Polyethylene (Yellow Jacket)

Schedule 10

GENERAL TECHNIQUES AND METHODS OF CONSTRUCTION

1. Union Gas Limited ("Union") will provide its own inspection staff to enforce Union's construction specifications and *Ontario Regulation 210/01 under the Technical Standards and Safety Act 2000, Oil and Gas Pipeline Systems.*
2. Pipeline construction is divided into several crews that create a mobile assembly line. Each crew performs a different function, with a finished product left behind when the last crew has completed its work.
3. Union's contract specifications require the contractor to erect safety barricades, fences, signs or flashers, or to use flag persons as may be appropriate, around any excavation across or along a road.
4. It is Union's policy to restore the areas affected by the construction of the pipeline to "as close to original condition" as possible. As a guide to show the "original condition" of the area, photos and/or a video will be taken before any work commences. When the clean up is completed, the approval of the landowner or appropriate government authority is obtained.
5. Construction of the pipeline includes the following activities:

Locating Running Line

6. Union establishes the location where the pipeline is to be installed ("the running line"). For pipelines within road allowances, the adjacent property lines are identified and the running line is set at a specified distance from the property line. For pipelines located on private easement, the easement is surveyed and the running line is set at the specified distance from the edge of the easement. The distance from the start of the pipeline (or other suitable point) is marked on the pipeline stakes and the drawings.

Clearing and Grading

7. The right-of-way is prepared for the construction of the pipeline. When required, bushes, trees and crops are removed and the ground leveled. When required, the topsoil is stripped and stored, and/or sod is lifted.

Stringing

8. The pipe is strung adjacent to the running line. The joints of pipe are laid end-to-end on supports that keep the pipe off the ground to prevent damage to the pipe coating.

Welding

9. The pipe is welded/fused into manageable lengths. The welds in steel pipe are radiographically inspected, if required, and the welds are coated.

Burying

10. Pipe may be buried using either the trench method or the trenchless method. All utilities that will be crossed or paralleled by the pipeline are located by the appropriate utility prior to installing the pipeline. Prior to trenching, all such utilities will be hand-located or hydro vacuumed.

    Trench Method: Trenching is done by using a trenching machine or hoe excavator depending upon the ground conditions. Provisions are made to allow residents access to their property, as required. All drainage tiles that are cut during the trench excavation are flagged to signify that a repair is required. All tiles are measured and recorded as to size, depth, type and quality. This information is kept on file with Union. If a repair is necessary in the future, Union will have an accurate method of locating the tile. Next, the pipe is lowered into the trench. For steel pipe, the pipe coating is tested using a high voltage electrical tester as the pipe is lowered into the trench. All defects in the coating are repaired before the pipe is lowered in. Next, if the soil that was excavated from the trench is suitable for backfill, it is backfilled. If the soil is not suitable for backfill (such as rock), it is hauled away and the trench is backfilled with suitable material such as sand. After the trench is backfilled, drainage tile is repaired.

    Rock Excavation: Rock in solid beds or masses will be removed by "Hoe Ram", where practical. Where rock that is too hard to "Hoe Ram" is encountered, blasting will be permitted in accordance to Union's construction procedures and the *Canadian Explosives Act.* The contractor shall obtain all necessary permits and shall comply with all legal requirements in connection with the use, storage and transportation of explosives.

    Trenchless Method: Trenchless methods are alternate methods used to install pipelines under railways, roads, sidewalks, trees and lawns. There are two trenchless methods that could be used for the proposed NPS 8 pipeline, depending on the soil conditions, and the length and size of the installation. These methods are boring (auguring) and directional drilling.

Tie-Ins

11. The sections of pipelines that have been buried using either the trench or trenchless method are joined together (tied-in).

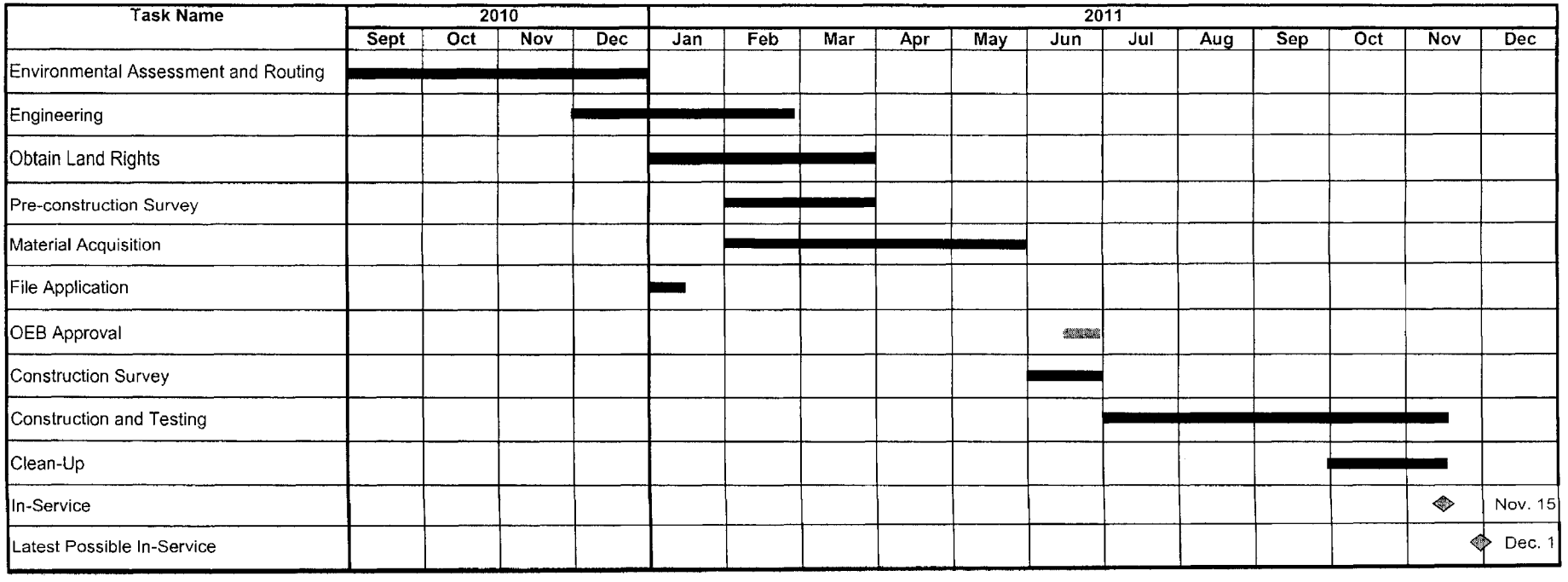
Cleaning and Testing

12. To complete the construction, the pipeline is cleaned, tested in accordance with Union's specifications using water.

Restoration

13. The final activity is the restoration. The work area is leveled, the sod is replaced in lawn areas and other grassed areas are re-seeded. Where required, concrete, asphalt and gravel are replaced to return the areas to as close to the original conditions as possible.

London 3rd Feed Reinforcement
Pipeline Construction Schedule



Schedule 12

PIPELINE COSTS

		TOTAL ESTIMATE
MATERIAL		
Pipe		$320,915
Valve/Test Head Assembly		$6,686
Construction Material		$25,000
Salvage		$0
	SUB TOTAL	$351,023
STORES OVERHEAD		
Pipe	6%	Not Applicable
Construction Material	15%	$0
STORES OVERHEAD		$0
TOTAL MATERIAL		**$351,023**
LABOUR		
Company Labour		$137,500
Miscellaneous Labour		$181,500
Salvage of Pipe		$0
TOTAL LABOUR		**$313,500**
LABOUR - CONTRACT		
Contract Lay		$1,425,550
Pay Items		$71,778
TOTAL CONTRACT		**$1,137,039**
LANDS		
Land		$10,000
Land Rights		$0
Temporary Land Use & Damages		$20,000
TOTAL LANDS		**$30,000**
	SUB-TOTAL	**$1,831,562**
CONTINGENCIES	10.00%	**$183,156**
SUBTOTAL		**$2,014,718**
INTEREST DURING CONSTRUCTIO	6.82%	**$137,404**
TOTAL COST OF PIPELINE		**$2,335,278**

Schedule 13

DISCOUNTED CAS FLOW ANALYSIS

EB-2010-0381
Schedule 13

		2011	2012	2013	2014	2015	2016
Project Year		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Cash Inflows							
Total Sales Margin		129,229	804,335	1,332,878	1,913,494	2,531,790	3,150,086
O & M Expense		-47,319	-142,328	-241,289	-355,835	-484,438	-619,915
Property (Municipal) Tax		-60,127	-78,989	-99,047	-124,585	-150,124	-175,662
Capital Tax		-4,710	-6,241	-7,839	-9,815	-11,674	-13,422
Income Tax		54,109	-96,222	-194,372	-305,147	-407,525	-510,800
Large Corporation Tax		0	0	0	0	0	0
Total Cash Inflow	$	71,181	480,556	790,331	1,118,112	1,478,029	1,830,287
Cash Outflows							
Capital Expenditure		-6,458,397	-2,331,464	-2,535,504	-3,149,578	-3,149,578	-3,149,578
Contribution		0	0	0	0	0	0
Change in Working Capital		-5,712	-23,071	-20,393	-22,736	-24,420	-24,912
Total Cash Outflows	$	-6,464,109	-2,354,535	-2,555,897	-3,172,314	-3,173,998	-3,174,490
Net Cash Flows	$	-6,392,927	-1,873,980	-1,765,566	-2,054,202	-1,695,969	-1,344,203
NPV per Period		-6,371,117	-1,794,954	-1,606,649	-1,780,750	-1,399,504	-1,057,375
Cumulative NPV	$	-6,371,117	-8,166,070	-9,772,719	-11,553,469	-12,952,973	-14,010,348
Net Present Value Project $	$	**8,185,388**					
Profitability Index per Period		0.01	0.06	0.11	0.16	0.21	0.26
Profitability Index Project		**1.35**					

DISCOUNTED CAS FLOW ANALYSIS

EB-2010-0381
Schedule 13

2017	2018	2019	2020	2021	2022	2023	2024
Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14
3,768,382	4,386,677	4,695,825	4,695,825	4,631,246	4,566,667	4,566,667	4,566,667
-762,265	-911,488	-1,001,729	-1,027,833	-1,034,862	-1,039,167	-1,062,546	-1,085,925
-201,200	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739
-15,066	-16,611	-15,632	-14,712	-13,848	-13,037	-12,274	-11,559
-614,780	-719,283	-720,168	-738,312	-739,571	-740,226	-754,726	-767,885
0	0	0	0	0	0	0	0
2,175,071	2,512,557	2,731,558	2,688,230	2,616,227	2,547,499	2,510,383	2,474,560
-3,149,578	-3,149,578	0	0	0	0	0	0
0	0	0	0	0	0	0	0
-25,404	-25,897	-14,068	-1,870	4,320	4,515	-1,675	-1,675
-3,174,982	-3,175,475	-14,068	-1,870	4,320	4,515	-1,675	-1,675
-999,911	-662,918	2,717,489	2,686,359	2,620,547	2,552,014	2,508,707	2,472,885
-751,878	-479,774	1,789,966	1,679,710	1,555,361	1,437,692	1,341,364	1,254,997
-14,762,225	-15,241,999	-13,452,034	-11,772,323	-10,216,962	-8,779,270	-7,437,906	-6,182,909
0.30	0.35	0.42	0.50	0.56	0.62	0.68	0.74

DISCOUNTED CAS FLOW ANALYSIS

EB-2010-0381
Schedule 13

2025	2026	2027	2028	2029	2030	2031	2032
Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22
4,566,667	4,566,667	4,566,667	4,566,667	4,566,667	4,566,667	4,341,280	4,115,893
-1,109,304	-1,132,683	-1,156,063	-1,179,442	-1,202,821	-1,226,200	-1,199,274	-1,172,349
-226,739	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739
-10,886	-10,255	-9,663	-9,106	-8,584	-8,094	-7,634	-7,202
-779,783	-790,496	-800,096	-808,649	-816,217	-822,861	-769,877	-716,076
0	0	0	0	0	0	0	0
2,439,955	2,406,494	2,374,107	2,342,732	2,312,307	2,282,774	2,137,757	1,993,528
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
-1,675	-1,675	-1,675	-1,675	-1,675	-1,675	18,362	18,362
-1,675	-1,675	-1,675	-1,675	-1,675	-1,675	18,362	18,362
2,438,280	2,404,818	2,372,432	2,341,057	2,310,631	2,281,099	2,156,119	2,011,890
1,174,530	1,099,524	1,029,576	964,314	903,398	846,515	759,646	672,809
-5,008,379	-3,908,855	-2,879,279	-1,914,965	-1,011,568	-165,053	594,593	1,267,402
	8,185,388						
0.79	0.83	0.88	0.92	0.96	0.99	1.03	1.05
	1.35						

DISCOUNTED CAS FLOW ANALYSIS

2033	2034	2035	2036	2037	2038	2039	2040
Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30
4,115,893	4,115,893	4,115,893	4,115,893	4,115,893	4,115,893	4,115,893	4,115,893
-1,192,620	-1,212,891	-1,233,162	-1,253,434	-1,273,705	-1,293,976	-1,314,247	-1,334,518
-226,739	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739
-6,796	-6,416	-6,059	-5,724	-5,410	-5,116	-4,840	-4,581
-721,307	-725,816	-729,645	-732,837	-735,429	-737,457	-738,955	-739,954
0	0	0	0	0	0	0	0
1,968,431	1,944,031	1,920,287	1,897,159	1,874,610	1,852,605	1,831,113	1,810,101
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
-1,452	-1,452	-1,452	-1,452	-1,452	-1,452	-1,452	-1,452
-1,452	-1,452	-1,452	-1,452	-1,452	-1,452	-1,452	-1,452
1,966,979	1,942,579	1,918,835	1,895,707	1,873,158	1,851,153	1,829,660	1,808,648
624,189	585,109	548,577	514,414	482,457	452,552	424,559	398,349
1,891,590	2,476,700	3,025,277	3,539,691	4,022,148	4,474,700	4,899,259	5,297,608
1.08	1.11	1.13	1.15	1.17	1.19	1.21	1.23

DISCOUNTED CAS FLOW ANALYSIS

2041	2042	2043	2044	2045	2046	2047	2048
Year 31	Year 32	Year 33	Year 34	Year 35	Year 36	Year 37	Year 38
4,115,893	4,115,893	4,115,893	4,115,893	4,115,893	4,115,893	4,115,893	4,115,893
-1,354,789	-1,375,061	-1,395,332	-1,415,603	-1,435,874	-1,435,874	-1,435,874	-1,435,874
-226,739	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739	-226,739
-4,338	-4,111	-3,898	-3,698	-3,511	-3,336	-3,172	-3,019
-740,485	-740,576	-740,253	-739,541	-738,463	-743,845	-748,903	-753,658
0	0	0	0	0	0	0	0
1,789,541	1,769,407	1,749,672	1,730,312	1,711,306	1,706,099	1,701,205	1,696,603
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
-1,452	-1,452	-1,452	-1,452	-1,452	0	0	0
-1,452	-1,452	-1,452	-1,452	-1,452	0	0	0
1,788,089	1,767,954	1,748,219	1,728,860	1,709,853	1,706,099	1,701,205	1,696,603
373,801	350,804	329,254	309,056	290,120	274,774	260,058	246,170
5,671,409	6,022,213	6,351,468	6,660,524	6,950,644	7,225,418	7,485,476	7,731,646
1.24	1.26	1.27	1.28	1.30	1.31	1.32	1.33

DISCOUNTED CAS FLOW ANALYSIS

2049	2050
Year 39	Year 40
4,115,893	4,115,893
-1,435,874	-1,435,874
-226,739	-226,739
-2,875	-2,741
-758,127	-762,328
0	0
1,692,278	1,688,211
0	0
0	0
0	0
0	0
1,692,278	1,688,211
233,061	220,682
7,964,707	8,185,388
1.34	1.35

Schedule 14

NAME AND ADDRESS	LEGAL DESCRIPTION	PERMANENT EASEMENT Estimated Dimenstions (Metres) Length	Width	Area (Hectares)	TEMPORARY EASEMENT Estimated Dimenstions (Metres) Length	Width	Area (Hectares)
Forest City Bible Church 1889 Wonderland Rd. N. London, Ontario N6G 5C1	Part of PIN 08138-0234 LT Part of the South Half of Lot 21, Concession 5 London, London Township **Gate Station 20M X 35M**	**Pipeline** **86M X 5M** **Pipeline** **86M X 5M** **Access** **100M X 5M**		0.0429 0.0429 **0.0499**			
The Board of Governors University of Western O 22312 Wonderland Rd N Ilderton, Ontario N0M 2A0	Part of PIN 081390043 Part North Half Lot 20 Concession 9 Middlesex CentreTWP/London TWP				**20 metres Wide** **20 metres Long** **10 metres Wide** **20 metres Long**		**0.0399 Ha** **0.0199 Ha**
Clarence Harold Jackson Nancy Evelyn Jackson [redacted]	Part of PIN 081390045 South Half Lot 21, Concession 9 Middlesex CentreTWP/London TWP				**10 metres Wide** **20 metres Long** **10 metres Wide** **20 metres Long**		**0.0199 Ha** **0.0199 Ha**
Edwin Frank Brown Teresa Mary Frances Brown [redacted]	Part of PIN 081390024 Part North Half Lot 21 and North Half Lot 22 Concession 8 Middlesex Centre/London TWP				**10 metres Wide** **20 metres Long**		**0.0199 Ha**
Loretta Poier [redacted]	Part of PIN 081390019 Part South Half Lot 21 Concession 8 Middlesex Centre/London TWP				**10 metres Wide** **20 metres Long**		**0.0199 Ha**
Michael Thomas Murphy	Part of PIN 081380015				**10 metres Wide**		**0.0199 Ha**

NAME AND ADDRESS	LEGAL DESCRIPTION	PERMANENT EASEMENT Estimated Dimenstions (Metres) Length	Width	Area (Hectares)	TEMPORARY EASEMENT Estimated Dimenstions (Metres) Length	Width	Area (Hectares)
[redacted]	Part North Half Lot 21, Concession 7 London Township				**20 metres Long**		
Richard Floyd Heard [redacted]	Part of PIN 081380207 Part South Half Lot 21 Concession 7 Middlesex Centre /London TWP				**10 metres Wide** **20 metres Long**		**0.0199 Ha**
Morris Zaifman Holdings Ltd 180 Adelaide St London, Ontario N5Z 3L1	Part of PIN 081380211 Part of North Half Lot 21 Concession 6 Middlesex Centre/London TWP				**10 metres Wide** **20 metres Long**		**0.0199 Ha**
The Bell Telephone Company of Canada 100 Dundas Str. London, Ont, N6A 4L6	Part of PIN 081380079 Part South Lot 21 Concession 6 London Township				**10 metres Wide** **20 metres Long** **10 metres Wide** **20 metres Long**		**0.0199 Ha** **0.0199 Ha**
Vista Wood Estates Ltd 1200 Riverside Dr., Suite 15 London, Ontario N6H 5C6	Part of PIN 081380238 Part Lot 21 Concession 5 London/London Township				**10 metres Wide** **20 metres Long**		**0.0199 Ha**

NAME AND ADDRESS	LEGAL DESCRIPTION	PERMANENT EASEMENT Estimated Dimenstions (Metres) Area Length Width (Hectares)		TEMPORARY EASEMENT Estimated Dimenstions (Metres) Area Length Width (Hectares)	
Sab Realty Limited c/o Richard Lubell 300 Dundas St., London, Ontario N6B 1T6	Part of PIN 081380244 Part of the South Half Lot 21 Concession 5 London/London Township			**20 metres Wide** **20 metres Long**	**0.0399 Ha**

Schedule 15

For Internal Use Only
Lands File No.:
Cheque No.:
Project:
Acct No.:

PIPELINE EASEMENT

(the "Easement")

Between

(herein called the "Transferor")

and

UNION GAS LIMITED
(herein called the "Transferee")

This Easement is an easement in Gross

WHEREAS the Transferor is the owner in fee simple of those lands and premises more particularly described as: PIN: Insert Legal (hereinafter called the "Transferor's Lands").

The Transferor does hereby GRANT, CONVEY, TRANSFER AND CONFIRM unto the Transferee, its successors and assigns, to be used and enjoyed as appurtenant to all or any part of the lands of the Transferee's lands the right, liberty, privilege and easement on, over, in, under and/or through a strip of the Transferor's Lands more particularly described as being PIN: Insert Legal Being Part of the PIN (hereinafter referred to as the "Lands") to survey, lay, construct, maintain, inspect, patrol, alter, remove, replace, reconstruct, repair, move, keep, use and/or operate one Pipe line for the transmission of pipeline quality natural gas as defined in The Ontario Energy Board Act S.O. 1998 (hereinafter referred to as the "Pipeline") including therewith all such buried attachments, equipment and appliances for cathodic protection which the Transferee may deem necessary or convenient thereto, together with the right of ingress and egress at any and all times over and upon the Lands for its servants, agents, employees, those engaged in its business, contractors and subcontractors on foot and/or with vehicles, supplies, machinery and equipment for all purposes necessary or incidental to the exercise and enjoyment of the rights, liberty, privileges and easement hereby granted. The Parties hereto mutually covenant and agree each with the other as follows:

1. In consideration of the sum of DOLLARS ($) of lawful money of Canada (hereinafter called the "Consideration"), which sum is payment in full for the rights and interest hereby granted and for the rights and interest, if any, acquired by the Transferee by expropriation, including in either or both cases payment in full for all such matters as injurious affection to remaining lands and the effect, if any, of registration on title of this document and where applicable, of the expropriation documents, subject to Clause 12 hereof to be paid by the Transferee to the Transferor within 90 days from the date of these presents or prior to the exercise by the Transferee of any of its rights hereunder other than the right to survey (whichever may be the earlier date), the rights, privileges and easement hereby granted shall continue in perpetuity or until the Transferee, with the express written consent of the Transferor, shall execute and deliver a surrender thereof . Prior to such surrender Transferee shall remove all debris as may have resulted from the Transferee's use of the Lands from the Lands and in all respects restore the Lands to it's previous productivity and fertility so far as is reasonably possible , save and except for items in respect of which compensation is due under Clause 2. hereof. Transferor and Transferee hereby agree that nothing herein shall oblige Transferee to remove the Pipeline from the Lands as part of Transferee's obligation to restore the Lands.

2. The Transferee shall make to the Transferor (or the person or persons entitled thereto) due compensation for any damages to the Lands resulting from the exercise of any of the rights herein granted, and if the compensation is not agreed upon by the Transferee and the Transferor, it shall be determined by arbitration in the manner prescribed by the Expropriations Act, R.S.O. 1990, Chapter E-26 or any Act passed in amendment thereof or substitution therefore. Any gates, fences and tile drains curbs, gutters, asphalt paving, lockstone, patio tiles interfered with by the Transferee shall be restored by the Transferee at its expense as closely as reasonably possible to the condition and function in which they existed immediately prior to such interference by the Transferee and in the case of tile drains, such restoration shall be performed in accordance with good drainage practice and applicable government regulations.

3. The Pipeline (including attachments, equipment and appliances for cathodic protection but excluding valves, take-offs and fencing installed under Clause 9 hereof) shall be laid to such a depth that upon completion of installation it will not obstruct the natural surface run-off from the Lands nor ordinary cultivation of the Lands nor

any tile drainage system existing in the Lands at the time of installation of the Pipeline nor any planned tile drainage system to be laid in the Lands in accordance with standard drainage practice, if the Transferee is given at least thirty (30) days notice of such planned system prior to the installation of the pipeline; provided that the Transferee may leave the Pipeline exposed in crossing a ditch, stream, gorge or similar object where approval has been obtained from the Ontario Energy Board or other Provincial Board or authority having jurisdiction in the premises. The Transferee agrees to make reasonable efforts to accommodate the planning and installation of future tile drainage systems following installation of the pipeline so as not to obstruct or interfere with such tile installation.

4. As soon as reasonably possible after the construction of the Pipeline, the Transferee shall level the Lands and unless otherwise agreed to by the Transferor, shall remove all debris as may have resulted from the Transferee's use of the Lands therefrom and in all respects restore the Lands to its previous productivity and fertility so far as is reasonably possible, save and except for items in respect of which compensation is due under Clause 2 hereof.

5. The Transferee shall indemnify the Transferor for any and all liabilities, damages, costs, claims, suits and actions which are directly attributable to the exercise of the rights hereby granted, except to the extent of those resulting from the gross negligence or wilful misconduct of the Transferor.

6. In the event that the Transferee fails to comply with any of the requirements set out in Clause 2, 3, or 4 hereof within a reasonable time of the receipt of notice in writing from the Transferor setting forth the failure complained of, the Transferee shall compensate the Transferor (or the person or persons entitled thereto) for any damage, if any, necessarily resulting from such failure and the reasonable costs if any, incurred in the recovery of those damages.

7. Except in case of emergency, the Transferee shall not enter upon any of the Transferor's Lands, other than the Lands, without the consent of the Transferor. In case of emergency the right of entry upon the Transferor's Lands for ingress and egress to and from the Lands is hereby granted. The determination of what circumstances constitute an emergency, for purposes of this paragraph is within the absolute discretion of the Transferee, but is a situation in which the Transferee has a need to access the pipeline in the public interest without notice to the Transferor, subject to the provisions of paragraph 2 herein. The Transferee will, within 72 hours of entry upon such lands, advise the Transferor of the said emergency circumstances and thereafter provide a written report to Transferor with respect to the resolution of the emergency situation. The Transferee shall restore the lands of the Transferor at its expense as closely as reasonably practicable to the condition in which they existed immediately prior to such interference by the Transferee and in the case of tile drains, such restoration shall be performed in accordance with good drainage practice.

8. The Transferor shall have the right to fully use and enjoy the Lands except for planting trees over the lesser of the Lands or a six (6) metre strip centered over the Pipeline, and except as may be necessary for any of the purposes hereby granted to the Transferee, provided that without the prior written consent of the Transferee, the Transferor shall not excavate, drill, install, erect or permit to be excavated, drilled, installed or erected in, on, over or through the Lands any pit, well, foundation, pavement, building, mobile homes or other structure or installation. Notwithstanding the foregoing the Transferee upon request shall consent to the Transferor erecting or repairing fences, hedges, pavement, lockstone constructing or repairing tile drains and domestic sewer pipes, water pipes, and utility pipes and constructing or repairing lanes, roads, driveways, pathways, and walks across, on and in the Lands or any portion or portions thereof, provided that before commencing any of the work referred to in this sentence the Transferor shall (a) give the Transferee at least (30) clear days notice in writing describing the work desired so as to enable the Transferee to evaluate and comment on the work proposed and to have a representative inspect the site and/or be present at any time or times during the performance of the work, (b) shall follow the instructions of such representative as to the performance of such work without damage to the Pipeline, (c) shall exercise a high degree of care in carrying out any such work and, (d) shall perform any such work in such a manner as not to endanger or damage the Pipeline as may be required by the Transferee.

9. The rights, privileges and easement herein granted shall include the right to install, keep, use, operate, service, maintain, repair, remove and/or replace in, on and above the Lands any valves and/or take-offs subject to additional agreements and to fence in such valves and/or take-offs and to keep same fenced in, but for this right the Transferee shall pay to the Transferor (or the person or persons entitled thereto) such additional compensation as may be agreed upon and in default of agreement as may be settled by arbitration under the provisions of The Ontario Energy Board Act, S.O. 1998, or any Act passed in amendment thereof or substitution therefore. The Transferee shall keep down weeds on any lands removed from cultivation by reason of locating any valves and/or take-offs in the Lands.

10. Notwithstanding any rule of law or equity and even though the Pipeline and its appurtenances may become annexed or affixed to the realty, title thereto shall nevertheless remain in the Transferee.

11. Neither this Agreement nor anything herein contained nor anything done hereunder shall affect or prejudice the Transferee's rights to acquire the Lands or any other portion or portions of the Transferor's lands under the provisions of The Ontario Energy Board Act, S.O. 1998, or any other laws, which rights the Transferee may exercise at its discretion in the event of the Transferor being unable or unwilling for any reason to perform this Agreement or give to the Transferee a clear and unencumbered title to the easement herein granted.

12. The Transferor covenants that he has the right to convey this easement notwithstanding any act on his part, that he will execute such further assurances of this easement as may be requisite and which the Transferee may at its expense prepare and that the Transferee, performing and observing the covenants and conditions on its part

to be performed, shall have quiet possession and enjoyment of the rights, privileges and easement hereby granted. If it shall appear that at the date hereof the Transferor is not the sole owner of the Lands, this Indenture shall nevertheless bind the Transferor to the full extent of his interest therein and shall also extend to any after-acquired interest, but all moneys payable hereunder shall be paid to the Transferor only in the proportion that his interest in the Lands bears to the entire interest therein.

13. In the event that the Transferee fails to pay the consideration as hereinbefore provided, the Transferor shall have the right to declare this easement cancelled after the expiration of 15 days from personal service upon the Secretary, Assistant Secretary or Manager, Lands Department of the Transferee at its Executive Head Office in Chatham, Ontario, (or at such other point in Ontario as the Transferee may from time to time specify by notice in writing to the Transferor) of notice in writing of such default, unless during such 15 day period the Transferee shall pay the said consideration; upon failing to pay as aforesaid, the Transferee shall forthwith after the expiration of 15 days from the service of such notice execute and deliver to the Transferor at the expense of the Transferee, a valid and registerable release and discharge of this easement.

14. All payments under these presents may be made either in cash or by cheque of the Transferee and may be made to the Transferor (or person or persons entitled thereto) either personally or by mail. All notices and mail sent pursuant to these presents shall be addressed to the Transferor at and to the Transferee at Union Gas Limited, P.O.Box 2001, 50 Keil Drive North, Chatham, Ontario N7M 5M1. Attention: Manager, Lands or to such other address in either case as the Transferor or the Transferee respectively may from time to time appoint in writing.

15 The rights, privileges and easement hereby granted are and shall be of the same force and effect as a covenant running with the land and this Indenture, including all the covenants and conditions herein contained, shall extend to, be binding upon and enure to the benefit of the heirs, executors, administrators, successors and assigns of the Parties hereto respectively; and, wherever the singular or masculine is used it shall, where necessary, be construed as if the plural, or feminine or neuter had been used, as the case may be.

16. The Transferor hereby acknowledges that this transfer will be registered electronically and the Transferor hereby authorizes the Transferee to complete the registration of this transfer.

DATED this day of January 2010

_____

Name & Title:

I have authority to bind the corporation

_____

Name & Title:

I have authority to bind the corporation

Address:

UNION GAS LIMITED

_____

Name: Mervyn R. Weishar
Senior Lands Agent

I have authority to bind the Corporation

Additional Information: (if applicable)

Solicitor:

Telephone:

Municipality of Chatham-Kent

Province of Ontario

DECLARATION REQUIRED UNDER
SECTION 50 OF THE PLANNING
ACT, R.S.O. 1990, as amended

I, Mervyn R. Weishar, of the City of Municipality of Chatham-Kent , in the Province of Ontario.

DO SOLEMNLY DECLARE THAT

1. I am, Senior Lands Agent Lands Department of Union Gas Limited, the Transferee in the attached Grant of Easement and as such have knowledge of the matters herein deposed to.

2. The use of or right in the land described in the said Grant of Easement is being acquired by Union Gas Limited for the purpose of a hydrocarbon transmission line within the meaning of part VI of the Ontario Energy Board Act , 1998.

AND I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath, and by virtue of The Canada Evidence Act.

DECLARED before me at the
Municipality of Chatham-Kent,
in the Province of Ontario

this day of January ,2010

A Commissioner, etc.

Schedule 17

Summary of Comments
London Reinforcement Project

AGENCY	COMMENT	RESPONSE
Technical Standards & Safety Authority	TSSA letter to UG dated December 24, 2010, requesting Design and Pipe Specifications TSSA email dated January 7, 2011 to UG regarding pigging. TSSA email dated January 7, 2011 to UG indicating specifications and design acceptable.	UG email dated January 6, 2011 providing design and pipeline specifications to TSSA UG email dated January 7, 2011 to TSSA regarding pigging.
Municipality of Middlesex Centre	Municipality letter to UG dated January 4, 2011. Comments concerning existing water pipeline, municipal drains , depth of pipeline cover.	UG email January 10, 2011;confirmation that UG to incorporate comments into design drawings and confirmation that standard location and depth will be provided when finalized.
City of London	City letter to UG dated Feb 17, 2011 (letter erroneously dated August 17, 2011); City concerns regarding consultation, route selection and alternatives, use of Wonderland Road for pipeline location.	UG letter to City dated March 9, 2011. UG willing to continue dialogue with City to address City's concerns.
County of Middlesex	County letter to UG dated February 24, 2011. Similar concerns as the City including consultation, use of Wonderland Road, financial impacts .	UG letter dated March 9, 2011. UG willing to continue dialogue with County to address concerns.
Upper Thames River Conservation Authority	CA letter dated January 5, 2011 to UG; CA approvals required for watercourse crossings and municipal drain crossing locations; no objection to pipeline route along Wonderland Road.	No response required
Ministry of Tourism and Culture	Ministry letter dated February 18, 2011; Stage 2 review required.	No response required

14th Floor, Centre Tower
3300 Bloor Street West
Toronto, Ontario
Canada M8X 2X4
Tel.: 416.734.3300
Fax: 416.231.1626
Toll Free: 1.877.682.8772

www.tssa.org

December 24, 2010

CF

Mr. Tony Vadlja,
Lead Environmental Planner
Union Gas Limited
P. O. Box 5353 Station A,
109 Commissioners Road W.,
London, ON N6A 4P1

Re: Union Gas Limited London North Reinforcement Project.

Dear Mr. Vadlja:

This is in response to your letter of December 15, 2010 regarding the referenced project. We reviewed the Azimuth Environmental Consulting Inc. Report AEC 10-223 dated December 2010. In order for me to provide further comments, the Design and Pipe Specifications, including the stress level expressed in % of SMYS at maximum operating pressure (MOP) will be required.

Yours truly,

Oscar Alonso, P. Eng.
Fuels Safety Engineer
416 734 3353
oalonso@tssa.org

cc: Zora Crnojacki, Chair, OPCC, OEB

I\fsesb\oa\Vadlya, London North Reinforcement

Vadlja, Tony

From: oalonso@tssa.org
Sent: January 7, 2011 11:03 AM
To: Smith, Chantel
Cc: Wachsmuth, Bill; Vadlja, Tony; zora.crnojcki@oeb.gov.on.ca
Subject: RE: Union Gas Limited London North Reinforcement Project

Thanks Chantel. The referenced reinforcement report is acceptable. We reviewed the design and pipe specifications for the project and found in conformance to the O. Reg. 210/01.

Should the pipeline be upgraded to operate over 30% SMYS (to the new MOP of 6160 kPa), subsection 16 (5) and 16(6) of O. Reg. 210/01 would be applicable.

Regards,

Oscar Alonso
Fuels Safety Engineer
Tel.: 416 734 3353
e-mail: oalonso@tssa.org

Technical Standards & Safety Authority -- "Putting Public Safety First"
website: www.tssa.org
toll-free: 1-877-682-8772

"Smith, Chantel" <CJSmith@uniongas.com>

01/07/2011 10:17 AM

To "oalonso@tssa.org" <oalonso@tssa.org>
cc "Wachsmuth, Bill" <bwachsmuth@uniongas.com>, "Vadlja, Tony" <tvadlja@uniongas.com>
Subject RE: Union Gas Limited London North Reinforcement Project

Oscar,

The NPS 8 pipeline is being designed to be piggable for when the pressure is increased to 6160kPa. Because we don't know for sure when, or if even at all, this line will be upgraded, we will not be designing the station with the pig launcher/receiver until required.

Chantel Smith

519-667-4140 | office
cjsmith@uniongas.com

From: oalonso@tssa.org [mailto:oalonso@tssa.org]
Sent: January 7, 2011 9:08 AM
To: Smith, Chantel
Cc: Wachsmuth, Bill; Vadlja, Tony
Subject: Re: Union Gas Limited London North Reinforcement Project

Thanks Chantel for the information on the referenced pipeline.

I'll appreciate if you could provide the following additional information for the NPS 8: Will the pipeline be pigable and equipped with permanently mounted pig launching and receiving barrels?

Regards,

Vadlja, Tony

From: Smith, Chantel
Sent: January-06-11 5:31 PM
To: oalonso@tssa.org
Cc: Wachsmuth, Bill; Vadlja, Tony
Subject: Re: Union Gas Limited London North Reinforcement Project
Attachments: Design and Pipe specs - London North Reinforcement.pdf

Oscar:

Thank you for your interest in our London North Reinforcement pipeline construction project.

In response to your letter, I have attached the design and pipeline specifications you have requested, as well as other specifications you may be interested in.

Please review and provide us with any comments you may have regarding the proposed pipe.

Thanks.

Chantel Smith, EIT
District Engineering, London/Sarnia
Union Gas Limited | A Spectra Energy Company
109 Commissioners Rd. W | London, ON N6A 4P1
Tel: 519-667-4140
cjsmith@uniongas.com

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EB-2010-0381
Schedule 9

LONDON 3RD FEED PROJECT
DESIGN AND PIPE SPECIFICATIONS

Design Specifications – NPS 8

Class Location	-	Class 3
Design Factor	-	0.800
Location Factor (General)	-	0.7
Location Factor (Roads)	-	0.625
Maximum Design Pressure	-	6160 kPa
Maximum Operating Pressure	-	3450 kPa
SMYS	-	36.4%

Note: Initial operating pressure will only be 3450kPa, with intentions to bring up to 6160kPa in a few years.

Test Medium	-	Water
Test Pressure	-	8624 kPa min.
Valves/ Fittings	-	PN 100
Minimum Depth of Cover	-	1.2 m

Pipe Specifications

Size	-	NPS-8
Wall thickness	-	6.4 mm
Type	-	Electric Resistance Weld
Description	-	C.S.A. Standard Z245.1-07
Grade	-	290 MPa
Category	-	I
Coating	-	Extruded Polyethylene (Yellow Jacket)

Design Specifications – NPS 12

Class Location	-	Class 3
Design Factor	-	0.800
Location Factor (General)	-	0.7
Location Factor (Roads)	-	0.625
Maximum Design Pressure	-	420 kPa
Maximum Operating Pressure	-	420 kPa
Test Medium	-	Water
Test Pressure	-	588 kPa min.
Valves/ Fittings	-	PN 20
Minimum Depth of Cover	-	1.2 m

Pipe Specifications

Size	-	NPS-12
Wall thickness	-	5.6 mm
Type	-	Electric Resistance Weld
Description	-	C.S.A. Standard Z245.1-07
Grade	-	290 MPa
Category	-	I
Coating	-	Extruded Polyethylene (Yellow Jacket)

Vadlja, Tony

From: oalonso@tssa.org
Sent: January 7, 2011 11:03 AM
To: Smith, Chantel
Cc: Wachsmuth, Bill; Vadlja, Tony; zora.crnojcki@oeb.gov.on.ca
Subject: RE: Union Gas Limited London North Reinforcement Project

Thanks Chantel. The referenced reinforcement report is acceptable. We reviewed the design and pipe specifications for the project and found in conformance to the O. Reg. 210/01.

Should the pipeline be upgraded to operate over 30% SMYS (to the new MOP of 6160 kPa), subsection 16 (5) and 16(6) of O. Reg. 210/01 would be applicable.

Regards,

Oscar Alonso
Fuels Safety Engineer
Tel.: 416 734 3353
e-mail: oalonso@tssa.org

Technical Standards & Safety Authority -- "Putting Public Safety First"
website: www.tssa.org
toll-free: 1-877-682-8772

"Smith, Chantel" <CJSmith@uniongas.com>

01/07/2011 10:17 AM

To "oalonso@tssa.org" <oalonso@tssa.org>
cc "Wachsmuth, Bill" <bwachsmuth@uniongas.com>, "Vadlja, Tony" <tvadlja@uniongas.com>
Subject RE: Union Gas Limited London North Reinforcement Project

Oscar,

The NPS 8 pipeline is being designed to be piggable for when the pressure is increased to 6160kPa. Because we don't know for sure when, or if even at all, this line will be upgraded, we will not be designing the station with the pig launcher/receiver until required.

Chantel Smith

519-667-4140 | office
cjsmith@uniongas.com

From: oalonso@tssa.org [mailto:oalonso@tssa.org]
Sent: January 7, 2011 9:08 AM
To: Smith, Chantel
Cc: Wachsmuth, Bill; Vadlja, Tony
Subject: Re: Union Gas Limited London North Reinforcement Project

Thanks Chantel for the information on the referenced pipeline.

I'll appreciate if you could provide the following additional information for the NPS 8: Will the pipeline be pigable and equipped with permanently mounted pig launching and receiving barrels?

Regards,

MIDDLESEX CENTRE

Union Gas Ltd.
P.O. Box 5353
Station A
109 Commissioners Rd. W.
LONDON, ON.
N6A 4P1

January 4, 2011

Attention: Mr. Tony Vadlja,
Lead Environmental Planner,

Re: Union Gas Ltd.-London North Reinforcement Project

Dear Mr. Vadlja,

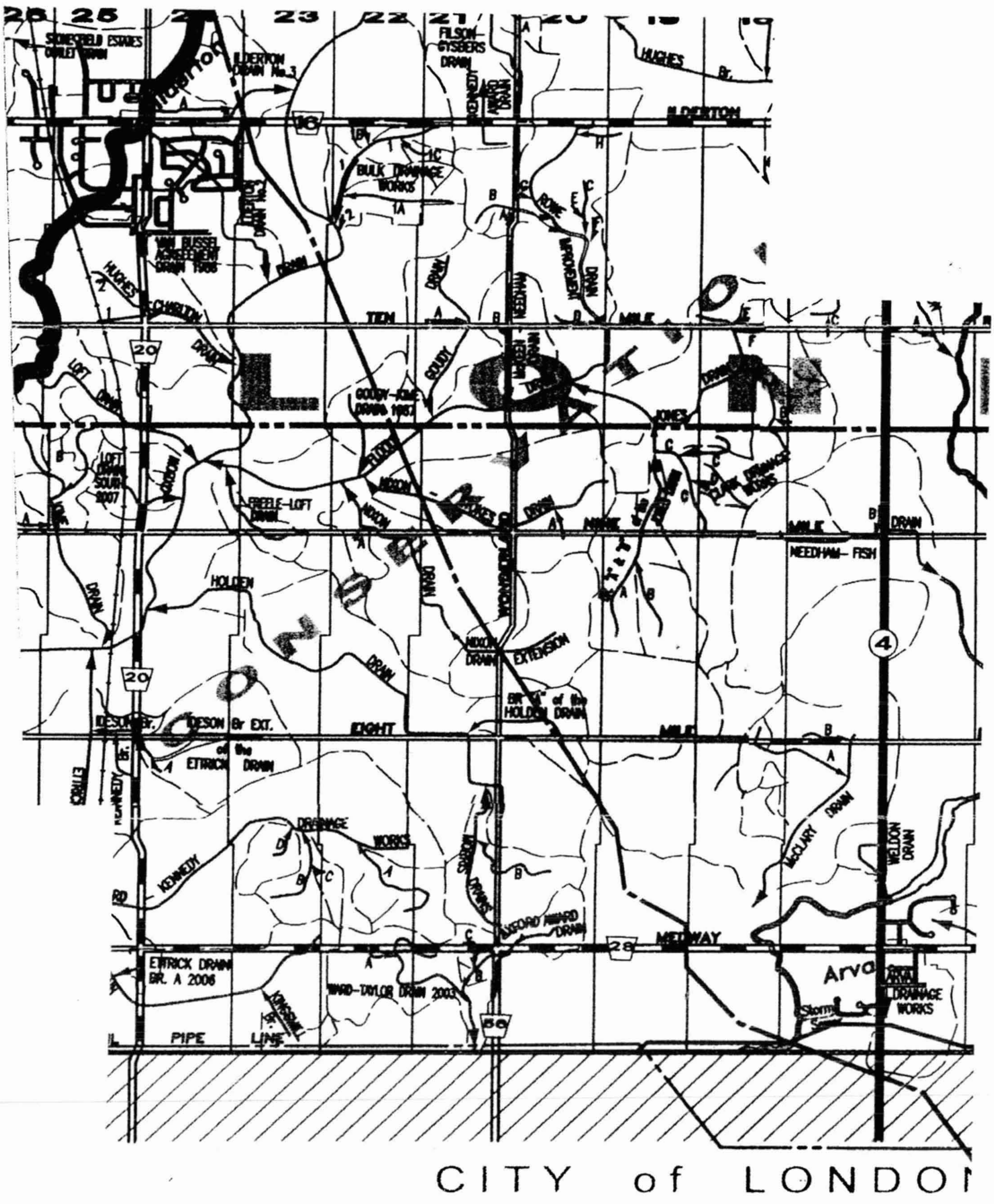
Upon review of your Environmental Report for the above noted project, I wish to offer the following comments at this time.

1. None of your drawings indicate that a 400mm water pipeline exists along the north side of the Medway Road (County Rd # 28) R.O.W. or the high pressure "Sarnia Products Oil Pipeline" at the City boundary.
2. Besides the 3 open ditch municipal drain crossings, there are at least 8 municipal tile drain crossings along Wonderland Road, and 4 along Eight Mile Road. These tile locations and depths will have to be verified prior to construction.
3. At this time no information has been provided regarding the minimum depth of cover specified for the pipeline anywhere, and specifically in the vicinity of tile drain and open ditch drain crossings. Adequate depth/cover of pipeline must be provided for the potential deepening of municipal drain channels, and the improvement/enlargement of municipal tile drains. Approved construction standards for the drain crossings will be required
4. Approved standard location of the proposed pipeline related to property lines will provide consistency for any future road or drainage improvements.

Thank you for offering the opportunity for comment. If you have any questions, please contact me at extension # 229 .

Yours truly,

Jim Reeve C.E.T.
Drainage Superintendent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FILSON-GYSBERS DRAIN
ILDERTON DRAIN No.3
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ILDERTON
BULK DRAINAGE WORKS
VAN BUSSEL AGREEMENT DRAIN 1988
CHARLTON
TEN
MILE
GOUDY
GOUDY-KIME DRAIN 1987
JONES
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HOLDEN
NIXON DRAIN EXTENSION
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McCLARY DRAIN
WELDON DRAIN
MEDWAY
ETTRICK DRAIN BR. A 2006
WARD-TAYLOR DRAIN 2003
Arva
DRAINAGE WORKS
PIPE
LINE
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4
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CITY of LONDON

Vadlja, Tony

From: Smith, Chantel
Sent: January 10, 2011 1:47 PM
To: reevej@middlesexcentre.on.ca
Cc: Wachsmuth, Bill; Vadlja, Tony
Subject: Re: Union Gas Ltd. - London North Reinforcement Project

Mr. Reeve,

Thank you for your letter, dated January 4, 2011, regarding your review of our Environmental Report for the Union Gas London North Reinforcement Project. We appreciate your comments and will ensure we incorporate these into our design drawings.

I will retain your information and will contact you when information regarding standard location and depth have been finalized.

Thank you.

Chantel Smith, EIT
District Engineering, London/Sarnia
Union Gas Limited | A Spectra Energy Company
109 Commissioners Rd. W | London, ON N6A 4P1
Tel: 519-667-4140
cjsmith@uniongas.com

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300 Dufferin Avenue
P.O. Box 5035
London, ON
N6A 4L9

London
CANADA

August 17, 2011

Tony Vadlja, Lead Environmental Planner
Union Gas Limited
P.O. Box 5353 Station A
109 Commissioners Road W.
London, ON N6A 4P1

Dear Mr. Vadlja:

Re: Union Gas Limited – London North Reinforcement Project

In response to your December 15, 2010 letter, I am providing comments on your Environmental Report. Please update your application to the Ontario Energy Board with these comments.

1. The Union Gas Environmental Report erroneously notes that "Gas staff are working with the County of Middlesex and City of London engineering staff to address their concerns and avoid potential conflicts with existing utilities and planned road improvement within their respective jurisdictions." (pg iii) No details had been provided to the City of London for its consideration prior to completion of the report. In fact, by way of a letter to the study consultant dated November 15, 2010, the City objected to the preferred Wonderland Road alignment: "The City of London does not support the proposed Wonderland Road alignment. The City of London is willing to work with you to overcome the challenges associated with bringing a new service trunk into the City. We would also be interested in alternative alignments that you may be considering." There was no further discussion or contact with the City of London prior to the preparation of the final report. This is not consistent with the Ontario Energy Board (OEB) Guidelines – Social Impact section -- where it is noted that: "It is important that an effective dialogue between the applicant and affected parties be maintained throughout the entire planning process, to ensure that decisions are both responsive and responsible." It is the City of

The Corporation of the City of London
Office 519.661.2500 X 4936
Fax 519.661-5931
pmcnally@london.ca
www.london.ca

London position that there has not been meaningful consultation, as expected and offered in our letter.

2. The Environmental Report only considered two alignments within existing road allowances and therefore is not a complete evaluation of alternatives. It makes simplifications at key study stages such that the impacts within the proposed alignment are not properly evaluated. The first simplification was "the decision of Azimuth and Union Gas that the road allowances in the study area provided a reasonable opportunity for route identification" (pg 2). This was done before considering the complex nature of the City of London road allowance. The nature of the road allowance options are then subsequently discounted, even though the complex nature is documented as: "...variability of widths of rights-of-way as a result of factors such as land purchases by the municipality, ownership changes over time, variations in utility easement requirements, ditch drainage, future road widening, and road allowance cultivated by adjacent farmer..." (pg 3). The Environmental Report does not attempt to evaluate these, but instead, again simplifies the environmental review: "Therefore, for the purposes of this report the term "road allowance or easement" simply refers to placement of the pipeline within the disturbed municipal road allowance area" (pg 3). The above two simplifications do not meet the intent of the OEB Guidelines to properly identify, manage and document environmental impacts, nor does it follow the General Planning Principles in the Guideline. It is the position of the City of London that there is insufficient information and review of that information to confirm the preferred route.

3. The Environmental Report erroneously notes that "discussions will be held with the County of Middlesex and City of London engineering staff to confirm the appropriate location for the pipeline within the road allowance in order to avoid any potential disruption to future road improvements or construction" (pg 27). It is the City of London position that such information is critical to the route selection process itself and should have been determined and evaluated in the study.

4. The Urban Siting section of the Guidelines was not followed. This section recognizes "...a different set of issues, concerns, and problems to be managed." It specifically requires "...the precise location of all existing underground utility and service works and corridors"; and, "Each municipality should be contacted for advice on construction activities...as well as their preference for a proposed location and timing of construction." The Environmental Report includes none of this information or an

evaluation of it. The report (pg 29) notes that: "Union Gas are in consultation with the City of London and the County of Middlesex to determine all existing utilities and infrastructure within the road allowance and the limits of any future road expansions." No requests for such information were made before the Environmental Report was completed. It is the City of London's position that this is critical information to be considered in the route selection process, not after.

5. The Environmental Report erroneously notes on pg 38 that an action taken to resolve City of London concerns was a Union Gas meeting with City Engineering staff. No such meeting occurred before completion of the study. This further indicates a lack of consultation as noted in item 1, above.

6. The proposed routing of a gas pipeline within London's Wonderland Road North road allowance is not supported by the City because it may:

    a. encumber adjacent existing and planned land uses, including low and medium residential, neighbourhood facility, office and commercial uses;

    b. conflict with existing and future municipal servicing, including watermains, sanitary sewers and storm sewers; and,

    c. conflict with existing and future road needs, including significant profile changes, widening to four through lanes, left and right turn lanes, intersections and roundabout traffic control options.

The Environmental Report did not accumulate this information from the City such that the effects could be evaluated. Available information including approved Draft Plans of Subdivision, as well as completed and ongoing Environmental Assessment studies related to municipal infrastructure have not been considered. Zoning By-law changes to meet TSSA setback requirements for high pressure pipelines were not evaluated. It is the position of the City of London that this information is critical to a route selection process and is directed by the OEB Guidelines.

In summary, an inappropriately planned pipeline may increase future costs to the City of London, impact planned land uses and may constrain the ability of the City of London to meet its municipal infrastructure requirements approved under the Environmental Assessment Act.

We are of the opinion that many important aspects of the Ontario Energy Board Guidelines that are to be used for such Environmental Reports were not followed, including consultation, planning, alternative route reviews and the use of available information. My staff remain available to work with you on updating this study.

Yours truly,

Pat McNally, P. Eng.
General Manager – Environmental and Engineering Services
and City Engineer

cc R. Panzer
D. Ailles

uniongas
A Spectra Energy Company

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March 9, 2011

Mr. Pat McNally
General Manager
City of London
Environmental and Engineering Services and City Engineer
300 Dufferin Avenue
P.O. Box 5035
London ON N6A 4L9

Re: Union Gas Limited – London Reinforcement Project

Dear Mr. McNally,

Thank you for your letter of February 17, 2011 regarding the above project (your letter is erroneously dated August 17, 2011).

One of our primary goals in planning for projects is to ensure thorough consultation with all affected stakeholders. As well, pursuant to the Ontario Energy Board's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, public consultation is a requirement for any applicant. Accordingly, Union Gas believes that it has met the requirements of this Guideline.

The following is in response to the specific points in your letter:

1) We will continue our ongoing meetings and discussions with City representatives to address the various concerns the City may have regarding the alignment of the proposed pipeline along Wonderland Road. Our primary point of contact in this regard is Mr. Don Beauchamp.

2) Section 5 of the Environmental Report describes the route selection process for this proposed pipeline. At your convenience or the convenience of City staff, we would be more than willing to discuss in more detail our route evaluation and decision making process. Please contact me by phone at 519-667-4165 to arrange for this discussion.

3) Please see response to 1).

4) Please see response to 1 and 2)

5) Although no meeting between Union Gas and the City occurred before the completion of the Report, there have been various meetings and discussions with the City subsequent to the completion of the Report.

6) We recognize that Wonderland Road, particularly within the City limits, has and will continue to be affected by the ongoing growth in the City. This includes the items noted in point 6 of your letter. Union Gas will continue to consult with City engineers to determine an acceptable location for the pipeline along Wonderland Road.

The proposed London Reinforcement pipeline project is an important component of the infrastructure to support the growth of London. It is in our mutual interest to ensure the pipeline is planned, constructed and operated in an effective manner for both Union Gas and the City. We look forward to our ongoing consultations in this regard.

Yours truly,

Tony Vadlja,
Lead Environmental Planner
Union Gas Limited

cc D. Beauchamp

COUNTY OF MIDDLESEX
COUNTY ENGINEER'S OFFICE
399 RIDOUT STREET N., LONDON, ON N6A 2P1
Tel: 519-434-7321
Fax: 519-434-0638

February 24, 2011

Tony Vadlja, Lead Environmental Planner
Union Gas Limited
P.O. Box 5353 Station A
109 Commissioners Road W.
London, ON N6A 4P1

Dear Mr. Vadlja:

Re: Union Gas Limited – London North Reinforcement Project

The County of Middlesex would like to echo many of the concerns raised by the City of London in their recent letter regarding the Environmental Report prepared for the above noted project.

The Environmental Report fails to evaluate alternatives other than the use of municipal road allowances. Consideration was not given to the deficient road allowance width of County Road 56 (Wonderland Road) and the impact on future maintenance, servicing and capital works on this roadway.

This section of roadway is likely to be reconstructed within a five year timeframe. Due to the narrow right of way the installation of a major transmission gas pipeline will have significant financial impacts on Middlesex County due to the proximity to road infrastructure and the additional safety requirements for working close to natural gas facilities. Also future construction plans will be limited by the pipeline, and the County may incur significant costs related to the required relocation of either sections or the entirety of the pipeline in order to facilitate future planned capital works.

Consultation with the affected municipalities was poor and more should have been completed prior to the finalization of the Environmental Report. Many of the issues of concern to both the County and the City could have been identified and likely would have changed the selection of Wonderland Road as the preferred route. Simply stating that discussions will be held with the County of Middlesex and the City of London is not sufficient as significant restrictions would have been identified prior to the selection of the preferred route.

County staff is willing to provide any additional information and would be available to participate in an update to this study. The importance of this pipeline for the supply of natural gas to the northwest of the City of London is recognized by Middlesex County, but the negative impacts of installation of the pipeline along County Road 56 (Wonderland Road) cannot be ignored.

If you have any questions, please feel free to contact the undersigned.

Yours truly,

Chris Traini, P.Eng.
County Engineer
County Engineer's Office

cc.: Pat McNally, General Manager – Environmental and Engineering Services, City of London (via email)
John Lucas, Division Manager – Transportation Engineering, City of London (via email)

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March 9, 2011

Mr. Chris Traini
Chief Engineer
County of Middlesex
County Engineer's Office
399 Ridout Street N.,
London ON N6A 2P1

Re: Union Gas Limited – London Reinforcement Project

Dear Mr. Traini,

Thank you for your letter of February 24, 2011. As you know, we continue to discuss the location of the proposed pipeline along Wonderland Road with both the County and the City. We are aware of the concerns expressed by both the City and County and will endeavour to address these concerns in the planning and construction of the proposed pipeline. Thank you for the County's ongoing assistance with our pipeline project.

Yours truly,

Tony Vadlja,
Lead Environmental Planner
Union Gas Limited

cc D. Beauchamp

UPPER THAMES RIVER
CONSERVATION AUTHORITY
Working in Partnership with the Community for a Healthy Watershed

The Thames
A Canadian
Heritage River

January 5, 2011

Via E-Mail

Union Gas Limited
P. O. Box 5353 , Station A
109 Commissioners Road West
London, Ontario
N6A 4P1

Attention: **Tony Vadlja – Lead Environmental Planner**

Dear Mr. Vadlja:

Re: **London North Reinforcement Project**
Environmental Report

The Upper Thames River Conservation Authority acknowledges receipt of a copy of the above-noted report, prepared for Union Gas by Azimuth Environmental Consulting Inc. and dated December 2010. We have completed a review of the report and offer the following comments at this time.

1. As noted on page 23 of the report, approvals will be required from the UTRCA for all watercourse crossings proposed along the selected route.
2. Consistent with communications received from the Municipality of Middlesex Centre (appended to the Azimuth report), details regarding municipal drain crossing location and methodology should be reviewed with the Municipality prior to proceeding.
3. The UTRCA does not have any objection to the preferred route along Wonderland Road between 10 Mile Road and Fanshawe Park Road.

Thank you for the opportunity to review and comment on the Environmental Report. If you have any additional information or questions at this time, please contact the undersigned.

Yours truly,
UPPER THAMES RIVER CONSERVATION AUTHORITY

Mark Snowsell
Land Use Regulations Officer

MS/ms

c.c. Paul Neals, Azimuth Environmental Consulting Inc.
(e-mail paul@azimuthenvironmental.com)

Ministry of Tourism and Culture
Culture Programs Unit
Programs & Services Br.
900 Highbury Avenue
London, ON N5Y 1A4
Tel: 519-675-6898
Fax: 519-675-7777
e-mail: shari.prowse@ontario.ca

Ministre du Tourisme et de la Culture
Unité des programmes culturels
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Ontario

February 18, 2011

Mr. Arthur Figura
Timmins Martelle Heritage Consultants Inc.
584 Oxford Street East
London, Ontario N5Y 3J1

RE: Review and Acceptance into the Provincial Register of Reports: Archaeological Assessment Report Entitled, "Stage 1 Archaeological Assessment Union Gas - North London Reinforcement Environmental Assessment City of London Geographic Township of London Middlesex County, Ontario", December 2010, Received January 26, 2011, Licence/PIF # P083-083-2010, MTC File PI00272

Dear Mr. Figura:

This office has reviewed the above-mentioned report which has been submitted to this Ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18. This review is to ensure that the licensed professional consultant archaeologist has met the terms and conditions of their archaeological licence, that archaeological sites have been identified and documented according to the 1993 technical guidelines set by the Ministry and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario.

As the result of our review, this Ministry accepts the above titled report into the Provincial register of archaeological reports. The report indicates that portions of the subject property have archaeological potential as illustrated in Figures 9, 22, 41, 54 and should be subject to a Stage 2 archaeological assessment if they will be impacted by this project. It is also recommended that once the final route is chosen and project mapping is provided a more detailed review of existing conditions can be conducted in order to better define the scope of the Stage 2 fieldwork. This Ministry concurs with this recommendation.

I trust this information is of assistance. Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Shari Prowse
Archaeology Review Office

cc. Archaeology Licence Office
Mr. Tony Vadlja, Union Gas

Schedule 18

TOTAL ESTIMATED ENVIRONMENTAL COSTS

LONDON REINFORCEMENT PIPELINE PROJECT

Pre-Construction

- Environmental Report
- Archaeology Assessment Report
- Stage 2 Archaeological Review

Total Pre-Construction	**$**	**50,000**

Construction

- Monitoring

Total Construction	**$**	**5,000**

Post Construction

- Post Construction Report

Total Post Construction	**$**	**5,000**
Total Estimated Environmental Costs	**$**	**60,000**