City of Richmond

Report to Committee

TO Public Works & Transportation - Oct 22, 2008

To:	Public Works and Transportation Committee	**Date:**	September 30, 2008
From:	John Irving, P.Eng. MPA Director, Engineering	**File:**	10-6045-09-05/2008-Vol 01
Re:	**Terasen Proposed Dike Pipeline Crossing**		

Staff Recommendation

That a letter be written to Terasen Inc., indicating Council's support of their application for a Certificate of Public Convenience and Necessity to the BC Utilities Commission for their proposed NPS 500 natural gas transmission main replacement project.

John Irving, P.Eng. MPA
Director, Engineering
(604-276-4140)

Att. 2

FOR ORIGINATING DEPARTMENT USE ONLY	
ROUTED TO: CONCURRENCE Roads & Construction Services.....Y ☑ N ☐	CONCURRENCE OF GENERAL MANAGER
REVIEWED BY TAG YES ☑ NO ☐	REVIEWED BY CAO YES ☑ NO ☐

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Staff Report

Origin

In August 2008 Terasen Inc., advised the City of their intent to replace Terasen's ageing NPS 20 natural gas main. The NPS 20 gas main supplies natural gas to the Cities of Richmond and Vancouver. In order to complete this work, Terasen is required to file an application for a Certificate of Public Convenience and Necessity to the BC Utilities Commission. Accordingly, Terasen requires Council support of this application in order to proceed with their proposed works.

The purpose of this report is to provide Council with the City related details surrounding Terasen's proposed gas main replacement project and to recommend that Council indicate their support for this project to proceed.

Analysis

Terasen Inc., is a Canadian corporation headquartered in British Columbia and the parent company of the Terasen Gas companies, the principle natural gas distributor of gas in this province, including the City of Richmond. Terasen completes supply of natural gas to the City through large transmission type mains that connect to smaller distribution pipes.

Terasen owns and operates two transmission mains in the vicinity of the Nelson Road alignment (refer to Attachment 1). One of the transmission mains (NPS 24) is relatively new and is expected to remain in service for several more years. Per Terasen, the river crossing portion of their other transmission main (NPS 20), is nearing the end of its useful service life and needs to be replaced.

In order for Terasen to proceed with their proposed transmission main replacement, they are required to file an application for a Certificate of Public Convenience and Necessity (CPCN) to the BC Utilities Commission. The CPCN process requires that Terasen clearly demonstrate that their proposed work is in the best interest of their customers, including the City.

Terasen has advised that construction of their replacement NPS 20 transmission main is planned for the late 2009 timeframe.

Through discussions with Terasen staff beginning in August 2008, the following issues in particular were identified as representing the best interests of the City, specifically:

- the capacity of the new main to meet the City's future needs;
- the impact of the proposed work to the City's dike at the south crossing; and
- impacts of construction to the public.

Future Needs

At the August 2008 meeting Terasen confirmed that replacement of their existing NPS 20 transmission main will be completed with a new main of adequate size to meet future City demands.

City Dike at Terasen Crossings

Through the City's completion of regular dike inspections, short sections of dike at the Terasen 450 mm and 600 mm gas crossings were found to be less than the provincial standard. Specifically, while the dike height meets provincial requirements, portions of the dike width had been removed at Terasen's requirement to reduce the weight of soil over their NPS 20 and NPS 24 transmission mains.

The City advised Terasen that the current state of the dike is not acceptable. It is imperative that any work associated with their NPS 20 transmission main replacement project addresses these issues.

Terasen has responded to the City's requirements as confirmed in their letter dated September 9, 2008 (Attachment 2). Specifically, Terasen has agreed to pay the costs for the design and construction for the dike structure necessary to accommodate their transmission mains as well as meet the City's dike needs.

Public Impact

The current program proposed by Terasen includes Horizontal Directional Drilling (HDD) of the new replacement main. Construction via HDD methodology typically is one of the best technologies for minimizing impact to the public.

Terasen currently does not have a Municipal Access Agreement with the City. Accordingly, Terasen was advised that all work must be completed to the applicable City requirements and bylaws and that confirmation in writing is required in this regard prior to receiving the City's support on their CPCN application.

Financial Impact

There is no financial impact. Terasen has agreed to pay design and construction costs for a dike structure that meets City standards over their gas infrastructure.

Conclusion

Terasen proposes to replace the river crossing portion of their ageing NPS 20 natural gas transmission main in the vicinity of Nelson Road. To complete this work, Terasen is required to file an application for a Certificate of Public Convenience and Necessity to the BC Utilities Commission. Staff have reviewed the City's needs in this context and have identified the City's future natural gas requirements, impacts to the dike and public impact as items that need to be addressed prior to supporting Terasen's CPCN application.

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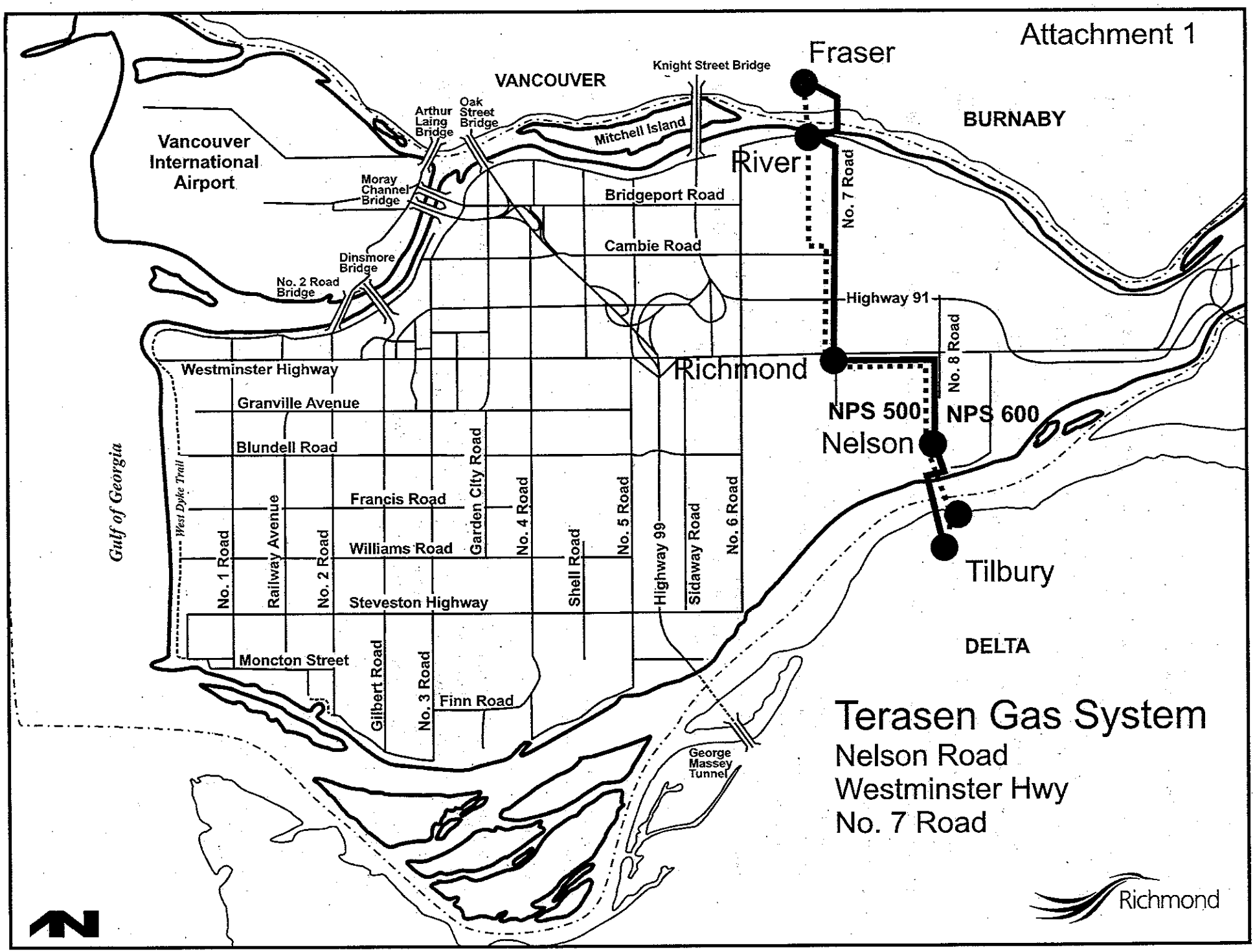
JVY:jvy


Attachment 1
Fraser
River
VANCOUVER
BURNABY
Knight Street Bridge
Arthur Laing Bridge
Oak Street Bridge
Mitchell Island
Vancouver International Airport
Moray Channel Bridge
Bridgeport Road
No. 7 Road
Cambie Road
Dinsmore Bridge
No. 2 Road Bridge
Highway 91
No. 8 Road
Westminster Highway
Richmond
Granville Avenue
NPS 500
NPS 600
Nelson
Blundell Road
Gulf of Georgia
West Dyke Trail
Garden City Road
No. 4 Road
No. 5 Road
Francis Road
No. 1 Road
Railway Avenue
No. 2 Road
Williams Road
Shell Road
Highway 99
Sidaway Road
No. 6 Road
Tilbury
Steveston Highway
DELTA
Moncton Street
Gilbert Road
No. 3 Road
Finn Road
George Massey Tunnel
Terasen Gas System
Nelson Road
Westminster Hwy
No. 7 Road
Richmond

Terasen Gas

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September 9, 2008

Robert Gonzalez, P.Eng., P.E.
General Manager Engineering and Public Works
City of Richmond
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SUBJECT: Terasen Gas Pipelines and City of Richmond Dike Improvements
FRASER RIVER SOUTH ARM CROSSING UPGRADE PROJECT

Dear Sirs:

Thank you for the opportunity to discuss the formulation of a plan that will meet both Terasen Gas Inc. ("Terasen") pipelines and the City of Richmond's ("Richmond") dike improvement operational needs.

To confirm the outline of the initial plan to allow our respective organizations to move forward and ultimately construct a mutually acceptable solution(s) so that both structures will meet or exceed applicable requirements:

a. **Current As-Is Stress Level On Terasen's Pipelines**

- Terasen has completed its analysis of the current stress levels on both the as-is NPS 20 and NPS 24 pipeline that are under, or near, the City of Richmond's dike and have concluded that while both are within pipeline regulations with no immediate concerns, the stresses are near the maximum allowable limits.
- Furthermore, simple placement of typical dike materials such as mineral soils will likely cause the stresses on the pipelines to exceed the maximum limits and as such would be unacceptable to Terasen.
- Special design considerations will be required so that the structures can co-exist.

b. **Pipeline Design Basis Requirements For Incorporation Into The Dike Improvement Design**

- To mitigate additional stresses on Terasen's current pipelines (NPS 20 and NPS 24) due to dike improvements, Terasen's analysis suggests that a more cost effective and timely solution especially for a short term solution for the existing NPS 20 would be to focus efforts on a special dike (earthworks) design versus replacement of the linepipe with more robust metallurgical properties and/or changes to pipeline alignment.
- Moreover, Terasen has identified that the goal of the dike improvement design should be to achieve as close as practical "no net additional loading" over the current NPS 20 and NPS 24 pipeline(s) than that currently present.

Terasen Gas

- Terasen believes that a variety of special dike improvement designs could meet the above pipeline design consideration and have been used on similar applications throughout the world.
- With due regard to Richmond's milestones to have the first phase of dike upgrades constructed by the 2008 – 2009 winter the following aspects need further development:

    1. Existing NPS 20 – a short term solution that will satisfy requirements up to Oct 2009 inclusive of a risk management strategy on the assumption that the proposed replacement of the existing NPS 20 via the horizontal directional drilling ("HDD") construction method is approved by the BC Utilities Commission ("BCUC") and as a result the existing NPS 20 pipeline will be abandoned.

    2. Upgraded NPS 20 – the HDD NPS 20 pipeline will be designed such that its depth will be sufficient to meet anticipated long term future dike improvement requirements and if approved by the BCUC is anticipated to be in-service by Oct 2009.

    3. NPS 24 – Terasen has no plans to upgrade the NPS 24 pipeline within the foreseeable future so a special dike improvement design would need to be sufficient for the long term from the get go.

c. **Next Steps**

- Richmond retains dike design consultants from Golder Associates (or from other consultants at Richmond's option if it chooses) as soon as possible to commence a detailed assessment and/or preparation of special dike – pipeline crossing designs that provide the lowest cost solution and meet, or exceed, all pipeline and dike requirements OR the identification of an insurmountable conflict or "show stopper" condition(s) that prevents reaching a compatible design.
- Terasen and its consultants will assist in the communication and review of the special dike design from a pipeline perspective as and when required.
- In the event that the no net loading in combination with other dike design criteria can not be substantially achieved to each parties satisfaction, Terasen and Richmond will broaden the alternatives so that a mutually acceptable solution can be achieved.
- And, while not specifically discussed, Terasen presumes that Richmond will own, design, construct, maintain and operate the dike structure in accordance with all applicable requirements.

d. **Funding**

- Terasen will fund its share of the work based on the principle that Terasen will compensate Richmond for all reasonable incremental design, procurement and construction costs for the lowest acceptable special dike improvement costs over that which Richmond would not have otherwise incurred if the pipelines did not cross under the dike and subject to:

    i. Richmond providing to Terasen regular cost forecasts as information becomes known and

Terasen Gas

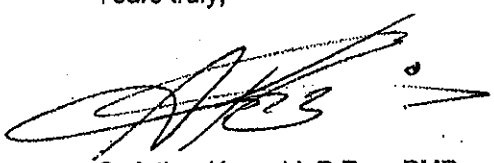
ii. that adequate support documentation is provided as to the nature, purpose and quantum of the expenditure.

I trust the above adequately documents the discussion between Terasen and Richmond, and more importantly, establishes a framework to achieve a solution in a timely manner.

Please advise when we can meet next with respect to further development on the dike design.

If you need any clarification or if the above needs adjustment please contact Amy Hennessy, Community Relations Manager at (604) 576-7363, or call me at 604-592-7475 - email art.kanzaki@terasengas.com.

Yours truly,



G. Arthur Kanzaki, P.Eng. PMP

Project Manager
Fraser River South Arm Crossing Upgrade Project

cc: Joel Lavers
Mujib Rahman
Chris Coady
Amy Hennessy