



City of Richmond

Report to Committee

To: Public Works and Transportation Committee  
From: Robert Gonzalez, P.Eng.  
Director, Engineering  
Re: Floodplain Management Bylaw

*To Public Works & Transportation July 18, 2007*  
Date: June 28, 2007  
*Xr: 10-6045-11-01*  
*File: 12-8060-02-01*

Staff Recommendation

That staff prepare a Floodplain Management Bylaw for Council's consideration as outlined in this report dated June 28, 2007 from the Director, Engineering.

607 Robert Gonzalez, P.Eng.  
Director, Engineering  
(4150)

FOR ORIGINATING DEPARTMENT USE ONLY					
ROUTED TO:		CONCURRENCE		CONCURRENCE OF GENERAL MANAGER	
Law .....	Y	<input checked="" type="checkbox"/>	N		
Building Approvals .....	Y	<input checked="" type="checkbox"/>	N		
Development Applications .....	Y	<input checked="" type="checkbox"/>	N		
Policy Planning .....	Y	<input checked="" type="checkbox"/>	N		
REVIEWED BY TAG	YES	NO	REVIEWED BY CAO	YES	NO
	<input checked="" type="checkbox"/> <i>DW</i>	<input type="checkbox"/>		<input checked="" type="checkbox"/> <i>ca</i>	<input type="checkbox"/>

## Staff Report

### Origin

In June 2006, staff presented the Richmond 2006-2031 Flood Protection Management Strategy Report to Council for information. The report summarized the study's findings and outlined an implementation plan. It is anticipated that the final strategy will be presented to Council later in 2007. One of the primary tasks identified in the implementation plan was to develop a Floodplain Management Bylaw.

This report provides details regarding the proposed Floodplain Management Bylaw and seeks Council's support for its implementation.

### Analysis

As Richmond is situated in a flood plain area, flood protection is paramount. A comprehensive floodplain bylaw is a critical regulatory tool to mitigate the impacts of flood hazards and to assist in the future development of Richmond.

Based on past agreements with the Provincial Government, the City created an Urban Exempt area west of Highway 99 and the existing Policy 7000 allows buildings in the Urban Exempt area to be built below the 200-year flood level along the Fraser River to an elevation of 0.9m geodetic. The 0.9m elevation represents the existing natural grade and is much lower than the Provincial recommended flood elevation of 2.6m. See Figure 1 for the existing flood construction levels.

While retaining a low building elevation of 0.9m has traditionally been manageable, it poses significant future challenges given the anticipated growth and densification identified in the City's Official Community Plan. Development and densification will continue to increase the volume of storm water and speed at which it has to be removed in order to continue to meet the City's drainage service level of a 1 in 10 year event. Through the City's long range infrastructure models, staff have gained a better understanding of the drainage infrastructure improvements required to sustain the current level of service. It is readily apparent that additional techniques, beyond adding more and larger drainage infrastructure, are required.

The proposed Floodplain Management Bylaw will use non-structural strategies for flood protection to reduce the dependence on structural defence mechanisms such as the dyke. The long term strategy is that over an extended period of time, the City should raise the level of developed land such that it is above the 200-year flood level. In addition to reducing reliance on dykes, the size and amount of drainage infrastructure required is reduced given the reduced flooding risks from buildings being constructed at higher elevations.

While the goal of having the habitable areas of buildings constructed at higher elevations is beneficial from an infrastructure view point, the challenge remains from a development and land use planning perspective. In the City Centre, where most of the re-development is being experienced on a lot by lot basis, it is not practical or possible in some cases to severely stagger building elevations. In East Richmond in the agricultural areas it would not be practical to require barns or storage structures to be constructed above natural grades. To address these

issues the proposed Floodplain Management Bylaw must allow some flexibility to allow a gradual transition to higher building elevations in City Centre and exemptions for farming structures in agricultural areas.

Where possible, with large planning initiatives such as West Cambie, minimum habitable building elevations will be required to meet Provincial Flood Construction Levels as will be set out in the proposed Floodplain Management Bylaw.

Following the Local Government Act and guidelines established in the provincial Flood Hazard Area Land Use Management Guidelines (May 2004), the proposed Floodplain Bylaw will:

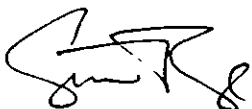
- Establish setbacks to limit the construction, reconstruction, movement, extension or location of landfill or structural support required to support a floor system or pad;
- Establish new flood construction levels as determined by the most recent study concluded by the Fraser Basin Council study and subsequently adopted by the Province as shown in Figure 2;
- Require that where it is not feasible to construct buildings to meet Provincial flood construction levels, building habitable elevations be set higher than fronting roads; and
- Limit the site-specific exemptions to be consistent with the Ministry of Water, Land and Air Protection, Province of British Columbia, Flood Hazard Area Land Use Management Guidelines, dated May 2004 or as approved by the General Manager, Engineering & Public Works.

### **Financial Impact**

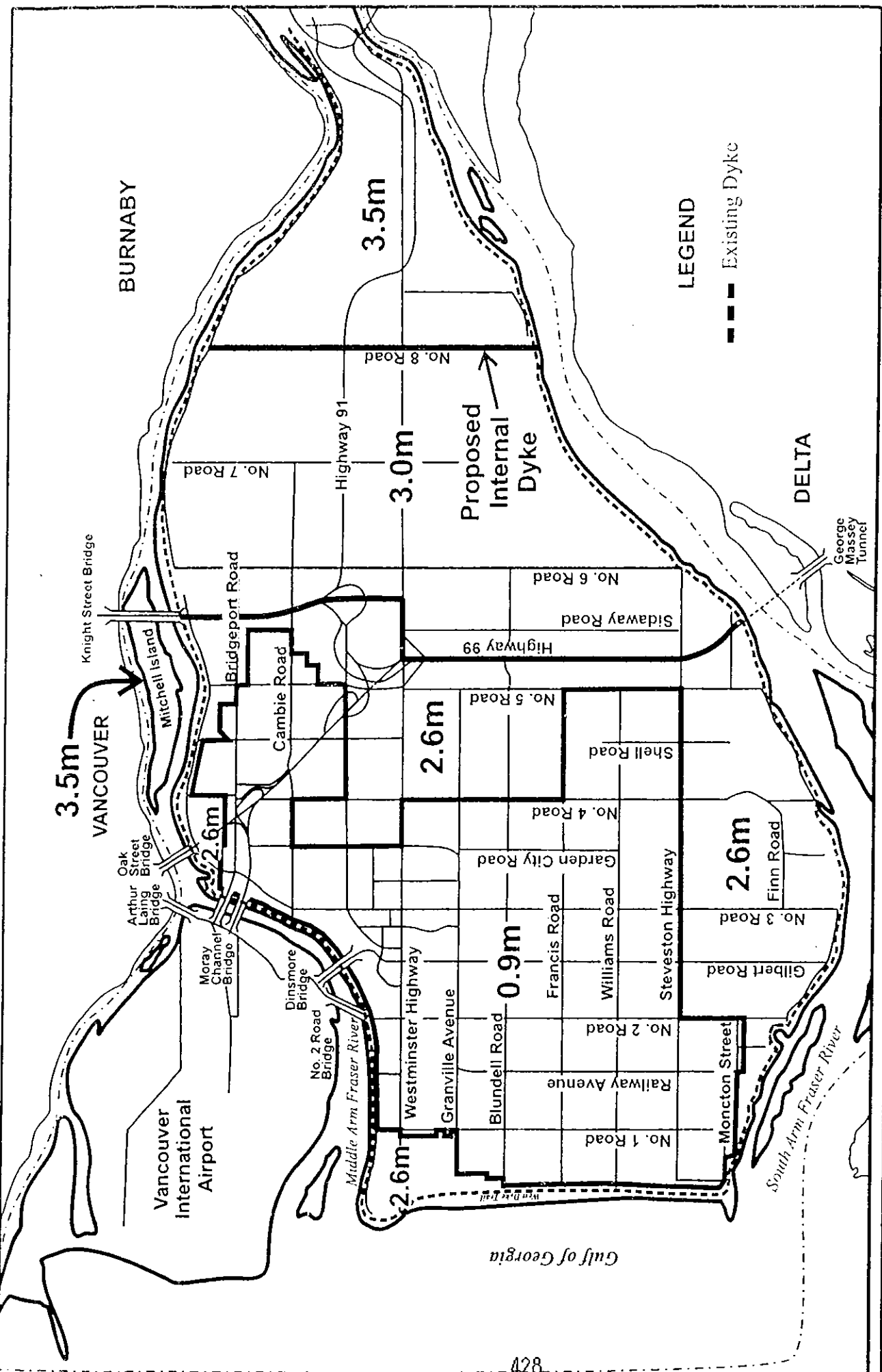
None at this time. Through the capital program, as new infrastructure is planned, it will be planned and designed with the higher building elevations in mind.

### **Conclusion**

Though the long range infrastructure modelling efforts commenced in 2000 by Engineering Planning staff, it has become evident that constructing significantly more and larger drainage infrastructure to sustain current service levels is not a feasible long term sustainable solution. A combination of techniques is required and the proposed Floodplain Management Bylaw will provide some of the additional necessary tools. Concurrently, the proposed Floodplain Management Bylaw will have to be sufficiently flexible to allow for situations where it is not feasible or practical to raise building elevations.

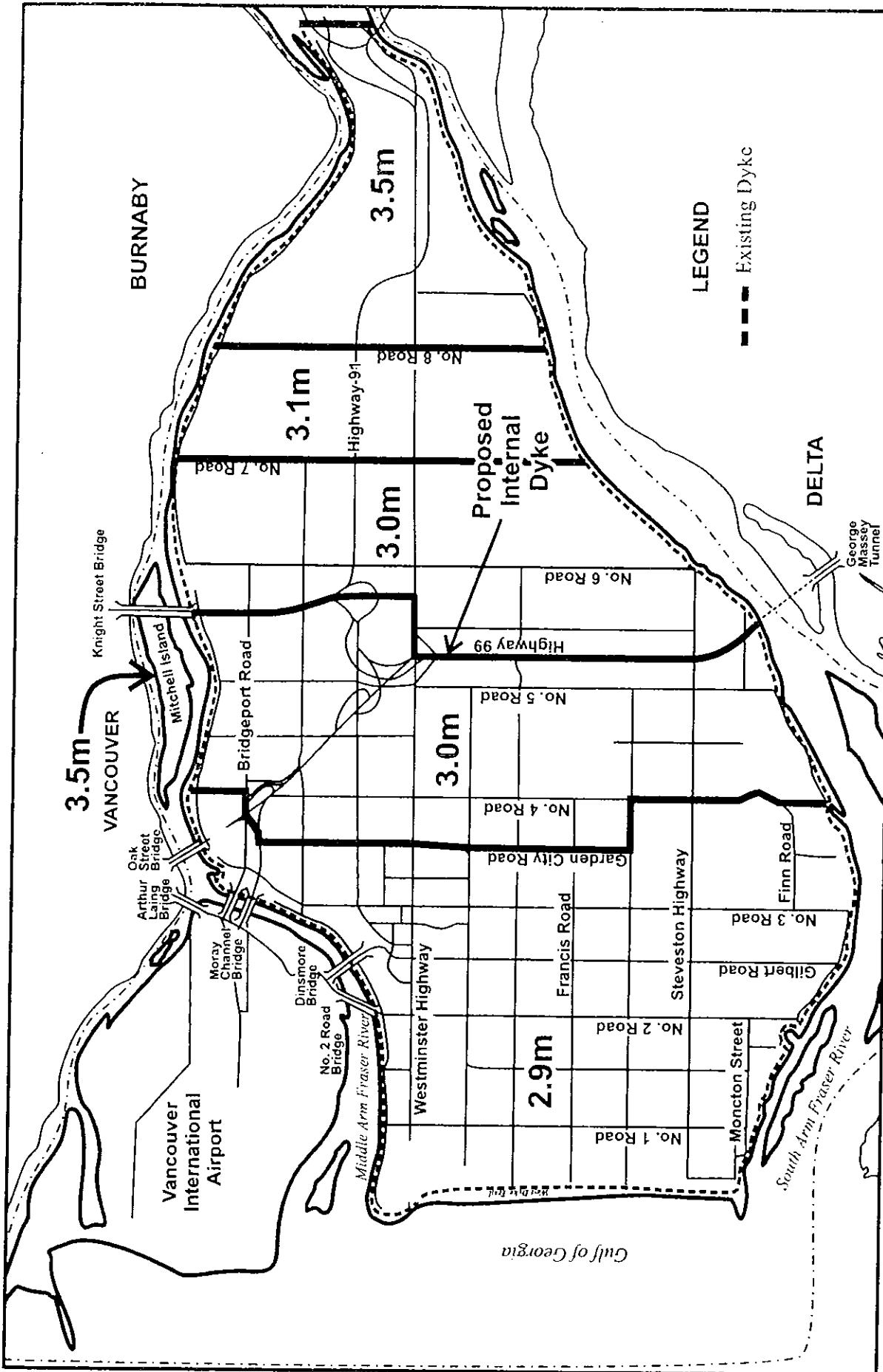


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**Figure 1**  
 Existing Flood Plain Construction Elevations

Original Date: 01/13/00  
 Revision Date: 07/03/07  
 Note: Elevations are in G.S.C.



**Figure 2**  
Proposed Flood Plain Construction Elevations

Original Date: 03/15/07

Revision Date: 06/29/07

Note: Elevations are in G.S.C.