City of Richmond

Report to Committee

To:	Planning Committee	**Date:**	June 2, 2008
From:	Jerry Chong Director, Finance	**File:**	
Re:	**Proposed DCC Program and Rates Bylaw**		

Staff Recommendation

1) That Development Cost Charges Bylaw No. 8024, Amendment Bylaw No. 8396 which amends the 2008 Development Cost Charge (DCC) Program and is required to implement the proposed new City Centre Area Plan, be introduced and given first reading.

2) That staff be directed to obtain public input regarding the draft 2008 Development Cost Charge (DCC) Program and Bylaw as per the report from the Director, Finance dated June 2, 2008, and report back to Council in July 2008.

Jerry Chong
Director, Finance
(4064)

FOR ORIGINATING DIVISION USE ONLY

ROUTED TO:	CONCURRENCE
Budgets	Y ☑ N ☐
Economic Development	Y ☑ N ☐
Real Estate Services	Y ☑ N ☐
Engineering	Y ☑ N ☐
Law	Y ☑ N ☐
Parks Planning, Design & Construction	Y ☑ N ☐
Policy Planning	Y ☑ N ☐
Development Applications	Y ☑ N ☐
Transportation	Y ☑ N ☐

CONCURRENCE OF GENERAL MANAGER

REVIEWED BY TAG	YES	NO
	☑	☐

REVIEWED BY CAO	YES	NO
acting	☑	☐

2455012

Staff Report

Origin

Introduction

Section 933 of the *Local Government Act* authorizes municipalities to levy development cost charges (DCCs) to recover:

- infrastructure servicing capital costs for roads, drainage, water, and sanitary sewer systems, and
- parkland acquisition and development costs

related directly or indirectly to the developments to be assessed. DCCs must only be used for new growth in the City, as opposed to maintaining existing services. The City of Richmond has levied DCCs since 1979, when they were introduced by provincial government legislation.

Development cost charge bylaws must be reviewed periodically to ensure consistency with development and servicing plans and to accurately reflect construction costs. The last review of the DCC programs and rates was completed in 2006. Subsequent to that review, the City initiated an update to its long-term land use plan for the City Centre. This new plan refocuses the development potential in the City Centre and, consequently, will require additional investments in infrastructure and parkland. The City must now revise its DCC rates to reflect these recent changes.

In 2006, Richmond City Council initiated a strategic update of the City Centre Area Plan (CCAP) which was approved in principle in February 2007. Over the past year, City staff and consultants have been refining the CCAP CONCEPT in order to prepare a new CCAP Bylaw, which will include an Implementation Strategy. As part of the Implementation Strategy, staff has completed a review of the development cost charge bylaw with the assistance of **Urban Systems Limited** (CCAP Implementation Strategy), and has recommended a new set of DCC rates that reflect the development plan expressed in the CCAP. The proposed DCC Program itemizes all infrastructure, parkland acquisition, and parkland development projects that are necessary to support new growth throughout the City and that will be funded (in part) by DCCs.

DCCs can be implemented City-wide or on an area-specific basis. In a City-wide DCC, the same DCC rate is applied for each land use deemed to generate the same or similar capital cost burden regardless of the location of the development. An area-specific DCC typically divides the community into different areas according to geographic or other distinctive areas based on technical engineering reasons.

Staff has opted to recommend a City-wide DCC rather than an area-specific DCC for the following reasons:

- **All development throughout the City is expected to benefit from DCC works.** The provincial *DCC Best Practices Guide* recommends that roads, parks, water, sanitary and drainage DCCs be established on a municipal wide basis unless there is a significant

disparity between those who pay the DCCs and those who benefit. It is expected that the proposed DCC program will benefit all areas of growth throughout the City.

More specifically, the City Centre is the location of most, if not all, of the major facilities that attract residents, and businesses, from all over Richmond. Accordingly, the roads network is required to provide convenient access and egress to and throughout the City Centre. Similarly, the parkland serves not only the area residents and businesses, but also those who are attracted to the major facilities in the City Centre. For water, sanitary and storm sewers the DCC program will benefit users in all parts of the City. There are no significant technical or topographic constraints that justify establishing these utilities on an area-specific basis.

- **City-wide DCCs provide flexibility.** The City-wide DCC model gives the City the most flexibility in terms of accumulating and spending DCC revenues. Area-specific DCCs can limit the amount of DCCs available to fund works by having multiple DCC reserves with a small amount in different reserves. This fragmentation may mean that the City and developers could have to wait a significant time for sufficient DCC revenues to accumulate before any works can be built. Furthermore, collecting City-wide DCCs gives the City the flexibility to construct DCC works anywhere in the City with accumulated DCC reserves.

- **City-wide DCCs reduce administrative complexity.** The existing DCC bylaw is applicable throughout the City. Having a City-wide DCC can reduce the complexity of collecting the DCC and cost of administering the DCC reserves. A City-wide DCC bylaw is often simpler for front counter staff to administer and can reduce the staff time required to assess, collect and expend the DCCs. The reduced administration effort associated with a City-wide DCC can be significant.

Bylaw Adoption Process

The following describes the process for adopting a new DCC Bylaw:

1. Planning Committee recommends 1st reading to DCC Bylaw and public meeting
2. Council gives 1st reading to DCC Bylaw and authorizes public meeting
3. Public meeting re: proposed new DCC Bylaw (including any requested meeting with UDI, GVHBA, NAIOP)
4. Staff review public input and prepare any necessary revisions to DCC Bylaw
5. Council gives 2nd and 3rd reading to DCC Bylaw (or amends the DCC Bylaw and gives 2nd and 3rd reading if revisions necessary due to public input)
6. Bylaw review and approval by provincial Inspector of Municipalities
7. Council adopts (gives 4th reading) to DCC Bylaw
8. DCC Bylaw and Program implemented 1 year after adoption

A draft DCC Program and Bylaw have been prepared, ready for the review of Planning Committee in accordance with step (1) above.

Analysis

The two main inputs necessary to formulate development cost charge rates are:

(1) the **development plan** as expressed in the *Official Community Plan,* and specific neighbourhood plans such as the CCAP, and
(2) the **infrastructure servicing** and **parkland acquisition and development** programs required to adequately service the expected new development.

In keeping with the infrastructure and parks planning that has been completed, the proposed development cost charges are based on projected development and servicing for the 2007 to 2031 time period. In some cases the proposed infrastructure will service new development beyond the 2031 period.

Development Plan

The development plan used for the proposed DCC bylaw projects development is summarized as follows:

City-Wide Growth Estimates

Land Use	Growth (2007-2031)
Residential	2,412 single-family residential lots and 34,556 multiple-family residential dwelling units
Commercial	1,327,373 m^2 building area
Light Industry	3,445,725 m^2 building area
Major Industry	429 ha site area

The plan anticipates:

1) almost 120,000 (90,000 by 2031) Richmond residents, in predominantly multi-family housing mainly in the City Centre
2) a growth of approximately 4.8 million square metres of commercial and light industry floor space, primarily in the City Centre and north Richmond.
3) considerable new major (or heavy) industry development concentrated in the Fraser Port lands, and on Mitchell/Twigg Island.

Because of the CCAP, these growth estimates differ significantly from that used in determining the DCC rates in 2006.

Infrastructure Servicing

Development cost charges may be levied by local governments to recover the capital costs of providing roads, drainage, water, and sanitary sewer infrastructure systems, and of acquiring and developing parkland, related directly or indirectly to the developments to be assessed. The total infrastructure servicing necessary to provide adequately for the expected new development is

summarized in the table below. The amounts represent the proposed costs to be recovered through DCCs:

Infrastructure	Amount*
Transportation (roads)	$ 525,740,492
Drainage	$ 210,020,330
Water	$ 38,624,892
Sanitary Sewer	$ 122,426,551
Total	$ 896,812,265

*amounts shown are City-wide DCC recoverable costs (i.e. total cost attributed to development less municipal assist factor)

The details of the infrastructure programs are included in the CCAP Implementation Strategy.

The infrastructure program total has increased over the program (approximately $318.5 million) included with the last DCC Rates bylaw in 2006. There are two main reasons for this increase:

- The increase in the proposed Roads Program is due to significant cost escalation in both construction and land, and the addition of road works in the City Centre to support the projected growth based on an updated City Centre Transportation Plan.
- The utility infrastructure programs (water, sanitary, and drainage) have also been subject to significant construction and land cost escalation. More importantly, however, the City and its consultants have completed a number of studies as part of the CCAP to identify infrastructure needed to support development in the City Centre. The City has:
  - updated the City-wide water model for the City Centre area;
  - updated the City-wide sanitary model for the City Centre, Fraserview, and Bridgeport sanitary study areas; and
  - consolidated the existing drainage models into a new West Richmond drainage model.

These studies have provided Staff with more accurate, supportable programs to service new development.

Parkland Acquisition and Development

The requirement for new parkland is driven primarily by population growth. CCAP parkland guidelines of 3.25 acres of parkland for every 1,000 residents in the City Centre and 7.66 acres per 1,000 residents outside the City Centre. Presently there is approximately 189 acres of existing park and open space in the City Centre, which includes 43 acres that are existing school sites. The total projected requirement for new parkland in the City Centre by 2031 is 292.5 acres, of which approximately 54 acres will be acquired through the proposed new DCC Program. The net City-wide DCC recoverable costs for this new development is $315,962,198.

DCCs for parkland development are permitted to provide fencing, landscaping, drainage and irrigation, trails, restrooms, changing rooms, playground and playing field equipment on

parkland. The net City-wide DCC recoverable costs to be recovered as a result of this new development are $133,388,053.

A summary of the parkland acquisition and development programs is included in Section 10 of the CCAP Implementation Strategy. The largest increase in the parkland program is the cost of land in the City Centre. Parkland acquisition and development costs have not been adjusted for other parts of the community. A large part of the program (about $301 million in parkland acquisition and development costs) is planned for the City Centre, where park development is much more intense, and costly.

Unlike most other municipalities, Richmond has levied DCCs for parkland on commercial and industrial categories of development since development cost charges were introduced. The rationale is that, even though the requirement for new parkland is primarily population-driven and therefore should accrue to residential development, the employees of new commercial and industrial developments do create a new burden on City parkland. That burden is considerably less than that created by new residents, however, and that difference has been reflected in the development charge rates levied on commercial and industrial development.

Benefit Factors and Assist Factor

DCCs may be levied to recover the costs of infrastructure and parkland related directly or indirectly to the developments to be assessed. All of the infrastructure projects and parkland acquisitions and development in the new DCC Program are necessary to service the expected new development. Nevertheless, it is apparent that some benefits from the new work may accrue to existing development, and that different works may benefit existing development differently. In developing DCC rate bylaws, municipalities are expected to recognize the benefits of the DCC programs to existing residents and businesses, and fund that portion from City sources.

The majority of projects in the new DCC program benefit only new growth. However, some projects are needed both to support growth and address existing problems. The portion of the program remedying existing problems has been deducted from the DCC program, and must be funded by City sources.

Section 933(2) of the *Local Government Act* specifies that DCCs are to be used "to assist the local government" to pay for the costs of the infrastructure and parkland programs. Therefore the local government must contribute a portion of the program costs; this is known as the **assist factor.**

The assist factor has traditionally been seen as a measure of the degree to which a municipality wishes to encourage development. However, most local governments have opted for a minimal assist factor (the minimum is 1 percent) in favour of making new development pay its way, since whatever is not levied in DCCs must be funded from City sources. Although UDI has requested that the benefit factors be increased, Urban Systems and staff do not believe this is appropriate because the work done on the CCAP has clearly identified who benefits from the required infrastructure servicing and parkland acquisition and development and that these benefit factors

are correctly reflected in the proposed DCC Program. Consistent with previous DCC bylaws, the assist factor used to calculate the new rates for all types of servicing is **1 percent.**

Development Cost Charge Rates

Consistent with the current DCC rates, the new DCC rates proposed are intended for application in all areas of the City.

The new DCC rates proposed are summarized as follows:

Development Category	Rate basis	Existing DCC	Proposed DCC	% increase
Single family	Per lot	$21,457	**$28,004**	31%
Townhouse	Per unit (based on 1,350 ft^2 unit)	$16,120	**$21,586**	34%
Apartment	Per unit (based on 950 ft^2 unit	$11,746	**$15,856**	35%
Commercial	Per ft^2 of building area	$9.20	**$12.25**	33%
Light Industry	Per ft^2 of building area	$7.49	**$9.91**	32%
Major Industry	Per acre of gross site area	$83,812	**$102,735**	23%

The total of the combined infrastructure servicing and parkland programs has increased approximately 46 percent over the 2006 DCC program (in DCC recoverable costs). However, the DCC rates have risen by only 22% to 35% due to increased development estimates.

Consistent with how the City's current DCC rates were developed, Urban Systems allocated costs across land uses by estimating the burden that each land use creates for each type of program. This methodology is commonly used by many municipalities in British Columbia, and is recommended for use in the provincial *Development Cost Charges Best Practices Guide.*

The attached appendices provide a comparison of DCCs in the region. Richmond's proposed single family and townhouse DCCs (not including regional DCCs) would be one of the highest in the region. The proposed apartment DCCs would also be among the highest, just behind Vancouver, Surrey, and Port Coquitlam.

Another way of attaching some perspective to DCC rates is in relation to housing prices. According to the Real Estate Board of Greater Vancouver, the benchmark price of a detached single-family dwelling in Richmond in February 2008 was $774,133, and an apartment was $313,756. Two years prior, about when the current DCCs were introduced, the figure for a single-family dwelling was $584,449, and for an apartment was $245,065.

Dwelling type	February 2006 price	February 2006 DCC	%	February 2008 price	February 2008 DCC	%
Detached	$584,449	$21,457	**3.7%**	$774,133	$28,004	**3.6%**
Apartment	$245,065	$11,746	**4.8%**	$313,756	$15,856	**5.0%**

As the table above shows, the percentage of DCCs to housing prices is in line with the adoption of the new DCC rates.

Application of Development Cost Charges

Implementation

The proposed new DCC rates have increased due to the requirements and increased costs in order to accommodate development. In reviewing development cost charges it is incumbent on municipalities to recognize that current and near-term development industry plans are generally based on known costs. When introducing charges with substantial increases, therefore, municipalities have often taken the approach of allowing a 'grace period' to allow the industry to adapt to the new costs. The City's last DCC increase allowed such a grace period and it has been requested by UDI again this time. Therefore, it is proposed that the new DCC Bylaw and rates come into force and effect one year after the bylaw is adopted. This means:

- all building permit and subdivision applications are given a one year (from adoption of the bylaw) grace period to be completed (e.g., the building permit is issuable or the subdivision application is approved).
- all building permit and subdivision applications which are incomplete (e.g. the building permit is not issuable or the subdivision application is not approved) before the new bylaw comes into force and effect (one year after adoption) will be subject to the new DCC rates.
- all building permit and subdivision applications received after the new bylaw comes into force and effect do not get any additional grace period and DCCs must be paid at the new DCC rates

Council may also consider other measures for allowing the development industry to adjust to the new rates, such as delaying the effective date of the bylaw to beyond one year. However, based on current DCC revenue projections, any further delay in implementation will result in a loss of DCC revenues, with a consequent delay in undertaking necessary works and acquisitions.

Financial Impact

New development cost charge rates are required to provide the funds necessary for anticipated growth, in accordance with the current *Official Community Plan,* and at the levels of service and standards for infrastructure servicing and parkland adopted by Council.

While DCCs will pay for the majority of infrastructure and park costs needed to support development, the City will still be responsible for a share of the costs through the municipal

assist factor (1% of DCC recoverable costs). The City will also be responsible for the portion of infrastructure costs allocated to existing development.

Conclusions

Section 933 of the *Local Government Act* authorizes municipalities to levy development cost charges to recover:

- **infrastructure servicing capital costs** for roads, drainage, water, and sanitary sewer systems, and
- **parkland acquisition and development costs**

related directly or indirectly to the developments to be assessed.

Staff has recently completed a thorough review of the Development Cost Charge Bylaw and has recommended a new DCC Bylaw in consideration of:

- the development plan expressed in the *Official Community Plan,* and
- the infrastructure and parkland necessary to adequately service the expected new development.

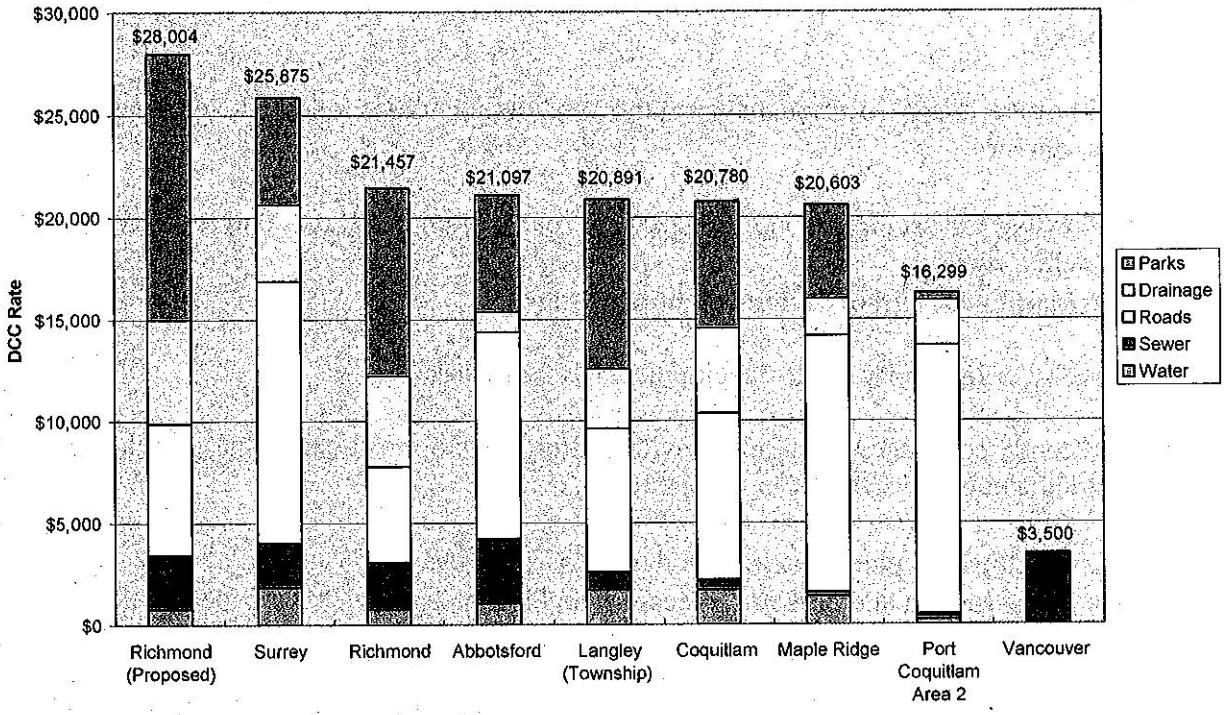
Staff believes that the development cost charge rates shown in the attached bylaw are required to produce the necessary revenue to fund the infrastructure and parkland expected during the 2007 to 2031 period, at the levels of service and standards adopted by Council.

The draft Development Charge Program and Bylaw should now be made available to the public for review.

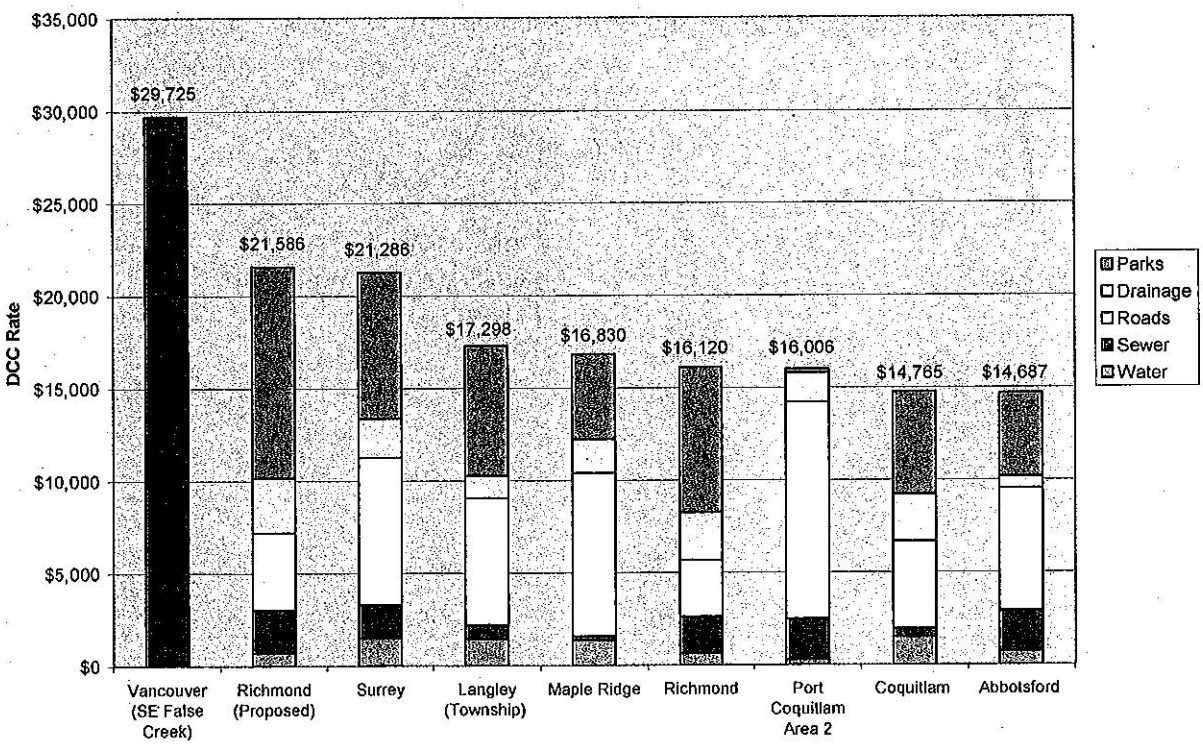
Jerry Chong
Director, Finance
(4064)

Holger Burke
Development Coordinator
(4164)

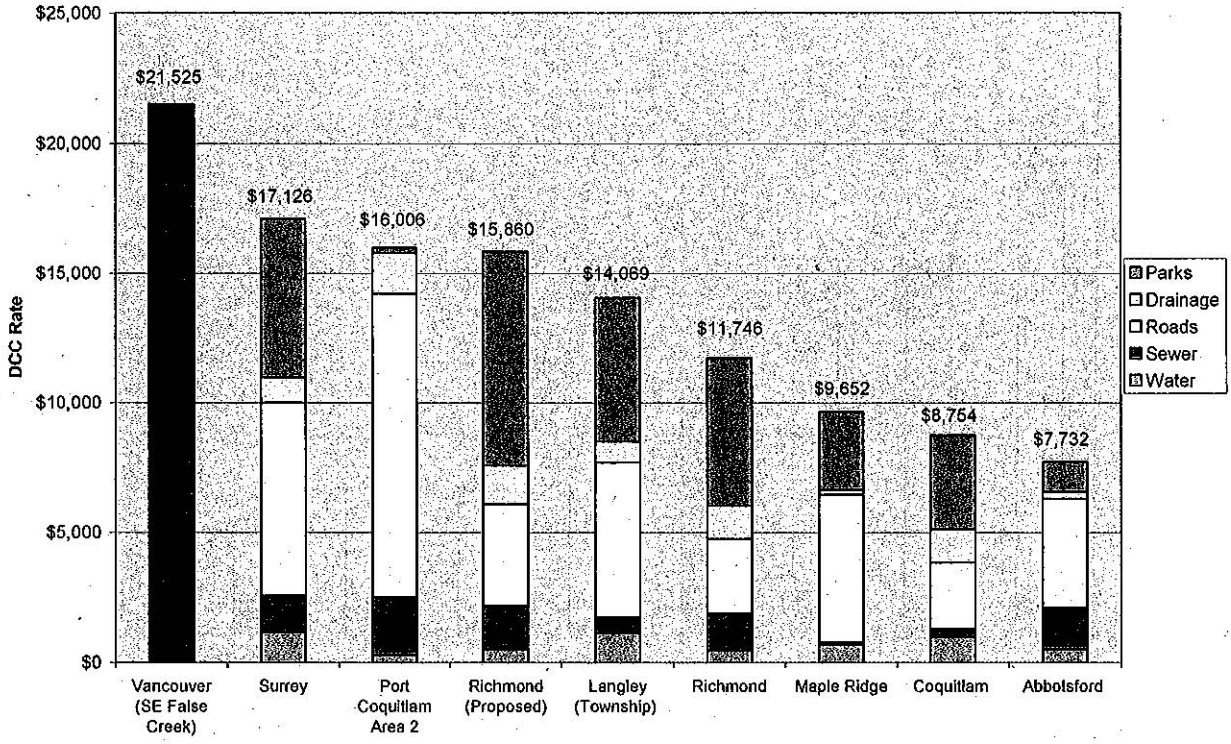
SINGLE FAMILY DCC COMPARISON (PER LOT)
WITHOUT REGIONAL DCCS



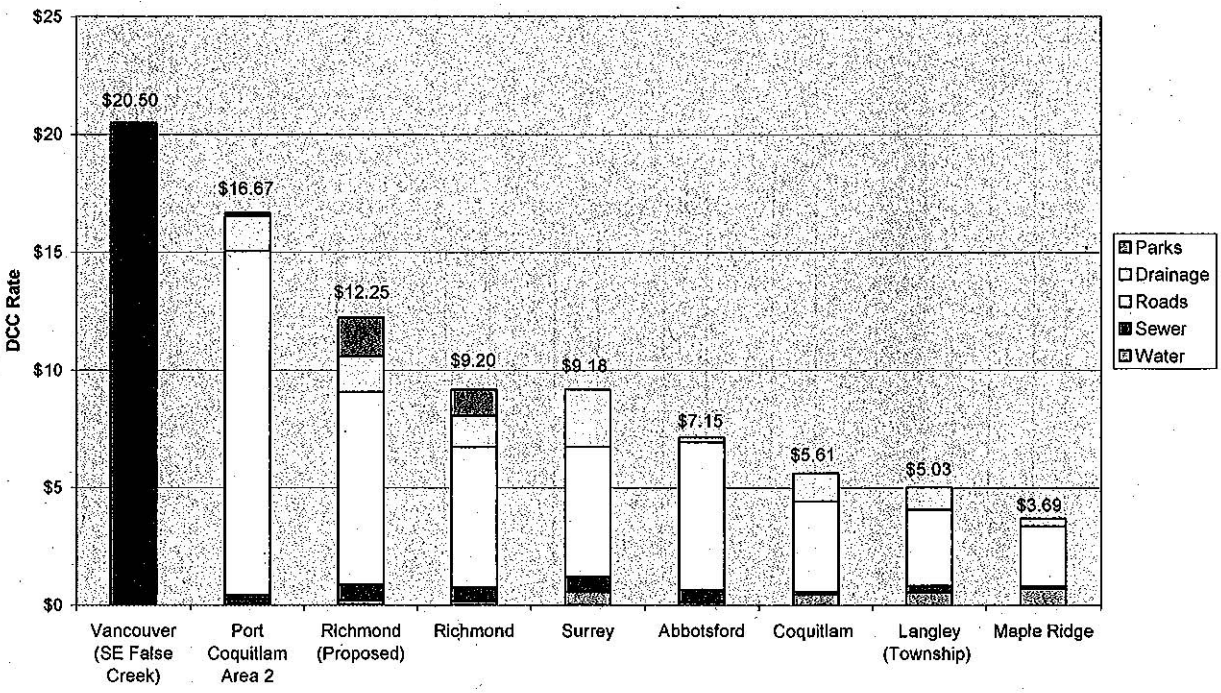
TOWNHOUSE DCC COMPARISON (PER UNIT)
WITHOUT REGIONAL DCCS



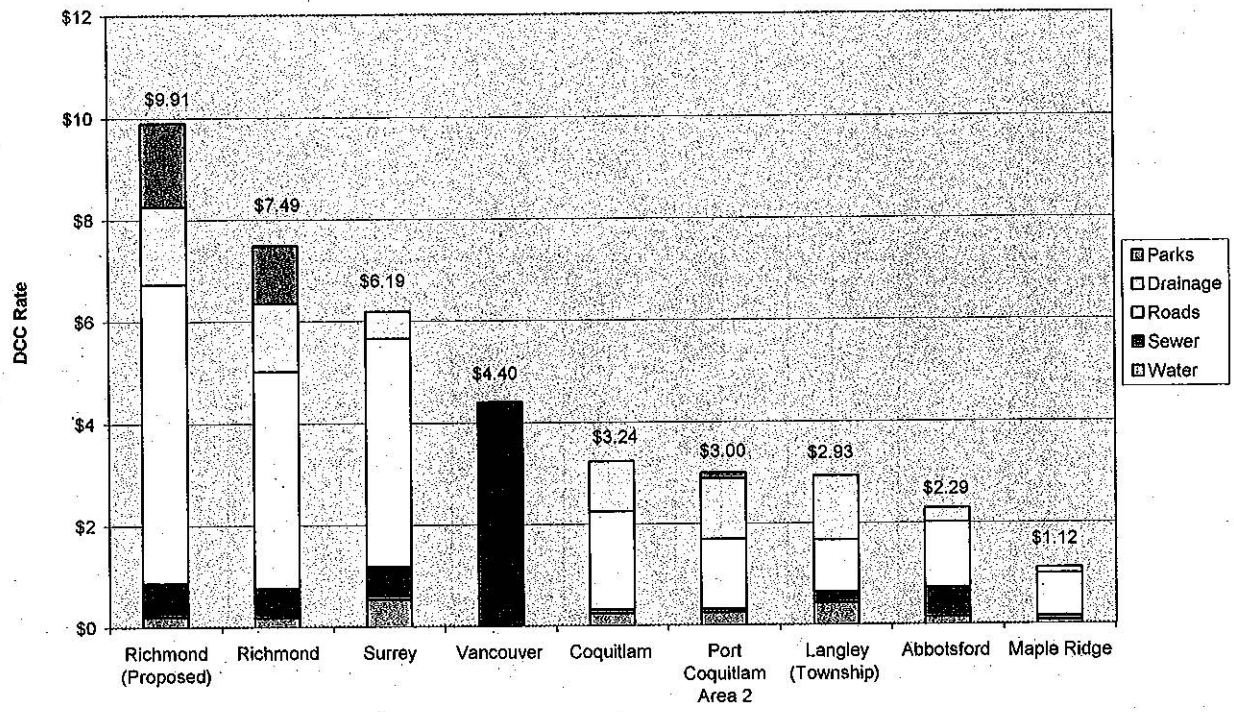
APARTMENT DCC COMPARISON (PER UNIT)
WITHOUT REGIONAL DCCS



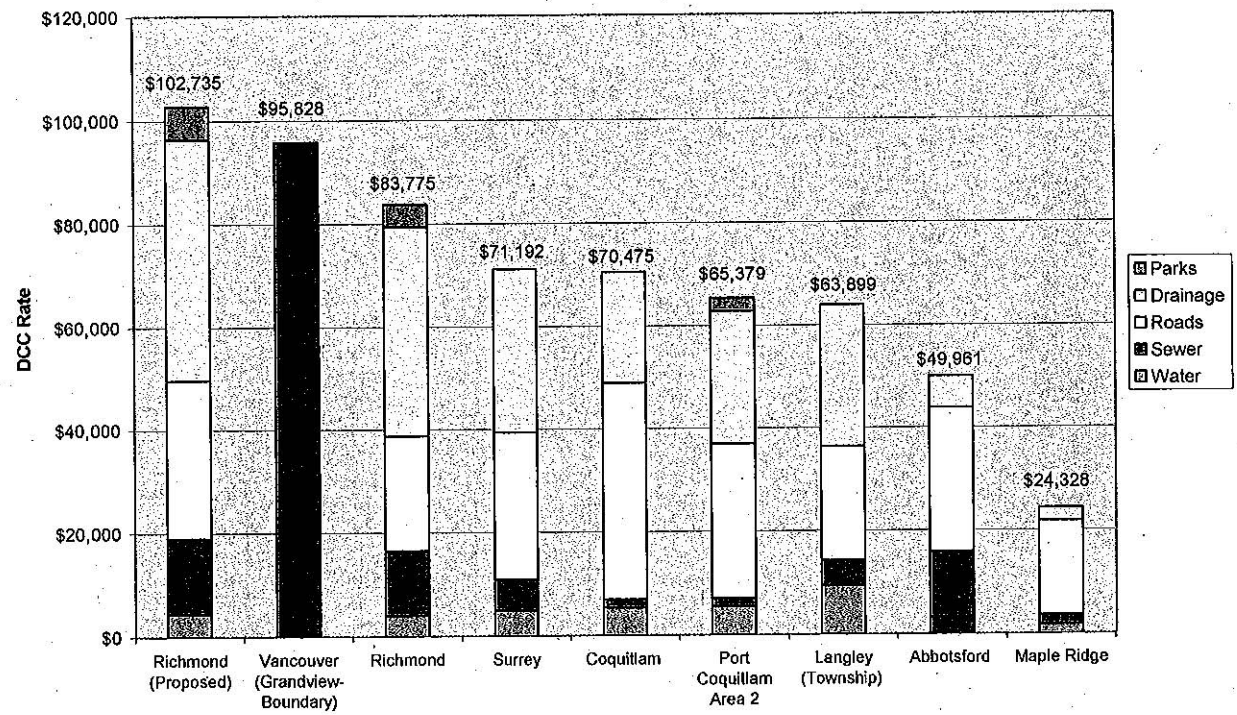
COMMERCIAL DCC COMPARISON (PER SQUARE FOOT OF BUILDING AREA)
WITHOUT REGIONAL DCCS



LIGHT INDUSTRIAL DCC COMPARISON (PER SQUARE FOOT OF BUILDING AREA)
WITHOUT REGIONAL DCCS



MAJOR INDUSTRIAL DCC COMPARISON (PER ACRE)
WITHOUT REGIONAL DCCS



City of Richmond

Bylaw 8396

Development Cost Charges Bylaw No. 8024, Amendment Bylaw No. 8396

WHEREAS Council has adopted Development Cost Charges for the City, and

WHEREAS amendments to the Development Cost Charges are required to finance expected servicing in the City,

The Council of the City of Richmond enacts as follows:

1. Bylaw No. 8024 is amended by deleting Schedule "B" and substituting Schedule "B" attached hereto and forming part of the Bylaw as Schedule "B" to Bylaw No. 8024.
2. Bylaw No. 8024 is amended by deleting Schedule "C" and substituting Schedule "C" attached hereto and forming part of the Bylaw as Schedule "C" to Bylaw No. 8024.
3. Bylaw No. 8024 is amended by deleting Schedule "D" and substituting Schedule "D" attached hereto and forming part of the Bylaw as Schedule "D" to Bylaw No. 8024.
4. Bylaw No. 8024 is amended by deleting Schedule "E" and substituting Schedule "E" attached hereto and forming part of the Bylaw as Schedule "E" to Bylaw No. 8024.
5. If any part, section, subsection, clause, or subclause of this bylaw is, for any reason, held to be invalid by a decision of a Court of competent jurisdiction, such decision does not affect the validity of the remaining portions of this bylaw.
6. This bylaw comes into force and effect one year after adoption.
7. This Bylaw is cited as **"Development Cost Charges Bylaw No. 8024, Amendment Bylaw No. 8396".**

FIRST READING	
SECOND READING	
THIRD READING	
ADOPTED	

CITY OF RICHMOND
APPROVED for content by originating dept.
APPROVED for legality by Solicitor

MAYOR

CORPORATE OFFICER

SCHEDULE B to BYLAW NO. 8396

SCHEDULE B to BYLAW NO. 8024

DEVELOPMENT COST CHARGES - RESIDENTIAL DEVELOPMENT

Single-Family Dwelling

Servicing Type	rate per lot
Road Works	$6,431.35
Drainage	$5,131.99
Water Works	$810.63
Sanitary Sewer	$2,634.91
Parks Acquisition	$9,109.36
Parks Development	$3,885.44
TOTAL	$28,003.68

Townhouse

Servicing Type	rate per square foot of the building area
Road Works	$3.08
Drainage	$2.20
Water Works	$0.53
Sanitary Sewer	$1.72
Parks Acquisition	$5.93
Parks Development	$2.53
TOTAL	$15.99

Multi-Family Dwelling

Servicing Type	rate per square foot of the building area
Road Works	$4.11
Drainage	$1.57
Water Works	$0.54
Sanitary Sewer	$1.77
Parks Acquisition	$6.10
Parks Development	$2.60
TOTAL	$16.69

SCHEDULE C to BYLAW NO. 8396

SCHEDULE C to BYLAW NO. 8024

DEVELOPMENT COST CHARGES - COMMERCIAL DEVELOPMENT

Servicing Type	rate per square foot of the building area
Road Works	$8.20
Drainage	$1.53
Water Works	$0.21
Sanitary Sewer	$0.67
Parks Acquisition	$1.15
Parks Development	$0.49
TOTAL	$12.25

SCHEDULE D to BYLAW NO. 8396

SCHEDULE D to BYLAW NO. 8024

DEVELOPMENT COST CHARGES - LIGHT INDUSTRIAL DEVELOPMENT

Servicing Type	rate per square foot of the building area
Road Works	$5.86
Drainage	$1.53
Water Works	$0.21
Sanitary Sewer	$0.67
Parks Acquisition	$1.15
Parks Development	$0.49
TOTAL	$9.91

SCHEDULE E to BYLAW NO. 8396

SCHEDULE E to BYLAW NO. 8024

DEVELOPMENT COST CHARGES - MAJOR INDUSTRIAL DEVELOPMENT

Servicing Type	rate per acre of gross site area
Road Works	$30,619.11
Drainage	$46,728.08
Water Works	$4,473.33
Sanitary Sewer	$14,540.33
Parks Acquisition	$4,468.31
Parks Development	$1,905.88
TOTAL	$102,735.04

FINAL REPORT

City of Richmond

CCAP Implementation Strategy

1123.0027.01/ June 12, 2008
CITYHALL-#2465049-v1-Final_CCAP_Implementation_Strategy.DOC
REDMS 2465049

URBAN SYSTEMS
2353 - 13353 Commerce Parkway
Richmond, BC V6V 3A1
Telephone: 604-273-8700
Fax: 604-273-8752

TABLE OF CONTENTS

Executive Summary E-1
1.0 Introduction 1
2.0 Guiding Principles for Financing Growth 2
3.0 Financing Options 7
3.1 General Revenue 7
3.2 Local Service Taxes for Local Area Services 8
3.3 Works and Services 9
3.4 City-Wide Development Cost Charges 10
3.5 Area Specific Development Cost Charges 11
3.6 Community User Fees 12
3.7 Utility Charges 12
3.8 Gifts (Developer Contributions) 13
3.9 Density Bonusing 14
3.10 Short and Long-Term Borrowing 15
3.11 Public-Private Partnerships and Joint Ventures 16
3.12 5% Parkland Dedication 17
3.13 Grants 18
3.14 School Site Acquisition Charges 18
4.0 Implementation Tools 20
5.0 CCAP Program and Financial Costs 25
6.0 CCAP Financing and Cost Recovery Approach - Transportation 27
6.1 Overview of Transportation Plan Update 27
6.2 Cost Estimates 27
6.3 Key Issues 29
6.4 Recommended Approach 29
7.0 CCAP Financing and Cost Recovery Approach – Water 34
7.1 Overview of Water Model Update 34
7.2 Cost Estimates 34
7.3 Key Issues 35
7.4 Recommended Approach 36
8.0 CCAP Financing and Cost Recovery Approach –Sanitary 39
8.1 Overview of Sanitary Sewer Update 39
8.2 Cost Estimates 40
8.3 Key Issues 42
8.4 Recommended Approach 42

9.0 CCAP Financing and Cost Recovery Approach – Storm Drainage 45
9.1 Overview of Storm Drainage Update 45
9.2 Cost Estimates 46
9.3 Key Issues 47
9.4 Recommended Approach 48
10.0 CCAP Financing and Cost Recovery Approach – Open Space (Parkland Acquisition and Development) 51
10.1 Overview of Parkland Acquisition and Development Plans 51
10.2 Cost Estimates 51
10.3 Key Issues 52
10.4 Recommended Approach 52
11.0 CCAP Financing and Cost Recovery Strategy – Amenities (Recreation and Cultural Facilities) 57
11.1 Overview of Community Amenity Plans 57
11.2 Recommended Approach 59
12.0 CCAP Land Acquisition Strategy 61
13.0 Community Planning 63
14.0 CCAP Development Cost Charge Summary 64
15.0 Phasing Strategy 66
15.1 Overview of Phasing Plans 66
15.2 Principles 66
15.3 Recommended CCAP Phasing Strategy 67
15.4 Recommended Phasing Policies 68

APPENDICES

Appendix A: Recommended Transportation Projects
Appendix B: Overlap Between Current and Proposed Transportation DCC Programs
Appendix C: Recommended Water Projects
Appendix D: Overlap Between Current and Proposed Water DCC Programs
Appendix E: Recommended Sanitary Projects
Appendix F: Overlap Between Current and Proposed Sanitary DCC Programs
Appendix G: Recommended Storm Drainage Projects
Appendix H: Overlap Between Current and Proposed Storm Drainage DCC Programs
Appendix I: Proposed DCC Calculations

LIST OF TABLES

Table E.1: Total Costs for the CCAP Area (2031) 3
Table E.2: CCAP Financing Strategy (2031) 4
Table E.3: Approximate Proposed Impact on City-Wide DCC Rates 5
Table 1: Financing Options and Implementation Tools 7
Table 2: General Revenue – Pros and Cons 8
Table 3: Local Service Taxes for Local Area Services – Pros and Cons 9
Table 4: Works and Services – Pros and Cons 10
Table 5: City-Wide Development Cost Charges – Pros and Cons 11
Table 6: Area Specific Development Cost Charges – Pros and Cons 11
Table 7: Community User Fees – Pros and Cons 12
Table 8: Utility Charges– Pros and Cons 13
Table 9: Gifts (Developer Contributions) – Pros and Cons 14
Table 10: Density Bonusing – Pros and Cons 15
Table 11: Short and Long-Term Borrowing – Pros and Cons 16
Table 12: Public-Private Partnerships or Joint Ventures – Pros and Cons 17
Table 13: 5% Parkland Dedication – Pros and Cons 18
Table 14: Grants – Pros and Cons 18
Table 15: Richmond School Site Acquisition Charge 19
Table 16: DCC Front-Ender Agreements – Pros and Cons 20
Table 17: Latecomer Charges – Pros and Cons 21
Table 18: Development Works Agreements – Pros and Cons 22
Table 19: Phased Development Agreements – Pros and Cons 23
Table 20: DCC Credits and Rebates– Pros and Cons 24
Table 21: Total Costs for Proving Services to Existing and New Development in the CCAP Area 25
Table 22: Transportation Costs by Street Category 28
Table 23: Recommended Transportation Financing and Cost Recovery Approach 32
Table 24: Approximate Impact on Transportation DCC Rates 33
Table 25: Unit Costs for Pipe Upgrades (Water) 35
Table 26: CCAP Water Capital Costs by Pipe Diameter 35
Table 27: Recommended Financing and Cost Recovery Approach – Water 37
Table 28: Approximate Impact on City-Wide Water DCC Rates 38
Table 29: Unit Costs for Pipe Upgrades (Sanitary) 40
Table 30: Cost by Infrastructure Component (Sanitary) 41
Table 31: Sanitary Sewer Financing and Cost Recovery Approach 43
Table 32: Approximate Impact on City-Wide Sanitary Sewer DCC Rates 43
Table 33: Unit Costs for Upgrades (Drainage) 46
Table 34: Cost by Infrastructure Component (Drainage) 47
Table 35: Storm Drainage Financing and Cost Recovery Strategy 49

Table 36: Approximate Impact on City-Wide Storm Drainage DCC Rates 50
Table 37: Recommended Parkland Acquisition Approach 54
Table 38: Recommended Parkland Development Approach 55
Table 39: Approximate Impact on City-Wide Parkland Acquisition DCC Rates 55
Table 40: Approximate Impact on City-Wide Parkland Development DCC Rates 56
Table 41: Amenity Facilities 59
Table 42: Approximate Impact on City-Wide DCC Rates (2031) 65

EXECUTIVE SUMMARY

Introduction

In 2006, Richmond City Council initiated a strategic update of the City Centre Area Plan (CCAP). This update included a series of public consultation processes and a variety of other studies. In February 2007, Council approved in principle the CCAP CONCEPT. The CONCEPT uses a capacity based framework of what the ultimate build out could be for development in Richmond's city centre. Over the past year, City staff and consultants have been refining the CCAP CONCEPT in order to prepare a new CCAP Bylaw (which would include an *Implementation Strategy*).

To ensure that the City Centre Area Plan develops in an orderly, sustainable and financially sound manner, the City requires an *Implementation Strategy*. The *Implementation Strategy* is a comprehensive financing and phasing strategy that:

- Identifies which transportation, utilities, parks and community facilities are needed to support development in the City Centre
- Determines how the transportation, utilities and parkland acquisition & improvements should be financed (the financing of new community facilities will be the subject of a separate process)
- Establishes a financing and phasing strategy for development in the City Centre to the year 2031

Guiding Principles

In order to determine the most appropriate financing strategy for development in the City Centre, the City has identified 14 guiding principles, which form the basis of the *Implementation Strategy*. The guiding principles are as follows (these guiding principles are not listed in any priority):

The CCAP financing strategy should:

1. Be based on applicable legislation
2. Distinguish between costs to service existing development and new growth
3. Meet the City's triple bottom line policy of financial, environmental and social sustainability
4. Strive for equity
5. Allocate costs according to the "benefiter pay" principle
6. Balance equity and administrative efficiency

7. Limit financial risk to the City and its residents
8. Be based on a "pay as you go" approach
9. Foster certainty and clarity for development/investment in the community
10. Create accountability to residents, taxpayers and investors
11. Provide for flexibility
12. Support the development of complete communities and encourage the early implementation of transit oriented development
13. Be based on current costs and should ensure no double counting or charges
14. Focus on developing a financing and cost recovery strategy to the year 2031 (the costs to the ultimate build out year of 2100 will be the subject of future reviews)

Recommended Improvements

The City and its consultants have recently completed several engineering studies to identify infrastructure upgrades as well as parkland and improvements that will be required to service the future CCAP population. The City commissioned the following studies as part of the CCAP:

- City Centre Transportation Plan Update – Implementation Plan (IBI, 2007)
- Water Model Update (Earth Tech, 2007)
- Drainage Model Update (Earth Tech, 2007)
- Sanitary Model Update (Earth Tech, 2007)
- Park cost estimates prepared by the City of Richmond (2007)
- PRCS Facilities Strategic Plan (PERC, June 2007)
- Library Facilities Plan (Richmond Public Library, 2007)

These studies have determined what transportation, utilities, parks and new community facilities are needed for a total population of 120,000 residents by the year 2100 or earlier. Recommended transportation and utility upgrades, and parkland acquisition and development costs total over $1 billion. Costs for community facilities will be finalized by the City in upcoming reports on the Corporate Facilities Implementation Plan, but have been estimated to be approximately $235 million (excluding land and parking).

It should be noted that when the City builds new infrastructure, DCC related or not, there are on-going operation and maintenance (O&M) costs. These O&M costs and ultimately the

replacement cost of these works will be the responsibility of the City. The on-going costs are typically funded through utility fees and general revenue funds.

Table E.1: Total Costs for the CCAP Area (2031)

INFRASTRUCTURE TYPE	TOTAL COST
Transportation	$562,076,000
Water	$16,771,000
Sanitary	$62,691,000
Drainage	$84,085,000
Parkland Acquisition (2031)	$237,698,000
Parkland Development (2031)	$82,325,000
Sub Total	***$1,045,646,000***
Community Facilities :	
PRCS Community Amenities	$235,000,000 (estimated)
Community Safety Building and Fire Hall #1	To be confirmed through future staff reports.
TOTAL COST	**TBD**

Financing Options

Based on the guiding principles, the City plans to finance CCAP related costs through development cost charges (DCCs) as well as through other funding sources such as works and services, utility charges and reserves, density bonusing, and general revenues. The following table summarizes how the various costs will be recovered (the financing of new community facilities will be the subject of a separate process). Each of these approaches is consistent with past practices in Richmond and is common among B.C. municipalities.

Table E.2: CCAP Financing Strategy (2031)

INFRASTRUCTURE TYPE	*CCAP COSTS TO BE FINANCED THROUGH CITY-WIDE DCCS (DCC recoverable costs)*	*CCAP COSTS TO BE FINANCED THROUGH OTHER MEANS (e.g., Works and Services, Utility Charges, General Revenues, etc.)*	TOTAL COST
Transportation	$247,396,000	$314,680,000	$562,076,000
Water	$8,197,000	$8,574,000	$16,771,000
Sanitary	$57,385,000	$5,306,000	$62,691,000
Drainage	$41,786,000	$42,299,000	$84,085,000
Parkland Acquisition (2031)	$223,555,000	$14,143,000	$237,698,000
Parkland Development (2031)	$77,427,000	$4,898,000	$82,325,000
Sub Total	***$655,746,000***	***$389,900,000***	***$1,045,646,000***
Community Facilities	To be confirmed through future staff reports	To be confirmed through future staff reports	To be confirmed through future staff reports
TOTAL COST	**TBD**	**TBD**	**TBD**

The applicable CCAP costs will be added to the DCC program. The DCC program will be based on a new time horizon to 2031. A specific, City Centre DCC program is not contemplated.

The approximate proposed impact on City-Wide DCCs is summarized in the following table.

Table E.3: Approximate Proposed Impact on City-Wide DCC Rates

LAND USE	UNITS	PROPOSED TRANSPORTATION DCC	PROPOSED WATER DCC	PROPOSED SANITARY DCC	PROPOSED DRAINAGE DCC	PROPOSED PARK ACQUISITION DCC	PROPOSED PARK DEVELOPMENT DCC	TOTAL PROPOSED DCC	TOTAL CURRENT DCCS	% CHANGE
Single Family	per lot	$6,431.35	$810.63	$2,634.91	$5,131.99	$9,109.36	$3,885.44	$28,003.68	$21,456.86	31%
Townhouse	per sq. ft. of building area	$3.08	$0.53	$1.72	$2.20	$5.93	$2.53	$15.99	$11.94	34%
Apartment	per sq. ft. of building area	$4.11	$0.54	$1.77	$1.57	$6.10	$2.60	$16.69	$12.37	35%
Commercial	per sq. ft. of building area	$8.20	$0.21	$0.67	$1.53	$1.15	$0.49	$12.25	$9.20	33%
Light Industrial	per sq. ft. of building area	$5.86	$0.21	$0.67	$1.53	$1.15	$0.49	$9.91	$7.49	32%
Major Industrial	per acre of gross site area	$30,619.11	$4,473.33	$14,540.33	$46,728.08	$4,468.31	$1,905.88	$102,735.04	$83,811.92	23%

The following financing options were not considered as principal means to finance transportation, utility and parkland acquisition and improvements. Relying on these options other than in limited circumstances is inappropriate because it places the burden of financing growth on the existing tax base or involves funding sources that are too insecure.

Where the City (Residents/Businesses) pay through:

- Local service taxes under the *Community Charter* (taxes from a specific area of the City Centre)
- Community user fees under the *Community Charter* (paid by the users for services and amenities)
- Short or long-term borrowing (which typically involves a public referendum and can be paid back in a variety of ways including through municipal taxes)

Where others help pay through:

- Grants (e.g., from the Federal and Provincial governments)
- Public-private partnerships (cooperative or joint ventures between the private and public sectors)

Phasing Approach

The vision of growth presented at various CCAP open houses over the past two years included a varied density and included new parks and open space, high rise residential development, mixed-use development (high rise) and mixed-use development (mid-rise) development. This growth is projected to ultimately reach a population of 120,000 people, 36,000 jobs and 390 acres of parkland. Growth is to occur through a set of high density urban villages. To achieve the village concept the City Centre should develop based on the principles of transit-oriented development (TOD). To reach this vision the growth will be phased.

The most rapid growth in the City Centre is to occur between 2008 and 2021. The next period from 2022 to 2031 and beyond will see the composition of the population grow significantly in older adults. Beyond 2031, the growth will continue but at a slower pace. By 2031, 50,000 of the projected 80,000 additional people will be part of the City Centre population. This significant growth in the 2008 to 2031 period will drive the need for the majority of the infrastructure, parkland and many of the new amenities.

The fundamental planning and development priorities for the City Centre, as stated in the CCAP CONCEPT, include:

- Establishment of high-density transit villages
- Enhancement of the waterfront
- Acquisition of well-located, high amenity public parks and amenities

The following policies are based on the suggested preferred development areas and the need for immediate policies to help facilitate growth over the next five to ten years. New policies to support the completion of the City Centre plan beyond the next ten years will be developed as the CCAP evolves.

- **Phasing Policy #1:** Focus the investment of City Centre monies on infrastructure, parkland and development and amenities that promote development within 200m of the six village centres.
- **Phasing Policy #2:** Purchasing significant parkland and future facility lands within the next 10 – 15 years to reduce the impact of rising land costs in the City Centre. This may require an aggressive monetary borrowing plan to achieve any significant results.
- **Phasing Policy #3:** Prioritize the DCC program to focus attention on ensuring that any municipal funding in support of City Centre DCC projects is in place as development occurs.
- **Phasing Policy #4:** Encourage subdivision, rezoning, DP and building permit applications to facilitate development within 200m of the village centres.
- **Phasing Policy #5:** If a developer wishes to develop outside of the above priority phasing areas and policies, the City will require that the developer assume all infrastructure costs related to the development. The City will not allocate City resources to support development that occurs outside of this phasing framework; however, if the developer will cover all infrastructure costs, the City will consider development outside of this phasing framework and give DCC credits for items on the DCC program.

Next Steps

To complete the CCAP and begin implementing this strategy, the City will:

1. Prepare the City Centre Area Plan (CCAP) Bylaw (which would include the *CCAP Implementation Strategy*);

2. Prepare a new Development Cost Charge (DCC) Bylaw, with the proposed new DCC rates to partially pay for the costs associated with the CCAP;
3. Prepare the Off-Street Parking and Loading Bylaw (these provisions are in the Zoning and Development Bylaw) to reduce the parking requirements within transit village areas;
4. Present the CCAP Bylaw (including the *Implementation Strategy*), the amended Off-Street Parking and Loading Bylaw, and new DCC Bylaw to Planning Committee (a subcommittee of Council) and Council for first reading (the public and interested stakeholders can appear as a delegation to these meetings);
5. Have a public meeting on the proposed new DCC Bylaw;
6. Hold a Public Hearing for the public and interested stakeholders to comment on the new CCAP Bylaw (including the *Implementation Strategy*) and the proposed Off-Street Parking and Loading Bylaw (which is an amendment to the Zoning and Development Bylaw);
7. Give second and third reading to the CCAP Bylaw (including the *Implementation Strategy*), the amended Off-Street Parking and Loading Bylaw and the new DCC Bylaw;
8. Send the new DCC Bylaw to the Province for approval; and
9. Once the Province has approved the new DCC Bylaw, Council will adopt the CCAP Bylaw (including the *Implementation Strategy*), the amended Off-Street Parking and Loading Bylaw and the new DCC Bylaw.

1.0 INTRODUCTION

In 2006, Richmond City Council initiated a strategic update of the City Centre Area Plan (CCAP). This update included a series of public consultation processes and a variety of other studies.

In February 2007, Council approved in principle the CCAP CONCEPT. The CONCEPT identified a capacity based framework for development for downtown Richmond.

Over the past year, City staff and consultants have been refining the CCAP CONCEPT in order to prepare a new City Centre Area Plan Bylaw (which would include an *Implementation Strategy*).

The purpose of the CCAP Implementation Strategy is to ensure that the City Centre develops in an orderly, sustainable and financially sound manner.

Urban Systems has been retained to assist with the preparation of the *CCAP Implementation Strategy*.

2.0 GUIDING PRINCIPLES FOR FINANCING GROWTH

The development of guiding principles and a clear philosophical approach to managing growth financing are both key elements of the development of a solid fiscal approach. The guiding principles outlined below are the basis of selected financing and cost recovery methods for the *City Centre Area Plan Implementation Strategy* (hereafter referred to as the *"Implementation Strategy"*). Council and City staff should consider the guiding principles in the preparation of each approach to financing for infrastructure, open space and amenities.

The guiding principles for the *Implementation Strategy* are as follows:

1. **The *Implementation Strategy* be based on applicable legislation.**

   The *Implementation Strategy* is based on the legal framework available to BC municipalities as per the *Local Government Act* and *Community Charter*.

2. **The *Implementation Strategy* distinguishes between costs to service existing development and costs to service new growth.**

   This is an important consideration in determining who pays for improvements in the City Centre and how these costs are paid for (e.g., utility upgrades to service existing development only cannot be incorporated into the DCC Bylaw).

3. **The *Implementation Strategy* meets the City's triple bottom line policy of financial, environmental and social sustainability.**

   The City has established a City Centre vision that is based on Smart Growth goals. Accordingly, fiscal responsibility is a key goal that must guide the development of an *Implementation Strategy* for the City Centre. More specifically, this means that the *Implementation Strategy* should take into consideration both short- and long-term considerations to ensure the financial health of the City for future generations. In turn, financial sustainability will provide the City with the resources to ensure that environmental and social sustainability objectives are also met. Furthermore, the *Implementation Strategy* will ensure, through its phasing plan, that community facilities, parks and other amenities are provided in a timely fashion to support the creation of socially sustainable communities.

4. **The *Implementation Strategy* is based on the achievement of equity.**

   The *Implementation Strategy* should support and promote equity. Equity results in approaches that reinforce fairness in cost allocation – it does not, however, mean that all situations will be addressed in exactly the same manner (equality). Instead, Council and

staff will need to consider the guiding principles collectively to choose an appropriate funding strategy for each project and service required as a result of future development.

5. The "benefitter pay" principle is in effect.

The *Implementation Strategy* and selected financing/cost recovery methods will be developed based on the "benefitter pay" principle, which is closely related to notions of equity. Where a service, amenity or infrastructure beneficiary can be clearly established, a cost recovery strategy that allocates some or all of the cost to the service beneficiary will be employed. For example, if a trunk water main requires extension solely to service a new development area, it is reasonable for the City to require those who benefit from the extension to pay for that extension. This practice is consistent with the approach recently used in the implementation of certain West Cambie works.

Where a service provides benefits to new development as well as a broader based benefit to the community as a whole, the costs of the project would be allocated accordingly. For example, if the water trunk main discussed above provides increased service to 30% of the existing community while also servicing the future growth area, then 70% of the project cost would be allocated to the growth area and 30% would be allocated to the wider community, which would pay its share through utility fees, local service taxes, reserve funds, or other innovative funding sources.

Defining which user groups or areas of the City benefit from community amenities is somewhat different than determining who benefits from infrastructure works. Those who participate in community programs or make use of community recreational facilities clearly benefit directly from community amenities. The benefit, however, of community facilities is not necessarily limited to user groups – benefits are enjoyed by all community members as everyone benefits, directly or indirectly, from programs and services that make the City more culturally, physically and socially healthy.

6. The *Implementation Strategy* will ensure a balance between the principle of equity and the principle of administrative efficiency.

If the principle of equity was the only consideration in the development of the *Implementation Strategy*, complex financial management and cost recovery procedures would result. This would require either dedicated staff or a significant increase in legal and consulting fees for the City on an annual basis. Therefore, equity must be balanced with administrative efficiency to ensure that cost recovery strategies are cost effective to administer and can be implemented efficiently.

7. Financing and cost recovery strategies should be developed to limit financial risk to the City and its taxpayers.

Communities assume financial risk when they undertake capital or other projects necessary to accommodate future development. This is especially true when long-term borrowing (by the City) is employed as a means to finance capital projects that are required by new development prior to having collected the necessary funds from developers to pay for these projects. If development activity falls unexpectedly, the community may not be able to rely on developer contributions (typically through DCCs) to repay the capital costs and interest associated with borrowing. In these cases, the City may have to supplement developer contributions with revenues from other sources such as general property taxes, even if the new service does not provide existing taxpayers with any benefit. It is therefore critical that the *Implementation Strategy* minimize the City's exposure to financial risk.

8. Financing strategies will be developed to reflect a "pay as you go approach" to financing capital projects.

Recommended financing strategies will be based primarily on a "pay as you go" financing strategy that will limit the City's need to incur long-term debt all at once for capital projects, particularly in cases where the projects are required exclusively to service future development. Where long-term debt is required, the term of the debt will be matched closely to the need, development phasing, and anticipated lifecycle of the capital project open space or amenity for which debt is being considered.

9. The *Implementation Strategy* will foster certainty and clarity for development and investment in the community.

One of the City's Smart Growth goals is to build economic vitality in the community. Investment in a community is encouraged when certainty and clarity are built into the community's subdivision and development approval processes, as well as in financing, cost recovery and infrastructure implementation strategies. Stability builds confidence in the development industry and enables clear and rational long-term planning of investment in the community. Inadequate planning, delays in infrastructure development, and uncertainty in municipal processes can result in the delay or cancellation of developments in the community and can reduce community support for growth. It is therefore important that the *Implementation Strategy* foster certainly and clarity for development and investment in the community.

10. **The *Implementation Strategy* will serve to create accountability to residents, taxpayers and investors.**

    The City of Richmond, through the creation of a transparent *Implementation Strategy*, will enhance accountability to residents, taxpayers and investors. The *Implementation Strategy*, and in particular the information on how costs are allocated, will be accessible and understandable by the various stakeholders.

11. **The *Implementation Strategy* will provide for flexibility.**

    The priorities of a community evolve over time. Growth may also occur more slowly or quickly than anticipated in the *Implementation Strategy*. As a consequence, the approach to financing must be flexible enough to allow the City to take advantage of opportunities (e.g., new development proposals) or to remedy situations (e.g. rising costs, changes to community facility phasing) as they arise.

12. **The *Implementation Strategy* will support the development of Complete Communities and encourage early implementation of transit oriented development.**

    The *Implementation Strategy* will provide a framework to ensure the development of Complete Communities as defined in the CCAP. It is important that as development occurs, the planning objectives, facilities and infrastructure that define Complete Communities are achieved. Therefore, the *Implementation Strategy* may first allocate City resources to support the construction of infrastructure and amenities that help create high density urban villages (transit oriented development) before promoting growth in other areas.

13. **The *Implementation Strategy* will be based on current costs and will ensure no double counting or charges.**

    The costs in this *Implementation Strategy* are based on current land acquisitions, materials and construction costs. It is assumed that the *Implementation Strategy* will be amended as needed as costs change or new information becomes available.

14. **The *Implementation Strategy* will focus on providing a detailed implementation plan for development to 2031. Implementation steps for development beyond 2031 will be determined in the future.**

    While costs to the full 100 year (2100) build-out of the City Centre will be acknowledged, the *Implementation Strategy* will focus on developing a financing and cost recovery strategy for those costs that are expected to occur before 2031 because the next 25 years will see the increase of approximately 45,000 people. Since conditions can change quite significantly

in the future (e.g., legislation may be amended to give municipalities additional cost-recovery tools, markets fluctuate, etc.), it is reasonable to focus on the relatively near future for the development of the *Implementation Strategy*.

3.0 FINANCING OPTIONS

A wide variety of financing tools are available to British Columbia municipalities in accordance with the *Community Charter* and the *Local Government Act*. These financing tools and related implementation tools include those listed in **Table 1**:

Table 1: Financing Options and Implementation Tools

FINANCING OPTIONS	IMPLEMENTATION TOOLS
◆ General revenue (e.g., general property taxes; gaming revenues) ◆ Local service taxes ◆ Works and services ◆ City-wide development cost charges (DCCs) ◆ Area specific development cost charges (DCCs) ◆ Community amenity fees ◆ Utility charges ◆ Gifts (e.g., developer contributions) ◆ Density bonusing ◆ Short and long-term borrowing ◆ Public-private partnerships/joint ventures ◆ 5% parkland dedication ◆ Grants	◆ DCC front ender agreements ◆ Latecomer charges ◆ Development works agreements ◆ Phased development agreements ◆ DCC credits or rebates

This section provides a brief description of each financing tool as well as an evaluation of the pros and cons associated with each tool. Section 4 provides information on related implementation tools such as DCC front-ender agreements, latecomer charges, development works agreements, phased development agreements, and DCC credits and rebates.

3.1 General Revenue

The City currently uses general revenue funds collected through municipal taxes and gaming receipts to fund various expenses including those related to roads and community amenities. Because the use of general revenues is not typically consistent with the "benefitter pay" principle, general revenues may not be the most appropriate funding source for growth-related

infrastructure and services, but may be acceptable for community recreation/culture facilities that benefit all through enhancing liveability. However, the City may choose to use general revenues to accelerate the construction of municipal facilities to service growth in the City Centre. This approach would likely involve long-term borrowing and commensurate tax increases, which would have to be approved by City residents by referendum (a referendum may not be technically required, but is politically preferable to elector assent via counter petition).

Table 2: General Revenue – Pros and Cons

PROS	CONS
◆ Priorities are set by Council within the framework of all City needs. ◆ Can help accelerate the provision of services to make the City Centre a complete community. ◆ Relatively stable revenue source (via property taxation).	◆ Difficult to find monies when competing with City wide needs. ◆ May not be financially feasible for the City to borrow to advance services in the City Centre. ◆ May require a referendum to seek new tax dollars to fund the works (if a referendum is deemed politically necessary). ◆ Increases in taxation are not favourably received.

3.2 Local Service Taxes for Local Area Services

Under Sections 210 to 219 of the *Community Charter*, municipalities are authorized to impose local services taxes[1] for local area services. A local area service is a municipal service that is provided to a specific area within the community and that is to be paid for (in whole or in part) by a local service tax. Projects funded through local service taxes often include localized street or utility improvements as well as local park acquisitions and development. Local service taxes are levied only within the area of the community that receives the local area service – in this way, local area services are consistent with the "benefitter pay" principle. Local service taxes may be levied as a single amount per parcel or may be based on property assessment. Local area services may be proposed by Council or undertaken in response to a petition from property owners.

Local service taxes are typically used by municipalities to provide additional services to established areas, and are not generally used to fund growth-related infrastructure. Local service taxes are most useful in cases where a specific area in the community desires a higher level of

[1] Local improvement area and specified area taxes are the predecessors of local service taxes.

service (e.g. improved parks maintenance or additional street lighting) than is typically provided. In these cases, the costs of the enhanced service could be charged back to those benefiting through the local service tax.

Table 3: Local Service Taxes for Local Area Services – Pros and Cons

PROS	CONS
◆ Adds services to established areas. ◆ As local service taxes are not dependant on development, the use of local services taxes could enable the City to accelerate construction of needed infrastructure, amenities, or parks to make the City Centre a complete community. ◆ Relatively stable revenue source (via property taxation). ◆ Consistent with the benefitter pay principle.	◆ Requires elector assent. ◆ Increases in taxation are not favourably received.

3.3 Works and Services

As per Section 938 of the *Local Government Act*, the City can require developers to build infrastructure improvements such as utilities and roads as part of the subdivision or building permit process. These improvements are called "works and services" and are secured by the City by means of a servicing agreement. The City can require developers to provide works and services both within a subdivision and on that portion of a highway immediately adjacent to the development site up to the centre line of the highway. The City can also ask for other off-site infrastructure necessary to service specific developments. The City sets infrastructure servicing standards and design criteria in its Subdivision Bylaw and can establish different standards and requirements for different areas of the City. For example, the City could require developers in the City Centre to dedicate and build all roads (i.e. from minor streets to major thoroughfares). This would be a departure from the current practice of including many of the major thoroughfares (arterial roads) in the development cost charge program.

Many communities find it difficult to not only acquire land for trails, but also to secure funding to develop trails. One of the ways that the City can obtain and develop trails is through works and services. Trails fall within the definition of "highway", and can therefore be required through the City's Subdivision Bylaw. For example, the City could amend its Subdivision Bylaw to require developers to dedicate and construct waterfront trails to the City's standards as part of their

development (with no compensation). This may have limited application but is worth consideration.

Table 4: Works and Services – Pros and Cons

PROS	CONS
◆ No cost to the City as the developer finances the costs. ◆ Infrastructure is built by the developer.	◆ Provision of infrastructure is dependant on adjacent development – therefore infrastructure may not always be provided in a timely fashion. ◆ May be perceived as unfair by developers who feel that other landowners benefit from the works and services, but do not pay.

3.4 City-Wide Development Cost Charges

The statutory provisions related to development cost charges (DCCs) are included in Sections 933 to 937 of the *Local Government Act*. B.C. Reg. 166/84 also provides guidance with respect to payment of DCCs by instalment.

DCCs are charges levied on new development to assist local governments with financing the cost of upgrading or providing engineering infrastructure, and acquiring and developing parkland needed to support new development. The City has successfully used DCCs in the past and plans to continue to use this tool to fund growth-related infrastructure and park requirements.

The City currently uses DCCs as a source of capital, which means that the City allows DCC revenues to accumulate in a reserve fund before the infrastructure work is necessary (i.e. the City does not front-end DCC projects). This approach limits the City's need to borrow funds to complete DCC projects. This approach is preferred because interest on long term debt (other than "eligible interest" on major community infrastructure with community wide benefits such as water or sewer treatment facilities) cannot be incorporated into the DCC calculation. If the City were to borrow for a DCC project, the interest costs would, therefore, be borne by existing taxpayers in the community even if the service upgrades and the long term borrowing would provide existing taxpayers with little or no benefit, which is often the case.

Table 5: City-Wide Development Cost Charges – Pros and Cons

PROS	CONS
◆ Little cost to the City. ◆ Consistent with the benefitter pay principle as growth pays for growth. ◆ Common financing strategy that is already used by the City.	◆ Dependant on development. ◆ In general, interest costs are not eligible DCC costs. ◆ Applicable only for water, sanitary sewer, storm drainage, and transportation infrastructure as well as for parkland acquisition and development. ◆ Can be used only to pay for the infrastructure and park-related needs of growth – cannot be used to finance works needed for existing development.

3.5 Area Specific Development Cost Charges

If the City feels that certain infrastructure upgrades or parks benefit only the City Centre area, then an area specific DCC for the City Centre may be appropriate. The City may choose to use a combination of City-wide and sector specific DCCs to recover infrastructure and park costs associated with growth.

Table 6: Area Specific Development Cost Charges – Pros and Cons

PROS	CONS
◆ Little cost to the City. ◆ Consistent with the benefiter pay principle as growth pays for growth. ◆ DCCs are a common financing strategy that is already used by the City.	◆ May pose cash flow issues for the City as revenues cannot be shifted from City-wide DCC reserves to area specific DCC reserves. ◆ In general, interest costs are not eligible DCC costs. ◆ Applicable only for water, sanitary sewer, storm drainage, and transportation infrastructure as well as for parkland acquisition and development. ◆ Can be used only to pay for the infrastructure and park-related needs of growth – cannot be used to finance works needed for existing development.

3.6 Community User Fees

Sections 194 to 196 of the *Community Charter* give municipalities the authority to collect fees (from anyone who benefits from the municipal service, including existing property owners, user groups, etc.) in relation to services provided (including amenities). Local governments are therefore authorized to collect user fees for a range of community amenities such as recreation centres, daycares and libraries. Fees must be established by bylaw and must be clearly related to the cost of providing the service. Fees may vary by category of persons, property, business and activity to reflect the different impacts on a service that different users may have. Local governments must be able to support their fee structure through the provision of a report which outlines how the fee was established.

While user fees may provide the City with a method of recovering costs associated with new community amenities, user fees may not be a suitable strategy for financing the initial construction of community amenities. If community amenities need to be built before the City has collected sufficient fees to finance the project, then these costs must be front-ended by the City, typically through borrowing.

Table 7: Community User Fees – Pros and Cons

PROS	CONS
◆ Possibly no direct cost to the City. ◆ May be perceived as more equitable than a contribution as the rationale for the fee must show how the fee was calculated. ◆ Increases certainty for both the developer and the City, as the imposition of fees is not determined on a case by case basis.	◆ Decreases flexibility for the City, as the provision of amenities is not determined on a case by case basis. ◆ Requires City time and resources to develop the fee. ◆ May not be a suitable method of financing community amenities (i.e. borrowing may be required to build the amenities).

3.7 Utility Charges

Sections 194 to 196 of the *Community Charter* outline a municipality's ability to collect fees, including utility charges, in relation to services provided. Utility charges must be established by bylaw and must be clearly related to the cost of providing the service (e.g., water, sanitary sewer, storm drainage). Utility charges may vary by category of persons, property, business and activity to reflect the different impacts on a service that different users may have. User fees are typically collected to cover the operating costs associated with the provision of municipal services as well as the financing of growth-related infrastructure. Municipalities must be able to support their fee structure through the provision of a report which outlines how a fee was established.

The one caveat on this broad power is that municipalities cannot impose a highway toll unless specifically provided for through a Provincial or Federal Enactment.

Table 8: Utility Charges– Pros and Cons

PROS	CONS
◆ May be perceived as more equitable than general taxation as the rationale for the fee must show how the fee was calculated. ◆ Can be designed to be consistent with the benefiter pay principle (those who use the service, pay for the service according to benefit).	◆ Utility rate increases are not favourably received.

3.8 Gifts (Developer Contributions)

Through the development approval process, developer may grant gifts to the City. Typically, this takes the form of land (e.g., for parks or open space) or a monetary contribution (e.g., cash towards the leisure statutory reserves fund for leisure facilities throughout the City or facilities in the City Centre rather than building an on-site indoor amenity area).

Gifts such as land or community amenities are often negotiated as part of a Comprehensive Development Agreement (CDA). The legislative authority enabling municipalities to enter into CDAs is included in Section 8 of the *Community Charter*.

CDAs are agreements between a municipality and a developer under which the developer, in exchange for development approval, agrees to provide works and amenities over-and-above the services that would be required to facilitate site development and that would be secured through other development finance tools. Examples include affordable housing, libraries, fire halls, transit stations, community recreation space, and various types of "hard" infrastructure. CDAs are used to secure works and amenities that benefit both the project and the surrounding community, and, in essence, attempt to neutralize the development's financial impact on the municipality.

Arranged during the zoning approval process, CDAs are normally considered only for large development – or redevelopment – projects, which mean that CDAs may not be suitable for use within the CCAP as no one developer may have a significant amount of land. Since the costs of works and amenities provided under a CDA are negotiated on a case-by-case basis, the use of CDAs would give the City and the developer a high degree of flexibility. However, this flexibility

also means that the City cannot be certain that the required community amenities will be obtained. Furthermore, CDA costs are not recoverable. Since the front-ending developer would not have a means of recouping its costs from subsequent development, the use of CDAs to finance community amenities that benefit not only the City Centre but also the wider Richmond community may not be appropriate.

Table 9: Gifts (Developer Contributions) – Pros and Cons

PROS	CONS
◆ No direct cost to the City. ◆ Provides flexibility to the City and developer as each contribution is provided on a case-by-case basis. ◆ May be used to partially fund community amenities if cash contributions are made in lieu of providing facilities (e.g., build up a community recreation reserve). ◆ City Centre Facilities Fund already in place and utilized by the City.	◆ Comprehensive Development Agreements (CDAs) are normally only considered for large developments or redevelopments. ◆ Typically requires consultation efforts at rezoning. ◆ Consultations with developer take time and resources. ◆ Since this is a site specific process, outcomes are not certain for either the developer or the municipality. ◆ May not be able to obtain the full cost of amenities. ◆ May be perceived as inequitable as contribution may not always reflect benefit (from the amenity). ◆ Does not allow the front-ending developer to collect amenity costs from subsequent developers.

3.9 Density Bonusing

Municipalities may employ density bonusing in accordance with Section 904 of the *Local Government Act*. Density bonusing is an arrangement under which a local government allows a developer to exceed basic density levels in a zoning bylaw in exchange for the provision of a specific public amenity that benefits the community. Local governments can grant bonus densities in exchange for contributions toward amenities, such as walkways, plazas and open spaces, child care facilities, landscaping and off-street parking. Density bonusing is voluntary, in that the developer can proceed with the base density and not take advantage of a density bonus.

Density bonusing may provide the City with leverage necessary to obtain public facilities while providing developers with the benefit of obtaining increased densities for their projects. The

increased density helps pay for the amenity and also provides for a reasonable profit to do so. However, density bonusing is feasible only if market conditions are favourable. If market conditions do not support increased density, then the developer may not choose to accept increased densities in exchange for the provision of community amenities. Therefore, if the City relies on density bonusing as the primary means to acquire community amenities, there is a significant risk that community amenities will not be obtained.

There is also a large portion of the City Centre that is already zoned. This would limit the overall usefulness of bonus density as a cost recovery tool. In addition, within the City Centre there are building height limits (e.g., 45m). The City has recently approved an Affordable Housing Strategy that utilizes density bonusing as the primary mechanism to obtain built affordable housing or cash contributions in lieu of affordable housing.

Table 10: Density Bonusing – Pros and Cons

PROS	CONS
◆ Little cost to the City. ◆ Can benefit developers who wish to build at higher densities. ◆ In the City Centre, higher densities are generally encouraged. ◆ Density bonusing is being used to secure affordable housing.	◆ Effective strategy only if the developer wishes to have higher densities and if market conditions support density bonus. ◆ Part of the City Centre is already zoned and does not require rezoning to meet the CCAP objectives. ◆ The existing building height limit (e.g. 45m) may not enable increased density. ◆ May increase uncertainty for the City as density bonusing may not yield the required community amenities.

3.10 Short and Long-Term Borrowing

The statutory provisions providing local governments with authority to undertake short and long-term borrowing are included in Sections 179 and 180 of the *Community Charter*. Borrowing is a tool used by local governments to front-end the cost of all types of new infrastructure. Initiated by bylaw, long-term borrowing's maximum term is the lesser of 30 years and the reasonable life expectancy of the capital asset for which the debt is incurred. In most cases, monies are raised through the sale of debentures by the Municipal Finance Authority (MFA). This tool allows the City to build larger capital projects (e.g., the No. 2 Road Bridge and acquisition of land for the Terra Nova Natural/Rural Park) that are not feasible to finance solely out of reserves or current

revenues. Borrowing is a financing tool – the City would still need to determine how to repay the debt (e.g., through taxes, utility charges, DCCs, etc.).

Financial risks are inherent in the use of long-term borrowing. When used with local service areas, the risks are minimal as the recovery of monies is assured through the parcel tax. However, when long-term borrowing is used with DCCs, risks can be significant as monies may not be recovered if development does not occur as projected. In order to limit the municipality's financing risk, the use of long-term debt, front ended by the community, will need to be considered relatively carefully within the context of the *Implementation Strategy*.

While the City has had limited interest in borrowing for new parkland acquisition, it may be advantageous for the City to borrow funds to acquire parks in advance of development taking place. Acquiring key parcels of land early in the development process should help ensure that the City buys land in an attempt to keep pace with the rising cost of land in the City Centre. The City can borrow to front-end parkland acquisition or development and then recover these costs through DCCs; however interest costs cannot typically be recovered through DCCs.

Table 11: Short and Long-Term Borrowing – Pros and Cons

PROS	CONS
◆ Allows the City to obtain necessary funds in a timely fashion for projects the City could otherwise not afford. ◆ Allows the City to amortize costs over a relatively long time period (e.g., 20 years), which may reflect benefit.	◆ The City incurs interest costs. ◆ Borrowing capacity is limited. ◆ May require a referendum. ◆ The City exposes itself to the risk that it will not be able to repay the debt.

3.11 Public-Private Partnerships and Joint Ventures

Partnering arrangements are included in sections 21 and 22 of the *Community Charter.*

Public-private partnerships (P3s) are defined as co-operative ventures in which local governments and private sector entities combine strengths and share risks and rewards, to develop local infrastructure and community facilities. Establishing public-private partnerships is a complex undertaking requiring local governments to assess their organizational capabilities, adopt a P3 policy and procedures and secure trusted advisors from outside of the organizations prior to proceeding with these ventures.

P3s are well suited to sizable infrastructure projects that benefit a large number of people over wide areas, such as waste treatment plants and recreation and entertainment centres. P3s are not well-suited to smaller projects that only benefit specific areas as the resources required to enter and implement a P3 may outweigh the benefits. A construction value of $5 million is a minimum benchmark for P3 projects.

As a result of the legal and financial complexity associated with P3 arrangements, P3s are likely not appropriate for funding the required transportation improvements, utility upgrades, and parks; however, P3s are being considered for PRCS projects.

Table 12: Public-Private Partnerships or Joint Ventures – Pros and Cons

PROS	CONS
◆ May transfer risk to the private partner. ◆ Typically, the private partner finances the project. ◆ Enables the completion of projects that would otherwise be too costly for the City to undertake alone.	◆ Complex to develop and administer. ◆ It may not be possible to transfer significant amounts of risk. ◆ The City does not have full control over the project. ◆ Not suitable for smaller-scale projects.

3.12 5% Parkland Dedication

The *Local Government Act* authorizes municipalities to require the dedication of 5% of a lot for parkland (or cash in lieu) at subdivision. The amount of parkland the City can expect to obtain through 5% dedication at subdivision depends on the scale and type of future subdivision within the City. As per the *Local Government Act*, owners of land (as opposed to buildings, which means strata subdivisions are exempt) being subdivided are not required to dedicate parkland if their subdivision results in the creation of fewer than 3 additional lots, involves the consolidation of existing parcels, or if the smallest lot created is larger than 2 ha. While significant growth is anticipated within the City Centre, most future development is not expected to generate significant amounts of parkland through 5% dedication at subdivision due to the *LGA* exemptions (especially the fact that strata subdivisions are exempt). While most communities obtain at least some of their parkland through 5% dedication at subdivision, the City does not currently collect any parkland through these provisions of the *Local Government Act* mainly because it has, and can, acquire parkland through DCCs and, in certain instances, through rezoning negotiations.

Table 13: 5% Parkland Dedication – Pros and Cons

PROS	CONS
◆ Little cost to the City. ◆ Enables the City to ask for land or cash in lieu.	◆ Relatively few subdivisions are expected in the City Centre; therefore, 5% dedication at subdivision is not expected to yield significant land. ◆ The City would have to amend its current policy not to obtain parkland (or cash in lieu) at subdivision. ◆ Dependant on development. ◆ As multi-family developments do not typically require subdivision of land, it is not possible to require 5% dedication of parkland for many multi-family developments.

3.13 Grants

The City of Richmond may be eligible for Provincial and/or Federal grant funding for certain projects; however, since grant funding is not guaranteed, it would be risky for the City to rely heavily on grants to support infrastructure development in the City Centre. Furthermore, grant programs often favour new infrastructure development and do not often provide local governments with funds for infrastructure re-investment or ongoing operations and maintenance costs.

Table 14: Grants – Pros and Cons

PROS	CONS
◆ Potentially a source of significant funding.	◆ Typically do not apply to on-going operations and maintenance costs. ◆ Not guaranteed. ◆ Require resources to apply for the grant. ◆ Typically require some level of contribution from the local government (i.e. 100% funding is relatively rare).

3.14 School Site Acquisition Charges

These charges are determined by the School Board and Province. The City collects the charge and forwards it to the School District.

The Richmond School District No. 38 adopted a School Site Acquisition Charge Capital Bylaw on May 2, 2006. The School Site Acquisition Charge rates became effective May 2, 2006 to require developers to pay for up to 35% of the costs of new school lands and buildings. These charges will apply to all new residential development applications at either subdivision stage, for single family / duplex lots, or at building permit stage for multiple family residential developments or for the residential component of mixed-use developments. The current 2008 Richmond School Site Acquisition Charges are shown in **Table 15**.

Table 15: Richmond School Site Acquisition Charge

PRESCRIBED CATEGORY OF ELIGIBLE DEVELOPMENT	SCHOOL SITE ACQUISITION CHARGE (PER UNIT)
Low Density (<21 units / gross ha.)	$ 700.00
Medium Low (21-50 units / gross ha.)	$ 630.00
Medium (51-125 units / gross ha.)	$ 560.00
Medium High (126-200 units / gross ha.)	$ 490.00
High Density (>200 units / gross ha.)	$ 420.00

School Site Acquisition Charges are not financing options available to the City to pay for municipal infrastructure.

4.0 IMPLEMENTATION TOOLS

In addition to the financing tools discussed in the previous section, the City has several implementation tools it can use to recover costs associated with development. Each of these will be considered in appropriate circumstances in implementing the City Centre Area Plan.

- **DCC front-ender agreements** – The City may wish to enter into DCC front-ender agreements voluntarily with developers who build and finance DCC works in advance of the City's construction schedule. Under a DCC front-ender agreement, the local government agrees to collect and forward all future DCCs related to the specific works to the front-ending developer(s). The City could establish an area in the City Centre in which DCCs collected will be repaid to the developer over time. DCCs collected elsewhere in the City cannot be used to repay the front-ending developer. This assumes that there will be sufficient DCCs collected from that area to fund the DCC front-ender agreement. The repayment of interest charges cannot be included in the DCC front-ender agreement. Interest can be recouped only if the DCC already includes an interest component that has been approved by the Inspector of Municipalities to reflect exceptional circumstances. This will be examined as part of the *Implementation Strategy*.

  In general, municipalities should not permit developers to front-end DCC works if it would not be in the municipality's best interest to advance development in that particular area ahead of schedule.

Table 16: DCC Front-Ender Agreements – Pros and Cons

PROS	CONS
◆ Little cost to the City as the developer front-ends the costs. ◆ Allows a municipality to shift financial risk to the front-ending developer. ◆ Allows front-ending developers to recoup costs from subsequent developers who benefit from the infrastructure. ◆ No time limitation. ◆ No elector assent requirements.	◆ Requires administration by the City. ◆ Interest cannot be included in the agreement (unless interest has been approved by the Inspector as part of the DCC program). ◆ If development does not occur within the area subject to the DCC front-ender agreement, the front-ending developer will not recoup its funds. ◆ Few developers may be willing to front end the costs due to fragmented land holdings.

- **Latecomer charges** – Section 939 of *Local Government Act* entitles developers that build excess or extended services, to recoup these costs (including interest) from properties that will benefit from these services. Excess services would include upsizing of infrastructure beyond what is required through works and services, whereas extended services are infrastructure extensions that will benefit future development along the extension. The City would be responsible for administering the latecomer agreement and collecting the charges from benefiting properties as they develop. Latecomer charges can be collected for a maximum period of 15 years. Projects that are included in the DCC program cannot be subject to a latecomer agreement, and projects constructed under a latecomer agreement cannot be included in the DCC program.

  If the City requires a developer to build excess or extended services, then they are obligated by the legislation to administer a latecomer agreement. The development horizon for the City Centre is 25 to 75 years, which is well beyond the 15-year time limit for latecomer agreements. Therefore, the use of latecomer agreements may not be suitable for certain components of the CCAP.

Table 17: Latecomer Charges – Pros and Cons

PROS	CONS
◆ Little cost to the City as the developer front-ends the costs. ◆ Allows municipality to shift financial risk to the front-ending developer. ◆ Allows front-ending developers to recoup costs from subsequent developers who benefit from the infrastructure. ◆ No elector assent requirements. ◆ Allows for the inclusion of interest.	◆ Requires administration by the City. ◆ The time period for recovering costs through latecomers is limited to 15 years; therefore, latecomer agreements may not suitable in cases where the development timeline is expected to be significantly longer than 15 years. ◆ If development does not occur within the area subject to the latecomer agreement, the front-ending developer will not recoup its funds. ◆ Difficult to find developers willing to front-end the significant costs without owning significant lands in the latecomer benefiting area.

- **Development works agreements** – Section 937.1 of the *Local Government Act* pertains to development works agreements, which, like latecomer charges, are a tool that allows developers to recoup off-site servicing costs (e.g., utility upgrades) from properties that benefit from the service. Under a development works agreement, the City would collect a one-time charge from properties subject to the development works agreement to repay the

developer that paid for the off-site services. Development works agreements allow developers to recoup not only the original capital costs, but also interest costs. Unlike latecomers agreements, development works agreements are not subject to a collection time period; however, development works agreements do require elector assent from those property owners in the area subject to the agreement.

Since the build-out horizon for the CCAP is beyond 15 years, development works agreements are likely preferable to latecomers agreements, which have a time limit of 15 years. However, the development works agreement process is complicated by the elector assent requirements.

Table 18: Development Works Agreements – Pros and Cons

PROS	CONS
◆ Little cost to the City as the developer front-ends the costs. ◆ Allows municipality to shift financial risk to the front-ending developer. ◆ Allows front-ending developers to recoup costs from subsequent developers who benefit from the infrastructure. ◆ Time limitation on collection determined by the City and developer. ◆ Allows for inclusion of interest.	◆ Requires elector assent, which may be difficult to obtain in the City Centre area based on current ownership. ◆ Requires administration by the City. ◆ If development does not occur within the area subject to the development works agreement, the front-ending developer will not recoup its funds.

- **Phased Development Agreements** – Recent amendments to the *Local Government Act* now allow for Phased Development Agreements (PDAs). Section 905.1 of the *Local Government Act* authorizes local governments to voluntarily enter into PDAs with developers to essentially exchange zoning for community amenities and the inclusion of specific features (as determined through the agreement) in the development. As long as the agreement is in effect, any subsequent changes to the zoning bylaw would not apply to the lands subject to the agreement. The maximum term of a PDA is 10 years, but the Inspector of Municipalities can extend this term to 20 years. Phased Development Agreements must be adopted by bylaw and require a public hearing.

  The City could use PDAs to require the provision of community amenities (e.g., park space, recreation facilities, daycare space, libraries, etc.) within the City Centre. However, like developer gifts, PDAs do not guarantee that the required community amenities will be

obtained. Furthermore, PDA costs are not recoverable and the front-ending developer would not have a means of recouping its costs from subsequent development.

Table 19: Phased Development Agreements – Pros and Cons

PROS	CONS
◆ No direct cost to City. ◆ Increases certainty for the developer as zoning protection is provided for 10 years. ◆ The public hearing requirement increases transparency. ◆ Can require developers to finance amenities.	◆ Requires consultation efforts at rezoning and negotiations take time and resources. ◆ Since this is a site specific process, outcomes are not certain for either the developer or the municipality. ◆ Does not allow the front-ending developer to collect amenity costs from subsequent developers. ◆ May not be able to obtain the full cost of amenities.

- **DCC Credits and Rebates** - Section 933(8) of the *Local Government Act* requires municipalities to provide DCC Credits in specific circumstances. Further details on the "nuances" associated with DCC Credits and DCC Rebates are included in the Development Cost Charges Best Practices Guide available through the Ministry of Community Services at www.gov.bc.ca.

  DCC programs are intended to support broader local government growth management plans. Developers who front-end the cost of constructing required trunk services in advance of their proposed timing (e.g. they are required in a year prior to that planned for in the municipality's Five Year Financial Plan or in advance of adequate funds being available to the municipality) would be entitled to a DCC credit. DCC credits and rebates can only be given for trunk works that are included in the DCC program.

  An out-of-sequence development should be carefully considered against the community's growth management objectives, as identified in the OCP. It is recommended that local governments explicitly identify situations where a DCC credit or rebate would be considered, so as not to undermine the effectiveness of their OCP.

  In the case where major infrastructure is "front-ended" by developers in Richmond, for the purposes of fairness and equity, the City should consider the issuance of DCC Credits and

Rebates to these developers. This approach is aligned with the guiding principles included in Section 2.

Table 20: DCC Credits and Rebates– Pros and Cons

PROS	CONS
◆ Ensures developers do not pay twice for infrastructure. ◆ The issuance of credits supports developers who wish to build infrastructure ahead of the City's schedule.	◆ Issuing and tracking credits and rebates impose administrative costs on the City. ◆ Issuing credits and rebates may trigger development in areas of the City ahead of schedule, which may undermine the effectiveness of established land use plans. ◆ A credit may not be adequate to cover infrastructure costs (as DCC credits are issued only up to the amount of DCC owing for the type of infrastructure constructed).

5.0 CCAP PROGRAM AND FINANCIAL COSTS

The cost estimates used in this section have been taken directly from the following studies and analyses that were completed as part of the CCAP:

- City Centre Transportation Plan Update – Implementation Plan (IBI, 2007)
- Water Model Update (Earth Tech, 2007)
- Drainage Model Update (Earth Tech, 2007)
- Sanitary Model Update (Earth Tech, 2007)
- Park cost estimates prepared by the City of Richmond (2007)
- PRCS Facilities Strategic Plan (PERC, June 2007)
- Library Facilities Plan (Richmond Public Library, 2007)

These studies have determined what transportation, utilities, parks and new community facilities are needed for a total population of 120,000 residents by the year 2100 or earlier. Further details on these costs and their financing options are included in the following sections (see the appendices for lists of the recommended projects).

Table 21: Total Costs for Proving Services to Existing and New Development in the CCAP Area

INFRASTRUCTURE TYPE	TOTAL COST
Transportation	$562,076,000
Water	$16,771,000
Sanitary	$62,691,000
Drainage	$84,085,000
Parkland Acquisition (2031)	$237,698,000
Parkland Development (2031)	$82,325,000
Sub Total	***$1,045,646,000***
Community Facilities :	
PRCS Community Amenities	$235,000,000 (estimated)
Community Safety Building and Fire Hall #1	To be confirmed through future staff reports.
TOTAL COST	**TBD**

It should be noted that when the City builds new infrastructure, DCC related or not, there are on-going operation and maintenance (O&M) costs. These O&M costs and ultimately the replacement cost of these works will be the responsibility of the City. The on-going costs are typically funded through utility fees and general revenue funds.

6.0 CCAP FINANCING AND COST RECOVERY APPROACH - TRANSPORTATION

This section outlines possible financing and cost recovery options for transportation.

6.1 Overview of Transportation Plan Update

To fully understand the cost estimates, it is necessary to understand the transportation analysis that was conducted for the City Centre. In summary, IBI's City Centre Transportation Plan Update – Implementation Plan included the following:

- Analysis of and recommendations related to: the street network, transit, pedestrian, cycling, driving and parking, goods movement and emergency services with the City Centre;
- Recommended street network improvements for the City Centre within the next 25 years;
- Implementation costs and timing for the recommended street network improvements; and
- Recommended policy initiatives related to transit, walking, cycling, driving and parking, and goods movement and emergency service.

This implementation plan for transportation focuses primarily on the street network.

6.2 Cost Estimates

The cost estimates prepared by IBI are based on 2007 construction estimates and include contingencies and engineering allowance. Land costs have been estimated at a rate of $1,600 per square metre for residential property and $800 per square metre for commercial and lower density residential property. Construction costs have been reviewed by the City to ensure there is no duplication between the roads program and the sanitary, water, and drainage programs. To ensure funds are used efficiently, it is recommended that the City coordinate the prioritization of roadworks and utility projects.

The street network projects fall into the following categories:

- **Major Thoroughfare** – Urban arterial intended to accommodate longer distance vehicle trips (4 plus lanes, left turns, landscaped median, and urban greenway).
- **Major Street** – Urban collector that will link areas of the City Centre (4 lanes, left-turns).

- **Minor Street** – Urban street serving fronting businesses and residences. Minor streets in commercial or higher density areas may have four lanes (4 lanes for commercial/high density residential otherwise 2 lanes).
- **Lanes and Mews** – Service lanes primarily intended for vehicle access for loading, parking and service purposes. Mews primarily intended as a multi-modal route for pedestrians and cyclists and possibly some lower speed traffic.
- **Trails and Paths –** Multi-use trails for pedestrians and cyclists.
- **Pedestrian/Cyclist Crossing Enhancements** – Enhancements to ensure safe road crossing for pedestrians and cyclists, as well as a pedestrian/cyclist bridge over the Middle Arm.

As shown in **Table 22**, Major Streets and Minor Streets account for the large majority of the total street network costs. In total, the recommended street network improvements are expected to cost over $562 million.

Table 22: Transportation Costs by Street Category

TYPE	*LAND COST*	*CONSTRUCTION COSTS*	*TOTAL*
Major Thoroughfare	$3,700,000[1]	$23,283,000[1]	$26,983,000[1]
Major Street	$83,186,000	$101,287,000	$184,473,000
Minor Street	$235,425,000	$84,825,000	$320,250,000
Lanes and Mews	To be determined[2]	To be determined[2]	To be determined[2]
Trails and Paths	$0	$370,000	$370,000
Pedestrian/Cyclist Crossing Enhancements		$30,000,000	$30,000,000
TOTAL (Excluding Lanes and Mews)	**$322,311,000**	**$239,765,000**	**$562,076,000**

Source: Draft City Centre Transportation Plan Update – Implementation Plan, IBI, 2007 (unit costs revised by the City of Richmond)

1 – Urban greenways located on private property are not included in the Transportation costs because they form part of a development's landscaping and on-site improvements. The City will secure public access to these greenways through statutory rights-of-way.

2 – Lanes and Mews are not included in the Transportation costs because they have only been defined conceptually and will be part of a development's required access improvements. Wherever possible, the City will secure lanes through road dedications. The City would typically secure public access to mews through statutory rights-of-way.

6.3 Key Issues

The development of a financing and cost recovery strategy for street network improvements must take the following key issues into account:

- **Fragmented land ownership** – The absence of a major landowner may make negotiated acquisition of street network improvements challenging. Fragmented land ownership may also mean that parcels may not develop in sequence (or at all) to provide network linkages as required.

- **Significance of costs** – The road construction cost estimates are significant relative to land acquisition costs.

- **Required transportation routes** – It is likely that the City will require the timely development of Major Thoroughfares and Major Streets to ensure the efficient and safe movement of people and goods. Therefore, any financial strategy for the street network must ensure that the City has the funds to construct Major Thoroughfares and Major Streets when needed.

- **Grants** – Translink funding may be available for Major Road Network projects; however, funding is not guaranteed. This *Implementation Strategy* does not assume any Translink funding.

6.4 Recommended Approach

Given the key issues noted above, it is most appropriate to recover transportation costs through:

- **Works and Services –** Works and services will cover all of the costs associated with Minor Streets (except for some costs associated with five key Minor Streets – these costs are included in the DCC program). Land and construction costs associated with select trails/paths are expected to be obtained at no cost to the City through the development process.

- **General Revenue** – As per the *Local Government Act*, if the City wishes to levy DCCs, the City is obligated to assist development with costs associated with growth. The percentage of DCC costs paid by the City is called the Municipal Assist Factor, and is typically set at 1% (the City's current DCC rates are based on an assist factor of 1%). The City is also obligated to fund the portion of DCC project costs that benefit existing development, which is assumed to

be 5% of total DCC costs. For transportation infrastructure, the City funds both of these amounts (1% and 5%) through general revenues.

- **Development Cost Charges –** The following costs would be included in the Transportation DCC program:
  - Construction costs associated with all Major Thoroughfares and all Major Streets, including construction costs for urban greenways along Major Thoroughfares and Major Streets in cases where the urban greenway is located within a City road right-of-way.
  - Construction and/or land costs associated with five Minor Streets from the City Centre Transportation Plan Update, one Pedestrian/Cycling Trail as well as six Minor Streets from the existing DCC program that are critical to the completion of the transportation network.
  - Construction costs for Pedestrian/Cyclist Crossing Enhancements that are not expected to be acquired through the development process.

  Land costs for urban greenways on Major Thoroughfares and Major Streets are assumed to be nil as the City plans to secure the required land for urban greenways through statutory rights-of-way (for width up to 4.0m).

  The following four DCC options were considered as part of the analysis to determine the most appropriate financing and cost recovery strategy for Transportation:

  - Option A: City-wide DCC for all DCC eligible projects with a growth horizon to 2101
  - Option B: City-wide DCC for all DCC eligible projects with a growth horizon to 2041
  - Option C: City-wide DCC for all DCC eligible projects with a growth horizon to 2031
  - Option D: Combination of a City-wide DCC and a City Centre DCC for all DCC eligible projects with a growth horizon to 2031. Under this option, only Major Thoroughfares would be added to the City's current City-wide DCC program – all other projects would be recovered from a City Centre DCC.

  Evaluation of DCC Options and Recommendation – The DCC options considered vary in terms of time horizon and the basis on which the charge is levied

(i.e. on a City-wide basis or an area-specific basis). These differences produce different DCC rates. For the City-wide DCC options (Options A, B, and C), DCC recoverable costs remain constant across all three options. Therefore, as the time horizon increases, the same costs are spread over a larger amount of growth. Consequently, DCC rates for Options A and B are lower than those under Option C. While lower rates may be preferred, Options A and B could mean that the City may not be able to collect sufficient funds to build infrastructure when it is needed. In general, the longer the time horizon, the more uncertain growth estimates are, and therefore, the more risk the City assumes. Furthermore, the Transportation Plan Update indicated that the recommended upgrades would be needed to service population growth to 2031; therefore, choosing a time horizon beyond 2031 may not be prudent.

In accordance with the "benefiter pay" principle, the City may wish to allocate City Centre specific costs to a City-Centre DCC. Only major transportation components (i.e. Major Thoroughfares) with a City-wide benefit would be included in the City-Wide DCC. Option D reflects this approach. While this Option may be consistent with the "benefiter pay" principle, this approach yields DCCs (for those developing in the City Centre) that may not be affordable.

Based on the risks inherent in assuming a longer time horizon and affordability issues related to area-specific DCCs, Option C (City-wide DCC to 2031) was identified as the most reasonable alternative.

The recommended approach is summarized in **Table 23**.

Table 23: Recommended Transportation Financing and Cost Recovery Approach

TOTAL TRANSPORTATION CAPITAL COSTS **$562,076,000**			
Cost to Service Existing Development ***$0***		***Cost to Service CCAP Growth*** ***$562,076,000***	
No upgrades required to service existing development identified in the City Centre Transportation Plan Update		Costs Financed Through City-Wide DCCs (land costs for Major Thoroughfares and Major Streets; construction costs within Major Thoroughfares and Major Streets; select Minor Streets and Trails or Paths; and Pedestrian/Cyclist Crossing Enhancements)	$247,396,000 (DCC recoverable costs)[2]
		Costs Financed by City (1% MAF on DCCs and 5% of DCC costs allocated to existing development)	$15,651,000
		Costs Financed Through Works and Services* (most Minor Streets and select Pedestrian or Cyclist Enhancements on public roads)	$299,029,000

****The Transportation Plan Update identified only a portion of the works to be completed through works and services.***

Table 24 shows the resulting DCC rates.

[2] IBI's Transportation Plan Update identified $247,396,000 in DCC recoverable costs for the City Centre. The City's current DCC Bylaw already identifies $179,353,000 of DCC recoverable costs for the City Centre, of which $72,925,000 will be deleted due to overlap with the new recommendations.

Table 24: Approximate Impact on Transportation DCC Rates

LAND USE	*UNITS*	*CURRENT DCC RATES*	*APPROXIMATE PROPOSED DCC RATES*
Single Family	per lot	$4,682.00	$6,431.35
Townhouse	per sq. ft. of building area	$2.24	$3.08
Apartment	per sq. ft. of building area	$3.00	$4.11
Commercial	per sq. ft. of building area	$5.97	$8.20
Light Industrial	per sq. ft. of building area	$4.26	$5.86
Major Industrial	per acre of gross site area	$22,291.53	$30,619.11

These DCC rates would replace the current City-Wide transportation DCCs.

The DCC rates have been calculated under the following assumptions:

- City-wide DCC
- DCC horizon is to 2031
- Growth estimates include both residential and non-residential growth
- 1% Municipal Assist Factor
- 95% benefit factor (portion of costs attributed growth)
- Overlap between the current transportation DCC program and the proposed transportation DCC program totals $72,925,000 (in DCC recoverable costs) (see **Appendix B**)
- Equivalency factors equal those used for the current DCC Bylaw (see Table K.3 in **Appendix I**).

Further details on the DCC rates calculations are included in **Appendix I**.

7.0 CCAP FINANCING AND COST RECOVERY APPROACH – WATER

7.1 Overview of Water Model Update

The City of Richmond has recently had the new City Centre area of its City wide water model updated. The work completed by Earth Tech Inc. included the review of the water system under three demand scenarios for the new City Centre area:

1. the existing (2006) residential population of 43,200 people and industrial, commercial and institutional (ICI) equivalent population of 27,545;
2. the Theoretical Zoning Map (TZM) (2021) residential population of 91,770 and an ICI equivalent population of 38,340; and,
3. CCAP (2101) residential population of 120,105 and a total population of 164,545.

The City Centre water system analysed principally consists of distribution water mains that vary in size from 200mm to 350mm.

The recommended improvements address the need for new mains and increases in the pipe size of existing mains required to meet domestic water demands, fire flow demands, and pipe age and material replacement requirements under the three growth scenarios.

These calculations include efficiencies resulting from water metering. Further efficiencies may be factored in as sustainability and water conservation measures are implemented.

In summary, Earth Tech's Water Model Update includes the following:

- An update of the City's existing water model;
- An evaluation of the water distribution system under Existing, Theoretical Zoning Map, and City Centre Area Plan land uses;
- Recommended water system improvements for each of the three demand scenarios; and
- Analysis for the City Centre based on a build-out population of 120,105 residents.

7.2 Cost Estimates

The unit costs are shown in **Table 25**, and the total costs by pipe diameter are shown in **Table 26**. The cost estimates are reported in 2007 dollars and include a contingency allowance of 25% and an engineering allowance of 15%.

Table 25: Unit Costs for Pipe Upgrades (Water)

PIPE DIAMETER (mm)	*UNIT COST ($/m)*	*With 25% Contingency and 15% Engineering*
200	$700	$1,006
250	$750	$1,078
300	$900	$1,294
350	$1,000	$1,438
Tie-ins	$15,000	$21,563

Source: Water Model Update, Earth Tech (2007)

Table 26: CCAP Water Capital Costs by Pipe Diameter[3]

PIPE DIAMETER (mm)	*COST TO SERVICE EXISTING, TZM, CCAP*	*COST TO SERVICE TZM AND CCAP GROWTH*	*COST TO SERVICE CCAP GROWTH*	*TOTAL*
200	$4,318,825	$2,193,769	$2,132,100	$8,644,694
250	$2,554,078	$2,253,281	$366,563	$5,173,922
300	$495,938	$534,750	$322,575	$1,353,263
350		$661,250		$661,250
Modelling			$937,500	$937,500
TOTAL	**$7,368,841**	**$5,643,050**	**$3,758,738**	**$16,771,000**

Source: Water Model Update, Earth Tech (2007)

7.3 Key Issues

The development of a financing and cost recovery strategy for water improvements must take the following key issues into account:

- **Ensure Timely Construction of Water Infrastructure** – Developers will be responsible for ensuring their servicing needs are met in accordance with the City's OCP/Area Plans. If the scale of the required improvements to service any one development is too significant, the City may consider partnering with one or more developers to ensure certain components of the water system are constructed.

[3] ***Critical Assumption -*** The total cost to service the CCAP build-out population is assumed to be the sum of the "Existing, TZM, CCAP Costs", "TZM & CCAP Costs", and "CCAP Only Costs" identified in the Water Model Update.

- **Availability of DCC Funds** – The City Centre DCCs are only part of a larger DCC program. Over the coming years there will be demands for DCC funding throughout the whole community. The competing demands for the DCC funds may challenge City resources.

7.4 Recommended Approach

Given the key issues noted above, it is most appropriate to recover water infrastructure costs through:

- **City-Wide Development Cost Charges –** The following costs would be included in the City-Wide Water DCC program:
  - Costs to upsize the current water mains from 150mm (as required through works and services) to the recommended diameter. All upsizing costs related to the "Existing, TZM, CCAP", "TZM & CCAP", and "CCAP Only" demand scenarios are included in the DCC program.

- **Works and Services/Water Utility Reserves or Charges/Other Revenue Sources –** The City would recover the following costs through various innovative funding strategies including, but not limited to, works and services, water utility reserves or charges, and other possible revenue sources:
  - Consistent with current City practice, costs associated with constructing water mains less than or equal to 150mm in diameter will be allocated to the developer through servicing agreements (as per City Design Specifications).
  - The City's portion of DCC costs (i.e., 1% Municipal Assist Factor).

The recommended financing and cost-recovery approach for water infrastructure is summarized in **Table 27.**

Table 27: Recommended Financing and Cost Recovery Approach – Water

TOTAL WATER CAPITAL COSTS **$16,771,000**			
Cost to Service Existing Development ***$0***		***Cost to Service TZM and CCAP Growth*** ***$16,771,000***	
No upgrades required to service existing development specifically identified in the Water Model Update.		Costs Financed Through City-Wide DCCs (upsizing)	$8,197,000[4] (DCC recoverable costs)
		Costs Financed Through Works and Services (pipes ≤ 150 mm)	$8,491,000
		Costs Financed by City (1% MAF on DCCs)	$83,000

The impact on DCC rates is summarized in **Table 28**

[4] The City's current DCC Bylaw includes $2,836,000 in DCC recoverable costs for projects in the City Centre. These costs will be deleted due to overlap with the new recommended works.

Table 28: Approximate Impact on City-Wide Water DCC Rates

LAND USE	*UNITS*	*CURRENT DCC RATES*	*APPROXIMATE PROPOSED DCC RATES*
Single Family	per lot	$768.18	$810.63
Townhouse	per sq. ft. of building area	$0.49	$0.53
Apartment	per sq. ft. of building area	$0.50	$0.54
Commercial	per sq. ft. of building area	$0.19	$0.21
Light Industrial	per sq. ft. of building area	$0.19	$0.21
Major Industrial	per acre of gross site area	$4,114.56	$4,473.33

These DCC rates would replace the current City-Wide water DCCs.

The DCC rates have been calculated under the following assumptions:

- City-wide DCC
- DCC horizon is to 2031
- Growth estimates are to 2031 and include both residential and non-residential growth
- 1% Municipal Assist Factor
- 100% benefit factor
- Overlap between the current water DCC program and the proposed water DCC program totals $2,836,000 (in DCC recoverable costs)
- Equivalency factors equal those used for the current DCC Bylaw
- No assumed further reductions due to City or developer sustainability initiatives

Further details on the DCC rates calculations are included in **Appendix I**.

The degree of overlap between the current DCC program and the proposed DCC program is summarized in **Appendix D**.

8.0 CCAP FINANCING AND COST RECOVERY APPROACH –SANITARY

8.1 Overview of Sanitary Sewer Update

The City of Richmond has recently had the current City Centre, Fraserview and Bridgeport sanitary study areas of its City wide sanitary system model updated. The work completed by Earth Tech Inc. included the review of the sanitary sewer system under three demand scenarios for the City Centre area:

1. the existing (2006) residential population of 43,200 people and industrial, commercial and institutional (ICI) equivalent population of 27,545;
2. the Theoretical Zoning Map (TZM) (2021) residential population of 91,770 and an ICI equivalent population of 38,340; and
3. CCAP (2101) residential population of 120,105 and total population of 164,545.

The City Centre sanitary sewer system analysed consists of gravity sanitary sewers, pump stations and force mains.

The recommended improvements identify the increase in pipe size of existing sewers required to meet capacity needs and new sewers, pump stations and force mains required to meet the demands of growth in the three time periods.

Note these calculations do not include any efficiencies due to sustainability initiatives because the implications of sustainability initiatives are not yet known. This will be addressed over time as information becomes available.

In summary, Earth Tech's Sanitary Model Update includes the following:

- Conversion of the existing MOUSE model to MIKE URBAN model;
- An update of the City's sanitary pipe network;
- An evaluation of the sanitary system under Existing, Theoretical Zoning Map, and City Centre Area Plan demand scenarios;
- Recommended sanitary system improvements for each of the three demand scenarios; and
- Analysis for the City Centre based on a build-out population of 120,105 residents.

8.2 Cost Estimates

The sanitary sewer cost estimates are based on the following unit costs:

Table 29: Unit Costs for Pipe Upgrades (Sanitary)

PIPE DIAMETER (mm)	*BASE UNIT COST ($/m)*	*CONTINGENCY*	*ENGINEERING*	UNIT COST W/ ENGINEERING AND CONTINGENCY
Gravity Sewers				
200	$900	35%	15%	$1,397
250	$1,425	35%	15%	$2,212
300	$1,500	35%	15%	$2,329
375	$1,650	35%	15%	$2,562
450	$2,250	35%	15%	$3,493
525	$6,750	35%	15%	$10,479
600	$6,750	35%	15%	$10,479
Forcemains				
200	$800	25%	15%	$1,150
250	$850	25%	15%	$1,222
300	$900	25%	15%	$1,294
375	$1,000	25%	15%	$1,438
450	$1,400	25%	15%	$2,013
525	$1,400	25%	15%	$2,013
600	$1,400	25%	15%	$2,013
Minor Pump Station Upgrades	$500,000	35%	15%	$776,250
Major Pump Station Upgrade	$1,500,000	35%	15%	$2,328,750
Modelling	$750,000	25%	0%	$937,500

Source: Sewer Model Update, Earth Tech (2007)

Based on these unit costs, the total cost to service the existing demand scenario and CCAP growth is approximately $62.7 million (see **Table 30**). The cost estimates are reported in 2007 dollars.

Table 30: Cost by Infrastructure Component (Sanitary)

INFRASTRUCTURE COMPONENT	*COSTS TO SERVICE EXISTING DEVELOPMENT*	*ADDITIONAL COSTS TO SERVICE CCAP*	TOTAL COSTS
Gravity Sewers			
200	$226,355	$997,637	$1,223,991
250	$110,616	$12,512,840	$12,623,455
300	$1,215,608	$8,725,826	$9,941,434
375	$76,849	$8,250,994	$8,327,843
450		$4,481,679	$4,481,679
525	$157,191	$7,890,969	$8,048,160
600		$157,191	$157,191
Sub-Total	***$1,786,617***	***$43,017,136***	***$44,803,753***
Forcemains			
250	$118,522		$118,522
300		$232,875	$232,875
375	$110,688	$2,256,875	$2,367,563
450	$382,375	$644,000	$1,026,375
600		$784,875	$784,875
Sub-Total	***$611,584***	***$3,918,625***	***$4,530,209***
Minor Pump Station Upgrades	$2,328,750	$5,433,750	$7,762,500
Major Pump Station Upgrades		$4,657,500	$4,657,500
Sub-Total	***$2,328,750***	***$10,091,250***	***$12,420,000***
Modelling		$937,500	$937,500
TOTAL COSTS	**$4,727,000**	**$57,965,000**	**$62,691,000**

Source: Sanitary Model Update, Earth Tech (2007)

8.3 Key Issues

The development of a financing and cost recovery strategy for sanitary improvements must take the following key issues into account:

- **Coordination of Construction of Sanitary Infrastructure** – There are many pump stations and sanitary force mains required to service the City Centre. Because these facilities will service large catchment areas and not likely one developer, multiple agreements may have to be developed to reimburse developers that front end works that service others.

- **Availability of DCC Funds** – The City Centre DCCs are only part of a larger DCC program. Over the coming years there will be demands for DCC funding throughout the whole community. The competing demands for the DCC funds may challenge City resources.

8.4 Recommended Approach

Given the key issues noted above, it is most appropriate to recover sanitary infrastructure costs through:

- **City-Wide Development Cost Charges –** The following costs would be included in the City-Wide Sanitary DCC program:
  - All costs associated with the "CCAP" demand scenario (i.e., those costs needed to service the "CCAP" demand scenario beyond those required to service the "Existing" demand scenario).

- **Works and Services/Sanitary Utility Reserves or Charges/Other Revenue Sources –** The City would recover the following costs through various innovative funding strategies including, but not limited to, works and services, sanitary utility reserves/charges, and other possible revenue sources:
  - The City's portion of DCC costs (i.e., 1% Municipal Assist Factor);
  - All upgrades needed for the "Existing" demand scenario.

Table 31: Sanitary Sewer Financing and Cost Recovery Approach

TOTAL SANITARY CAPITAL COSTS **$62,691,000**			
Cost to Service Existing Development ***$4,727,000***		***Costs to Service CCAP Growth*** ***$57,965,000***	
Costs Financed Through City-Wide DCCs	$0	Costs Financed Through City-Wide DCCs	$57,385,000[5] (DCC recoverable costs)
Costs Financed Through Sanitary Utility/Works and Services/Other	$4,727,000	Costs Financed by City (1% MAF on DCCs	$580,000

Table 32 shows the approximate impact on DCC rates.

Table 32: Approximate Impact on City-Wide Sanitary Sewer DCC Rates

LAND USE	***UNITS***	***CURRENT DCC RATES***	***APPROXIMATE PROPOSED DCC RATES***
Single Family	per lot	$2,315.28	$2,634.91
Townhouse	per sq. ft. of building area	$1.46	$1.72
Apartment	per sq. ft. of building area	$1.51	$1.77
Commercial	per sq. ft. of building area	$0.57	$0.67
Light Industrial	per sq. ft. of building area	$0.57	$0.67
Major Industrial	per acre of gross site area	$12,401.22	$14,540.33

****These DCC rates would replace the current City-Wide sanitary DCCs.***

[5] The City's current DCC Bylaw includes $28 million (in DCC recoverable costs) of works for the City Centre – all of these projects will be replaced by the new upgrades identified by Earth Tech.

The DCC rates have been calculated under the following assumptions:

- City-wide DCC
- DCC horizon is to 2031
- Growth estimates are to 2031 and include both residential and non-residential growth
- 1% Municipal Assist Factor
- 100% benefit factor
- The proposed sanitary DCC projects for the City Centre are assumed to entirely replace the sanitary DCC projects in the City Centre area in the current program; the overlap between the current sanitary DCC program and the proposed sanitary DCC program totals $28,059,000 in DCC recoverable costs (See **Appendix F**).
- Equivalency factors equal those used for the current DCC Bylaw
- No reductions due to City or developer sustainability initiatives

Further details on the DCC rate calculations are included in **Appendix I**.

9.0 CCAP FINANCING AND COST RECOVERY APPROACH – STORM DRAINAGE

9.1 Overview of Storm Drainage Update

The City of Richmond has recently consolidated their existing drainage models for the West Richmond, agricultural area of East Richmond and northern Richmond into a new West Richmond model. The work completed by Earth Tech Inc. included the review of the drainage system under two demand scenarios for the new City Centre area:

1. the existing (2006); and
2. the Theoretical Zoning Map (TZM) (2021)/ CCAP (2101).

The CCAP land use is very similar to the TZM scenario and therefore the results are shown as the TZM/ CCAP growth option. The City Centre drainage system analysed consists of storm sewers, pump stations (3), ditches, open channels and outfalls to the Fraser River. The model was developed for two major storm events; the 10 year 2 hour and the 10 year 24 hour events. The City separates it's drainage systems into minor (pipes less than 900mm in diameter and local ditches) and major (pipes greater than 900mm and large ditch/ channels and pump stations) systems.

The recommended improvements address undersized infrastructure that needs to be improved and new works required to meet the City's drainage design standards. The new works include storm pipes, pump stations and ditches required to meet the demands of growth as well as existing problems.

Notes these calculations do not include any efficiencies due to sustainability initiatives because the implications of sustainability initiatives are not yet known. This will be addressed over time as information becomes available.

In summary, the City's Drainage Model Update includes the following:

- An update of the City's existing drainage model for all of West Richmond;
- An evaluation of the drainage system under Existing, Theoretical Zoning Map, and City Centre Area Plan land use scenarios; and
- Recommended drainage system improvements for each of the three land uses.

9.2 Cost Estimates

The drainage cost estimates are based on the following unit costs:

Table 33: Unit Costs for Upgrades (Drainage)

PIPE DIAMETER (mm)	UNIT COST ($/m)	CONTINGENCY	ENGINEERING	UNIT COST W/ ENGINEERING AND CONTINGENCY
300	$725	35%	15%	$1,126
375	$805	35%	15%	$1,250
450	$875	35%	15%	$1,358
525	$1,020	35%	15%	$1,584
600	$1,090	35%	15%	$1,692
675	$1,150	35%	15%	$1,785
750	$1,250	35%	15%	$1,941
900	$1,600	35%	15%	$2,484
1050	$1,750	35%	15%	$2,717
1200	$1,850	35%	15%	$2,872
1350	$2,000	35%	15%	$3,105
1500	$2,400	35%	15%	$3,726
900x 2100	$4,000	35%	15%	$6,210
1200x2400	$5,500	35%	15%	$8,539
Flap gate with 450	$11,000	35%	15%	$17,078
Ditch Re-grading	$125	25%	15%	$180
Pump Station Upgrades	$1,500,000	25%	15%	$2,156,250
Modelling	$750,000	25%	0%	$937,500

Source: Drainage Model Update, Earth Tech (2007)

As shown in **Table 34**, drainage costs total approximately $84 million. Approximately 65% of these costs are for projects needed to service current development within the City Centre. Only 35% of the total costs are needed to service future growth in the City Centre. The cost estimates are reported in 2007 dollars.

Eight of the projects recommended by Earth Tech for the "Existing" land use scenario and two projects under the "CCAP" land use scenario have been deleted because they overlap with projects in the City's current DCC program. The total of $84 million takes this into account (See **Appendix G**).

Table 34: Cost by Infrastructure Component (Drainage)

INFRASTRUCTURE COMPONENT	*COSTS TO SERVICE CURRENT DEVELOPMENT*	*COSTS TO SERVICE CCAP GROWTH*	TOTAL COSTS
300	$341,499	$24,503	$366,003
375	$1,024,530	$284,084	$1,308,614
450	$1,497,844	$55,356	$1,553,201
525	$1,957,623	$3,668,989	$5,626,611
600	$6,253,335	$960,686	$7,214,021
675	$3,664,818	$3,351,235	$7,016,052
750	$9,305,976	$11,217,752	$20,523,728
900	$9,081,877	$2,336,376	$11,418,252
1050	$1,611,107		$1,611,107
1200	$1,565,483		$1,565,483
1350	$8,768,216	$1,478,797	$10,247,012
1500	$4,668,678		$4,668,678
900 x 2100	$3,328,560		$3,328,560
Flap Gate	$51,233	$17,078	$68,310
Pump Station Upgrade	$2,156,250	$4,312,500	$6,468,750
Regrade Ditch	$58,824	$103,268	$162,093
Modelling		$937,500	$937,500
Total	**$55,336,000**	**$28,748,000**	**$84,084,000**

Source: Drainage Model Update, Earth Tech (2007)

9.3 Key Issues

The development of a financing and cost recovery strategy for drainage improvements must take the following key issues into account:

- **Ensure Timely Construction of Drainage Infrastructure** – Developers will be responsible for ensuring their servicing needs are met in accordance with the City's OCP/Area Plans. If the scale of the required improvements to service any one development is too

significant; the City may consider partnering with one or more developers to ensure components of the drainage system are constructed.

- **Availability of DCC Funds** – The City Centre DCCs are only part of a larger DCC program. Over the coming years there will be demands for DCC funding throughout the whole community. The competing demands for the DCC funds may challenge City resources.

9.4 Recommended Approach

Given the key issues noted above, it is most appropriate to recover storm drainage infrastructure costs through:

- **City-Wide Development Cost Charges –** The following costs would be included in the City-Wide Storm Drainage DCC program:
  - All costs associated with the "CCAP" land use scenario (i.e., those costs needed to service the "CCAP" land use scenario beyond those required to service the "Existing" land use scenario).
  - Costs associated with six projects that were recommended to service the "Existing" land use scenario, but were identified to replace projects in the current DCC program. These projects total $13,460,000 (in total costs). See Table G.1 in **Appendix G**.

- **Works and Services/Storm Utility Reserves or Charges/General Revenues/Other Revenue Sources –** The City would recover the following costs through various innovative funding strategies including, but not limited to, works and services, storm utility reserves and charges, general revenues, and other possible revenue sources:
  - Consistent with the City's current practice, the City's portion of DCC costs (i.e., 1% Municipal Assist Factor);
  - All upgrades needed for the "Existing" demand scenario.

The recommended financing and cost-recovery approach for storm drainage infrastructure is summarized in **Table 35.**

Table 35: Storm Drainage Financing and Cost Recovery Strategy

TOTAL STORM DRAINAGE CAPITAL COSTS **$84,085,000**			
Cost to Service Existing Development $41,876,000		***Cost to Service CCAP Growth $42,208,000***	
Costs Financed Through City-Wide DCCs	$0 (6 projects allocated to DCCs accounted for in adjacent column*)	Costs Financed Through City-Wide DCCs (all projects in the "CCAP" land use scenario plus 6 projects in the "Existing" land use scenario)	$41,786,000 (DCC recoverable costs)[6]
Costs Financed Through Storm Utility/General Revenue/Works and Services/Other	$41,876,000*	Costs Financed by City (1% MAF)	$422,000

Six projects, totalling $13,460,000, were recommended to service existing development, but were identified to replace projects in the current DCC program.

The impact on DCCs is shown in **Table 36.**

[6] The City's current DCC Bylaw includes $416,000 (in DCC recoverable costs) in projects for the City Centre that will be replaced by the new projects recommended by Earth Tech.

Table 36: Approximate Impact on City-Wide Storm Drainage DCC Rates

LAND USE	*UNITS*	*CURRENT DCC RATES*	*APPROXIMATE PROPOSED DCC RATES*
Single Family	per lot	$4,459.81	$5,131.99
Townhouse	per sq. ft. of building area	$1.92	$2.20
Apartment	per sq. ft. of building area	$1.36	$1.57
Commercial	per sq. ft. of building area	$1.33	$1.53
Light Industrial	per sq. ft. of building area	$1.33	$1.53
Major Industrial	per acre of gross site area	$40,609.35	$46,728.08

These DCC rates would replace the current City-Wide drainage DCCs, and would not be added to the current drainage DCC rates.

The DCC rates have been calculated under the following assumptions:

- City-wide DCC
- DCC horizon is to 2031
- Growth estimates are to 2031 and include both residential and non-residential growth
- 1% Municipal Assist Factor
- 100% benefit factor as per the current DCC Bylaw
- The overlap between the current drainage DCC program and the proposed program is $416,000 in DCC recoverable costs (see **Appendix H**).
- Equivalency factors equal those used for the current DCC Bylaw
- No reductions due to City or developer sustainability initiatives

Further details on the DCC rate calculations are included in **Appendix I**.

10.0 CCAP FINANCING AND COST RECOVERY APPROACH – OPEN SPACE (PARKLAND ACQUISITION AND DEVELOPMENT)

10.1 Overview of Parkland Acquisition and Development Plans

At present, there is approximately 76.5 hectares (189 acres) of existing park and open space in the City Centre. The figure includes approximately 17 hectares (43 acres) that are existing school sites. This works out to approximately 4.25 acres of park and open space per 1,000 residents for the existing 44,500 population in the City Centre.

As part of the CCAP CONCEPT approved in principle by Council in February 2007, it was agreed that 3.25 acres of park and open space should be provided for every 1,000 residents in the future. Consequently, approximately 81.34 hectares (201 acres) of new park and open space is required for an ultimate "build out" population of 120,000 residents. Thus, by the year 2100, a total of 158 hectares (390 acres) of park and open space is required in the City Centre, consisting of urban waterfront parks or waterfront natural areas, urban parks, community parks and neighbourhood parks for both residential and commercial areas.

10.2 Cost Estimates

Assuming that approximately 90,000 residents will live in the City Centre Area Plan by 2031, around 42 hectares (103.5 acres) of new park and open space will be required to obtain a ratio of 3.25 acres of park and open space for every 1,000 residents. In order to assist in the determination of the cost of acquiring parkland in the City Centre, the Parks, Recreation and Cultural Services (PRCS) Department retained the services of G.P. Rollo Associates Ltd. Mr. Rollo's land values were then confirmed or adjusted by the City's Real Estate Services Division.

The cost of developing parkland in the City Centre was based on current construction costs. Together, the parkland acquisition and park development costs formed the basis for achieving Council's objective of having 3.25 acres of park and open space for every 1,000 residents in the City Centre.

For parks required beyond 2031 to build-out, the City has estimated that an additional 13 hectares (32 acres) of parkland will be required. Assuming land costs of $5 million/acre, this amounts to $159 million. Development costs for these parks have been estimated to be approximately $16.6 million.

10.3 Key Issues

Developing a financing strategy for parks was one of the more challenging components of the *Implementation Strategy*. Some of the reasons for this include:

- Parkland acquisition and park development combined are already the largest item in the current DCC rates (e.g., between 40% and 44% of the current DCCs goes to parks);
- Land acquisition costs have escalated significantly in the City Centre (this is why staff retained the services of G.P. Rollo Associates Ltd to get more accurate and current values to use in the DCC Program);
- Market values for City Centre land in Richmond are significantly higher than during the last DCC review and are also, on average, higher than other Metro Vancouver urban areas such as Surrey or areas where greenfield sites exist; and
- Given that there are very few areas within the City Centre that are expected to subdivide, the City cannot expect to obtain any significant amount of parkland through 5% dedication at subdivision. Currently, the City does not require developers to dedicate parkland at subdivision because it has found that the payment of DCCs to be a more effective method of financing parkland acquisition and development costs.

10.4 Recommended Approach

In order meet Council's objective of 3.25 acres of park and open space per 1,000 residents in the City Centre, PRCS staff had to seriously review how this standard could be met and keep the DCC rates from increasing even more. As a result of this analysis, the following approach has been recommended:

- The current inventory of parks and open space in the City Centre was carefully re-examined and recent land acquisitions (14.5 acres), rights-of-way (3 acres of surplus road rights-of-way that will be incorporated as future park), and rights-of-way or privately owned publicly accessible spaces (POPAs) totalling 30 acres were excluded from the DCC program.
- The land use maps proposed to be included in the CCAP Bylaw were reviewed in detail and together PRCS and Policy Planning staff were able to more firmly locate the various park and open spaces required in the proposed new DCC Program.
- Where appropriate, linear greenways were identified as POPAs that the City did not need to use DCCs to acquire (i.e., the POPAs are typically acquired as a right-of-way as part of the development approval process).

- Of the 103.5 acres of park and open space required to service a year 2031 population of 90,000 residents approximately:
    - 22 acres is already owned by the City but still being used for industrial, road or other purposes;
    - 27.5 acres can be acquired as POPAs or right-of-ways (e.g., at the time of development and do not need to be purchased by the City); and
    - 54 acres needs to be added to the DCC Program.

This approach is summarized in **Tables 37** and **38**. Taking this approach, the parkland acquisition and park development DCCs are proposed to increase by approximately 40%.

It should be noted that City staff did consider other alternatives to increasing the DCC Program but decided not to pursue them either because of their uncertainty or negative impact on liveability. These alternatives included:

- Acquiring the parkland through the development approval process, which yields uncertain results;
- Utilizing the 5% parkland dedication requirement as a condition of subdivision approval (most of the developments in the City Centre involve a consolidation rather than a subdivision);
- Using a density bonus to acquire the parkland (staff would prefer to use the density bonus approach to obtain affordable housing and other amenities like child care);
- Exploring the concept of density transfers, where the density lost on the park area is transferred to an adjacent development (this requires further legal analysis); and
- Reducing the 3.25 acres per 1,000 residents park and open space standard in the City Centre.

The 54 acres of required parkland and all parkland development costs are recommended to be included in a City-wide DCC. The City considered implementing an area specific DCC for neighbourhood parks, and open spaces and greenways needed in the City Centre (i.e., allocate costs for these parks to a City Centre DCC, and allocate parks with a wider benefit to the entire City). This option would increase the cost of developing in the City Centre. A City Centre DCC is not recommended because it would:

- Be viewed as a disincentive to developing in the City Centre;

- Delay the acquisition and development of important neighbourhood parks and open space; and
- Necessitate revising the existing DCC program to reflect a similar approach elsewhere in the City.

Table 37: Recommended Parkland Acquisition Approach

TOTAL PARKLAND ACQUISITION CAPITAL COSTS **$237,698,000**			
Cost to Service Existing Development ***$0***		***Cost to Service CCAP Growth*** ***$237,698,000***	
No upgrades required to service existing development		Costs Financed Through City-Wide DCCs	$223,555,000[7]
		Costs Financed by City (1% MAF; 5% of costs allocated to existing development)	$14,143,000

[7] The City's current DCC Bylaw includes $67,779,000 (in DCC recoverable costs) for parkland acquisition in the City Centre; these costs will be replaced with the proposed parkland acquisition program.

Table 38: Recommended Parkland Development Approach

TOTAL PARKLAND DEVELOPMENT CAPITAL COSTS **$82,325,000**			
Cost to Service Existing Development ***$0***		***Cost to Service CCAP Growth*** ***$82,325,000***	
No upgrades required to service existing development		Costs Financed Through City-Wide DCCs	$77,427,000[8]
		Costs Financed by City (1% MAF; 5% of costs allocated to existing development)	$4,898,000

Tables 39 and **40** show the approximate impact on DCC rates.

Table 39: Approximate Impact on City-Wide Parkland Acquisition DCC Rates

LAND USE	***UNITS***	***CURRENT DCC RATES***	***APPROXIMATE PROPOSED DCC RATES***
Single Family	per lot	$5,245.90	$9,109.36
Townhouse	per sq. ft. of building area	$3.31	$5.93
Apartment	per sq. ft. of building area	$3.41	$6.10
Commercial	per sq. ft. of building area	$0.65	$1.15
Light Industrial	per sq. ft. of building area	$0.65	$1.15
Major Industrial	per acre of gross site area	$2,497.63	$4,468.31

****These DCC rates would replace the current City-Wide parkland acquisition DCCs.***

[8] The City's current DCC Bylaw includes $62,180,000 (in DCC recoverable costs) for park development in the City Centre; these costs will be replaced with the proposed park development program.

Table 40: Approximate Impact on City-Wide Parkland Development DCC Rates

LAND USE	*UNITS*	*CURRENT DCC RATES*	*APPROXIMATE PROPOSED DCC RATES*
Single Family	per lot	$3,985.69	$3,885.44
Townhouse	per sq. ft. of building area	$2.52	$2.53
Apartment	per sq. ft. of building area	$2.59	$2.60
Commercial	per sq. ft. of building area	$0.49	$0.49
Light Industrial	per sq. ft. of building area	$0.49	$0.49
Major Industrial	per acre of gross site area	$1,897.63	$1,905.88

These DCC rates would replace the current City-Wide parkland development DCCs.

The DCC rates have been calculated under the following assumptions:

- City-wide DCC
- DCC horizon is to 2031
- Growth estimates include both residential and non-residential growth
- 1% Municipal Assist Factor
- 95% benefit factor (portion of costs attributed growth)
- Overlap between the current parkland acquisition DCC program and the proposed parkland acquisition DCC program totals $67,779,000 in DCC recoverable costs
- Overlap between the current parkland development DCC program and the proposed parkland development DCC program totals $62,180,000 in DCC recoverable costs
- Equivalency factors equal those used for the current DCC Bylaw

Further details on the DCC rates calculations are included in **Appendix I**.

11.0 CCAP FINANCING AND COST RECOVERY STRATEGY – AMENITIES (RECREATION AND CULTURAL FACILITIES)

11.1 Overview of Community Amenity Plans

A principal goal of the CCAP vision is the development of complete communities in the City Centre. A "healthy community" as described in the CCAP includes the creation of gathering places, spaces and community buildings. The Open Space section of this *Implementation Strategy* deals with parks and open space (parkland acquisition and development). This section deals with community amenities (e.g., community recreation facilities, libraries, etc).

The following plans have been completed by the City of Richmond or its consultants:

1. **Parks, Recreation and Cultural Services (PRCS) Master Plan for 2005-2015** was adopted by Council on June 12, 2006, with the amendment and recommendation that staff be directed to develop a Facility Evaluation Framework to provide further rationale for prioritizing investment in capital projects. It identifies several facilities (existing and new) for capital investment in order to support a broad range of programs offered by a variety of service providers. The Facility Evaluation Framework was subsequently included in the PRCS Master Plan by Council on June 25, 2007.

2. **City Centre Places and Spaces Study** was adopted for inclusion into the CCAP CONCEPT by Council on October 23, 2006. It identifies the type of facilities and amenities that would be required for the City Centre and included locational criteria for community facilities and amenities.

3. **PRCS Facilities Strategic Plan** was adopted by Council on June 25, 2007. It identifies the general location, scope, development costs and schedule for major recreation an cultural facilities in the City. Council has directed that this Plan be incorporated into the Corporate Facilities Implementation Plan being prepared by Facilities Management. At the June 25, 2007 meeting, Council directed:

    - staff to prepare a joint feasibility study, including a funding strategy, for three new facilities: City Centre Community Centre, Older Adults' Activity Centre and Minor Aquatic Centre, with funding for this to be considered within the 2008 Capital Budget program;
    - that the following projects be referred to staff to determine how feasibility studies would be developed for each project: Terra Nova Rural Park Historic

District; Filed Sport Tournament Centre; Richmond Environmental Centre; and Visual Arts and Performing Arts Centre.

-

4. **Library Facilities Plan** was produced by the Richmond Public Library and Council directed that it be incorporated into the Corporate Facilities Implementation Plan at its meeting on October 9, 2007. It identified eight projects that are designed to meet the needs of both the current population and future population growth, as well as a specialized resource centre.

The following reports are still in process and will not be approved or implemented until after the *CCAP Implementation Strategy* is considered:

1. **New Community Safety Building and Upgrades to Fire Hall #1.** These projects are still in the works and will be presented to Council in early 2008.

2. **Corporate Facilities Implementation Plan** which includes the aforesaid PRCS facilities is to be considered by Council later in 2008.

In light of the fact that these two reports are still pending, the *CCAP Implementation Strategy* is proceeding without this information being finalized.

From the information available at this time a group of amenity projects has been assembled. The specific projects identified for the City Centre are identified in **Table 41**.

Council has the authority to amend the plan and rates should it wish.

Table 41: Amenity Facilities

TYPE OF FACILITY	SERVICE AREA	NEEDED SPACE (SQ. FT.)	TIMING	PRELIMINARY COST ESTIMATE (W/O LAND COSTS)
Community Centre South	C	35,000	2008-2014	$19 million
Community Centre North	C	35,000	2022-2029	$19 million
Community Centre West	C	20,000	2030 +	$11 million
Community Centre East	C	20,000	2030 +	$11 million
Older Adult Facility - South	CW	30,000	2005-2016	$16.5 million
Aquatic Centre	CW	45,000	2008-2014	$31.5 million
Cultural Centre	CW	44,000	2015-2021	*
Richmond Museum	R	25,000	2015-2021	$15 million
Visual & Performing Arts Centre	R/CW	45,000	2022-2029	$27 million
Expansion of Brighouse Branch	CW	16,000	2008	$10 million
New Main Library	CW	100,000	2015	$60 million
City Centre Branch Library North	C	25,000	2018	$15 million

N=Neighbourhood, C=Community, CW=City-wide, R=Regional

****Existing building – cost to be determined depending on whether the existing building is retrofitted or a new building is required.***

11.2 Recommended Approach

The PRCS Facilities Strategic Plan identified a number of funding options for community amenities which will need to be thoroughly explored during the feasibility stage of development. These funding options included:

- Property Tax / Reserves (e.g., capital reserves such as the leisure facilities reserve and City Centre facilities fund – which can receive funds through developer gifts / contributions or property taxes);
- Public-Private Partnerships (which require significant government subsidization);
- Joint Ventures (which again require significant government subsidization);
- Referendum (i.e., the City borrow the funds through debt financing to finance the initial capital costs – which would involve an increase in property taxes to fund the debt repayment);
- Intergovernmental Funding (e.g., grants and transfers from senior levels of government); and
- Community Contributions (e.g., corporate sponsorship programs; fundraising programs; etc.).

It is recommended that the City consider the development of a community user fee to help recover the capital costs associated with the planned community facilities. Unlike gifts, which are voluntary contributions made by developers typically at rezoning, or additional density, which developers achieve through density bonusing, community user fees would be mandatory just like utility charges. The community user fee could be levied on property owners or on user groups (i.e., those groups that use the community facilities).

Currently, the City's community facilities are run by community organizations, which levy their own user fees for programs. The City may consider levying a surcharge on these user fees to help recoup capital costs associated with the community facilities.

The financing and cost recovery approach to the community and amenity facilities will be determined later in 2008 by City staff.

It is proposed that the density bonusing approach be used to:

- Achieve built affordable housing units or cash in lieu contributions as per the Council adopted Richmond Affordable Housing Strategy; and
- Obtain child care as an amenity, where in order to move beyond the base density identified and recommended in the City Centre Area Plan, developers will be required to provide either the child care space or a cash in lieu contribution towards child care.

12.0 CCAP LAND ACQUISITION STRATEGY

The timely acquisition of land for municipal infrastructure, facilities and parks is critical to the success of the CCAP vision. The amount of land required for the water, sanitary and drainage servicing programs is minimal. The land required for transportation infrastructure, parks and facilities is more complicated and challenging.

- **Road Land Acquisition** - The land cost component of the Minor Street, Lanes and Mews will be borne by the developer through the Works and Services provisions of the Subdivision Bylaw. As part of the cost of developing land in the City Centre the developer will be asked to both dedicate the land to accommodate the Minor Streets, Lanes and Mews and also build these works.

  Major Thoroughfares and Major Street also have land widening requirements. Developers that front these types of roads will for the most part also dedicate these roads but the construction of these roads may be either by the City or developer. There are a few exceptions to this requirement. There are a number of new roads or extensions of certain existing roads that are critical to the transportation network. These roads are primarily Major Thoroughfares and Major Street and there are also three Minor Streets that have also been included. These few land acquisitions will be included in the City-wide DCC program. It is anticipated the DCCs will be used to fund the construction of all of the Major Thoroughfares and Major Streets.

  The most significant implication of this approach is that until land for roads are dedicated a DCC funded road construction project will not occur. For example a Major Thoroughfare may be necessary for optimal traffic movement throughout the City but may not be constructed until a developer decides to develop their parcel and dedicate the required land. This approach does have the affect of reducing the transportation DCC but reduces the City's ability to bring certain roads on line in a timely manner. The costs of the land dedication are borne directly by the development community and individual land owners.

  Land dedication from developers for off-street walking/cycling facilities is not included in the proposed transportation program (e.g., Lansdowne Trail in the Richmond Oval lands; Cook Cycling Path through Richmond Centre; Alder Cycling Path in McLennan North Sub-Area) except for those in the existing DCC program.

- **Parkland Acquisition** - The parkland acquisition requirements are also significant. The ultimate goal is to have more than 200 acres of parkland in the City Centre. If all this land

had to be acquired the cost is estimated to be more than $400 million. Land costs in the City Centre are escalating at a significant rate.

The goals to acquire parkland can be summarized as:

- Meet the community's parkland needs in a timely manner;
- Have the funds available to acquire the parkland when needed;
- Try to address the rising land costs in the City Centre by acquiring land early; and
- Explore all possible methods for acquisition as these may change over the life of the CCCAP.

- **Joint School/ City Land Acquisition** - The opportunity exists for the School Board and City to work together to acquire mutually beneficial properties within the City Centre. Due to the land acquisition and disposal strategy of the School Board and Provincial acquisition and disposal policies, the City may have to establish policies for the City Centre in the *Implementation Strategy* to acquire joint City and school park sites in the future or for the City to acquire any surplus School Board lands in the future.

- **Public-Private Land Ownership** - There may be situations where a developer and the City may find joint land ownership or use beneficial for locating an urban park. For example, a situation may exist where a developer needs to build a parking structure next to their development. The City may also need an urban park in the general location. The possibility exists that the park may be built on top of the parking structure and that the City would acquire the land at a reduced rate with a long term agreement with the building ownership for dual use of the lands. Alternatively, a joint ownership agreement may be desirable instead of sole ownership by the City.

The most common methods to acquire parkland include are through DCCs or 5% parkland dedication at the time of subdivision. Other methods such as joint use agreements with schools or others and gifts are common but not a typical foundation for a parkland acquisition strategy. At this time, it is anticipated that the majority of parkland will be acquired through DCCs.

13.0 COMMUNITY PLANNING

The Planning and Development Department has identified the need to recover some of the costs of City Centre planning work. This is appropriate because most of the special community planning projects undertaken by the Policy Planning Division to complete the proposed CCAP support private sector development and involve expenditures on consultants.

The main contracts to do the various planning studies to update the City Centre Area Plan involve approximately $600,000. Since this project has been ongoing over the past two years, this equates to approximately $300,000 annually.

One of the ways to collect this money is to add a City Centre community planning fee to the Development Applications Fee Bylaw. This fee would be commensurate with the overall cost of administration and overhead of the City's planning function. Similar fees may be appropriate for community planning costs in the rest of Richmond.

Another way to recover the costs of community planning may be through phased development agreements on rezoning applications in the City Centre. A phased development agreement is a new tool that has been granted to municipalities under the *Local Government Act*. Essentially, it is an agreement between the developer (who agrees to certain items – in this case cost recovery for community planning by the City) and the City (who agrees that it will not change the zoning of the property for between 5 to 10 years). For example, if the rezoning applications in the City Centre in 2007 contributed $0.25 per square foot of their total net building area (including retail and office space) towards community planning, it is estimated $200,000 would be raised.

14.0 CCAP DEVELOPMENT COST CHARGE SUMMARY

The impact on DCC rates is summarized in **Table 42**. City-Wide (2031) DCC rates are expected to be approximately 31% higher than current DCCs for single family development.

Table 42: Approximate Impact on City-Wide DCC Rates (2031)

LAND USE	UNITS	TRANSPORTATION DCC		WATER DCC		SANITARY DCC		DRAINAGE DCC		PARK ACQUISITION DCC		PARK DEVELOPMENT DCC		TOTAL DCC		% CHANGE
		Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	
Single Family	**per lot**	$6,431.35	$4,682.00	$810.63	$768.18	$2,634.91	$2,315.28	$5,131.99	$4,459.81	$9,109.36	$5,245.90	$3,885.44	$3,985.69	$28,003.68	$21,456.86	31%
Townhouse	**per sq. ft. of building area**	$3.08	$2.24	$0.53	$0.49	$1.72	$1.46	$2.20	$1.92	$5.93	$3.31	$2.53	$2.52	$15.99	$11.94	34%
Apartment	**per sq. ft. of building area**	$4.11	$3.00	$0.54	$0.50	$1.77	$1.51	$1.57	$1.36	$6.10	$3.41	$2.60	$2.59	$16.69	$12.37	35%
Commercial	**per sq. ft. of building area**	$8.20	$5.97	$0.21	$0.19	$0.67	$0.57	$1.53	$1.33	$1.15	$0.65	$0.49	$0.49	$12.25	$9.20	33%
Light Industrial	**per sq. ft. of building area**	$5.86	$4.26	$0.21	$0.19	$0.67	$0.57	$1.53	$1.33	$1.15	$0.65	$0.49	$0.49	$9.91	$7.49	32%
Major Industrial	**per acre of gross site area**	$30,619.11	$22,291.53	$4,473.33	$4,114.56	$14,540.33	$12,401.22	$46,728.08	$40,609.35	$4,468.31	$2,497.63	$1,905.88	$1,897.63	$102,735.04	$83,811.92	23%

Municipal Assist Factor = 1%

15.0 PHASING STRATEGY

15.1 Overview of Phasing Plans

The vision of growth presented at various CCAP open houses over the past two years included a varied density and new parks and open space, high rise residential development, mixed-use development (high rise) and mixed-use development (mid-rise) development. This growth is projected to ultimately reach a population of 120,000 people, 36,000 jobs and 390 acres of parkland. Growth is to occur through a set of high density urban villages. To achieve the village concept the City Centre should develop based on the principles of transit-oriented development (TOD). To reach this vision the growth will be phased.

The most rapid growth in the City Centre is to occur between 2007 and 2021. The next period from 2021 to 2031 and beyond will see the composition of the population grow significantly in older adults. Beyond 2031, the growth will continue, but at a slower pace. By 2031, 50,000 of the projected 80,000 additional people will be part of the City Centre population. This significant growth in the 2007 to 2031 period will drive the need for the majority of the infrastructure, parkland and many of the new amenities.

The fundamental planning and development priorities for the City Centre, as stated in the CCAP CONCEPT, include:

- Establishment of high-density transit villages
- Enhancement of the waterfront
- Acquisition of well-located, high amenity public parks and amenities

The following sections outline a *Phasing Strategy* consistent with these priorities.

15.2 Principles

The following guiding principles are proposed for the *Phasing Strategy*:

1. The *Phasing Strategy* identifies the preferred development areas in the City Centre.
2. The *Phasing Strategy* considers the City's priorities for providing transportation, utilities and park improvements.
3. The *Phasing Strategy* factors in the potential location and development of community facilities.
4. The *Phasing Strategy* supports the planning objectives of the CCAP CONCEPT to create a "complete community".

5. The *Phasing Strategy* co-ordinates phasing for growth with phasing required City investments/infrastructure.
6. The *Phasing Strategy* emphasizes development around the Canada Line and the Richmond Oval.
7. The *Phasing Strategy* encourages high density transit villages around the Canada Line and enhances the use of the waterfront.
8. The *Phasing Strategy* recognizes that development will continue in areas that have already been pre-planned or pre-zoned (e.g., McLennan North and South Sub-Area Plans; Downtown Commercial (C7) District; etc.).
9. The *Phasing Strategy* enables the early acquisition of strategic parcels to minimize the impact of escalating land values.
10. The *Phasing Strategy* encourages development in proximity to parks and community facilities.
11. The *Phasing Strategy* enables development to proceed ahead of a planned phase if the developer pays all the costs, particularly advancing parkland acquisition and parkland development that is not on the DCC program (i.e., beyond 2031).
12. The *Phasing Strategy* will be clear and simple to understand for all stakeholders.
13. The *Phasing Strategy* is based on the projected population growth in the City Centre.
14. The *Phasing Strategy* ensures the financial sustainability of each phase for the City and developers.

Note: these guiding principles are not listed in any priority.

15.3 Recommended CCAP Phasing Strategy

The purpose of the recommended CCAP *Phasing Strategy* is to:

- Coordinate development and ensure that community infrastructure and amenities are provided in a timely manner;
- Maximize development around the Canada Line and transit stations to promote ridership;
- Enhance the use of the waterfront and the acquisition of the waterfront park/natural areas; and
- Enable flexibility as many areas of the City Centre may develop at the same time provided that services and community facilities are provided in a timely manner.

To phase development, the City has identified preferred development areas (shown on the Preferred Development Areas Map included in the CCAP). The preferred development areas:

- Facilitate the streetscape and road enhancements along No. 3 Road;
- Enable the completion of Lansdowne Road from No. 3 Road to the Richmond Oval;
- Facilitate the relocation of River Road to the CPR right-of-way;
- Reinforce the establishment and development of high density Village Centres within 200m of the Canada Line Stations and Richmond Oval; and
- Envision the enhancement of the waterfront and the acquisition of key waterfront parks and amenities.

Instead of phasing development in a traditional way (i.e., where development would not be permitted in one area until a higher priority phase was completed), it is proposed that development could proceed outside of the preferred development areas if the developer assumes the responsibility for the provision and construction of the required City improvements. This recommended approach has little implication to the developer who has to build the works and services anyway. Similarly, it is unlikely that the City would object to the provision of transportation or utility improvements ahead of schedule.

Where it does have an impact is regarding the acquisition and development of parkland that is not in the DCC program. If a developer wants to develop in an area where the parkland acquisition and/or development is not proposed by the City until after 2031, it is recommended that Council ask the developer to acquire and develop or contribute to the acquisition and development of all or a portion of the parkland in order to advance that particular park and open space ahead of the City's proposed DCC program. This is the recommended approach because it is felt that it would be difficult to deny the rezoning application based on timing (i.e., that the development is premature). It would also be problematic to allow the development to proceed but adjust the DCC Bylaw now (which could divert DCCs from other higher priorities) or in the future when sufficient development has occurred in that area (which would mean that some developments/neighbourhoods could initially be deficient of park and open space).

15.4 Recommended Phasing Policies

The following policies are based on the suggested preferred development areas and the need for immediate policies to help facilitate growth over the next five to ten years. New policies to support the completion of the City Centre plan beyond the next ten years will be developed as the CCAP evolves.

- **Phasing Policy #1:** Focus the investment of City Centre monies on infrastructure, parkland and development and amenities that promote development within 200m of the six village centres.
- **Phasing Policy #2:** Purchasing significant parkland and future facility lands within the next 10 – 15 years to reduce the impact of rising land costs in the City Centre. This may require an aggressive monetary borrowing plan to achieve any significant results.
- **Phasing Policy #3:** Prioritize the DCC program to focus attention on ensuring that any municipal funding in support of City Centre DCC projects is in place as development occurs.
- **Phasing Policy #4:** Encourage subdivision, rezoning, DP and building permit applications to facilitate development within 200m of the village centres.
- **Phasing Policy #5:** If a developer wishes to develop outside of the above priority phasing areas and policies, the City will require that the developer assume all infrastructure costs related to the development. The City will not allocate City resources to support development that occurs outside of this phasing framework; however, if the developer will cover all infrastructure costs, the City will consider development outside of this phasing framework and give DCC credits for items on the DCC program.

APPENDIX A

Recommended Transportation Projects

APPENDIX B

Overlap Between Current and Proposed Transportation DCC Programs

APPENDIX C

Recommended Water Projects

APPENDIX D

Overlap Between Current and Proposed Water DCC Programs

APPENDIX E

Recommended Sanitary Projects

APPENDIX F

Overlap Between Current and Proposed Sanitary DCC Programs

APPENDIX G

Recommended Storm Drainage Projects

APPENDIX H

Overlap Between Current and Proposed Storm Drainage DCC Programs

APPENDIX I

Proposed DCC Calculations

APPENDIX A

Recommended Transportation Projects

Table A.1: Recommended Transportation Projects

Street Project Index	Street Category	Quarter Section #	Street Name/ID	Limit 1	Limit 2	Scope/Type of Project (Street to match Vision)	Length (m)						Total DCC (10^3)	Total Non-DCC (10^3)
3001	1. Major Thoroughfare	4-6-03	Alderbridge Way	Garden City Rd	No. 4 Road	Urban Greenway incl S/W and Blvd	770	$ 281,667	100%	$ -		$ 281,667	$ 282	$ -
3002	1. Major Thoroughfare	4-6-03	Garden City Rd	Minor-04-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
4001	1. Major Thoroughfare	4-6-04	Alderbridge Way	Garden City Rd	No. 3 Road	Urban Greenway incl S/W and Blvd	875	$ 321,667	100%	$ -		$ 321,667	$ 322	$ -
4002	1. Major Thoroughfare	4-6-04	Alderbridge Way	Cooney		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
4003	1. Major Thoroughfare	4-6-04	Alderbridge Way	Buswell		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
4005	1. Major Thoroughfare	4-6-04	No. 3 Road	Alderbridge Way	Westminster Hwy	Urban Greenway incl S/W and Blvd, west side	795	$ 475,000	100%	$ -		$ 475,000	$ 475	$ -
4006	1. Major Thoroughfare	4-6-04	No. 3 Road	Minor-04-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
4007	1. Major Thoroughfare	4-6-04	No. 3 Road	Ackroyd		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
4008	1. Major Thoroughfare	4-6-04	No. 3 Road	Alderbridge Way		Traffic Signal - Relocate/Upgrade	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
4009	1. Major Thoroughfare	4-6-04	No. 3 Road	Lansdowne		Traffic Signal - Relocate/Upgrade	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
5001	1. Major Thoroughfare	4-6-05	Gilbert Rd	Dinsmore Bridge	CP Road	Upgrade Cycling, Add Urban Greenway	225	$ 1,000,000	100%	$ -		$ 1,000,000	$ 1,000	$ -
5002	1. Major Thoroughfare	4-6-05	Gilbert Rd	CP Road	Elmbridge	Widen to 4 lanes, Upgr. Cycling, Urban Greenway	265	$ 1,535,000	100%	$ 1,720,000	100%	$ 3,255,000	$ 3,255	$ -
5003	1. Major Thoroughfare	4-6-05	Gilbert Rd	Elmbridge	Westminster Hwy	Urban Greenway incl S/W and Blvd	445	$ 163,333	100%	$ -		$ 163,333	$ 163	$ -
5004	1. Major Thoroughfare	4-6-05	Gilbert Rd	CP Road		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5005	1. Major Thoroughfare	4-6-05	Gilbert Rd	Lansdowne		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5006	1. Major Thoroughfare	4-6-05	Gilbert Rd	Elmbridge		Traffic Signal - Relocate/Upgrade	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
6001	1. Major Thoroughfare	4-6-06	Westminster Hwy	Gilbert Rd	No. 2 Road	Urban Greenway incl S/W and Blvd	810	$ 296,667	100%	$ -		$ 296,667	$ 297	$ -
6002	1. Major Thoroughfare	4-6-06	Westminster Hwy	Minor-06-4	Azure Blvd	Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
6001	1. Major Thoroughfare	4-6-08	Gilbert Rd	Granville Avenue	Westminster Hwy	Urban Greenway incl S/W and Blvd	830	$ 305,000	100%	$ -		$ 305,000	$ 305	$ -
6002	1. Major Thoroughfare	4-6-08	Westminster Hwy	Gilbert Rd	No. 3 Road	Urban Greenway incl S/W and Blvd	815	$ 298,333	100%	$ -		$ 298,333	$ 298	$ -
8003	1. Major Thoroughfare	4-6-08	Westminster Hwy	Bowling Green	Cedarbridge	Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
8004	1. Major Thoroughfare	4-6-08	Westminster Hwy	Minoru		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
8005	1. Major Thoroughfare	4-6-08	Westminster Hwy	Gilbert Rd		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
9002	1. Major Thoroughfare	4-6-09	No. 3 Road	Granville Avenue	Westminster Hwy	Urban Greenway incl S/W and Blvd, west side	835	$ 500,000	100%	$ -		$ 500,000	$ 500	$ -
9003	1. Major Thoroughfare	4-6-09	No. 3 Road	Minor-08-4	Minor-09-2	Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
9004	1. Major Thoroughfare	4-6-09	No. 3 Road	Park		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
9005	1. Major Thoroughfare	4-6-09	No. 3 Road	Cook	Cook Bicycle Path	Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
9006	1. Major Thoroughfare	4-6-09	No. 3 Road	Saba		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
9007	1. Major Thoroughfare	4-6-09	No. 3 Road	Westminster Hwy		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
9008	1. Major Thoroughfare	4-6-09	Westminster Hwy	Garden City Rd	No. 3 Road	Urban Greenway incl S/W and Blvd	870	$ 318,333	100%	$ -		$ 318,333	$ 318	$ -
9009	1. Major Thoroughfare	4-6-09	Westminster Hwy	Buswell		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
9010	1. Major Thoroughfare	4-6-09	Westminster Hwy	Cooney		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
10001	1. Major Thoroughfare	4-6-10	Westminster Hwy	Garden City Rd	No. 4 Road	Urban Greenway incl S/W and Blvd	775	$ 855,000	100%	$ -		$ 855,000	$ 855	$ -
10002	1. Major Thoroughfare	4-6-10	Westminster Hwy	Birch		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
15001	1. Major Thoroughfare	4-6-15	No. 4 Road	General Currie		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
15002	1. Major Thoroughfare	4-6-15	Granville Avenue	Ash/Alder Cycling Trail		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
16001	1. Major Thoroughfare	4-6-16	Granville Avenue	Garden City Rd	No. 3 Road	Urban Greenway incl S/W and Blvd	760	$ 835,000	100%	$ -		$ 835,000	$ 835	$ -
16002	1. Major Thoroughfare	4-6-16	Granville Avenue	Cooney	St. Albans	Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
17001	1. Major Thoroughfare	4-6-17	Granville Avenue	Gilbert Rd	No. 3 Road	Urban Greenway incl S/W and Blvd	820	$ 900,000	100%	$ -		$ 900,000	$ 900	$ -
17002	1. Major Thoroughfare	4-6-17	Granville Avenue	Gilbert Rd		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
21001	1. Major Thoroughfare	5-6-21	Bridgeport Road	Sexsmith		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
21002	1. Major Thoroughfare	5-6-21	No. 3 Road	Beckwith		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
21003	1. Major Thoroughfare	5-6-21	No. 3 Road	River Rd		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
21004	1. Major Thoroughfare	5-6-21	No. 3 Road	Bridgeport Road		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
22001	1. Major Thoroughfare	5-6-22	Bridgeport Road	Hwy 99 Ramps	Major-22-1	Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
28001	1. Major Thoroughfare	5-6-28	Bridgeport Road	Highway 99	Sea Island (Airport Connector) Bridge	Urban Greenway incl S/W and Blvd	1140	$ 1,255,000	100%	$ -		$ 1,255,000	$ 1,255	$ -
28002	1. Major Thoroughfare	5-6-28	No. 3 Road	Bridgeport Road	Cambie Rd	Realign and upgrade (Future widening for raised bikelane on west side)	835	$ 2,330,000	100%	$ 1,002,000	100%	$ 3,332,000	$ 3,332	
28003	1. Major Thoroughfare	5-6-28	No. 3 Road	Bridgeport Road	Cambie Rd	Urban Greenway incl S/W and Blvd, west side	835	$ 500,000	100%	$ -		$ 500,000	$ 500	$ -
28004	1. Major Thoroughfare	5-6-28	No. 3 Road	Minor-28-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28005	1. Major Thoroughfare	5-6-28	No. 3 Road	Minor-28-2		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28006	1. Major Thoroughfare	5-6-28	No. 3 Road	Minor-28-4		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28007	1. Major Thoroughfare	5-6-28	No. 3 Road	Capstan		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
28008	1. Major Thoroughfare	5-6-28	No. 3 Road	Sea Island Way		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -

Table A.1: Recommended Transportation Projects

Street Project Index	Street Category	Quarter Section #	Street Name/ID	Limit (1)	Limit (2)	Scope/Type of Project (Street to match Vision)	Length (m)						Total DCC ($)	Total Non DCC ($)
26009	1. Major Thoroughfare	5-6-26	Sea Island Way	Highway 99	River Rd	Urban Greenway incl S/W and Blvd	1190	$ 1,310,000	100%	$ -		$ 1,310,000	$ 1,310	$ -
26010	1. Major Thoroughfare	5-6-26	Sea Island Way	Sexsmith		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
33001	1. Major Thoroughfare	5-6-33	Cambie Rd	Garden City Rd	No. 3 Road	Urban Greenway incl S/W and Blvd	870	$ 318,333	100%	$ -		$ 318,333	$ 318	$ -
33002	1. Major Thoroughfare	5-6-33	Cambie Rd	Odlin Cr.	Minor-28-3	Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33003	1. Major Thoroughfare	5-6-33	Cambie Rd	Brown		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33004	1. Major Thoroughfare	5-6-33	Garden City Rd	Leslie		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33005	1. Major Thoroughfare	5-6-33	No. 3 Road	Alderbridge Way	Cambie Rd	Realign and upgrade (Future widening for raised bikelane on west side)	815	$ 2,720,000	100%	$ -		$ 2,720,000	$ 2,720	$ -
33006	1. Major Thoroughfare	5-6-33	No. 3 Road	Alderbridge Way	Cambie Rd	Urban Greenway incl S/W and Blvd, west side	815	$ 490,000	100%	$ 978,000	100%	$ 1,468,000	$ 1,468	$ -
33007	1. Major Thoroughfare	5-6-33	No. 3 Road	Alexandra		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33008	1. Major Thoroughfare	5-6-33	No. 3 Road	Brownell		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33009	1. Major Thoroughfare	5-6-33	No. 3 Road	Browngate		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
33010	1. Major Thoroughfare	5-6-33	No. 3 Road	Cambie Rd		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
33011	1. Major Thoroughfare	5-6-33	No. 3 Road	Leslie		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
4010	2. Major Street	4-6-04	Cooney	Alderbridge Way	Lansdowne	Extension of Major Street, with Cycling	400	$ 2,800,000	100%	$ 9,680,000	100%	$ 12,480,000	$ 12,480	$ -
4011	2. Major Street	4-6-04	Cooney	Lansdowne	Westminster Hwy.	Cycling Lanes	400	$ 1,400,000	100%	$ -		$ 1,400,000	$ 1,400	$ -
4012	2. Major Street	4-6-04	Cooney	Minor-04-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
4013	2. Major Street	4-6-04	Lansdowne	Garden City Rd	No. 3 Road	Cycling, Urban Greenway	880	$ 2,815,000	100%	$ 2,112,000	100%	$ 4,927,000	$ 4,927	$ -
4014	2. Major Street	4-6-04	Lansdowne	Buswell		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
4015	2. Major Street	4-6-04	Lansdowne	Cooney		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
5008	2. Major Street	4-6-05	Alderbridge Way	Lansdowne	Minoru	Sidewalk Improvements	380	$ 456,000	100%	$ -		$ 456,000	$ 456	$ -
5009	2. Major Street	4-6-05	Alderbridge Way	Elmbridge	Lansdowne	Sidewalk Improvements	200	$ 240,000	100%	$ -		$ 240,000	$ 240	$ -
5010	2. Major Street	4-6-05	Alderbridge Way	Minoru	No. 3 Road	Urban Greenway incl S/W and Blvd	320	$ 116,667	100%	$ -		$ 116,667	$ 117	$ -
5011	2. Major Street	4-6-05	Alderbridge Way	Minor-05-2		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5012	2. Major Street	4-6-05	Alderbridge Way	Minoru		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
5013	2. Major Street	4-6-05	Alderbridge Way	Cedarbridge		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5014	2. Major Street	4-6-05	CP Road	Minoru		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5015	2. Major Street	4-6-05	CP Road	Cedarbridge		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5016	2. Major Street	4-6-05	Lansdowne	Gilbert Rd	Minoru	Extend Major Street, Include Cycling, Urban Greenway	395	$ 2,883,500	100%	$ 4,460,000	100%	$ 7,343,500	$ 7,344	$ -
5017	2. Major Street	4-6-05	Lansdowne	Minoru	No. 3 Road	Cycling, Urban Greenway	255	$ 815,000	100%	$ 1,660,000	100%	$ 2,475,000	$ 2,475	$ -
5018	2. Major Street	4-6-05	Lansdowne	Cedarbridge		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5019	2. Major Street	4-6-05	Lansdowne	Alderbridge Way		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
5020	2. Major Street	4-6-05	Lansdowne	Minoru		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
5021	2. Major Street	4-6-05	Minoru	Alderbridge Way	CP Road	Extend Major Street, Include Cycling, Urban Greenway	205	$ 1,496,500	100%	$ 4,960,000	100%	$ 6,456,500	$ 6,457	$ -
5022	2. Major Street	4-6-05	Minoru	Alderbridge Way	Westminster Hwy	Cycling, Urban Greenway	680	$ 1,970,000	100%	$ -		$ 1,970,000	$ 1,970	$ -
6005	2. Major Street	4-6-06	CP Road	Gilbert Rd	Hollybridge	Major street w/median in new corridor	270	$ 2,187,000	100%	$ -		$ 2,187,000	$ 2,187	$ -
6006	2. Major Street	4-6-06	CP Road	Hollybridge	No. 2 Road	Widen to 4 lanes + cycling + median	805	$ 4,750,000	100%	$ -		$ 4,750,000	$ 4,750	$ -
6006	2. Major Street	4-6-06	CP Road	River Rd Connector		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
6007	2. Major Street	4-6-06	CP Road	Minor-06-2		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
6008	2. Major Street	4-6-06	CP Road	Minor-06-4		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
6009	2. Major Street	4-6-06	CP Road	Minor-06-5	Lansdowne Cycling Trail	Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
6010	2. Major Street	4-6-06	CP Road	Lansdowne	Hollybridge	Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
6011	2. Major Street	4-6-06	CP Road	Minor-06-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
6012	2. Major Street	4-6-06	Lansdowne	CP Road	Gilbert Rd	Extend Major Street, Include Cycling, Urban Greenway	285	$ 2,080,500	100%	$ 1,850,000	100%	$ 3,930,500	$ 3,931	$ -
6013	2. Major Street	4-6-06	Lansdowne	Minor-06-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
8006	2. Major Street	4-6-08	Minoru	Granville Avenue	Westminster Hwy	Cycling, Urban Greenway	865	$ 836,667	100%	$ -		$ 836,667	$ 837	$ -
8007	2. Major Street	4-6-08	Minoru	Cook Cycling Trail		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
8008	2. Major Street	4-6-08	Minoru	Saba		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -

Table A.1: Recommended Transportation Projects

Street Project Index	Street Category	Quarter Section #	Street Name/ID	Limit 1	Limit 2	Scope/Type of Project (Street to match Vision)	Length (m)						Total DCC ($10³)	Total Non-DCC ($10³)
8009	2. Major Street	4-6-08	Minoru	Minor-08-4		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
8010	2. Major Street	4-6-08	Minoru	Park		Traffic Signal - Relocate/Upgrade	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
9011	2. Major Street	4-6-09	Cook	Garden City Rd	No. 3 Road	Cycling Lanes	870	$ 3,045,000	100%	$ -		$ 3,045,000	$ 3,045	$ -
9012	2. Major Street	4-6-09	Cook	Cooney		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
9014	2. Major Street	4-6-09	Cooney	Granville	Westminster Hwy	Cycling Lanes	800	$ 2,803,200	100%	$ -		$ 2,803,200	$ 2,803	$ -
9015	2. Major Street	4-6-09	Cooney	Minor-09-2		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
9016	2. Major Street	4-6-09	Cooney	Park		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
9017	2. Major Street	4-6-09	Cooney	Saba		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	100%	$ -		$ 50,000	$ 50	$ -
16003	2. Major Street	4-6-16	General Currie	Garden City Rd	No. 3 Road	Bicycle Friendly Street	760	$ 40,000	100%	$ -		$ 40,000	$ 40	$ -
16004	2. Major Street	4-6-16	St. Albans	Blundell Road	Granville Avenue	Bicycle Friendly Street	800	$ 40,000	100%	$ -		$ 40,000	$ 40	$ -
17003	2. Major Street	4-6-17	Minoru	Blundell Road	Granville Avenue	Sidewalk Improvements	795	$ 955,000	100%	$ -		$ 955,000	$ 955	$ -
21005	2. Major Street	5-6-21	Beckwith	No. 3 Road	Sexsmith	Realign and upgrade	150	$ 1,395,000	100%	$ -		$ 1,395,000	$ 1,395	$ -
21006	2. Major Street	5-6-21	Beckwith	Great Canadian	Sexsmith	Widen to 4 lanes	300	$ 1,440,000	100%	$ -		$ 1,440,000	$ 1,440	$ -
21007	2. Major Street	5-6-21	Great Canadian	Beckwith	River Rd	Urban Greenway	350	$ 70,000	100%	$ -		$ 70,000	$ 70	$ -
21008	2. Major Street	5-6-21	Great Canadian	Van Horne		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
21009	2. Major Street	5-6-21	Great Canadian	Beckwith		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
21010	2. Major Street	5-6-21	Great Canadian	River Road		Traffic Signal - Relocate	n/a	$ 125,000	100%	$ -		$ 125,000	$ 125	$ -
21011	2. Major Street	5-6-21	No. 3 Road	Bridgeport Road	River Rd	Realign and upgrade (Future widening / realignment)	240	$ 2,330,000	100%	$ 576,000	100%	$ 2,906,000	$ 2,906	$ -
21013	2. Major Street	5-6-21	Sexsmith	Beckwith	Charles	Extension of Major Street, with Cycling	155	$ 1,085,000	100%	$ -		$ 1,085,000	$ 1,085	$ -
21014	2. Major Street	5-6-21	Sexsmith	Beckwith	Bridgeport Road	Widen to 4 lanes, Shared Cycling	205	$ 985,000	100%	$ -		$ 985,000	$ 985	$ -
21015	2. Major Street	5-6-21	Sexsmith	River Rd		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
21016	2. Major Street	5-6-21	Sexsmith	Beckwith		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
22002	2. Major Street	5-6-22	Beckwith	Great Canadian	Major-22-1	Widen to 4 lanes	675	$ 2,970,000	100%	$ 1,000,000	100%	$ 3,970,000	$ 3,970	$ -
22003	2. Major Street	5-6-22	Major-22-1	Bridgeport Road	Van Horne	New Major Street Segment with Cycling	660	$ 4,620,000	100%	$ 15,970,000	100%	$ 20,590,000	$ 20,590	$ -
22004	2. Major Street	5-6-22	Major-22-1	Beckwith		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
22005	2. Major Street	5-6-22	Major-22-1	Trail-22-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
22006	2. Major Street	5-6-22	Major-22-1	Van Horne		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
22007	2. Major Street	5-6-22	Major-22-1 / Van Horne	River Drive		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
22008	2. Major Street	5-6-22	River Drive	Great Canadian	No. 4 Road	Widen to 4 lanes, Bicycle Friendly Street (Shared Cycling)	960	$ 4,610,000	100%	$ 1,200,000	100%	$ 5,810,000	$ 5,810	$ -
22009	2. Major Street	5-6-22	Van Horne	Great Canadian	Major-22-1	Widen, Add cycling Lanes, new S/W	480	$ 2,450,000	100%	$ 3,120,000	100%	$ 5,570,000	$ 5,570	$ -
22010	2. Major Street	5-6-22	Van Horne	Major-22-1	River Drive	Widen, Add cycling lanes, new S/W	220	$ 1,120,000	100%	$ 1,430,000	100%	$ 2,550,000	$ 2,550	$ -
28011	2. Major Street	5-6-28	Brown	Cambie Rd	Capstan/Sexsmith	Extension of Major Street, with Cycling	430	$ 3,010,000	100%	$ 2,418,605	100%	$ 5,428,605	$ 5,429	$ -
28012	2. Major Street	5-6-28	Brown	Minor-28-2		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28013	2. Major Street	5-6-28	Capstan	CP Road	Garden City Rd	Widen, Add cycling Lanes, new S/W	755	$ 3,850,000	100%	$ 4,910,000	100%	$ 8,760,000	$ 8,760	$ -
28014	2. Major Street	5-6-28	Capstan	Hazelbridge		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28015	2. Major Street	5-6-28	Capstan	Minor-28-3		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28016	2. Major Street	5-6-28	Capstan	Sexsmith		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28017	2. Major Street	5-6-28	CP Road	Cambie Rd	Capstan	Major street w/median in new corridor	540	$ 4,374,000	100%	$ 3,510,000	100%	$ 7,884,000	$ 7,884	$ -
28018	2. Major Street	5-6-28	CP Road	Minor-28-1		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28019	2. Major Street	5-6-28	CP Road	Minor-28-2		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28020	2. Major Street	5-6-28	CP Road	Capstan		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
28021	2. Major Street	5-6-28	Sexsmith	Sea Island Way	Capstan	Widen, Add cycling Lanes, new S/W	350	$ 1,785,000	100%	$ 2,275,000	100%	$ 4,060,000	$ 4,060	$ -
28022	2. Major Street	5-6-28	Sexsmith	Hazelbridge		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
32002	2. Major Street	5-6-32	Cambie Rd	CP Road	No. 3 Road	Major street w/median in new corridor	75	$ 607,500	100%	$ 1,820,000	100%	$ 2,427,500	$ 2,428	$ -
32003	2. Major Street	5-6-32	CP Road	Gilbert Rd	Leslie	Major street w/median in new corridor	600	$ 4,200,000	100%	$ -		$ 4,200,000	$ 4,200	$ -
32005	2. Major Street	5-6-32	CP Road	Cambie Rd	Leslie	Major street w/median in new corridor	565	$ 3,955,000	100%	$ -		$ 3,955,000	$ 3,955	$ -
32007	2. Major Street	5-6-32	CP Road	Alexandra		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
32008	2. Major Street	5-6-32	CP Road	Leslie		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
32009	2. Major Street	5-6-32	CP Road	Brownell		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -

Table A.1: Recommended Transportation Projects

Street Project Index	Street Category	Channel Section #	Street Name/ID	Limit 1	Limit 2	Scope/Type of Project (Street to match Vision)	Length (m)						Total Cost ($k)	Total non-DCC ($k)
32010	2. Major Street	5-6-32	CP Road	Browngate		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
32011	2. Major Street	5-6-32	CP Road	Cambie Rd		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
32012	2. Major Street	5-6-32	Leslie	CP Road	No. 3 Road	Widen, new S/W, Bicycle Friendly Street (Shared Lane)	255	$ 1,225,000	100%	$ 1,560,000	100%	$ 2,885,000	$ 2,885	$ -
33012	2. Major Street	5-6-33	Brown	Alderbridge Way	Leslie	Extension of Major Street, with Cycling	265	$ 1,855,000	100%	$ 2,990,000	100%	$ 4,845,000	$ 4,845	$ -
33013	2. Major Street	5-6-33	Brown	Cambie Rd	Leslie	Widen, Add cycling Lanes, new S/W	555	$ 2,830,000	100%	$ 3,610,000	100%	$ 6,440,000	$ 6,440	$ -
33014	2. Major Street	5-6-33	Brown	Alexandra		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33015	2. Major Street	5-6-33	Brown	Brownell		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33016	2. Major Street	5-6-33	Brown	Leslie		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33017	2. Major Street	5-6-33	Brown	Browngate	Odlin	Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33020	2. Major Street	5-6-33	Browngate	Brown	Hazelbridge	Widen, Add cycling Lanes, new S/W	190	$ 970,000	100%	$ 1,240,000	100%	$ 2,210,000	$ 2,210	$ -
33021	2. Major Street	5-6-33	Leslie	Brown	Hazelbridge	Realign and upgrade, Bicycle Friendly Street (Shared lane)	225	$ 2,185,000	100%	$ 254,000	100%	$ 2,439,000	$ 2,439	$ -
33022	2. Major Street	5-6-33	Leslie	Hazelbridge	No. 3 Road	Sidewalk Improvements, Bicycle Friendly Street	195	$ 245,000	100%	$ -		$ 245,000	$ 245	$ -
33023	2. Major Street	5-6-33	Leslie	Brown	Garden City Rd	Widen, new S/W, Bicycle Friendly Street (Shared Lane)	400	$ 1,920,000	100%	$ 260,000	100%	$ 2,180,000	$ 2,180	$ -
33024	2. Major Street	5-6-33	Leslie	Sorenson		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
33025	2. Major Street	5-6-33	Odlin	Brown	Odlin Cr.	Realign and upgrade to major street with cycling	320	$ 3,105,000	100%	$ 4,360,000	100%	$ 7,465,000	$ 7,465	$ -
33026	2. Major Street	5-6-33	Odlin	Garden City Rd	Odlin Cr.	Realign and upgrade to major street with cycling	180	$ 215,000	100%	$ 1,020,000	100%	$ 1,235,000	$ 1,235	$ -
33027	2. Major Street	5-6-33	Odlin	Odlin Cr.		Traffic Signal - New	n/a	$ 175,000	100%	$ -		$ 175,000	$ 175	$ -
32001a	2. Major Street	5-6-32	Browngate	CP Road	No. 3 Road	New Major Street Segment with Cycling	200	$ 1,400,000	100%	$ 4,840,000	100%	$ 6,240,000	$ 6,240	$ -
4016	3. Minor Street	4-6-04	Ackroyd	Arcadia	No. 3 Road	Sidewalk Improvements, Bicycle Friendly Street	775	$ 970,000	0%	$ -		$ 970,000	$ -	$ 970
4018	3. Minor Street	4-6-04	Minor-04-1	Garden City Rd	No. 3 Road	New Minor Street - Commercial, Bicycle Friendly Street	890	$ 5,028,500	0%	$ 28,750,000	0%	$ 33,778,500	$ -	$ 33,779
5023	3. Minor Street	4-6-05	Ackroyd	Minoru	No. 3 Road	Extend Minor Street - Commercial, Bicycle Friendly Street	255	$ 1,440,750	100%	$ 4,110,000	0%	$ 5,550,750	$ 1,441	$ 4,110
5024	3. Minor Street	4-6-05	Cedarbridge	Elmbridge	Westminster Hwy	Extend Minor Street - Commercial	205	$ 1,148,000	0%	$ 3,300,000	0%	$ 4,448,000	$ -	$ 4,448
5025	3. Minor Street	4-6-05	Cedarbridge	Alderbridge Way	CP Road	Extend Minor Street - Commercial	205	$ 1,148,000	0%	$ 3,300,000	0%	$ 4,448,000	$ -	$ 4,448
5026	3. Minor Street	4-6-05	Elmbridge	Gilbert Rd	Minoru	Sidewalk Improvements, Bicycle Friendly Street	485	$ 605,000	0%	$ -		$ 605,000	$ -	$ 605
5027	3. Minor Street	4-6-05	Minor-05-1	Minoru	No. 3 Road	New Minor Street - Commercial, Bicycle Friendly Street	255	$ 1,440,750	0%	$ 4,110,000	0%	$ 5,550,750	$ -	$ 5,551
5028	3. Minor Street	4-6-05	Minor-05-2	Ackroyd	Alexandra	New Minor Street - Commercial	755	$ 4,228,000	0%	$ 8,530,000	0%	$ 12,758,000	$ -	$ 12,758
6014	3. Minor Street	4-6-06	Elmbridge	Minor-06-4	River Rd Connector	New Minor Street - Commercial	430	$ 2,408,000	0%	$ 6,920,000	0%	$ 9,328,000	$ -	$ 9,328
6015	3. Minor Street	4-6-06	Elmbridge	Gilbert Rd	Minor-06-4	Sidewalk Improvements, Bicycle Friendly Street	405	$ 505,000	0%	$ -		$ 505,000	$ -	$ 505
6016	3. Minor Street	4-6-06	Hollybridge	CP Road	River Rd	Cycling, Urban Greenway	220	$ 680,000	0%	$ -		$ 680,000	$ -	$ 680
6017	3. Minor Street	4-6-06	Minor-06-1	Minor-06-4	River Rd	New Minor Street - Commercial	1060	$ 5,936,000	0%	$ 25,650,000	0%	$ 31,586,000	$ -	$ 31,586
6018	3. Minor Street	4-6-06	Minor-06-2	Lansdowne Cycling Trail	Westminster Hwy	New Minor Street - Residential	400	$ 2,040,000	0%	$ 6,440,000	0%	$ 8,480,000	$ -	$ 8,480
6019	3. Minor Street	4-6-06	Minor-06-3	Lansdowne Cycling Trail	CP Road	New Minor Street - Residential	135	$ 688,500	0%	$ -		$ 688,500	$ -	$ 689
6020	3. Minor Street	4-6-06	Minor-06-4	Lansdowne Cycling Trail	Westminster Hwy	New Minor Street - Commercial	465	$ 2,604,000	0%	$ 5,250,000	0%	$ 7,854,000	$ -	$ 7,854
6021	3. Minor Street	4-6-06	Minor-06-5	CP Road	Elmbridge	New Minor Street - Commercial, Bicycle Friendly Street	150	$ 847,500	0%	$ 2,420,000	0%	$ 3,267,500	$ -	$ 3,268
6022	3. Minor Street	4-6-06	River Rd	Hollybridge	Minor-06-1	Sidewalk Improvements	150	$ 180,000	0%	$ -		$ 180,000	$ -	$ 180
6023	3. Minor Street	4-6-06	River Rd Connector	CP Road	Elmbridge	Extend Minor Street - Commercial	125	$ 700,000	0%	$ -		$ 700,000	$ -	$ 700
6024	3. Minor Street	4-6-06	CP Road	No. 2 Road	River Road Connector	Extend Minor Street - Commercial	120	$ 672,000	0%	$ -		$ 672,000	$ -	$ 672
8011	3. Minor Street	4-6-08	Bowling Green	*Existing End*	Saba	Extend Minor Street - Commercial	100	$ 560,000	0%	$ 3,230,000	0%	$ 3,790,000	$ -	$ 3,790
8012	3. Minor Street	4-6-08	Minor-08-1	Park	Minor-08-4	New Minor Street - Commercial	255	$ 1,428,000	0%	$ 4,110,000	0%	$ 5,538,000	$ -	$ 5,538
8013	3. Minor Street	4-6-08	Minor-08-2	Saba	Westminster Hwy	New Minor Street - Commercial	155	$ 868,000	0%	$ 5,010,000	0%	$ 5,878,000	$ -	$ 5,878
8014	3. Minor Street	4-6-08	Minor-08-4	Minoru Park	No. 3 Road	New Minor Street - Commercial	510	$ 2,858,000	0%	$ 8,210,000	0%	$ 11,066,000	$ -	$ 11,066
8015	3. Minor Street	4-6-08	Park	Minoru Park	No. 3 Road	Extend Minor Street - Commercial	460	$ 2,576,000	0%	$ 7,410,000	0%	$ 9,986,000	$ -	$ 9,986

Table A.1: Recommended Transportation Projects

Street Project Index	Street Category	Quarter Section #	Street Name/ID	Limit 1	Limit 2	Scope/Type of Project (Street to match Vision)	Length (m)						Total DCC ($)	Total DCC ($/L)
8016	3. Minor Street	4-6-08	Saba	Bowling Green	No. 3 Road	Extend Minor Street - Commercial, Bicycle Friendly Street	400	$ 2,260,000	0%	$ 12,920,000	0%	$ 15,180,000	$ -	$ 15,180
9018	3. Minor Street	4-6-09	Buswell	Granville Avenue	Westminster Hwy	Sidewalk Improvements	830	$ 995,000	0%	$ -		$ 995,000	$ -	$ 995
9020	3. Minor Street	4-6-09	Minor-09-2	Cooney	No. 3 Road	New Minor Street - Commercial	370	$ 2,072,000	0%	$ 5,960,000	0%	$ 8,032,000	$ -	$ 8,032
9021	3. Minor Street	4-6-09	Park	Cooney	Eckersley	Extend Minor Street - Residential	105	$ 535,500	0%	$ 1,690,000	0%	$ 2,225,500	$ -	$ 2,226
9022	3. Minor Street	4-6-09	Park	Citation	*Existing End*	Extend Minor Street - Residential	90	$ 459,000	0%	$ 1,450,000	0%	$ 1,909,000	$ -	$ 1,909
9023	3. Minor Street	4-6-09	Park	Cooney	No. 3 Road	Sidewalk Improvements	365	$ 440,000	0%	$ -		$ 440,000	$ -	$ 440
9024	3. Minor Street	4-6-09	Saba	Cooney	Spires	Extend Minor Street - Commercial, Bicycle Friendly Street	100	$ 565,000	0%	$ 1,610,000	0%	$ 2,175,000	$ -	$ 2,175
9025	3. Minor Street	4-6-09	Saba	Cooney	No. 3 Road	Sidewalk Improvements, Bicycle Friendly Street	360	$ 450,000	0%	$ -		$ 450,000	$ -	$ 450
9026	3. Minor Street	4-6-09	Spires	Saba	*Existing End*	Bicycle Friendly Street	300	$ 15,000	0%	$ -		$ 15,000	$ -	$ 15
10006	3. Minor Street	4-6-10	Cook/Katsura/Alberta	Alder	Garden City Rd	Bicycle Friendly Street	450	$ 25,000	0%	$ -		$ 25,000	$ -	$ 25
15003	3. Minor Street	4-6-15	Ash	Blundell Road	Granville Avenue	Cycling Lanes	820	$ 40,000	0%	$ -		$ 40,000	$ -	$ 40
15005	3. Minor Street	4-6-15	General Currie	Ash	Garden City Rd	Bicycle Friendly Street	420	$ 20,000	0%	$ -		$ 20,000	$ -	$ 20
17004	3. Minor Street	4-6-17	Acheson	Minoru	No. 3 Road	Bicycle Friendly Street	250	$ 15,000	0%	$ -		$ 15,000	$ -	$ 15
17005	3. Minor Street	4-6-17	Moffat	Blundell Road	Granville Avenue	Sidewalk Improvements	795	$ 955,000	0%	$ -		$ 955,000	$ -	$ 955
21017	3. Minor Street	5-6-21	Douglas	No. 3 Road	Sexsmith	Extend Minor Street - Residential	100	$ 510,000	0%	$ 1,610,000	0%	$ 2,120,000	$ -	$ 2,120
21018	3. Minor Street	5-6-21	Lehigh	No. 3 Road	West	New Minor Street - Residential	150	$ 765,000	0%	$ 2,420,000	0%	$ 3,185,000	$ -	$ 3,185
21019	3. Minor Street	5-6-21	No. 3 Road	Lehigh	River Rd	New Minor Street - Residential, with Greenway	170	$ 952,000	0%	$ 2,740,000	0%	$ 3,692,000	$ -	$ 3,692
21020	3. Minor Street	5-6-21	River Rd	West Road	No. 3 Road	Widen Existing Minor Street to 4 lanes	150	$ 495,000	0%	$ 975,000	0%	$ 1,470,000	$ -	$ 1,470
21021	3. Minor Street	5-6-21	West	Lehigh	River Rd	Extend Minor Street - Residential	140	$ 714,000	0%	$ 2,250,000	0%	$ 2,964,000	$ -	$ 2,964
21022	3. Minor Street	5-6-21	West	Bridgeport Road	River Rd	Widen Existing Minor Street to 4 lanes	140	$ 460,000	0%	$ -		$ 460,000	$ -	$ 460
28023	3. Minor Street	5-6-28	CP Road	Capstan	Minor-28-4	Extend Minor Street - Commercial	250	$ 1,400,000	0%	$ 2,030,000	0%	$ 3,430,000	$ -	$ 3,430
28024	3. Minor Street	5-6-28	Hazelbridge	Capstan	Sexsmith	Extend Minor Street - Commercial	255	$ 1,428,000	100%	$ 4,110,000	0%	$ 5,538,000	$ 1,428	$ 4,110
28025	3. Minor Street	5-6-28	Hazelbridge	Minor-28-3	Sexsmith	Extend Minor Street - Residential	130	$ 663,000	0%	$ 2,090,000	0%	$ 2,753,000	$ -	$ 2,753
28026	3. Minor Street	5-6-28	Hazelbridge	Cambie Rd	Capstan	Sidewalk Improvements	415	$ 500,000	0%	$ -		$ 500,000	$ -	$ 500
28027	3. Minor Street	5-6-28	Minor-28-1	Hazelbridge	River Rd	New Minor Street - Commercial	385	$ 2,156,000	0%	$ 6,200,000	0%	$ 8,356,000	$ -	$ 8,356
28028	3. Minor Street	5-6-28	Minor-28-2	Brown	River Rd	New Minor Street - Commercial, Bicycle Friendly Street	495	$ 2,796,750	0%	$ 7,970,000	0%	$ 10,766,750	$ -	$ 10,767
28029	3. Minor Street	5-6-28	Minor-28-3	Cambie Rd	Patterson	New Minor Street - Residential	615	$ 3,136,500	0%	$ 9,900,000	0%	$ 13,036,500	$ -	$ 13,037
28030	3. Minor Street	5-6-28	Minor-28-4	Hazelbridge	River Rd	New Minor Street - Residential	410	$ 2,091,000	0%	$ 6,600,000	0%	$ 8,691,000	$ -	$ 8,691
28031	3. Minor Street	5-6-28	Minor-28-5	Minor-28-3	Sexsmith	New Minor Street - Residential	160	$ 816,000	0%	$ 2,580,000	0%	$ 3,396,000	$ -	$ 3,396
28032	3. Minor Street	5-6-28	Patterson	*New End of Street*	Sexsmith	Extend Minor Street - Residential	65	$ 331,500	0%	$ 1,050,000	0%	$ 1,381,500	$ -	$ 1,382
28035	3. Minor Street	5-6-28	Capstan	CP Road	River Road	New Minor Street- Commercial	80	$ 448,000	0%	$ -		$ 448,000	$ -	$ 448
32013	3. Minor Street	5-6-32	Alexandra	CP Road	No. 3 Road	Extend Minor Street - Commercial	320	$ 1,792,000	0%	$ 5,150,000	0%	$ 6,942,000	$ -	$ 6,942
32014	3. Minor Street	5-6-32	Brownell	CP Road	No. 3 Road	Extend Minor Street - Commercial	230	$ 1,288,000	0%	$ 3,700,000	0%	$ 4,988,000	$ -	$ 4,988
32015	3. Minor Street	5-6-32	Cambie Rd	CP Road	River Road	Extend Minor Street - Commercial, with Greenway	100	$ 610,000	0%	$ 1,610,000	0%	$ 2,220,000	$ -	$ 2,220
33028	3. Minor Street	5-6-33	Alexandra	No. 3 Road	Sorenson	Sidewalk Improvements	700	$ 840,000	0%	$ -		$ 840,000	$ -	$ 840
33029	3. Minor Street	5-6-33	Brownell	Brown	No. 3 Road	New Minor Street - Commercial	420	$ 2,352,000	100%	$ 6,760,000	100%	$ 9,112,000	$ 9,112	$ -
33031	3. Minor Street	5-6-33	Hazelbridge	Alderbridge Way	Browngate Road	Sidewalk Improvements	845	$ 1,015,000	0%	$ -		$ 1,015,000	$ -	$ 1,015
33032	3. Minor Street	5-6-33	Hazelbridge	Brownell		Traffic Signal - New	n/a	$ 175,000	0%	$ -		$ 175,000	$ -	$ 175
33033	3. Minor Street	5-6-33	Hazelbridge	Browngate		Traffic Signal - Modify for 4th Leg	n/a	$ 50,000	0%	$ -		$ 50,000	$ -	$ 50
33034	3. Minor Street	5-6-33	Odlin Crescent	Brown	Cambie Rd	Sidewalk Improvements	745	$ 895,000	0%	$ -		$ 895,000	$ -	$ 895
33035	3. Minor Street	5-6-33	Sorenson Cr	Alexandra	Leslie	Extend Minor Street - Residential	110	$ 561,000	100%	$ -		$ 561,000	$ 561	$ -
32001b	3. Minor Street	5-6-32	Browngate	River Road	CP Road	New Minor Street	100	$ 700,000	0%	$ 2,420,000	0%	$ 3,120,000	$ -	$ 3,120
4017a	3. Minor Street	4-6-04	Buswell	Alderbridge Way	Lansdowne Road	Extend Minor Street - Commercial	400	$ 2,240,000	0%	$ 6,440,000	0%	$ 8,680,000	$ -	$ 8,680
4017b	3. Minor Street	4-6-04	Buswell	Lansdowne Road	Westminster Hwy	Extend Minor Street - Commercial	400	$ 2,240,000	100%	$ 6,440,000	100%	$ 8,680,000	$ 8,680	$ -
22011	5. Trails and Paths	5-6-22	Trail-22-1	No. 4 Road	Van Horne	Pedestrian/Cycling Trail	740	$ 370,000	100%	$ -	0%	$ 370,000	$ 370	$ -
4019	6. Ped/Cyc Crossing Enhancements	4-6-04	Westminster Hwy	No. 3 Road	Garden City	On Westminster, between No. 3 and Garden City	n/a	$ 3,000,000	100%	$ -	0%	$ 3,000,000	$ 3,000	$ -

Table A.1: Recommended Transportation Projects

Street Project Index	Street Category	Quarter Section #	Street Name/ID	Limit 1	Limit 2	Scope/Type of Project (Street to match Vision)	Length (m)						Total ($)	Total 000 ($)
4020	6. Ped/Cyc Crossing Enhancements	4-6-04	Garden City Rd	Alderbridge Way	Westminster Hwy	On Garden City, between Alderbridge and Westminster	n/a	$ 3,000,000	100%	$ -	0%	$ 3,000,000	$ 3,000	$ -
5029	6. Ped/Cyc Crossing Enhancements	4-6-05	Gilbert Rd	Lansdowne		On Gilbert Road at Lansdowne	n/a	$ 3,000,000	100%	$ -	0%	$ 3,000,000	$ 3,000	$ -
9028	6. Ped/Cyc Crossing Enhancements	4-6-09	Garden City Rd	Westminster Hwy	Granville Avenue	On Garden City, between Westminster and Granville	n/a	$ 3,000,000	100%	$ -	0%	$ 3,000,000	$ 3,000	$ -
26034	6. Ped/Cyc Crossing Enhancements	5-6-26	Garden City Road	Sea Island Way	Cambie Rd	On Garden City, between Sea Island and Cambie	n/a	$ 3,000,000	100%	$ -	0%	$ 3,000,000	$ 3,000	$ -
32018	6. Ped/Cyc Crossing Enhancements	5-6-32	Middle Arm Pedestrian Bridge	Cambie Rd	River Road	Pedestrian/Cycling Bridge (Cost based on a 6m wide, 350m long footbridge, 50% cost from others)		$ 15,000,000	100%	$ -	0%	$ 15,000,000	$ 15,000	$ -
							Total	$ 239,765,117		$ 322,310,605		$ 562,075,721	$ 263,047	$ 299,029

APPENDIX B

Overlap Between Current and Proposed Transportation DCC Programs

Table B.1: Transportation Projects from the Current DCC Program to be Deleted or Retained

Project No.	Name	Location	Year of Estimate	Description	Cost Estimate (in $thousands)	Delete or Keep Project from Existing Program?
A12P7	River Rd	Oak St Bridge to No 4 Rd	2006	w/ st 900mm	2884	Delete
A11P31	Sorenson Cr	Leslie Rd to Alexandra Rd	2006	w/ water 200mm	420	Delete
A10P40	North Loop Road (construction only)	Cambie to Capstan Way	2005		4000	Delete
A11P19	Sexsmith Rd	Sea Island Way to Capstan Way	2006	w/ water 300mm	2181	Delete
A11P29	Hazelbridge Way	Sea Island Way to Capstan Way	2006	w/ water 200mm	1564	Delete
A10P40	North Loop Road (construction only)	Gilbert to Leslie Rd	2005		7300	Delete
A10P40	North Loop Road (construction only)	Leslie Rd to Cambie	2005		4000	Delete
A11P18	Brown Rd	Cambie Rd to Leslie Rd	2006	w/ water 300mm	2206	Delete
A11P28	Leslie Rd Extension East	Sorenson Cr to new section of Leslie Rd (was to Garden City Rd)	2006	w/ water	296	Delete
A10P36	Cooney Rd (north-south)	Alderbridge to Lansdowne Rd	2006	w/ water 300mm	2058	Delete
A2P19	Gilbert Rd	Dinsmore Bridge to Westminster Hwy	2006		1441	Delete
New	Gilbert Road Widening	Dinsmore Bridge to Landsdowne Rd	2005		1500	Delete
GEN-05	Alderbridge Way Sidewalk	Cedarbridge Way to Elmbridge Way (south side only)	2004		140	Delete
GEN-05	Alderbridge Way Sidewalk	No 3 Road to Elmbridge	2004		372	Delete
New	Landsdowne Road Extension	Alderbridge to Minoru	2005		2500	Delete
A10P29	Landsdowne Rd	Minoru Blvd to Gilbert Rd	2005	incl. land	3257	Delete
A10P27	Minoru Blvd	Alderbridge Way to River Rd	2006		1354	Delete
GEN-05	Minoru Blvd. Sidewalk	Landsdowne to Alderbridge Way	2004		144	Delete
A10P37	Elmbridge Way	No 3 Rd to Minoru Blvd	2006	w/ st 600mm, water 200mm, w/o land	1354	Delete
A10P40	North Loop Road (construction only)	Hollybridge Way to Gilbert Rd	2005		3700	Delete
	Browngate Rd	River Rd to No 3 Rd	2006	w/ land, water 200mm	2123	Delete
A10P40	River Road Re-alignment (construction & interest)	No 2 Road to Hollybridge Way	2006		6105	Delete
	Landsdowne Rd	Gilbert Road to Hollybridge Way	2006	w/o water, incl land	2674	Delete
A12P38	New Road River Rd	Bridgeport Rd to No 3 Rd	2006	w/o land	1277	Delete
A11P30	Sexsmith Rd	Odlin Rd realignment	2006	w/ water 200mm, st 600mm	1288	Delete
A10P38	Kwantlen St	Minoru Blvd to Kwantlen St	2006		3981	Delete
A10P34	Alexander Rd	CPR to No 3 Rd	2006	w/ land, st 600mm, water 300mm	6419	Delete
A10P43	E-W Rd between Cambie & Capstan Way	River Rd to Hazelbridge Way	2006	w/ land, water 200mm, st 600mm	9416	Delete
A10P35	Cook Rd	No 3 Rd to Minoru Blvd	2006	w/ water 300mm	1385	Delete
A10P42	Median	Westminster Hwy: No 2 Rd to Gilbert Rd	2006		200	Delete
				Total	$ 77,539.00	Can be deleted from existing program

Table B.1: Transportation Projects from the Current DCC Program to be Deleted or Retained

Project No.	Name	Location	Year of Estimate	Description	Cost Estimate (in $thousands)	Delete or Keep Project from Existing Program?
A11P32	Hazelbridge Way	Cambie Road to Browngate	2006		91	Keep
GEN-04	Bike Improvements - CNR Bike Trail	CNR Bike Trail N of Bridgeport: Garden City to Shell Rd	2004		262	Keep
A11P25	Browngate Rd	No 3 Rd to Odlin Crescent	2006	w/ land	113	Keep
GEN-04	Bike Improvements in City Centre	City Centre	2005		138	Keep
A12P39	Covette Way	Capstan Way to Sea Island Way	2006	w/ land, water 250mm	1260	Keep
A11P1	Cambie Rd	No 3 Rd to Garden City Road	2006	w/ land	1567	Keep
	North Loop Road St. Enhancements	Leslie to Capstan Way	2006		10000	Keep
A9P19	South McLennan	east-west ring road	2006	w/ land	12206	Keep
A10P40	River Rd Re-alignment	No 2 Road to Hollybridge Way	2006	w/ land	3000	Keep
	No 3 Road Corridor Enhancement	No 3 Road, River Rd to Granville Ave	2006		23400	Keep
A10P26	Kwantlen St	Alderbridge Way to Alexandra Road	2006	w/ land	1473	Keep
A10P41	Median	Westminster Hwy: Cooney Rd to Gilbert Rd	2006		431	Keep
A10P9	Garden City Rd	Westminster Hwy to Granville Ave	2006		1253	Keep
A11P3	Westminster Hwy	Garden City to No 4 Rd			1117	Keep
A2P18	No 2 Road Bridge	No 2 Road Bridge north of Westminster Hwy			18270	Keep
A9P1	Granville Ave	Garden City Rd to No 4 Rd	2006		2731	Keep
A9P12	Ferndale Road	Garden City Rd to No 4 Rd			1297	Keep
A9P13	Alberta Road	Garden City Rd to No 4 Rd			592	Keep
A9P18	Cook Rd Extension	Garden City Rd to Alberta Road	2006		1437	Keep
GEN-04	Bike Improvements - Conn to City Centre Ped/Bike Bridge	Van Horne Way/ river Rd to City Centre Ped/ Bike Bridge	2005		50	Keep
GEN-05	Sidewalk	Firbridge Way, No 3 Rd to Minoru (north side)	2004		80	Keep
GEN-05	Sidewalk	Cedarbridge Way: Alderbridge to Elmbridge Way	2004		248	Keep
GEN-05	Garden City Sidewalk	Sea Island to Cambie Rd	2004		508	Keep
	Dover Crossing Pedestrian Bridge: No 2 Road	No 2 Road	2005		3000	Keep
	River Road Re-alignment	No 2 Road to Hollybridge Way	2006		3000	Keep
	North Loop Road Land (+interest)	No 2 to Capstan Way	2006		22895	Keep
A10P5	River Rd	Browngate to approx. 200m to the north	2006		1432	Keep (but revise)
A10P6	River Rd	Hollybridge Way to approx. 150m to the east	2006		1310	Keep (but revise)
				Total	$ 113,161.00	Projects to be kept on existing program

APPENDIX C

Recommended Water Projects

Table C.1: Recommended Water Projects

Upgrade Scenario	Location	From	To	Length (m)	Material	Year Installed	Existing Diameter (mm)	Recommended Diameter (mm)	Unit Cost ($/m)	W&S	W&S (w/ 25% contingency and 15% engineering)	DCC	DCC (w/ 25% contingency and 15% engineering)	Total	Total (w/ contingency and engineering)
Existing, TZM, CCAP	Capstain Way	No. 3 Rd	Sexsmith Rd	350	PVC	1986/1994	200	300	900	$ 157,500	$ 226,406	$ 187,500	$ 269,531	$ 345,000	$ 495,938
Existing, TZM, CCAP	Sexsmith Rd & Patterson Rd	Capstain Way	Garden City Rd	572	AC	1976	150	200	700	$ 257,400	$ 370,013	$ 173,000	$ 248,688	$ 430,400	$ 618,700
Existing, TZM, CCAP	Beckwith Rd &Gage Rd	Bridgeport Rd	End of Beckwith Rd	454	AC	1968	150	250	750	$ 204,300	$ 293,681	$ 166,200	$ 238,913	$ 370,500	$ 532,594
Existing, TZM, CCAP	Hazelbridge Way	Browndale Rd	Cambie St	314	PVC	2002	200	200	700	$ 141,300	$ 203,119	$ 108,500	$ 155,969	$ 249,800	$ 359,088
Existing, TZM, CCAP	Odlin Cr	Brown Rd	Odlin Rd	400	AC	1958/1962	150	200	700	$ 180,000	$ 258,750	$ 130,000	$ 186,875	$ 310,000	$ 445,625
Existing, TZM, CCAP	Brown Rd	Odlin Cr	Odlin Rd	208	AC	1958	150	200	700	$ 93,600	$ 134,550	$ 82,000	$ 117,875	$ 175,600	$ 252,425
Existing, TZM, CCAP	Odlin Rd	Browngate Rd	Brown Rd	130	n/a	n/a	150	250	750	$ 58,500	$ 84,094	$ 69,000	$ 99,188	$ 127,500	$ 183,281
Existing, TZM, CCAP	Minoru Blvd	Landsdowne Rd	Elmbridge Way	183	AC	1965	150	200	700	$ 82,350	$ 118,378	$ 75,750	$ 108,891	$ 158,100	$ 227,269
Existing, TZM, CCAP	Bowling Green Rd	Bowling Green Rd	Westminster Hwy	215	AC	1973	150	250	750	$ 96,750	$ 139,078	$ 94,500	$ 135,844	$ 191,250	$ 274,922
Existing, TZM, CCAP	Minoru Blvd	Granville Ave	Minoru Blvd	335	AC	1965	200	250	750	$ 150,750	$ 216,703	$ 130,500	$ 187,594	$ 281,250	$ 404,297
Existing, TZM, CCAP	Acheson Rd	Minoru Blvd	No. 3 Rd	270	AC	1973	150	200	700	$ 121,500	$ 174,656	$ 97,500	$ 140,156	$ 219,000	$ 314,813
Existing, TZM, CCAP	Bennett Rd	Minoru Blvd	No. 3 Rd	270	AC/PVC	1973/1995	150	200	700	$ 121,500	$ 174,656	$ 97,500	$ 140,156	$ 219,000	$ 314,813
Existing, TZM, CCAP	Park Rd	No. 3 Rd	Cooney Rd	355	AC	1956	150	200	700	$ 159,750	$ 229,641	$ 118,750	$ 170,703	$ 278,500	$ 400,344
Existing, TZM, CCAP	Cooney Rd	Granville Ave	Cook Rd	400	AC	1956	150	200	700	$ 180,000	$ 258,750	$ 130,000	$ 186,875	$ 310,000	$ 445,625
Existing, TZM, CCAP	Anderson Rd	Cooney Rd	Eckersley	120	AC	1956	150	200	700	$ 54,000	$ 77,625	$ 60,000	$ 86,250	$ 114,000	$ 163,875
Existing, TZM, CCAP	Cook Rd	Cooney Rd	Garden City Rd	500	AC	1966	150	250	750	$ 225,000	$ 323,438	$ 180,000	$ 258,750	$ 405,000	$ 582,188
Existing, TZM, CCAP	Eckersley Rd	Cook Rd	Anderson Rd	345	AC	1966	150	250	750	$ 155,250	$ 223,172	$ 133,500	$ 191,906	$ 288,750	$ 415,078
Existing, TZM, CCAP	Park Rd	Eckersley Rd	Park Pl	110	AC	1958	150	250	750	$ 49,500	$ 71,156	$ 63,000	$ 90,563	$ 112,500	$ 161,719
Existing, TZM, CCAP	Pimlico Way	Citation Dr	Cook Rd	175	AC	1975	150	200	700	$ 78,750	$ 113,203	$ 73,750	$ 106,016	$ 152,500	$ 219,219
Existing, TZM, CCAP	Cooney Rd / Spires Gate	Spires Rd	Saba Rd	150	AC	1955/1959	150	200	700	$ 67,500	$ 97,031	$ 67,500	$ 97,031	$ 135,000	$ 194,063
Existing, TZM, CCAP	South of Granville Ave	St. Albans Rd	Garden City Rd	200	PVC	1985	150	200	700	$ 90,000	$ 129,375	$ 80,000	$ 115,000	$ 170,000	$ 244,375
Existing, TZM, CCAP	No.3 Rd	Anderson Rd	Cook Rd	75	AC	1957	150	200	700	$ 33,750	$ 48,516	$ 48,750	$ 70,078	$ 82,500	$ 118,594
Existing, TZM, CCAP Total										$ 2,756,850	$ 3,965,991	$ 2,367,200	$ 3,402,850	$ 5,128,150	$ 7,368,841
TZM & CCAP	No. 4 Rd	Bridgeport Rd	River Dr	780	AC	1979	200	250	750	$ 351,000	$ 504,563	$ 264,000	$ 379,500	$ 615,000	$ 884,063
TZM & CCAP	Granville Ave	Gilbert Rd	Moffatt Rd	300	AC	1968	150	200	700	$ 135,000	$ 194,063	$ 105,000	$ 150,938	$ 240,000	$ 345,000
TZM & CCAP	Gilbert Rd	Granville Ave	Westminster Hwy	820	AC	1964	200	250	750	$ 369,000	$ 530,438	$ 276,000	$ 396,750	$ 645,000	$ 927,188
TZM & CCAP	Spires Rd	Spires Gate	Cook Cr	345	AC	1959	150	200	700	$ 155,250	$ 223,172	$ 116,250	$ 167,109	$ 271,500	$ 390,281
TZM & CCAP	Cook Cr	Spires Rd	Spires Rd	351	AC	1959	150	200	700	$ 157,950	$ 227,053	$ 117,750	$ 169,266	$ 275,700	$ 396,319
TZM & CCAP	Cook Gate	Spires Rd	Cook Rd	100	AC	1959	150	200	700	$ 45,000	$ 64,688	$ 55,000	$ 79,063	$ 100,000	$ 143,750
TZM & CCAP	Citation Dr	Granville Ave	Garden City Rd	417	AC	1975	150	200	700	$ 187,650	$ 269,747	$ 134,250	$ 192,984	$ 321,900	$ 462,731
TZM & CCAP	Garden City Rd	Cook Rd	Weayminster Hwy	410	AC	1961	150	200	700	$ 164,500	$ 265,219	$ 132,500	$ 190,469	$ 317,000	$ 455,688
TZM & CCAP	Cook Rd	No. 3 Rd	Cooney Rd	370	AC	1965/1966	150	250	750	$ 166,500	$ 239,344	$ 141,000	$ 202,688	$ 307,500	$ 442,031
TZM & CCAP	River Rd	Bridgeport Rd	Capstain St.	380	Steel/AC	1979/1964	150	300	900	$ 171,000	$ 245,813	$ 201,000	$ 288,938	$ 372,000	$ 534,750
TZM & CCAP	No. 3 Rd	Bridgeport Rd	Capstain St.	430	Steel/AC/PVC	1967/1976/2000	300	350	1,000	$ 193,500	$ 278,156	$ 266,500	$ 383,094	$ 460,000	$ 661,250
TZM & CCAP Total										$ 2,116,350	$ 3,042,253	$ 1,809,250	$ 2,600,797	$ 3,925,600	$ 5,643,050
CCAP only	Hazelbridge Way	Browndale Rd	Leslie Rd	256	PVC	1984	150	200	700	$ 115,200	$ 165,600	$ 94,000	$ 135,125	$ 209,200	$ 300,725
CCAP only	Leslie Rd	No.3 Rd	Brown Rd	410	PVC	1979/1984	150	200	700	$ 184,500	$ 265,219	$ 132,500	$ 190,469	$ 317,000	$ 455,688
CCAP only	Leslie Rd	Brown Rd	Sorenson Cr	300	AC	1968	150	200	700	$ 135,000	$ 194,063	$ 105,000	$ 150,938	$ 240,000	$ 345,000
CCAP only	Sorenson Cr	Leslie Rd	Odlin Cr	140	AC	1959	150	200	700	$ 63,000	$ 90,563	$ 65,000	$ 93,438	$ 128,000	$ 184,000
CCAP only	Brown Rd	Odlin Cr	Leslie Rd	90	AC	1968	150	200	700	$ 40,500	$ 58,219	$ 52,500	$ 75,469	$ 93,000	$ 133,688
CCAP only	Brown Rd	Odlin Rd	Cambie St	315	AC	1958	150	200	700	$ 141,750	$ 203,766	$ 108,750	$ 156,328	$ 250,500	$ 360,094
CCAP only	Intersection of Minoru Blvd & Landsdowne Rd			20	n/a	n/a	150	200	700	$ 9,000	$ 12,938	$ 35,000	$ 50,313	$ 44,000	$ 63,250
CCAP only	Bowling Green Rd	Bowling Green Rd	Westminster Hwy	216	AC	1969	150	300	900	$ 97,200	$ 139,725	$ 127,200	$ 182,850	$ 224,400	$ 322,575
CCAP only	Granville Ave	Minoru Blvd	No. 3 Rd	245	AC	1968	150	200	700	$ 110,250	$ 158,484	$ 91,250	$ 131,172	$ 201,500	$ 289,656
CCAP only	No.3 Rd	Anderson Rd	Cook Rd	300	AC	1964	150	250	750	$ 135,000	$ 194,063	$ 120,000	$ 172,500	$ 255,000	$ 366,563
CCAP only	Modelling											$ 750,000	$ 937,500	$ 750,000	$ 937,500
CCAP only Total										$ 1,031,400	$ 1,482,638	$ 1,681,200	$ 2,276,100	$ 2,712,600	$ 3,758,738
Grand Total										$ 5,906,700	$ 8,490,881	$ 5,857,650	[redacted]	$ 11,764,350	$ 16,770,628
										5,907,000	8,491,000	5,858,000	8,280,000	11,764,000	16,771,000

APPENDIX D

Overlap Between Current and Proposed Water DCC Programs

Table D.1: Water Projects to Delete From the Current DCC Program

Study Area	Pipe Location	Proposed Diameter (mm)	Length (m)	W&S Portion - Cost Estimate w/o Engineering and Admin	DCC Portion - Cost Estimate w/o Engineering and Admin	DCC Portion - Cost Estimate w 30% Engineering and Admin	Benefit Factor %	Benefit to New Development	MAF 1%	DCC Recoverable	Municipal Responsibility	DCC Recoverable to Delete
WATER DCC AND WORKS AND SERVICES FOR CURRENT DEMAND												
Bridgeport	Finlayson Dr	200	90	$ 40,455	$ 31,465	$ 40,905	95%	$ 38,859	$ 389	$ 38,471	$ 2,434	
Bridgeport	McLeod Ave	200	176	$ 79,155	$ 61,565	$ 80,035	95%	$ 76,033	$ 760	$ 75,272	$ 4,762	
Bridgeport	McLennan Ave	200	100	$ 45,135	$ 35,105	$ 45,637	95%	$ 43,355	$ 434	$ 42,921	$ 2,715	
Bridgeport	McKessock Ave	200	234	$ 105,255	$ 81,865	$ 106,425	95%	$ 101,103	$ 1,011	$ 100,092	$ 6,332	
Bridgeport	McKessock Ave/Baydala Crt Connector	200	54	$ 24,300	$ 18,900	$ 24,570	95%	$ 23,342	$ 233	$ 23,108	$ 1,462	
Bridgeport	Viscount Way Connector	200	61	$ 27,495	$ 21,385	$ 27,801	95%	$ 26,410	$ 264	$ 26,146	$ 1,654	
Bridgeport	Gage Rd	250	166	$ 74,610	$ 58,030	$ 75,439	95%	$ 71,667	$ 717	$ 70,950	$ 4,489	$ 70,950
Bridgeport	Beckwith Rd	250	289	$ 129,825	$ 100,975	$ 131,266	95%	$ 124,704	$ 1,247	$ 123,457	$ 7,810	$ 123,457
Bridgeport	St Edwards Dr	300	226	$ 101,745	$ 169,575	$ 220,448	95%	$ 209,425	$ 2,094	$ 207,331	$ 13,117	
Bridgeport Total		**n/a**	**1,396**	**$ 627,975**	**$ 578,865**	**$ 752,525**	**n/a**	**$ 714,898**	**$ 7,149**	**$ 707,749**	**$ 44,775**	**$ 194,407**
City Centre	Hazelbridge Way	200	98	$ 44,100	$ 34,300	$ 44,590	95%	$ 42,361	$ 424	$ 41,937	$ 2,653	$ 41,937
City Centre	Hazelbridge Way	200	123	$ 55,125	$ 42,875	$ 55,738	95%	$ 52,951	$ 530	$ 52,421	$ 3,316	$ 52,421
City Centre	Hazelbridge Way	200	94	$ 42,210	$ 32,830	$ 42,679	95%	$ 40,545	$ 405	$ 40,140	$ 2,539	$ 40,140
City Centre	Brown Rd	200	37	$ 16,695	$ 12,985	$ 16,881	95%	$ 16,036	$ 160	$ 15,876	$ 1,004	$ 15,876
City Centre	Brown Rd	200	136	$ 61,310	$ 47,685	$ 61,991	95%	$ 58,891	$ 589	$ 58,302	$ 3,688	$ 58,302
City Centre	Odlin Cres	200	266	$ 119,655	$ 93,065	$ 120,985	95%	$ 114,935	$ 1,149	$ 113,786	$ 7,199	$ 113,786
City Centre	Odlin Cres	200	134	$ 60,165	$ 46,785	$ 60,834	95%	$ 57,792	$ 578	$ 57,214	$ 3,620	$ 57,214
City Centre	Seesmith Rd	200	572	$ 257,490	$ 200,270	$ 260,351	95%	$ 247,333	$ 2,473	$ 244,860	$ 15,491	$ 244,860
City Centre	Lansdowne/Minoru Connector	200	20	$ 9,045	$ 7,035	$ 9,146	95%	$ 8,686	$ 87	$ 8,601	$ 544	$ 8,601
City Centre	Minoru Blvd/Granville Ave Connector	200	110	$ 48,545	$ 38,535	$ 50,096	95%	$ 47,591	$ 476	$ 47,115	$ 2,981	$ 47,115
City Centre	Granville Ave	200	69	$ 31,140	$ 24,220	$ 31,486	95%	$ 29,912	$ 299	$ 29,613	$ 1,873	$ 29,613
City Centre	Bennett Rd	200	173	$ 77,670	$ 60,410	$ 78,533	95%	$ 74,606	$ 746	$ 73,860	$ 4,673	$ 73,860
City Centre	Park Rd	200	49	$ 22,005	$ 17,115	$ 22,250	95%	$ 21,137	$ 211	$ 20,926	$ 1,324	$ 20,926
City Centre	Park Rd	200	130	$ 58,410	$ 45,430	$ 59,059	95%	$ 56,106	$ 561	$ 55,545	$ 3,514	$ 55,545
City Centre	Park Rd	200	176	$ 79,035	$ 61,705	$ 80,217	95%	$ 76,206	$ 762	$ 75,444	$ 4,773	$ 75,444
City Centre	Cooney Rd	200	122	$ 54,945	$ 42,735	$ 55,556	95%	$ 52,778	$ 528	$ 52,250	$ 3,306	$ 52,250
City Centre	Cooney Rd	200	13	$ 5,985	$ 4,655	$ 6,052	95%	$ 5,749	$ 57	$ 5,691	$ 360	$ 5,691
City Centre	Cooney Rd	200	25	$ 11,340	$ 8,820	$ 11,466	95%	$ 10,893	$ 109	$ 10,784	$ 682	$ 10,784
City Centre	Cooney Rd	200	168	$ 75,465	$ 58,695	$ 76,304	95%	$ 72,488	$ 725	$ 71,763	$ 4,540	$ 71,763
City Centre	Cooney Rd to Granville Connector	200	106	$ 48,776	$ 37,937	$ 49,318	95%	$ 46,852	$ 469	$ 46,384	$ 2,934	$ 46,384
City Centre	Anderson Rd	200	116	$ 51,975	$ 40,425	$ 52,553	95%	$ 49,925	$ 499	$ 49,426	$ 3,127	$ 49,426
City Centre	Eckersley Rd	200	169	$ 74,745	$ 58,135	$ 75,576	95%	$ 71,797	$ 718	$ 71,079	$ 4,497	$ 71,079
City Centre	Eckersley Rd	200	190	$ 85,545	$ 66,535	$ 86,496	95%	$ 82,171	$ 822	$ 81,349	$ 5,146	$ 81,349
City Centre	Cook Gate	200	106	$ 47,835	$ 37,205	$ 48,357	95%	$ 45,948	$ 459	$ 45,489	$ 2,878	$ 45,489
City Centre	Spires Rd	200	84	$ 37,845	$ 29,435	$ 38,256	95%	$ 36,352	$ 364	$ 35,989	$ 2,277	$ 35,989
City Centre	Spires Rd	200	78	$ 34,965	$ 27,195	$ 35,354	95%	$ 33,586	$ 336	$ 33,250	$ 2,104	$ 33,250
City Centre	Pimlico Way	200	181	$ 81,585	$ 63,455	$ 82,492	95%	$ 78,367	$ 784	$ 77,583	$ 4,908	$ 77,583
City Centre	Odlin Cres	250	272	$ 122,535	$ 95,305	$ 123,897	95%	$ 117,702	$ 1,177	$ 116,525	$ 7,372	$ 116,525
City Centre	Bowling Green Rd at Westminster Hwy	250	216	$ 96,975	$ 75,425	$ 98,053	95%	$ 93,150	$ 931	$ 92,218	$ 5,834	$ 92,218
City Centre	Park Rd	250	107	$ 48,060	$ 37,380	$ 48,594	95%	$ 46,164	$ 462	$ 45,703	$ 2,891	$ 45,703
City Centre	Cook Rd	250	96	$ 43,380	$ 33,740	$ 43,952	95%	$ 41,769	$ 417	$ 41,352	$ 2,616	$ 41,352
City Centre	Cook Rd	250	85	$ 38,070	$ 29,610	$ 38,493	95%	$ 36,568	$ 366	$ 36,203	$ 2,290	$ 36,203
City Centre	Cook Rd	250	91	$ 41,040	$ 31,920	$ 41,496	95%	$ 39,421	$ 394	$ 39,027	$ 2,469	$ 39,027
City Centre	Cook Rd	250	115	$ 51,615	$ 40,145	$ 52,189	95%	$ 49,579	$ 496	$ 49,083	$ 3,105	$ 49,083
City Centre	Cook Rd	250	128	$ 57,465	$ 44,695	$ 58,104	95%	$ 55,198	$ 552	$ 54,646	$ 3,457	$ 54,646
City Centre Total		**n/a**	**4,653**	**$ 2,094,046**	**$ 1,628,702**	**$ 2,117,313**	**n/a**	**$ 2,011,448**	**$ 20,114**	**$ 1,991,333**	**$ 125,980**	**$ 1,991,333**
WATER DCC AND WORKS AND SERVICES FOR OCP 2021 DEMAND												
Bridgeport	Finlayson Rd	250	87	$ 39,150	$ 30,450	$ 39,585	95%	$ 37,606	$ 376	$ 37,230	$ 2,355	$ -
Bridgeport Total		**n/a**	**87**	**$ 39,150**	**$ 30,450**	**$ 39,585**	**95%**	**$ 37,606**	**$ 376**	**$ 37,230**	**$ 2,355**	**$ -**
City Centre	Spires Gate	200	105	$ 47,340	$ 36,820	$ 47,866	95%	$ 45,473	$ 455	$ 45,018	$ 2,848	$ 45,018
City Centre	Cooney Rd	200	49	$ 21,915	$ 17,045	$ 22,159	95%	$ 21,051	$ 211	$ 20,840	$ 1,318	$ 20,840
City Centre	Rivet Rd	300	87	$ 43,650	$ 72,750	$ 94,575	95%	$ 89,846	$ 898	$ 88,948	$ 5,627	$ 88,948
City Centre	Corvette Way	300	295	$ 134,100	$ 223,500	$ 290,550	95%	$ 276,023	$ 2,760	$ 273,262	$ 17,288	$ 273,262
City Centre	Capstan Way	300	242	$ 108,900	$ 181,500	$ 235,950	95%	$ 224,153	$ 2,242	$ 221,911	$ 14,039	$ 221,911
City Centre Total		**n/a**	**791**	**$ 355,905**	**$ 531,615**	**$ 691,100**	**n/a**	**$ 656,545**	**$ 6,565**	**$ 649,979**	**$ 41,120**	**$ 649,979**
TOTAL		**n/a**	**6927**	**$ 3,117,076**	**$ 2,769,632**	**$ 3,600,522**	**n/a**	**$ 3,420,496**	**$ 34,205**	**$ 3,386,291**	**$ 214,231**	**$ 2,835,720**

Yellow highlighting indicates projects to be deleted from the current City-Wide Water DCC Program.
No highlighting indicates projects within the Bridgeport and City Centre Areas to be kept in the new City-Wide DCC Program.

APPENDIX E

Recommended Sanitary Projects

Table E.1: Recommended Sanitary System Improvements for Existing Land-Use

Type of Upgrade	Location	From	To	Length (m)	Year Installed	Existing Diameter (mm)	Recommended Diameter (mm)	Unit Cost ($/m)	Subtotal ($)	Contingency (25% to 35%)	Engineering (15%)	Cost Estimate Total ($)
Gravity Sewer	Easement between Cedarbridge Way and Minoru Blvd	Alderbridge Way	Lane at rear of 5431 Minoru Blvd	90	1969	200	300	1,500	$135,000	$47,250	$27,338	$209,588
Gravity Sewer	Heather St	Heather St.	Heather N Pump Station	16	1998	250	300	1,500	$24,000	$8,400	$4,860	$37,260
Gravity Sewer	Jones Rd	8600 Jones Rd	Jones Pump Station	20	1989	250	300	1,500	$30,000	$10,500	$6,075	$46,575
Gravity Sewer	Minoru Park behind 6611 Minoru Blvd	160m E of Gilbert Rd	175m N of Granville St	396	1985	250	300	1,500	$594,000	$207,900	$120,285	$922,185
Gravity Sewer	Minoru Park S of 7000 Westminster Hwy	7000 Westminster Hwy.	Brighouse Pump Station	15	1960/1985	450	525	6,750	$101,250	$35,438	$20,503	$157,191
Gravity Sewer	Minoru Park, 85 m N of Granville St	160 m W of Minoru Blvd	315m E of Gilbert Rd	50	1985	200	250	1,425	$71,250	$24,938	$14,428	$110,616
Gravity Sewer	Lane (just west of No. 3 Road)	5811 No. 3 Rd.	Lansdowne Road	162	1968	150	200	900	$145,800	$51,030	$29,525	$226,355
Gravity Sewer	Easement between 6340 & 6300 No 3 Rd	Richmond Centre Pump Station	6300 No. 3 Rd.	30	1969/1985	200/300	375	1,650	$49,500	$17,325	$10,024	$76,849
			SUB-TOTAL						***$1,150,800***	***$402,780***	***$233,037***	***$1,786,617***
Forcemain	Gilbert Rd	Brighouse Pump Station	Gilbert Rd	77	1982	300	375	1,000	$77,000	$19,250	$14,438	$110,688
Forcemain	Jones Rd	Jones Pump Station	St. Albans Rd	97	1989	200	250	850	$82,450	$20,613	$15,459	$118,522
Forcemain	St. Albans Rd	Jones Rd	Blundell Rd	190	1973	350	450	1,400	$266,000	$66,500	$49,875	$382,375
			SUB-TOTAL						***$425,450***	***$106,363***	***$79,772***	***$611,584***
Pump Station	Brighouse	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station	Eckersley A	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station	Jones	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
			SUB-TOTAL						***$1,500,000***	***$525,000***	***$303,750***	***$2,328,750***
								TOTAL				**$4,727,000**

Notes
35% contingency applied to gravity sewers and pump stations. All other projects include a contingency of 25%.

Table E.2: Recommended Sanitary System Improvements for CCAP Land-Use

Type of Upgrade	Required for	Location	From	To	Length (m)	Year Installed	Existing Diameter (mm)	Recommended Upgrade Diameter (mm)	Proposed Diameter (mm)	Unit Cost ($/m)	Subtotal ($)	Contingency (25% for Upgrades)	Engineering (15%)	Cost Estimate Total ($)
Gravity Sewer	CCAP & TZM	Garden City Rd	9011 Garden City	Van Horne Pump Station	53	1986	250		300	1,500	$79,500	$27,825	$16,099	$123,424
Gravity Sewer	CCAP & TZM	Lansdowne Rd	Lane west of No. 3 Rd	Cedarbridge Way	286	1965/1998	200		300	1,500	$429,000	$150,150	$86,873	$666,023
Gravity Sewer	CCAP & TZM	Brighouse School	6180 Skaha Cr	6240 Mare Cr	249	1964	300		375	1,650	$410,850	$143,798	$83,197	$637,845
Gravity Sewer	CCAP & TZM	Brighouse School	6211 Gilbert Rd	6180 Skaha Cr	178	1963/1964	350		450	2,250	$400,500	$140,175	$81,101	$621,776
Gravity Sewer	CCAP & TZM	Minoru Park S of 7000 Westminster Hwy	6251 Minoru Blvd	7000 Westminster Hwy.	377	1960/1985	450		525	6,750	$2,544,750	$890,663	$515,312	$3,950,724
Gravity Sewer	CCAP	Gilbert Rd	60m N of Azure Rd	145m S of Azure Rd	104	1964	250		300	1,500	$156,000	$54,600	$31,590	$242,190
Gravity Sewer	CCAP & TZM	Minoru Park behind 8611 Minoru Blvd	175m N of Granville St	8631 Minoru	58	1985	250		300	1,500	$87,000	$30,450	$17,618	$135,068
Gravity Sewer	CCAP & TZM	Easement between 6340 & 6300 No 3 Rd	6300 No. 3 Rd.	Buswell St	181	1969/1985	200/300		375	1,650	$298,650	$104,528	$60,477	$463,654
Gravity Sewer	CCAP & TZM	Easement between Cooney Rd & Buswell St	6331 Cooney Rd	6411 Buswell	251	1969	200		300	1,500	$376,500	$131,775	$76,241	$584,516
Gravity Sewer	CCAP	Western side of Cook Park & easement between Park Pl and Citation Dr	8580 Cook Rd	Eckersly A Pump Station	579	1974	250		375	1,650	$955,350	$334,373	$193,456	$1,483,181
Gravity Sewer	CCAP & TZM	Katsura St	6233 Katsura St	Ferndale Rd	77	1998	200		250	1,425	$109,725	$38,404	$22,219	$170,348
Gravity Sewer	CCAP	Easement between 7400 Gilbert Rd & 7437 Moffatt Rd	7400 Gilbert Rd	7440 Gilbert Rd	96	1982	200		250	1,425	$136,800	$47,880	$27,702	$212,382
Gravity Sewer	CCAP	Easement between 7437 & 7297 Moffatt Rd	Rear of 7400 Gilbert Rd	7435 Gilbert Rd.	120	1982	200		250	1,425	$171,000	$59,850	$34,628	$265,478
Gravity Sewer	CCAP	Easement between 7437 & 7297 Moffatt Rd	7435 Gilbert Rd.	Moffatt Pump Station	90	1982	200		300	1,500	$135,000	$47,250	$27,338	$209,588
Gravity Sewer	CCAP	Easement West of Moffat Rd	7471 Moffatt Rd	7571 Moffatt Rd	182	1982	200		250	1,425	$259,350	$90,773	$52,518	$402,641
Gravity Sewer	CCAP	7800 Minoru Blvd			21	1982	200		250	1,425	$29,925	$10,474	$6,060	$46,459
Gravity Sewer	CCAP		Rear of 8131 Bennett	Bennett West Pump Station	47	1973	250		300	1,500	$70,500	$24,675	$14,276	$109,451
Gravity Sewer	CCAP	Jones Rd	W side of General Currie Park	8333 Jones Rd	221	1989	200		250	1,425	$314,925	$110,224	$63,772	$488,921
Gravity Sewer	CCAP	Jones Rd	8333 Jones Rd	St. Albans Rd.	54	1989	200		300	1,500	$81,000	$28,350	$16,403	$125,753
Gravity Sewer	CCAP	Jones Rd	8655 Jones Rd	8711 Jones Rd	96	1989	200		250	1,425	$136,800	$47,880	$27,702	$212,382
Gravity Sewer	CCAP	Heather St	Heather St.	Heather N Pump Station	16	1996	250		300	1,500	$24,000	$8,400	$4,860	$37,260
Gravity Sewer	CCAP & TZM	Ackroyd Rd	Middle of property frontage 8500	Arcadia Pump Station	78	1969	200	300	375	1,650	$128,400	$43,890	$25,394	$194,684
Gravity Sewer	CCAP & TZM	Crossing Ackroyd Rd	Northeast corner of 5860 No. 3 Rd	Ackroyd Pump Station	14	n/a	200		375	1,650	$23,100	$8,085	$4,678	$35,863
Gravity Sewer	CCAP	Alderbridge Way	Along the front of 7811 Alderbridge Way		109	n/a	200		250	1,425	$155,325	$54,364	$31,453	$241,142
Gravity Sewer	CCAP	Alderbridge Way	Lansdowne Rd	87m along Property 7671 Alderbridge Way	87	n/a	150		200	900	$78,300	$27,405	$15,856	$121,561
Gravity Sewer	CCAP	Alderbridge Way	Property 7731	Easement between 7771 & 7811 Alderbridge Way	126	n/a	150		200	900	$113,400	$39,690	$22,964	$176,054
Gravity Sewer	CCAP & TZM	Easement between 7771 & 7811 Alderbridge Way	7080 River Rd	5003 Minoru Blvd	263	n/a	200	190 m of 250, 80 m of 300	450	2,250	$659,250	$230,738	$133,498	$1,023,486
Gravity Sewer	CCAP & TZM	Lane South of Alderbridge Way	5003 Minoru Blvd	Minoru Pump Station	80	n/a	300	375	450	2,250	$180,000	$63,000	$36,450	$279,450
Gravity Sewer	CCAP	Beckwith Rd	9211 Beckwith Rd	Intersection of Garden City Rd & Great Canadian Way	232	1989	200		250	1,425	$330,600	$115,710	$66,947	$513,257
Gravity Sewer	CCAP	Beckwith Rd	50m West of Smith St	No 3 Rd	247	1978	250		300	1,500	$370,500	$129,675	$75,026	$575,201
Gravity Sewer	CCAP & TZM	Bennett Rd	Bennett Rd.	Bennett West Pump Station	38	1973	250	300	375	1,650	$62,700	$21,945	$12,697	$97,342
Gravity Sewer	CCAP & TZM	North of Bennett Rd	8520 Granville St.	Bennett East Pump Station	84	1982/1988	250		300	1,500	$126,000	$44,100	$25,515	$195,615
Gravity Sewer	CCAP & TZM	North of Bennett Rd	Bennett East Pump Station	Bennett Rd.	25	1982/1988	250		300	1,500	$37,500	$13,125	$7,594	$58,219
Gravity Sewer	CCAP & TZM	North of Bennett Rd	8140 Granville St.	8131 Bennett Rd.*	34	1974	200		250	1,425	$48,450	$16,958	$9,811	$75,219
Gravity Sewer	CCAP	Brighouse Pump Station	South side 7001 Westminster Hwy.	Brighouse Pump Station	15	1985	450	525	600	6,750	$101,250	$35,438	$20,503	$157,191
Gravity Sewer	CCAP	Brighouse Pump Station	South side 7001 Westminster Hwy.	6211 Gilbert	150	n/a	350	450	525	6,750	$1,012,500	$354,375	$205,031	$1,571,906
Gravity Sewer	CCAP	Brown Rd	Intersection of Brown Rd & Leslie Rd	Southwest corner of Property 8400	87	1985	200		250	1,425	$123,975	$43,391	$25,105	$192,471
Gravity Sewer	CCAP	Cambie Rd/Hazelbridge Way	Intersection of Brown Rd & Cambie Rd	Northeast corner of Property 8271	232	1987	200		250	1,425	$330,600	$115,710	$66,947	$513,257
Gravity Sewer	CCAP & TZM	Capstan Way	Intersection of Capstan Way & Sexsmith Rd	Hazelbridge Way	230	1990/1999	200/250		450	2,250	$517,500	$181,125	$104,794	$803,419
Gravity Sewer	CCAP & TZM	Capstan Way	Intersection of Capstan Way & Hazelbridge Way	Skyline Pump Station	208	1971/1990	300/350		525	6,750	$1,404,000	$491,400	$284,310	$2,179,710
Gravity Sewer	CCAP	Capstan Way	Northwest corner of 8100 Capstan Way	18m South of Skyline Pump Station	76	1971	300		375	1,650	$125,400	$43,890	$25,394	$194,684
Gravity Sewer	CCAP & TZM	Crossing Capstan Way	8200 Capstan Way	Skyline Pump Station	18	n/a	350		525	6,750	$121,500	$42,525	$24,604	$188,629
Gravity Sewer	CCAP & TZM	Easement between 8151 Capstan Way & 3331 No. 3 Rd	Northwest corner of 3331 No. 3 Rd	Skyline Pump Station	45	n/a	300		450	2,250	$101,250	$35,438	$20,503	$157,191
Gravity Sewer	CCAP & TZM	Cedarbridge Way	Intersection of Lansdowne Rd & Cedarbridge Way	Minoru Pump Station	92	n/a	300	375	450	2,250	$207,000	$72,450	$41,918	$321,368
Gravity Sewer	CCAP & TZM	Lane East of Cedarbridge Way	5660 Cedarbridge Way	5003 Minoru Blvd.	96	n/a	150		200	900	$86,400	$30,240	$17,496	$134,136
Gravity Sewer	CCAP & TZM	Charles St	8891 Charles St	Van Horne Pump Station	100	1973	250/350	52 m of 300	450	2,250	$225,000	$78,750	$45,563	$349,313
Gravity Sewer	CCAP	Crossing Charles St	8891 Charles St.	8880 Charles St.	24	1978	250		375	1,650	$39,600	$13,860	$8,019	$61,479
Gravity Sewer	CCAP	Swale between 8500 Cook Rd & 8560 Eckersley	North East corner of 8560 Eckersley	South West corner of 8560 Eckersley	35	n/a	200		250	1,425	$49,875	$17,456	$10,100	$77,431
Gravity Sewer	CCAP & TZM	Between Cooney Rd & Citation Dr	8371 Anderson Rd.	Eckersley A Pump Station	103	1967/1976	200/250	54 m of 250	300	1,500	$154,500	$54,075	$31,286	$239,861
Gravity Sewer	CCAP	Corvette Way	Nothwest Corner of 8091 Capstan Way	75m South of Capstan Way	190	n/a	200		300	1,500	$285,000	$99,750	$57,713	$442,463
Gravity Sewer	CCAP	Corvette Way	Nothwest Corner of 8091 Capstan Way	Southwest corner of Property 3231	80	1971	200		250	1,425	$114,000	$39,900	$23,085	$176,985
Gravity Sewer	CCAP	Elmbridge Way	Westminster Hwy	Elmbridge Pump Station	76	1971	350		450	2,250	$171,000	$59,850	$34,628	$265,478
Gravity Sewer	CCAP	Lane South of Elmbridge Way	7100 Elmbridge Way	7300 Elmbridge Way	100	n/a	150		200	900	$90,000	$31,500	$18,225	$139,725
Gravity Sewer	CCAP	Lane crossing North of Elmbridge Way	Alderbridge Way	Southwest corner of Property 5791	250	n/a	200		250	1,425	$356,250	$124,688	$72,141	$553,078
Gravity Sewer	CCAP	Crossing Elmbridge Way	Northeast corner of 7360 Elmbridge Way	North property line of 7351 Elmbridge Way	87	n/a	200		250	1,425	$123,975	$43,391	$25,105	$192,471

Table E.2: Recommended Sanitary System Improvements for CCAP Land-Use

Type of Upgrade	Program/Area	Location	From	To	Length (m)	Year Installed	Existing Diameter (mm)	Recommended Upgrade (including Diameter)	Recommended Diameter (mm)	Unit Cost ($/m)	Subtotal ($)	Contingency (25% for Pipe)	Engineering (15%)	Total Estimated Cost ($)
Gravity Sewer	CCAP	Westminster Hwy & Alderbridge	7551 Westminster Hwy	7371 Westminster Hwy	85	n/a	200		250	1,425	$121,125	$42,394	$24,528	$188,047
Gravity Sewer	CCAP & TZM	Ferndale Rd	Centre of Ferndale Rd	Ferndale Pump Station	11	1999	250		300	1,500	$16,500	$5,775	$3,341	$25,616
Gravity Sewer	CCAP	Firbridge Way	5913 No. 3 Rd	5960 Minoru Blvd	61	n/a	150		200	900	$54,900	$19,215	$11,117	$85,232
Gravity Sewer	CCAP & TZM	Between Garden City Rd & Cooney Rd	8720 Spires St.	Eckersley B Pump Station	73	1967/1975	250	41 m of 300	375	1,650	$120,450	$42,158	$24,391	$186,999
Gravity Sewer	CCAP & TZM	Between Garden City Rd & Cooney Rd	8086 Spires Rd	8140 Spires Rd.	453	1967	200		250	1,425	$645,525	$225,934	$130,719	$1,002,178
Gravity Sewer	CCAP	Easement between 6091 Gilbert Rd & 6800 Westminster Hwy	Southwest corner of 6091 Gilbert Rd	Northwest corner of 6091 Gilbert Rd	42	1964	150		200	900	$37,800	$13,230	$7,655	$58,685
Gravity Sewer	CCAP & TZM	Crossing Gilbert Rd	Southwest corner of 5540 Hollybridge Way	Alderbridge Way	249	n/a	200		250	1,425	$354,825	$124,189	$71,852	$550,866
Gravity Sewer	CCAP	90m North of Granville Ave	West side of City Hall	85m West of Minoru Blvd	121	1985	150		250	1,425	$172,425	$60,349	$34,916	$267,690
Gravity Sewer	CCAP & TZM	Hazelbridge Way	Intersection of Hazelbridge Way & Capstan Way	N.E Corner of 8271 Gamble Rd	320	1971	200		300	1,500	$480,000	$168,000	$97,200	$745,200
Gravity Sewer	CCAP & TZM	Jones Rd	8655 Jones Rd.	Jones Pump Station	111	1969	250		375	1,650	$183,150	$64,103	$37,088	$284,340
Gravity Sewer	CCAP & TZM	Jones Rd	8520 General Currie Rd	8535 Jones Rd.	37	1969	250		300	1,500	$55,500	$19,425	$11,239	$86,164
Gravity Sewer	CCAP & TZM	Jones Rd	St. Albans Rd.	Jones Pump Station	92	1969	250	300	375	1,650	$151,800	$53,130	$30,740	$235,670
Gravity Sewer	CCAP & TZM	Jones Rd	8535 Jones Rd.	Jones Pump Station	14	1969	250		300	1,500	$21,000	$7,350	$4,253	$32,603
Gravity Sewer	CCAP	Kwantlen Street	5300 No. 3 Rd	Alderbridge Pump Station	91	1976	300		375	1,650	$150,150	$52,553	$30,405	$233,108
Gravity Sewer	CCAP	Lansdowne Rd	North East corner of 7640 Alderbridge Way	North West corner of 7640 Alderbridge Way	80	n/a	200		300	1,500	$120,000	$42,000	$24,300	$186,300
Gravity Sewer	CCAP & TZM	Leslie Rd	Leslie Rd & Brown Rd	8111 Leslie Rd	271	1972	250	300	375	1,650	$447,150	$156,503	$90,546	$694,200
Gravity Sewer	CCAP	Leslie Rd	Southeast corner 4551 No. 3 Rd	West of No. 3 Rd	114	1975	300		375	1,650	$188,100	$65,835	$38,090	$292,025
Gravity Sewer	CCAP	Leslie Rd & No. 3 Rd	Northeast Corner of 4540 No. 3 Rd	Leslie Pump Station	63	1975	350		450	2,250	$141,750	$49,613	$28,704	$220,067
Gravity Sewer	CCAP & TZM	Minoru Blvd	Minoru Blvd	Alphason Pump Station	11	1975	250		300	1,500	$16,500	$5,775	$3,341	$25,616
Gravity Sewer	CCAP	Minoru Blvd	6251 Minoru Blvd.	6391 Minoru Blvd.	65	1985	200		250	1,425	$92,625	$32,419	$18,757	$143,800
Gravity Sewer	CCAP	Westminster Hwy	7480 Westminster Hwy.	7340 Westminster Hwy.	110	1985	150		200	900	$99,000	$34,650	$20,048	$153,698
Gravity Sewer	CCAP	Westminster Hwy	7340 Westminster Hwy.	West side of Minoru Park	318	1985	200		250	1,425	$453,150	$158,603	$91,763	$703,515
Gravity Sewer	CCAP	Minoru Park	North West corner of Minoru Park	South West corner of 8611 Minoru Blvd	119	1985	200		300	1,500	$178,500	$62,475	$36,146	$277,121
Gravity Sewer	CCAP & TZM	Between Moffatt Rd & Gilbert Rd	7311 Moffatt Rd.	Moffatt Pump Station	108	1982	250	300	375	1,650	$178,200	$62,370	$36,086	$276,656
Gravity Sewer	CCAP & TZM	Between Moffatt Rd & Gilbert Rd	7459 Moffatt Rd.	Moffatt Pump Station	55	1982	200	300	375	1,650	$90,750	$31,763	$18,377	$140,889
Gravity Sewer	CCAP & TZM	No.3 Rd	Capstan Way	Sea Island Way	270	1985	250		300	1,500	$405,000	$141,750	$82,013	$628,763
Gravity Sewer	CCAP & TZM	No.3 Rd	Southeast corner of 4551 No. 3 Rd	Middle of 4411 No. 3 Rd	166	1971/1972	200	250	300	1,500	$252,000	$88,200	$51,030	$391,230
Gravity Sewer	CCAP & TZM	No. 3 Rd	6300 No. 3 Rd.	Richmond Centre Pump Station	5	1985	300		450	2,250	$11,250	$3,938	$2,278	$17,466
Gravity Sewer	CCAP & TZM	Between No 3 Rd & Cooney Rd	Buswell Pump Station	8411 No. 3 rd.	50	n/a	200		250	1,425	$71,250	$24,938	$14,428	$110,616
Gravity Sewer	CCAP & TZM	Between No 3 Rd & Buswell St	6120 Cook Rd	6300 No. 3 Rd.	146	n/a	200		250	1,425	$208,050	$72,818	$42,130	$322,998
Gravity Sewer	CCAP	Between No 3 Rd & Buswell St	6600 No. 3 Rd.	6120 Cook Rd.	10	n/a	200		250	1,425	$14,250	$4,988	$2,886	$22,123
Gravity Sewer	CCAP & TZM	Between No 3 Rd & Pimlico Way	6771 Cooney	8411 Anderson	143	n/a	200		250	1,425	$203,775	$71,321	$41,264	$316,361
Gravity Sewer	CCAP	Easement South of 5811 No. 3 Rd	No 3 Rd	5900 Minoru Blvd	94	n/a	200		250	1,425	$133,950	$46,883	$27,125	$207,957
Gravity Sewer	CCAP	Approx. 7m East of No.3 Rd	4140 No. 3 Rd	4640 No. 3 Rd	395	1975	200		250	1,425	$562,875	$197,006	$113,982	$873,863
Gravity Sewer	CCAP & TZM	Lane West of No. 3 Rd	Firbridge Way	Lansdowne Rd	299	n/a	150	200	250	1,425	$426,075	$149,126	$86,280	$661,481
Gravity Sewer	CCAP	Lane West of No. 3 Rd	Northwest corner of 5333 No. 3 Rd	Lansdowne Rd	288	1969	200		375	1,650	$476,850	$166,898	$96,562	$740,310
Gravity Sewer	CCAP	5555 No. 4 Rd	280m South of Alderbridge Way		50	n/a	250		300	1,500	$75,000	$26,250	$15,188	$116,438
Gravity Sewer	CCAP & TZM	South side of 8571 Odlin Cres	Odlin Crescent	Northey Rd	206	1973	200		250	1,425	$293,550	$102,743	$59,444	$455,736
Gravity Sewer	CCAP	River Dr	Intersection of Van Horne Way & River Rd	9460 River Rd	101	1970	250		300	1,500	$151,500	$53,025	$30,679	$235,204
Gravity Sewer	CCAP & TZM	River Dr	Intersection of No 3 Rd & Beckwith Rd	West Rd	263	1978	200		250	1,425	$374,775	$131,171	$75,892	$581,838
Gravity Sewer	CCAP	Northern edge of 6199 River Rd	6199 River Rd	5111 Hollybridge Way	108	1970	200		250	1,425	$153,900	$53,865	$31,165	$238,930
Gravity Sewer	CCAP & TZM	Easement between 6171 & 8191 River Rd	25m South of 6451 River Rd	Elmbridge Pump Station	402	n/a	200		300	1,500	$603,000	$211,050	$122,108	$936,158
Gravity Sewer	CCAP	Frontage of 7080 River Rd	Gilbert Rd	Easement of 7080 & 7280 River Rd	273	n/a	200		250	1,425	$389,025	$136,159	$78,776	$603,961
Gravity Sewer	CCAP & TZM	Sexsmith Rd	3131 Sexsmith Rd	3411 Sexsmith Rd	345	1999	200		375	1,650	$569,250	$199,238	$115,273	$883,761
Gravity Sewer	CCAP & TZM	Sexsmith Rd	Capstan Way	3551 Sexsmith Rd	79	1999	200		300	1,500	$118,500	$41,475	$23,996	$183,971
Gravity Sewer	CCAP & TZM	Spires Rd	8780 Spires Rd.	8720 Spires Rd.	60	1967/1975	200	250	300	1,500	$90,000	$31,500	$18,225	$139,725
Gravity Sewer	CCAP & TZM	Van Horne Way	9500 Van Horne Way	9600 Van Horne Way	121	1973	350		450	2,250	$272,250	$95,288	$55,131	$422,668
Gravity Sewer	CCAP	9800 Van Horne Way	223m South of River Dr	River Dr	223	1970	300		375	1,650	$367,950	$128,783	$74,510	$571,242
Gravity Sewer	CCAP	Easement between 9500 & 9800 Van Horne Way	40m South of Van Horne Way	West of No 4 Rd	144	1968/1990	200		250	1,425	$205,200	$71,820	$41,553	$318,573
Gravity Sewer	CCAP	Westminster Hwy	5900 No. 2 Rd	20m West of 6751 Westminster Hwy	186	1986	200		250	1,425	$265,050	$92,768	$53,673	$411,490
Gravity Sewer	CCAP	Westminster Hwy / Elmbridge Way	Southwest corner of 6751	Northwest corner of 6951	313	n/a	250		300	1,500	$469,500	$164,325	$95,074	$728,899
Gravity Sewer	CCAP	Cedarbridge Way	7351 Elmbridge	5660 Cedarbridge	212	n/a	200		375	1,650	$349,800	$122,430	$70,835	$543,065
Gravity Sewer	TZM & CCAP	Gilbert Rd	6020 Gilbert Rd.	6211 Gilbert	104	1964	250		300	1,500	$156,000	$54,600	$31,590	$242,190
Gravity Sewer	TZM & CCAP	Gilbert Rd	6200 Gilbert Rd.	6080 Gilbert Rd.	92	1964	150		200	900	$82,800	$28,980	$16,767	$128,547
Gravity Sewer	TZM & CCAP	Residential (West of Gilbert Rd)	6799 Azure Rd	8851 Azure Rd	89	1964	200		250	1,425	$126,825	$44,389	$25,682	$196,896
				SUB-TOTAL							$27,706,700	$9,697,905	$5,610,931	$43,017,536

Updated costs received January 22, 2008
RECMS 2465006

Table E.2: Recommended Sanitary System Improvements for CCAP Land-Use

Type of Upgrade	Required by	Location	From	To	Length (m)	Year Installed	Existing Diameter (mm)	Recommended Diameter (mm)	Unit Cost ($/m)	Subtotal ($)	Contingency (25% to 35%)	Engineering (10%)	Total Estimate ($)
Forcemain	CCAP & TZM	Capstan Way	River Rd	Skyline Pump Station	160	1971	300	450	1,400	$224,000	$56,000	$42,000	$322,000
Forcemain	CCAP	Easement between 7400 & 7600 River Rd	River Rd	Railway Tracks	140	1971	350	375	1,000	$140,000	$35,000	$26,250	$201,250
Forcemain	CCAP	Easement between 4411 & 4551 No 3 Rd	Railway Tracks	No 3 Rd	194	1971	350	375	1,000	$194,000	$48,500	$36,375	$278,875
Forcemain	CCAP	Along the front of 4551 No 3 Rd			136	1971	350	375	1,000	$136,000	$34,000	$25,500	$195,500
Forcemain	CCAP	Elmbridge Way	Elmbridge Pump Station	Hollybridge Way	340	1971	250	375	1,000	$340,000	$85,000	$63,750	$488,750
Forcemain	CCAP	Cedarbridge Way	Minoru Pump Station	Lansdowne Rd	90	1984	300	450	1,400	$126,000	$31,500	$23,625	$181,125
Forcemain	CCAP	Lansdowne Rd	Cedarbridge Way	Hollybridge Way	390	2003	450	600	1,400	$546,000	$136,500	$102,375	$784,875
Forcemain	CCAP & TZM	Lansdowne Rd	8120 Lansdowne Rd	Kwantlen St	370	2003	300	375	1,000	$370,000	$92,500	$69,375	$531,875
Forcemain	CCAP & TZM	St. Albans Rd	Jones Rd	Bennett Rd	390	1973	350	375	1,000	$390,000	$97,500	$73,125	$560,625
Forcemain	CCAP & TZM	St. Albans Rd	Bennett Rd	Eckersley A Pump Station	180	1974	250	300	900	$162,000	$40,500	$30,375	$232,875
Forcemain	CCAP & TZM	Gilbert Rd	Brighouse Pump Station	Gilbert Rd	70	1982	300	450	1,400	$98,000	$24,500	$18,375	$140,875
				SUB-TOTAL						$2,726,000	$681,500	$511,125	$3,918,625
Pump Station		Ackroyd	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station (Major)		Alderbridge (includes new wet well)	-	-	1	-	-	-	1,500,000	$1,500,000	$525,000	$303,750	$2,328,750
Pump Station		Arcadia	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station		Armoury	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station		Elmbridge	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station (Major)		Minoru (includes new wet well)	-	-	1	-	-	-	1,500,000	$1,500,000	$525,000	$303,750	$2,328,750
Pump Station		Richmond Center	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station		Skyline	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
Pump Station		Van Horne	-	-	1	-	-	-	500,000	$500,000	$175,000	$101,250	$776,250
				SUB-TOTAL						$6,500,000	$2,275,000	$1,316,250	$10,091,250
Modelling								Modelling		$750,000	$187,500	$0	$937,500
									TOTAL				

Notes:
35% contingency applied to gravity sewers and pump stations. All other projects include a contingency of 25%.

APPENDIX F

Overlap Between Current and Proposed Sanitary DCC Programs

Table F.1: Sanitary Projects to Delete From the Current DCC Program

Study Area	Type of Infrastructure	Upgrades Recommended	Length (m)	Recommended Size	Cost	WBS Portion - Cost Estimate w/o Engineering and Contingency	DCC Portion - Cost Estimate w/o Engineering and Contingency	DCC Portion - Cost Estimate w/ 30% Engineering and Contingency	Benefit Factor %	Benefit to New Development	MAF 1%	DCC Recoverable	Municipal Responsibility	DCC Recoverable to Delete
Minor System														
BRIDGEPORT SANITARY AREA	*Gravity Mains*		6993		$ 5,473,600	$ 4,195,800	$ 4,277,800	$ 5,561,140	95%	$ 5,283,083	$ 52,831	$ 5,230,252	$ 330,886	$ 2,382,578
		Gravity Main -Rear of #4640 No 3 Rd to Leslie PS	63	450	$ 126,000	$ 37,800	$ 88,200	$ 114,660	95%	$ 108,927	$ 1,089	$ 107,838	$ 6,822	$ 107,838
		Gravity Main -8140 Leslie Rd to 8390 Leslie Rd	271	375	$ 487,600	$ 162,600	$ 325,200	$ 422,760	95%	$ 401,622	$ 4,016	$ 397,606	$ 25,154	$ 397,606
		Gravity Main -8360 Leslie Rd to rear of 8400 Leslie Rd	88	300	$ 61,600	$ 52,800	$ 8,800	$ 11,440	95%	$ 10,868	$ 109	$ 10,759	$ 681	$ 10,759
		Gravity Main -8128 Capstan Way to Sexsmith Rd	145	300	$ 101,500	$ 87,000	$ 14,500	$ 18,850	95%	$ 17,908	$ 179	$ 17,728	$ 1,122	$ 17,728
		Gravity Main -8128 Capstan Way to Hazelbridge Way	97	375	$ 174,600	$ 58,200	$ 116,400	$ 151,320	95%	$ 143,754	$ 1,438	$ 142,316	$ 9,004	$ 142,316
		Gravity Main -Hazelbridge Way to 8200 Capstan Way	166	450	$ 332,000	$ 99,600	$ 232,400	$ 302,120	95%	$ 287,014	$ 2,870	$ 284,144	$ 17,978	$ 284,144
		Gravity Main -8200 Capstan Way to Skyline PS	34	450	$ 68,000	$ 20,400	$ 47,600	$ 61,880	95%	$ 58,786	$ 588	$ 58,198	$ 3,682	$ 58,198
		Gravity Main -River Rd fr West Rd to No. 3 Rd & along No 3 Rd to Beckwith Rd	263	300	$ 184,100	$ 157,800	$ 26,300	$ 34,190	95%	$ 32,481	$ 325	$ 32,156	$ 2,034	$ 32,156
		Gravity Main -Beckwith Rd fr No 3 Rd to 8971 Beckwith Rd & north to 8891 Charles St	359	375	$ 646,200	$ 215,400	$ 430,800	$ 560,040	95%	$ 532,038	$ 5,320	$ 526,718	$ 33,322	$ 526,718
		Gravity Main -8611 River Rd to 8891 Charles St	459	375	$ 826,200	$ 275,400	$ 550,800	$ 716,040	95%	$ 680,238	$ 6,802	$ 673,436	$ 42,604	$ 673,436
		Gravity Main -8891 Charles St to Vanhorne PS	48	450	$ 96,000	$ 28,800	$ 67,200	$ 87,360	95%	$ 82,992	$ 830	$ 82,162	$ 5,198	$ 82,162
		Gravity Main -8840 River Rd to Great Canadian Way	72	300	$ 50,400	$ 43,200	$ 7,200	$ 9,360	95%	$ 8,892	$ 89	$ 8,803	$ 557	$ 8,803
		Gravity Main -8900 River Rd	150	200	$ 90,000	$ 90,000	$ -	$ -	95%	$ -	$ -	$ -	$ -	$ -
		Gravity Main -8900 River Rd	200	200	$ 120,000	$ 120,000	$ -	$ -	95%	$ -	$ -	$ -	$ -	$ -
		Gravity Main -8460 River Dr	250	200	$ 150,000	$ 150,000	$ -	$ -	95%	$ -	$ -	$ -	$ -	$ -
		Gravity Main -Beckwith Rd fr Gage Rd to 9031 Beckwith Rd	303	300	$ 212,100	$ 181,800	$ 30,300	$ 39,390	95%	$ 37,421	$ 374	$ 37,046	$ 2,344	$ 37,046
		Gravity Main -Beckwith Rd at Great Canadian Way	30	300	$ 21,000	$ 18,000	$ 3,000	$ 3,900	95%	$ 3,705	$ 37	$ 3,668	$ 232	$ 3,668
		Gravity Main -3433 Regina Ave to 3291 Regina Ave	110	300	$ 77,000	$ 66,000	$ 11,000	$ 14,300	95%	$ 13,585	$ 136	$ 13,449	$ 851	
		Gravity Main -3291 Regina Ave to 3251 Regina Ave	60	300	$ 42,000	$ 36,000	$ 6,000	$ 7,800	95%	$ 7,410	$ 74	$ 7,336	$ 464	
		Gravity Main -3251 Regina Ave to Walford PS	46	375	$ 82,800	$ 27,600	$ 55,200	$ 71,760	95%	$ 68,172	$ 682	$ 67,490	$ 4,270	
		Gravity Main -McLennan Ave fr River Dr to Finlayson PS	205	375	$ 369,000	$ 123,000	$ 246,000	$ 319,800	95%	$ 303,810	$ 3,038	$ 300,772	$ 19,028	
		Gravity Main -thru 3111 Beckman Pl	68	300	$ 47,600	$ 40,800	$ 6,800	$ 8,840	95%	$ 8,398	$ 84	$ 8,314	$ 526	
		Gravity Main -10191 Hall Ave to 10271 Odlin Rd	89	300	$ 62,300	$ 53,400	$ 8,900	$ 11,570	95%	$ 10,992	$ 110	$ 10,882	$ 688	
		Gravity Main -10233 Hayne Crt to 10411 Odlin Rd	199	300	$ 139,300	$ 119,400	$ 19,900	$ 25,870	95%	$ 24,577	$ 246	$ 24,331	$ 1,539	
		Gravity Main -Rear of 10146 Carter Crt to 10233 Hayne Crt	189	300	$ 132,300	$ 113,400	$ 18,900	$ 24,570	95%	$ 23,342	$ 233	$ 23,108	$ 1,462	
		Gravity Main -Rear of 10482 Odlin Rd to Odlin PS	37	375	$ 66,600	$ 22,200	$ 44,400	$ 57,720	95%	$ 54,834	$ 548	$ 54,286	$ 3,434	
		Gravity Main -Rear of 10482 Odlin Rd to Hall Ave	112	300	$ 78,400	$ 67,200	$ 11,200	$ 14,560	95%	$ 13,832	$ 138	$ 13,694	$ 866	
		Gravity Main -12751 Vulcan Way to 12631 Vulcan Way	191	300	$ 133,700	$ 114,600	$ 19,100	$ 24,830	95%	$ 23,589	$ 236	$ 23,353	$ 1,477	
		Gravity Main -12631 Vulcan Way to Vulcan PS	40	375	$ 72,000	$ 24,000	$ 48,000	$ 62,400	95%	$ 59,280	$ 593	$ 58,687	$ 3,713	
		Gravity Main -2700 Sweden Way to 13200 Vulcan Way	196	450	$ 392,000	$ 117,600	$ 274,400	$ 356,720	95%	$ 338,884	$ 3,389	$ 335,495	$ 21,225	
		Gravity Main -13300 Vulcan Way to 13400 Vulcan Way	113	450	$ 226,000	$ 67,800	$ 158,200	$ 205,660	95%	$ 195,377	$ 1,954	$ 193,423	$ 12,237	
		Gravity Main -13400 Vulcan Way	11	450	$ 22,000	$ 6,600	$ 15,400	$ 20,020	95%	$ 19,019	$ 190	$ 18,829	$ 1,191	
		Gravity Main -2471 Viking Way	81	375	$ 145,800	$ 48,600	$ 97,200	$ 126,360	95%	$ 120,042	$ 1,200	$ 118,842	$ 7,518	
		Gravity Main -13611 Vulcan Way	63	375	$ 113,400	$ 37,800	$ 75,600	$ 98,280	95%	$ 93,366	$ 934	$ 92,432	$ 5,848	
		Gravity Main -2506 Greenland Dr	28	300	$ 19,600	$ 16,800	$ 2,800	$ 3,640	95%	$ 3,458	$ 35	$ 3,423	$ 217	
		Gravity Main -3711 Jacombs Rd to 3531 Jacombs Rd	204	300	$ 142,800	$ 122,400	$ 20,400	$ 26,520	95%	$ 25,194	$ 252	$ 24,942	$ 1,578	
		Gravity Main -Jacombs Rd fr Delf Pl to Worster Crt	203	300	$ 142,100	$ 121,800	$ 20,300	$ 26,390	95%	$ 25,071	$ 251	$ 24,820	$ 1,570	
		Gravity Main -Jacombs Rd fr Parkwood Way to 4680 Wyne Cr	330	375	$ 594,000	$ 198,000	$ 396,000	$ 514,800	95%	$ 489,060	$ 4,891	$ 484,169	$ 30,631	
		Gravity Main -Viking Way along 13680 Bridgeport Rd	103	375	$ 185,400	$ 61,800	$ 123,600	$ 160,680	95%	$ 152,646	$ 1,526	$ 151,120	$ 9,560	
		Gravity Main -14400 Burrows Rd	98	300	$ 68,600	$ 58,800	$ 9,800	$ 12,740	95%	$ 12,103	$ 121	$ 11,982	$ 758	
		Gravity Main -Van Dyke Pl	121	300	$ 84,700	$ 72,600	$ 12,100	$ 15,730	95%	$ 14,944	$ 149	$ 14,794	$ 936	
		Gravity Main -No 6 Rd fr #4455 to 13988 Maycrest Way	436	300	$ 305,200	$ 261,600	$ 43,600	$ 56,680	95%	$ 53,846	$ 538	$ 53,308	$ 3,372	
		Gravity Main -No 6 Rd fr 13988 Maycrest Way to Gilley E PS	61	375	$ 109,800	$ 36,600	$ 73,200	$ 95,160	95%	$ 90,402	$ 904	$ 89,498	$ 5,662	
		Gravity Main -No 6 Rd fr 13799 Commerce Pkwy to Gilley E PS	209	375	$ 376,200	$ 125,400	$ 250,800	$ 326,040	95%	$ 309,738	$ 3,097	$ 306,641	$ 19,398	
		Gravity Main -No 6 Rd fr 13800 Commerce Pkwy to 13799 Commerce Pkwy	201	375	$ 361,800	$ 120,600	$ 241,200	$ 313,560	95%	$ 297,882	$ 2,979	$ 294,903	$ 18,657	
		Gravity Main -No 6 Rd along 13700 International Pl	120	300	$ 84,000	$ 72,000	$ 12,000	$ 15,600	95%	$ 14,820	$ 148	$ 14,672	$ 928	
		Gravity Main -No 6 Rd fr 13700 International Pl to 13800 Commerce Pkwy	71	300	$ 49,700	$ 42,600	$ 7,100	$ 9,230	95%	$ 8,769	$ 88	$ 8,681	$ 549	
CITY CENTRE SANITARY AREA	*Gravity Mains*		5286		$ 5,058,200	$ 3,171,600	$ 1,886,600	$ 2,452,580	95%	$ 2,329,951	$ 23,300	$ 2,306,651	$ 145,929	$ 2,306,651
		Gravity Main -in lane west of Minoru Blvd, at Alderbridge Way	231	250	$ 161,700	$ 138,600	$ 23,100	$ 30,030	95%	$ 28,529	$ 285	$ 28,243	$ 1,787	$ 28,243
		Gravity Main -south of Alderbridge Way (at Minoru Blvd) to Minoru PS	81	375	$ 145,800	$ 48,600	$ 97,200	$ 126,360	95%	$ 120,042	$ 1,200	$ 118,842	$ 7,518	$ 118,842
		Gravity Main -in lane west of No 3 Rd, at Lansdowne	205	200	$ 123,000	$ 123,000	$ -	$ -	95%	$ -	$ -	$ -	$ -	$ -
		Gravity Main -in Lansdowne Rd fr lane west of No 3 Rd to Cedarbridge Way	286	250	$ 200,200	$ 171,600	$ 28,600	$ 37,180	95%	$ 35,321	$ 353	$ 34,968	$ 2,212	$ 34,968
		Gravity Main -in ROW east of Kwantlen St, south of Alderbridge Way	100	250	$ 70,000	$ 60,000	$ 10,000	$ 13,000	95%	$ 12,350	$ 124	$ 12,227	$ 774	$ 12,227
		Gravity Main -at Save-On Foods, south of Ackroyd Rd, east of No 3 Rd	51	300	$ 35,700	$ 30,600	$ 5,100	$ 6,630	95%	$ 6,299	$ 63	$ 6,236	$ 394	$ 6,236
		Gravity Main -along Ackroyd Rd, btwn Arcadia Rd & Cooney Rd	215	300	$ 150,500	$ 129,000	$ 21,500	$ 27,950	95%	$ 26,553	$ 266	$ 26,287	$ 1,663	$ 26,287
		Gravity Main -at Bowling Green Rd & Westminster Hwy	55	200	$ 33,000	$ 33,000	$ -	$ -	95%	$ -	$ -	$ -	$ -	$ -
		Gravity Main -in rear lots on Cooney Rd & thru Buswell St	432	250	$ 302,400	$ 259,200	$ 43,200	$ 56,160	95%	$ 53,352	$ 534	$ 52,818	$ 3,342	$ 52,818
		Gravity Main -east of No 3 Rd at Cook Rd	152	250	$ 106,400	$ 91,200	$ 15,200	$ 19,760	95%	$ 18,772	$ 188	$ 18,584	$ 1,176	$ 18,584
		Gravity Main -across No 3 Rd, just north of Cook Rd	93	375	$ 167,400	$ 55,800	$ 111,600	$ 145,080	95%	$ 137,826	$ 1,378	$ 136,448	$ 8,632	$ 136,448
		Gravity Main -at Cook Gate & Cook Rd	101	250	$ 70,700	$ 60,600	$ 10,100	$ 13,130	95%	$ 12,474	$ 125	$ 12,349	$ 781	$ 12,349
		Gravity Main -Eckersley B PS & Eckersley A PS	551	300	$ 385,700	$ 330,600	$ 55,100	$ 71,630	95%	$ 68,049	$ 680	$ 67,368	$ 4,262	$ 67,368
		Gravity Main -on Anderson Rd at Eckersley Rd	52	250	$ 36,400	$ 31,200	$ 5,200	$ 6,760	95%	$ 6,422	$ 64	$ 6,358	$ 402	$ 6,358
		Gravity Main -fr rear of 8251 Spires Rd to rear of 8160 Spires Rd	90	350	$ 63,000	$ 54,000	$ 9,000	$ 11,700	95%	$ 11,115	$ 111	$ 11,004	$ 696	$ 11,004
		Gravity Main -rear of 8251 Spires Rd	26	350	$ 18,200	$ 15,600	$ 2,600	$ 3,380	95%	$ 3,211	$ 32	$ 3,179	$ 201	$ 3,179
		Gravity Main -rear of 8251 Spires Rd to rear of 8780 Spires Rd	188	350	$ 131,600	$ 112,800	$ 18,800	$ 24,440	95%	$ 23,218	$ 232	$ 22,986	$ 1,454	$ 22,986
		Gravity Main -rear of 8900 Spires Rd to rear of 8780 Spires Rd	169	300	$ 118,300	$ 101,400	$ 16,900	$ 21,970	95%	$ 20,872	$ 209	$ 20,663	$ 1,307	$ 20,663
		Gravity Main -rear of 8780 Spires Rd to Cook Gate	59	400	$ 106,200	$ 35,400	$ 70,800	$ 92,040	95%	$ 87,438	$ 874	$ 86,564	$ 5,476	$ 86,564
		Gravity Main -along Cooks Gate	41	400	$ 73,800	$ 24,600	$ 49,200	$ 63,960	95%	$ 60,762	$ 608	$ 60,154	$ 3,806	$ 60,154
		Gravity Main -along Cooks Gate to Eckersley B PS	33	400	$ 59,400	$ 19,800	$ 39,600	$ 51,480	95%	$ 48,906	$ 489	$ 48,417	$ 3,063	$ 48,417
		Gravity Main -Upsize Gravity Main btwn Eckersley A & B PS	551	450	$ 1,102,000	$ 330,600	$ 771,400	$ 1,002,820	95%	$ 952,679	$ 9,527	$ 943,152	$ 59,668	$ 943,152
		Gravity Main -fr rear of 8780 Anderson Rd to 8371 Anderson Rd	90	250	$ 63,000	$ 54,000	$ 9,000	$ 11,700	95%	$ 11,115	$ 111	$ 11,004	$ 696	$ 11,004
		Gravity Main -fr 8931 Anderson Rd to 8371 Anderson Rd	96	250	$ 67,200	$ 57,600	$ 9,600	$ 12,480	95%	$ 11,856	$ 119	$ 11,737	$ 743	$ 11,737
		Gravity Main -fr 8371 Anderson Rd to Eckersley Rd	51	300	$ 35,700	$ 30,600	$ 5,100	$ 6,630	95%	$ 6,299	$ 63	$ 6,236	$ 394	$ 6,236
		Gravity Main -@ Eckersley Rd to Eckersley A PS	53	350	$ 37,100	$ 31,800	$ 5,300	$ 6,890	95%	$ 6,546	$ 65	$ 6,480	$ 410	$ 6,480
		Gravity Main -just upstream of Bennett W PS (in rear of lots)	40	250	$ 28,000	$ 24,000	$ 4,000	$ 5,200	95%	$ 4,940	$ 49	$ 4,891	$ 309	$ 4,891
		Gravity Main -east of Gilbert Rd, just north of Chatterton Rd	113	250	$ 79,100	$ 67,800	$ 11,300	$ 14,690	95%	$ 13,956	$ 140	$ 13,816	$ 874	$ 13,816
		Gravity Main -inflow into Moffat PS, fr the south	93	250	$ 65,100	$ 55,800	$ 9,300	$ 12,090	95%	$ 11,486	$ 115	$ 11,371	$ 719	$ 11,371
		Gravity Main -on Jones Rd, btwn No 3 Rd & St Albans Rd	220	250	$ 154,000	$ 132,000	$ 22,000	$ 28,600	95%	$ 27,170	$ 272	$ 26,898	$ 1,702	$ 26,898
		Gravity Main -on Jones Rd, just east of Jones PS	92	300	$ 64,400	$ 55,200	$ 9,200	$ 11,960	95%	$ 11,362	$ 114	$ 11,248	$ 712	$ 11,248
		Gravity Main -on Heather St, btwn 3 & Heather N PS	182	300	$ 127,400	$ 109,200	$ 18,200	$ 23,660	95%	$ 22,477	$ 225	$ 22,252	$ 1,408	$ 22,252
		General Currie Rd fr Garden City Rd to 9100 General Currie Rd	92	250	$ 64,400	$ 55,200	$ 9,200	$ 11,960	95%	$ 11,362	$ 114	$ 11,248	$ 712	$ 11,248
		9100 General Currie Rd to Heather St	102	400	$ 183,600	$ 61,200	$ 122,400	$ 159,120	95%	$ 151,164	$ 1,512	$ 149,652	$ 9,468	$ 149,652
		General Currie Rd fr Ash St to 9250 General Currie Rd	102	250	$ 71,400	$ 61,200	$ 10,200	$ 13,260	95%	$ 12,597	$ 126	$ 12,471	$ 789	$ 12,471
		9250 General Currie Rd to Heather St	103	400	$ 185,400	$ 61,800	$ 123,600	$ 160,680	95%	$ 152,646	$ 1,526	$ 151,120	$ 9,560	$ 151,120
		General Currie Rd to Heather N PS	95	400	$ 171,000	$ 57,000	$ 114,000	$ 148,200	95%	$ 140,790	$ 1,408	$ 139,382	$ 8,818	$ 139,382

Table F.1: Sanitary Projects to Delete From the Current DCC Program

Study Area	Type of Infrastructure	Upgrades Recommended	Length (m)	Recommended Size	Cost	W&S Portion - Cost Estimate w/o Engineering and Contingency	DCC Portion - Cost Estimate w/o Engineering and Contingency	DCC Portion - Cost Estimate w 30% Engineering and Contingency	Benefit Factor %	Benefit to New Development	MAF 1%	DCC Recoverable	Municipal Responsibility	DCC Recoverable to Delete
Major System CITY CENTRE SANITARY AREA	Forcemains		2535		$ 1,895,000	$ -	$ 1,895,000	$ 2,463,500	95%	$ 2,340,325	$ 23,403	$ 2,316,922	$ 146,578	$ 2,210,561
		Forcemain -Alderbridge PS lateral FM along Kwantlen Rd north of Lansdowne Rd	180	250	$ 126,000		$ 126,000	$ 163,800	95%	$ 155,610	$ 1,556	$ 154,054	$ 9,746	$ 154,054
		Forcemain -Brighouse PS lateral FM to Gilbert Rd	80	400	$ 68,000		$ 68,000	$ 88,400	95%	$ 83,980	$ 840	$ 83,140	$ 5,260	$ 83,140
		Forcemain -Eckersley A lateral FM, fr Eckersley A PS to St Albans Rd	180	350	$ 126,000		$ 126,000	$ 163,800	95%	$ 155,610	$ 1,556	$ 154,054	$ 9,746	$ 154,054
		Forcemain -St Albans Trunk FM, fr Granville Ave to Bennett Rd	205	350	$ 143,500		$ 143,500	$ 186,550	95%	$ 177,223	$ 1,772	$ 175,450	$ 11,100	$ 175,450
		Forcemain -St Albans Trunk FM, fr Bennett Rd to Jones Rd	410	450	$ 369,000		$ 369,000	$ 479,700	95%	$ 455,715	$ 4,557	$ 451,158	$ 28,542	$ 451,158
		Forcemain -St Albans Trunk FM, fr Jones Rd to Blundell Rd Trunk	205	500	$ 184,500		$ 184,500	$ 239,850	95%	$ 227,858	$ 2,279	$ 225,579	$ 14,271	$ 225,579
		Forcemain -Jones lateral FM along Jones Rd to St Albans Rd	100	300	$ 70,000		$ 70,000	$ 91,000	95%	$ 86,450	$ 865	$ 85,586	$ 5,415	$ 85,586
		Forcemain -Moffatt lateral FM, fr PS to Moffat Rd	125	300	$ 87,500		$ 87,500	$ 113,750	95%	$ 108,063	$ 1,081	$ 106,982	$ 6,768	$ 106,982
		Forcemain -Moffat Rd Trunk FM, fr Moffatt PS tie-in to Blundell Rd Trunk	350	350	$ 245,000		$ 245,000	$ 318,500	95%	$ 302,575	$ 3,026	$ 299,549	$ 18,951	$ 299,549
		Forcemain -Foster N lateral FM, fr PS to Blundell Rd Trunk	235	250	$ 164,500		$ 164,500	$ 213,850	95%	$ 203,158	$ 2,032	$ 201,126	$ 12,724	$ 201,126
		Forcemain -Heather N lateral FM, fr PS to Blundell Road Trunk	320	300	$ 224,000		$ 224,000	$ 291,200	95%	$ 276,640	$ 2,766	$ 273,874	$ 17,326	$ 273,874
		Forcemain -Minler lateral FM, fr PS to Gilbert Rd Trunk	145	200	$ 87,000		$ 87,000	$ 113,100	95%	$ 107,445	$ 1,074	$ 106,371	$ 6,729	
CITY CENTRE SANITARY AREA	Forcemains (OCP)		1827.9		$ 1,096,740	$ -	$ 1,096,740	$ 1,425,762	95%	$ 1,354,474	$ 13,545	$ 1,340,929	$ 84,833	$ 1,340,929
			1827.9		$ 1,096,740		$ 1,096,740	$ 1,425,762	95%	$ 1,354,474	$ 13,545	$ 1,340,929	$ 84,833	$ 1,340,929
BRIDGEPORT SANITARY AREA	Forcemains (OCP)		1218.6		$ 731,160	$ -	$ 731,160	$ 950,508	95%	$ 902,983	$ 9,030	$ 893,953	$ 56,555	$ 893,953
			1218.6		$ 731,160		$ 731,160	$ 950,508	95%	$ 902,983	$ 9,030	$ 893,953	$ 56,555	$ 893,953
BRIDGEPORT SANITARY AREA	Pump Stations		14		$ 7,000,000	$ -	$ 7,000,000	$ 9,100,000	95%	$ 8,645,000	$ 86,450	$ 8,558,550	$ 541,450	$ 3,667,950
		Pumps that cycle considerably more frequently than model predicts		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps that cycle considerably more frequently than model predicts		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps that cycle considerably more frequently than model predicts		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps that cycle considerably more frequently than model predicts		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps that cycle considerably more frequently than model predicts		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		Pumps operating both pumps or operating greater than 45 mins/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		Pumps operating both pumps or operating greater than 45 mins/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps operating both pumps or operating greater than 45 mins/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps operating both pumps or operating greater than 45 mins/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps operating both pumps or operating greater than 45 mins/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		Pumps that cycled more than 15 times/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		Pumps that cycled more than 15 times/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		Pumps that cycled more than 15 times/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		Pumps that cycled more than 15 times/hr		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
BRIDGEPORT SANITARY AREA	Pump Stations (OCP)			2	$ 1,600,000	$ -	$ 1,600,000	$ 2,080,000	95%	$ 1,976,000	$ 19,760	$ 1,956,240	$ 123,760	$ 1,956,240
		Pinnacle		1	$ 800,000		$ 800,000	$ 1,040,000	95%	$ 988,000	$ 9,880	$ 978,120	$ 61,880	$ 978,120
		West Cambie	1	1	$ 800,000		$ 800,000	$ 1,040,000	95%	$ 988,000	$ 9,880	$ 978,120	$ 61,880	$ 978,120
CITY CENTRE SANITARY AREA	Pump Stations		18		$ 9,000,000	$ -	$ 9,000,000	$ 11,700,000	95%	$ 11,115,000	$ 111,150	$ 11,003,850	$ 696,150	$ 10,392,525
		PumpStation -upgrade Eckersley A PS (EarthTech recommendation)		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Heather N PS (EarthTech recommendation)		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Eckersley B PS (EarthTech recommendation)		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Acheson PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Ackroyd PS (to be completed in 05/06)		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -reduce HP of pumps in Alberta PS to improve efficiency		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Alderbridge PS (to be completed in 05/06)		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Arcadia PS (to be completed in 05/06)		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Eckersley A PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Eckersley B PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -reduce HP of pumps in Ferndale PS to improve efficiency		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Foster N PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Heather N PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Jones PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Lancing PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	
		PumpStation -upgrade Minoru PS (to be completed 05/06)		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Moffat PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
		PumpStation -upgrade Richmond Centre PS		1	$ 500,000		$ 500,000	$ 650,000	95%	$ 617,500	$ 6,175	$ 611,325	$ 38,675	$ 611,325
CITY CENTRE SANITARY AREA	Pump Stations (OCP)			3	$ 2,400,000	$ -	$ 2,400,000	$ 3,120,000	95%	$ 2,964,000	$ 29,640	$ 2,934,360	$ 185,640	$ 2,934,360
		Cook/Buswell		1	$ 800,000		$ 800,000	$ 1,040,000	95%	$ 988,000	$ 9,880	$ 978,120	$ 61,880	$ 978,120
		Lansdowne		1	$ 800,000		$ 800,000	$ 1,040,000	95%	$ 988,000	$ 9,880	$ 978,120	$ 61,880	$ 978,120
		DFO Lands		1	$ 800,000		$ 800,000	$ 1,040,000	95%	$ 988,000	$ 9,880	$ 978,120	$ 61,880	$ 978,120
TOTAL					$ 37,254,700	$ 7,367,400	$ 29,887,300	$ 38,853,490	n/a	$ 35,910,816	$ 369,108	$ 36,541,707	$ 2,311,783	$ 28,086,738

Yellow highlighting indicates projects to be deleted from the current City-Wide Sanitary DCC Program.
No highlighting indicates projects within the Bridgeport and City Centre Areas to be kept in the new City-Wide DCC Program.
Additional projects have been deleted as they have been completed since 2006 - refer to the 2008 DCC Background Report.

APPENDIX G

Recommended Storm Drainage Projects

Table G.1: Recommended Storm Water Improvements for Existing Land-Use

Upgrade Scenario	Location	From	To	Pipe Length (m)	Existing Material	Year Installed	Existing Size (mm)	New Pipe Size (mm)	Acc. Slope (%)	Unit Cost	Subtotal	Contingency (25% or 35%)	Engineering (15%)	Total
Existing	Abercrombie	Abercrombie Rd	Minoru Blvd	150.6	Concrete	1984/1988	450	750	0.05%	$1,250	$188,213	$65,874	$38,113	$292,200
Existing	Abercrombie	7360 No. 3 Rd	7700 No. 3 Rd	218.7	Concrete	1984/1988	300/375	600	0.05%	$1,090	$238,361	$83,426	$48,268	$370,055
Existing	Acroyd Rd	8460 Ackroyd Rd	Arcadia Rd	340.0	Concrete	1984	600	750	0.11%	$1,250	$425,000	$148,750	$86,063	$659,813
Existing	Acroyd Rd	5880 No. 3 Rd	8400 Ackroyd Rd	260.0	Concrete	1983/1988	375/450	750	0.33%	$1,250	$325,000	$113,750	$65,813	$504,563
Existing	Acroyd Rd	5811 Cooney Rd	8460 Ackroyd Rd	115.0	Concrete	1980	375	750	0.82%	$1,250	$143,750	$50,313	$29,109	$223,172
Existing	Acroyd Rd	5880 No. 3 Rd	5811 Cooney Rd	250.0	Concrete	1984	600	750	0.06%	$1,250	$312,500	$109,375	$63,281	$485,156
Existing	Acroyd Rd	8400 Ackroyd Rd .	Arcadia Rd	358.2	Concrete	1984	600	750	0.08%	$1,250	$447,750	$156,713	$90,669	$695,132
Existing	Alberta Rd	Alder St	9480 Alberta Rd	14.3	PVC	1996	300	600	0.07%	$1,090	$15,598	$5,459	$3,159	$24,216
Existing	Aldebridge Way	Lansdowne Rd Alignment	Minoru Blvd	395.0	Concrete/Wood	1968/1970	250/300	600	0.05%	$1,090	$430,550	$150,693	$87,186	$668,429
Existing	Aldebridge Way	Minoru Blvd	No 3 Rd	300.0			300	600	0.05%	$1,090	$327,000	$114,450	$66,218	$507,668
Existing	Bennet Rd	Minoru Blvd	No 3 Rd	121.6	Natural	na	na	Regrade Ditch	0.05%	$125	$15,195	$3,799	$2,849	$21,845
Existing	Blundell Rd	No 3 Rd	Gilbert Rd	798.8	Stl/Conc/Wood	1971	200/375/600/750	1350	0.01%	$2,000	$1,597,604	$559,161	$323,515	$2,480,280
Existing	Blundell Rd	No 4 Rd	Garden City Rd	797.4	Steel/Concrete	1969/1970	200/300/600	1350	0.02%	$2,000	$1,594,800	$558,180	$322,947	$2,475,927
Existing	Bridge St	7131 Bridge St	Granville Ave	162.7	Concrete	2000	375/525	750	0.05%	$1,250	$203,375	$71,181	$41,183	$315,740
Existing	Cooney Rd	Acroyd Rd	Lansdowne Rd	207.5	Concrete	1976/1980	375	750	0.04%	$1,250	$259,338	$90,768	$52,516	$402,621
Existing	Easement b/w Minoru/No 3 Rd	5861 No 3 Rd	Lansdowne Rd	211.7	Wood/PVC	1972	200	450	0.03%	$875	$185,238	$64,833	$37,511	$287,581
Existing	Easement East of Gilbert Rd	Rear of 7451 Moffatt Rd	Rear of 7611 Moffatt Rd	104.4	Concrete	1982/1988	450	525	0.11%	$1,020	$106,480	$37,268	$21,562	$165,310
Existing	Easement East of Gilbert Rd	7700 Glibert Rd	Gilbert Rd	47.7	Concrete	1982/1988	300	600	0.05%	$1,090	$51,982	$18,194	$10,526	$80,702
Existing	Easement East of Gilbert Rd	Rear of 7611 Moffatt	Gilbert Rd	55.4	Concrete	1982/1988	600	750	0.05%	$1,250	$69,275	$24,246	$14,028	$107,549
Existing	Easement North of Acheson Rd	7671 Acheson Rd	Minoru Blvd	129.6	PVC	2004	150	300	0.46%	$725	$93,961	$32,887	$19,027	$145,875
Existing	Easement North of Blundell Rd	9351 Blundell Rd	Ash Rd	32.3	Concrete	2004	150	300	0.08%	$725	$23,439	$8,204	$4,746	$36,389
Existing	Easement North of Blundell Rd	Ash Rd	9351 Blundell Rd	37.3	Concrete	2004	200	375	0.06%	$805	$30,051	$10,518	$6,085	$46,654
Existing	Easement West of Buswell St	6280 No 3 Rd	6180 No 3 Rd	68.9	PVC	2005/2006	200	450	0.16%	$875	$60,358	$21,125	$12,222	$93,705
Existing	Easement West of Buswell St	Saba Rd	6180 No 3 Rd	49.7	PVC	2005/2006	300	600	0.16%	$1,090	$54,195	$18,968	$10,974	$84,137
Existing	East Side Garden City Rd	General Currie	Bennett Rd	177.6	Concrete	1977	450	675	0.05%	$1,150	$204,240	$71,484	$41,359	$317,083
Existing	East Side Garden City Rd	7500 Garden City	General Currie	119.7	Concrete	1977	375/600	750	0.05%	$1,250	$149,625	$52,369	$30,299	$232,293
Existing	East Side Garden City Rd	Bludell	7600 Garden City	303.9	Concrete	1977	750	900	0.05%	$1,600	$486,240	$170,184	$98,464	$754,888
Existing	East Side St. Albans Rd	Bennett Rd	Granville Ave	179.8	Wood	1972/1979	200	375	0.16%	$805	$144,707	$50,647	$29,303	$224,657
Existing	East Side St. Albans Rd	Blundell Rd	Bennett Rd	585.9	Wood/Concrete	1972/1979	200/600	750	0.10%	$1,250	$732,363	$256,327	$148,303	$1,136,993
Existing	East Side St. Albans Rd	8500 General Currie	St Albans Rd	39.7	na	1979	375	750	1.00%	$1,250	$49,625	$17,369	$10,049	$77,043
Existing	Eckersley Rd	6700 Ecksersley Rd	8500 Park Rd	15.3	Concrete	1975	200/300	600	0.07%	$1,090	$16,677	$5,837	$3,377	$25,891
Existing	Elmbridge Way	6791 Elmbridge Way	6651 Elmbridge	108.4	Concrete	1982/1985	300/450	600	0.05%	$1,090	$118,102	$41,336	$23,916	$183,353
Existing	Elmbridge Way	6651 Elmbridge	Westminster Hwy	130.8	na	na	na	675	0.05%	$1,150	$150,420	$52,647	$30,460	$233,527
Existing	Elmbridge Way	6791 Elmbridge Way	Gilbert Rd	342.2	Concrete	1985	525/600	900	0.21%	$1,600	$547,520	$191,632	$110,873	$850,025
Existing	Firbridge Way	5900 Minoru	5931 No 3 Rd	131.5	Concrete/Wood	1968	200	375	0.43%	$805	$105,849	$37,047	$21,435	$164,331
Existing	Garden City Rd	Kwantlen College	8831 Lansdowne	225.8	Concrete	1967/2002	300/450	525	0.05%	$1,020	$230,316	$80,611	$46,639	$357,566
Existing	Garden City Rd	5640 Garden City	Westminster Hwy	156.3	Concrete	1967/1986	na	450	0.17%	$875	$136,754	$47,864	$27,693	$212,310
Existing	Garden City Rd	Lansdowne Rd	5640 Garden City	243.0	Concrete	1967/1986	na	600	0.17%	$1,090	$264,847	$92,696	$53,632	$411,175
Existing	Gilbert Rd	7671 Gilbert Rd	Elmbridge Way	253.0	Wood/PVC	1972	200	375	0.03%	$805	$203,665	$71,283	$41,242	$316,190
Existing	Gilbert Rd	Along west side of 6951 Westminster Hwy		103.6	Wood	1969	250	450	0.05%	$875	$90,635	$31,722	$18,354	$140,711
Existing	Gilbert Rd North PS outfall			28.0	na	na	na	1200	0.05%	$1,850	$51,800	$18,130	$10,490	$80,420
Existing	Gilbert Rd North Pump Station (2 additional pumps)	River Rd and Hollybridge Way	River Rd and Hollybridge Way	1.0	na	na	na	Pump Station Upgrade	na	$1,500,000	$1,500,000	$375,000	$281,250	$2,156,250
Existing	Granville Ave	No 3 Rd	Citation Dr	643.0	Concrete	1970	300	600	0.05%	$1,090	$700,870	$245,305	$141,926	$1,088,101
Existing	Granville Ave	Heather	Garden City Rd	216.0	Concrete	na	600	750	0.06%	$1,250	$269,996	$94,499	$54,674	$419,169
Existing	Granville Ave	Granville Rd	7500 Granville	64.0	Concrete	na	600	750	0.02%	$1,250	$80,000	$28,000	$16,200	$124,200
Existing	Granville Ave	7840 Granville	No 3 Rd	195.0			na	750	0.02%	$1,250	$243,750	$85,313	$49,359	$378,422
Existing	Granville Ave	No 3 Rd	8511 Granville Ave	536.0	na	na	na	900 x 2100	0.03%	$4,000	$2,144,000	$750,400	$434,160	$3,328,560
Existing	Great Canadian Way	Railway Right-of Way	River Rd	143.8	Concrete	2004	375	525	0.93%	$1,020	$146,676	$51,337	$29,702	$227,714
Existing	Hazelbridge Way	Hazelbridge Way	4151 Hazelbridge Way	34.2	Concrete	na	300	600	0.38%	$1,090	$37,278	$13,047	$7,549	$57,874
Existing	Hazelbridge Way	4151 Hazelbridge Way	Cambie	102.9	Concrete	na	600	750	0.38%	$1,250	$128,600	$45,010	$26,042	$199,652
Existing	Heather St	9271 General Currie	Heather Rd	77.0	Concrete	2002/2004	200	375	0.04%	$805	$61,985	$21,695	$12,552	$96,232
Existing	Heather St	7751 Heather Rd	Heather Rd	36.0			200	375	0.04%	$805	$28,980	$10,143	$5,868	$44,991
Existing	Heather St	9211 Blundell Rd	Heather Rd	30.0			200	375	0.04%	$805	$24,150	$8,453	$4,890	$37,493
Existing	Heather St	7091 Ash Rd	Heather Rd	146.9	Concrete	2002/2004	300	600	0.04%	$1,090	$160,067	$56,023	$32,413	$248,503
Existing	Heather St	Granville Rd	7620 Heather Rd	597.6	Concrete	2002/2004	525	675	0.04%	$1,150	$687,275	$240,546	$139,173	$1,066,994
Existing	Heather St	7620 Heather	Blundell Rd	188.0	Concrete	2002/2004	600	750	0.04%	$1,250	$235,000	$82,250	$47,588	$364,838
Existing	Hollybridge Way	Lansdowne Rd Alignment	5440 Hollybridge Way	37.5	Wood	1974	150	300	0.05%	$725	$27,166	$9,508	$5,501	$42,176
Existing	Lane south of Douglas St	8900 Douglas St	Sexsmith Rd	104.0	PVC	1998	150	300	0.84%	$725	$75,400	$26,390	$15,269	$117,059
Existing	Minoru Blvd	7811 Granville Ave	6391 Minoru Blvd	517.1	Concrete/Steel	1964	750	1200	0.06%	$1,850	$956,563	$334,797	$193,704	$1,485,064
Existing	Minoru Blvd	Elmbridge Way	Westminster Hwy	189.3	Wood/Concrete	1965/1968	250/300	600	0.26%	$1,090	$206,337	$72,218	$41,783	$320,338
Existing	Minoru Blvd	7551 Acheson Rd	7540 Acheson Rd	16.0	Concrete	1982	600	750	0.19%	$1,250	$20,000	$7,000	$4,050	$31,050
Existing	Minoru Blvd	7540 Acheson Rd	7400 Acheson Rd	93.0			750	900	0.19%	$1,600	$148,800	$52,080	$30,132	$231,012
Existing	Minoru Blvd	7400 Minoru Blvd	7560 Minoru Blvd	250.0			600	750	0.19%	$1,250	$312,500	$109,375	$63,281	$485,156
Existing	Minoru Blvd	7560 Minoru Blvd	Blundell Rd	150.3			750	900	0.19%	$1,600	$240,480	$84,168	$48,697	$373,345
Existing	No 3 Rd	Aldebridge Way	5411 No 3 Rd	165.0	Concrete	1968	300	600	0.05%	$1,090	$179,850	$62,948	$36,420	$279,217
Existing	No 3 Rd	5411 No 3 Rd	Lansdowne Rd	230.0	Concrete	1968	300	750	0.05%	$1,250	$287,500	$100,625	$58,219	$446,344
Existing	No 3 Rd	3320 No 3 Rd	3200 No 3 Rd	150.6	Concrete	1967	250	450	0.05%	$875	$131,749	$46,112	$26,679	$204,540
Existing	No 3 Rd	3471 No 3 Rd	3360 No 3 Rd	80.8	Concrete	1967	300	525	0.05%	$1,020	$82,385	$28,835	$16,683	$127,903
Existing	No 3 Rd	3411 No 3 Rd	3320 No 3 Rd	87.2	Concrete	1967	450	600	0.05%	$1,090	$95,048	$33,267	$19,247	$147,562
Existing	No 3 Rd	3351 No 3 Rd	3411 No 3 Rd	18.8	Concrete	1967	525	675	0.05%	$1,150	$18,320	$6,762	$3,912	$29,994
Existing	No 4 Rd	6299 No 4 Rd	Easement at 6271 No 4 Rd	75.2	Concrete	2004	200	375	0.44%	$805	$60,536	$21,188	$12,259	$93,982
Existing	North Side Westminster Hwy	Minoru Blvd	7995 Westminster Hwy	179.6	Concrete/Steel	1963/1969	450	525	0.08%	$1,020	$183,192	$64,117	$37,096	$284,406

Updated costs received December 7, 2007
REDMS 2465055

Table G.1: Recommended Storm Water Improvements for Existing Land-Use

Upgrade Scenario	Location	From	To	Pipe Length (m)	Existing Material	Year Installed	Existing Size (mm)	New Pipe Size (mm)	New Slope (%)	Unit Cost	Subtotal	Contingency (25% or 35%)	Engineering (15%)	Total
Existing	North Side Westminster Hwy	Gilbert Rd	Minoru Blvd	537.7	Concrete	1963/1969	450	675	0.08%	$1,150	$618,355	$216,424	$125,217	$959,996
Existing	Park Rd	6700 Ecksersley Rd	8567 Citation	190.8	Concrete	1975	450	675	0.07%	$1,150	$219,381	$76,783	$44,425	$340,589
Existing	Park Rd	8567 Citation	Granville Ave	183.0			200/300	600	0.07%	$1,090	$199,470	$69,815	$40,393	$309,677
Existing	Park Rd	8450 Citation	8529 Citation	16.3			200/300	600	0.07%	$1,090	$17,767	$6,218	$3,598	$27,583
Existing	Pimlico Way/Citation Dr	8650 Citation	Garden City Rd	77.1	na	1975	200	525	0.04%	$1,020	$78,611	$27,514	$15,919	$122,044
Existing	Pimlico Way/Citation Dr	Cook Rd	8567 Citaiton	295.1	na	1975	300	675	0.04%	$1,150	$339,310	$118,758	$68,710	$526,778
Existing	Railway tracks	4411 No 3 Rd	4551 No 3 Rd	157.0	Concrete	1970	450	525	0.05%	$1,020	$160,181	$56,063	$32,437	$248,681
Existing	Railway tracks	4351 No 3 Rd	4411 No 3 Rd	106.3	Steel	1970	525	675	0.05%	$1,150	$122,291	$42,802	$24,764	$189,857
Existing	River Rd	Along frontage of 2120 River Rd		42.6			250/450	750	0.18%	$1,250	$53,250	$18,638	$10,783	$82,671
Existing	River Rd	9120 River Rd	9160 River Rd	18.7			na	Regrade Ditch	0.28%	$125	$2,336	$584	$438	$3,360
Existing	River Rd	Along frontage of 9160 River Rd		24.0			250/450	750	0.18%	$1,250	$30,000	$10,500	$6,075	$46,575
Existing	River Rd	Van Horne Rd	9800 Van Horne Rd	67.0			600/750	900	0.07%	$1,600	$107,200	$37,520	$21,708	$166,428
Existing	River Rd	Along frontage of 9871 River Rd		2.7	Concrete	1969/1977	600/750	900	0.07%	$1,600	$4,320	$1,512	$875	$6,707
Existing	River Rd	Along frontage of 9871 River Rd		10.5			na	Regrade Ditch	0.28%	$125	$1,313	$328	$246	$1,887
Existing	River Rd	Along frontage of 9871 River Rd		13.9			600/750	900	0.07%	$1,600	$22,240	$7,784	$4,504	$34,528
Existing	River Rd	6951 River Rd	5111 River Rd	30.6	Natural	na	na	Regrade Ditch	0.11%	$125	$3,825	$956	$717	$5,498
Existing	River Rd	River Rd and Hollybridge Way		3.8			600	900	0.11%	$1,600	$6,080	$2,128	$1,231	$9,439
Existing	River Rd	River Rd and Hollybridge Way		17.6			750	1350	0.11%	$2,000	$35,200	$12,320	$7,128	$54,648
Existing	River Rd	River Rd and Hollybridge Way	7400 River Rd	940.0			600	900	0.11%	$1,600	$1,504,000	$526,400	$304,560	$2,334,960
Existing	River Rd	7400 River Rd	7560 River Rd	58.0	Concrete	1977	450	750	0.11%	$1,250	$72,500	$25,375	$14,681	$112,556
Existing	Saba Rd	No 3 Rd	6060 Minoru	57.6	Concrete	1993	450	600	0.21%	$1,090	$62,740	$21,959	$12,705	$97,404
Existing	Sexsmith Rd	3160 Sexsmith Rd	3131 Sexsmith Rd	15.1	na	na	na	750	0.13%	$1,250	$18,875	$6,606	$3,822	$29,303
Existing	Sexsmith Rd	3200 Sexsmith Rd	3231 Sexsmith Rd	43.1	na	na	na	600	2.13%	$1,090	$46,979	$16,443	$9,513	$72,935
Existing	Spires Gate (install 1 flap gate)	on storm from 8180 Spires Rd	to 8600 Westminster Hwy	1.0	na	na	na	Flap Gate with 450	na	$11,000	$11,000	$3,850	$2,228	$17,078
Existing	Spires Gate (install 2 flap gates)	At Cooney Rd	on 2 450mm storm sewers	2.0	na	na	na	Flap Gate with 450	na	$11,000	$22,000	$7,700	$4,455	$34,155
Existing	Turnill St and Sills Ave	7733 Turnill Rd	7533 Turnill Rd	125.1	Concrete	2004	300	600	0.42%	$1,090	$136,374	$47,731	$27,616	$211,721
Existing	Turnill St and Sills Ave	Sills Ave. & Heather Rd	Garden City Rd	280.0			300	600	0.37%	$1,090	$305,200	$106,820	$61,803	$473,823
Existing	Turnill St and Sills Ave	7331 Turnill Rd	Bennett Rd	60.0	PVC	2004	300	600	0.37%	$1,090	$65,400	$22,890	$13,244	$101,534
Existing	Van Horne Way	9151 Van Horne Way	River Rd	572.1	Concrete	1969/1973	300/525	900	0.12%	$1,600	$915,360	$320,376	$185,360	$1,421,096
Existing	West Side Garden City Rd	7040 Garden City	7211 Garden City	93.0	Concrete	1985/1990	300	600	0.02%	$1,090	$101,337	$35,468	$20,521	$157,326
Existing	West Side Garden City Rd	Bennet Rd	7211 Garden City	72.9	Concrete	1985/1990	375/525	750	0.02%	$1,250	$91,100	$31,885	$18,448	$141,433
Existing	West Side Garden City Rd	Westminster Hwy & Garden City		7.4	Concrete	1985/1990	525	900	0.02%	$1,600	$11,840	$4,144	$2,398	$18,382
Existing	West Side St. Albans Rd	7331 St. Albans	Granville Ave	370.0	Wood/Concrete	1972/1979	200/250	450	0.03%	$875	$323,750	$113,313	$65,559	$502,622
Existing	West Side St. Albans Rd	7433 St. Albans	7331 St. Albans	108.8	Concrete	1972/1979	450	525	0.03%	$1,020	$110,937	$38,828	$22,465	$172,230
Existing	West Side St. Albans Rd	Blundell Rd	7433 St. Albans	303.8	Concrete	1972/1979	600	750	0.03%	$1,250	$379,804	$132,931	$76,910	$589,645
Existing	West Side St. Albans Rd	8300 General Currie	St Albans Rd	41.5			250	450	0.03%	$875	$36,313	$12,709	$7,353	$56,375
Existing	Westminster Hwy	9500 Westminster Hwy	9640 Westminster Hwy	146.0	Natural	na	na	Regrade Ditch	0.29%	$125	$18,250	$4,563	$3,422	$26,234
Existing	Westminster Hwy	9300 Westminster Hwy	9500 Westminster Hwy	179.7	Concrete	1979	300	600	0.03%	$1,090	$195,884	$68,559	$39,666	$304,110
Existing	Westminster Hwy	9260 Westminster Hwy	9300 Westminster Hwy	93.4	Concrete	1996	375	750	0.03%	$1,250	$116,750	$40,863	$23,642	$181,254
Existing	Westminster Hwy	8511 Westminster Hwy	8651 Westminster Hwy	159.0	Concrete	1973	375	525	0.00%	$1,020	$162,170	$56,759	$32,839	$251,769
			Total Length	19,249						Total	$27,087,543	$9,326,548	$5,462,114	$41,876,205
Projects to be Included in the Proposed DCC Program														
Existing	South Side Westminster Hwy	7320 Westminster Hwy	Gilbert Rd	356.4	Concrete	na	na	900	0.05%	$1,600	$570,160	$199,556	$115,457	$885,173
Existing	Minoru Blvd	Westminster Hwy	6391 Minoru Blvd	279.0	na	na	na	750	0.01%	$1,250	$348,750	$122,063	$70,622	$541,434
Existing	Granville Ave	Gilbert Rd	St Albans Rd	1,210.1	Concrete	na	na	1350	0.02%	$2,000	$2,420,200	$847,070	$490,091	$3,757,361
Existing	No 3 Rd	Lansdowne Rd	Granville Ave	1,253.0	na	na	na	1500	0.03%	$2,400	$3,007,200	$1,052,520	$608,958	$4,668,678
Existing	Cooney Rd (twin ex. box culvert)	Spires Gate	No. 3 Rd & Westminster	593.0			na	1050	0.01%	$1,750	$1,037,750	$363,213	$210,144	$1,611,107
Existing	Gilbert Rd	Blundell Rd	Granville Ave	603.5	na	na	na	900	0.02%	$1,600	$1,286,600	$449,960	$260,334	$1,995,894
										Total	$8,869,660	$3,034,381	$1,755,606	$13,459,647
										Sub-Total				$55,335,852
Projects to be Deleted Due to Overlap with Current DCC Projects														
Existing	Lansdowne Rd Alignment	No3 Rd	Hollybridge Way	854.0	na	na	na	1500	0.03%	$2,400	$2,049,600	$717,360	$415,044	$3,182,004
Existing	Granville Ave	St Albans Rd	Garden City Rd	429.4	Concrete	na	na	1050	0.02%	$1,750	$751,468	$263,014	$152,172	$1,166,653
Existing	No 3 Rd	Leslie Rd	4540 No 3 Rd	20.5	Concrete	na	na	1200 x 2400	0.05%	$5,500	$112,750	$39,463	$22,832	$175,044
Existing	Cambie Rd	8741 Cambie	8831 Cambie	104.7	Concrete	1975	250	450	0.21%	$875	$91,595	$32,058	$18,548	$142,201
Existing	Cambie Rd	Sexsmith Rd	8711 Cambie	107.0	Concrete	1975	300	600	0.21%	$1,090	$116,630	$40,821	$23,618	$181,068
Existing	East Side Garden City Rd	Granville Ave	Bennett Rd	166.9	Concrete	1977	250/300/450	600	0.05%	$1,090	$181,921	$63,672	$36,839	$282,432
Existing	West Side Garden City Rd	General Currie	Bennett Rd	190.8	Concrete	1985/1990	900	1050	0.02%	$1,750	$333,830	$116,841	$67,601	$518,271
Existing	West Side Garden City Rd	Blundell Rd	General Currie	391.6	Concrete	1985/1990	1050	1350	0.02%	$2,000	$783,100	$274,085	$158,576	$1,215,763
			Total Length	2,265						Total	$4,420,894	$1,547,313	$895,231	$6,863,437
										Grand Total	$40,178,097	$13,908,242	$8,112,951	$62,199,290

Notes
Projects highlighted in blue include a contingency of 25%; all other projects include a contingency of 35%.

Table G.2: Recommended Storm Drainage Improvements for TZM/CCAP Land-Use

Upgrade Scenario	Location	From	To	Pipe Length (m)	Existing Size (mm)	New Pipe Size (mm)	New Slope (%)	Unit Cost	Subtotal	Contingency (25 to 35%)	Engineering (15%)	Total
TZM/CCAP	Acheson Rd	No 3 Rd	Minoru Blvd	253.6	750	900	0.02%	$1,600	$405,712	$141,999	$82,157	$629,868
TZM/CCAP	Acheson Rd	7593 Acheson	7631 Acheson	30.0	na	Regrade Ditch	0.05%	$125	$3,750	$938	$703	$5,391
TZM/CCAP	Acheson Rd	7633 Acheson	7635 Acheson	12.0	na	Regrade Ditch	0.05%	$125	$1,500	$375	$281	$2,156
TZM/CCAP	Acheson Rd	7655 Acheson	7691 Acheson	30.0	na	Regrade Ditch	0.05%	$125	$3,750	$938	$703	$5,391
TZM/CCAP	Acheson Rd	Minoru Blvd	7593 Acheson	58.0	na	750	0.05%	$1,250	$72,500	$25,375	$14,681	$112,556
TZM/CCAP	Acheson Rd	7631 Acheson	7633 Acheson	16.0	na	750	0.05%	$1,250	$20,000	$7,000	$4,050	$31,050
TZM/CCAP	Acheson Rd	7635 Acheson	7655 Acheson	19.0	na	750	0.05%	$1,250	$23,750	$8,313	$4,809	$36,872
TZM/CCAP	Acheson Rd	7691 Acheson	7731 Acheson	45.0	na	750	0.05%	$1,250	$56,250	$19,688	$11,391	$87,328
TZM/CCAP	Acheson Rd	7731 Acheson	No 3 Rd	48.4	450	525	0.33%	$1,020	$49,317	$17,261	$9,987	$76,565
TZM/CCAP	Acheson Rd	7900 Bennett	7731 Acheson	76.2	200	375	0.33%	$805	$61,365	$21,478	$12,426	$95,269
TZM/CCAP	Acheson Rd	7980 Bennett	7940 Bennett	21.8	200	300	0.33%	$725	$15,783	$5,524	$3,196	$24,503
TZM/CCAP	Alderbridge Way	5 Crossings of Alderbridge Way b/w No 4/Garden City Rd		11.8	450	525	0.00%	$1,020	$12,036	$4,213	$2,437	$18,686
TZM/CCAP	Alderbridge Way	5 Crossings of Alderbridge Way b/w No 4/Garden City Rd		14.4	450	525	0.07%	$1,020	$14,678	$5,137	$2,972	$22,787
TZM/CCAP	Alderbridge Way	5 Crossings of Alderbridge Way b/w No 4/Garden City Rd		14.4	450	525	0.07%	$1,020	$14,678	$5,137	$2,972	$22,787
TZM/CCAP	Alderbridge Way	5 Crossings of Alderbridge Way b/w No 4/Garden City Rd		14.4	750	900	0.07%	$1,600	$23,024	$8,058	$4,662	$35,745
TZM/CCAP	Alderbridge Way	5 Crossings of Alderbridge Way b/w No 4/Garden City Rd		14.4	450	525	0.07%	$1,020	$14,678	$5,137	$2,972	$22,787
TZM/CCAP	Anderson Rd	8051 Anderson Rd	8231 Granville	220.0	450	525	0.10%	$1,020	$224,400	$78,540	$45,441	$348,381
TZM/CCAP	Anderson Rd	8151 Granville	8231 Granville	58.0	450	525	0.10%	$1,020	$59,160	$20,706	$11,980	$91,846
TZM/CCAP	Anderson Rd	8080 Anderson	8051 Anderson Rd	15.0	450	525	0.10%	$1,020	$15,300	$5,355	$3,098	$23,753
TZM/CCAP	Anderson Rd	No 3 Rd	8051 Anderson Rd	63.2	450	600	0.07%	$1,090	$68,877	$24,107	$13,948	$106,932
TZM/CCAP	Anderson Rd	No 3 Rd	8051 Anderson Rd	34.6	600	750	0.07%	$1,250	$43,250	$15,138	$8,758	$67,146
TZM/CCAP	Ash St	7120 Ash	7220 Ash	96.5	450	525	0.05%	$1,020	$98,379	$34,433	$19,922	$152,733
TZM/CCAP	Ash St	Granville Ave	7120 Ash	104.4	525	675	0.05%	$1,150	$120,060	$42,021	$24,312	$186,393
TZM/CCAP	Ash St	7120 Ash	7640 Ash	406.4	300/375	675	0.08%	$1,150	$467,360	$163,576	$94,640	$725,576
TZM/CCAP	Ash St	7640 Ash	Blundell Rd	200.0	600	750	0.08%	$1,250	$250,000	$87,500	$50,625	$388,125
TZM/CCAP	Ash St	9308 Keffer	Ash Rd	87.0	375	750	0.08%	$1,250	$108,750	$38,063	$22,022	$168,834
TZM/CCAP	Ash St	Blundell Rd	7833 Ash	203.0	600	750	0.08%	$1,250	$253,750	$88,813	$51,384	$393,947
TZM/CCAP	Blundell Rd	Blundell Rd	7833 Heather St	14.6	600	750	0.04%	$1,250	$18,250	$6,388	$3,696	$28,333
TZM/CCAP	Bridge St	7180 Bridge	7200 Bridge	2.5	450	600	0.14%	$1,090	$2,725	$954	$552	$4,231
TZM/CCAP	Bridge St	7151 Bridge	Blundell Rd	637.0	450/525	750	0.05%	$1,250	$796,250	$278,688	$161,241	$1,236,178
TZM/CCAP	Bridge St	9560 Sills Ave	Bridge St	98.0	375	750	0.05%	$1,250	$122,500	$42,875	$24,806	$190,181
TZM/CCAP	Bridge St	9688 Shields Ave	Bridge St	94.0	450	525	0.14%	$1,020	$95,880	$33,558	$19,416	$148,854
TZM/CCAP	Bridge St	7280 Bridge	Blundell Rd	510.6	450/525	675	0.14%	$1,150	$587,151	$205,503	$118,898	$911,552
TZM/CCAP	Bridge St	7380 Bridge St	Bridge St	5.0	525	900	0.14%	$1,600	$8,000	$2,800	$1,620	$12,420
TZM/CCAP	Buswell St	Park Rd	Anderson Rd	122	375	750	0.04%	$1,250	$152,500	$53,375	$30,881	$236,756
TZM/CCAP	Cambie Rd PS outfall			28.0	na	1350	0.05%	$2,000	$56,000	$19,600	$11,340	$86,940
TZM/CCAP	Cambie Rd Pump Station (2 additional pumps)	Conney Rd & Spires Gate	Conney Rd & Spires Gate	1.0	na	Pump Station Upgrade	na	$1,500,000	$1,500,000	$375,000	$281,250	$2,156,250
TZM/CCAP	Cook Gate (install 1 flap gate)	on storm from Spires Rd	Cook Rd	1:0	na	Flap Gate	na	$11,000	$11,000	$3,850	$2,228	$17,078
TZM/CCAP	Cooney Rd	Acroyd Rd	Westminster Hwy	187.8	375	750	0.05%	$1,250	$234,803	$82,181	$47,548	$364,531
TZM/CCAP	Easement East of Gilbert Rd	7300 Gilbert Rd	7400 Gilbert Rd	142.3	300	600	0.26%	$1,090	$155,070	$54,274	$31,402	$240,746
TZM/CCAP	Easement East of Gilbert Rd	7700 Gilbert Rd	7640 Gilbert Rd	48.4	300	600	0.01%	$1,090	$52,723	$18,453	$10,676	$81,853
TZM/CCAP	Easement East of Gilbert Rd	7640 Gilbert Rd	7600 Gilbert Rd	41.8	375	750	0.01%	$1,250	$52,250	$18,288	$10,581	$81,118
TZM/CCAP	Easement East of Gilbert Rd	Heather St	South side of 7720 Heather St	69.8	375	750	0.10%	$1,250	$87,250	$30,538	$17,668	$135,456
TZM/CCAP	Garden City Rd	6488 Garden City	Ferndale Rd	327.0	1050	1350	0.04%	$2,000	$654,000	$228,900	$132,435	$1,015,335
TZM/CCAP	Garden City Rd	6488 Garden City	Granville Ave	324.0	675	750	0.04%	$1,250	$405,000	$141,750	$82,013	$628,763
TZM/CCAP	Garden City Rd	Garden City Rd	6120 Garden City	5.6	600	750	0.00%	$1,250	$6,938	$2,428	$1,405	$10,770
TZM/CCAP	Garden City Rd	Westminster Hwy	9100 Westminster Hwy	70.7	1050	1350	0.00%	$2,000	$141,380	$49,483	$28,629	$219,492
TZM/CCAP	General Currie Rd	Heather St	Garden City Rd	196.8	600	900	0.05%	$1,600	$314,880	$110,208	$63,763	$488,851
TZM/CCAP	General Currie Rd	Ash St	Bridge St	201.4	525	675	0.05%	$1,150	$231,610	$81,064	$46,901	$359,575
TZM/CCAP	General Currie Rd	Bridge St	No 4 Road	200.3	750	900	0.18%	$1,600	$320,544	$112,190	$64,910	$497,645
TZM/CCAP	Granville Ave	Garden City Rd	Citation Dr	151.1	200	375	0.18%	$805	$121,619	$42,567	$24,628	$188,814
TZM/CCAP	Granville Ave	Garden City Rd	8790 Citation Dr	67.8	375/600	750	0.18%	$1,250	$84,701	$29,645	$17,152	$131,499
TZM/CCAP	Granville Ave	At St Albans Rd/Granville Ave		3.7	375	750	0.05%	$1,250	$4,625	$1,619	$937	$7,180
TZM/CCAP	Granville Ave	At No 3 Rd/Granville Ave		6.0	375	750	0.03%	$1,250	$7,500	$2,625	$1,519	$11,644
TZM/CCAP	Jones Rd	Garden City Rd	Turnill St	52.0	450	525	0.05%	$1,020	$53,040	$18,564	$10,741	$82,345
TZM/CCAP	Lane North of Blundell Rd	Minoru Blvd	Abercombie Dr	67.6	450	675	0.05%	$1,150	$77,763	$27,217	$15,747	$120,727
TZM/CCAP	Lane North of Blundell Rd	Minoru Blvd	Abercombie Dr	75.9	525	525	0.05%	$1,020	$77,449	$27,107	$15,683	$120,239
TZM/CCAP	Minoru Blvd	Acheson Rd	Granville Rd	264.3	600	900	0.12%	$1,600	$422,880	$148,008	$85,633	$656,521
TZM/CCAP	North Side Granville Ave	9533 Granville Ave	9171 Granville Ave	395.6	525	675	0.05%	$1,150	$454,940	$159,229	$92,125	$706,294
TZM/CCAP	North Side Granville Ave	9171 Granville Ave	Garden City Rd	103.5	600	750	0.05%	$1,250	$129,319	$45,262	$26,187	$200,767
TZM/CCAP	North side of Bennett Rd	7288 No 3 Rd	Garden City Rd	778.8	375/450	750	0.04%	$1,250	$973,444	$340,705	$197,122	$1,511,271
TZM/CCAP	North side of Bennett Rd	Minoru Blvd	No 3 Rd	133.94	450/600	750	0.05%	$1,250	$167,425	$58,599	$33,904	$259,927

Table G.2: Recommended Storm Drainage Improvements for TZM/CCAP Land-Use

Upgrade Scenario	Location	From	To	Pipe Length (m)	Existing Size (mm)	New Pipe Size (mm)	New Slope (%)	Unit Cost	Subtotal	Contingency (25 to 35%)	Engineering (15%)	Total
TZM/CCAP	North side of General Currie Rd	8611 General Currie	Garden City Rd	197.4	450	525	0.05%	$1,020	$201,338	$70,468	$40,771	$312,577
TZM/CCAP	North side of General Currie Rd	8251 General Currie	8291 Genreral Currie	113.0	375	750	0.01%	$1,250	$141,250	$49,438	$28,603	$219,291
TZM/CCAP	North side of General Currie Rd	St Albans Rd	8611 General Currie	195.0	375	750	0.04%	$1,250	$243,750	$85,313	$49,359	$378,422
TZM/CCAP	North side of General Currie Rd	8291 Genreral Currie	St Albans Rd	40.8	250	450	0.16%	$875	$35,656	$12,480	$7,220	$55,356
TZM/CCAP	North side of General Currie Rd	8120 General Currie	8251 General Currie	276.0	450	525	0.16%	$1,020	$281,520	$98,532	$57,008	$437,060
TZM/CCAP	North side of General Currie Rd	8031 General Currie	8131 General Currie	118.0	600	750	0.16%	$1,250	$147,500	$51,625	$29,869	$228,994
TZM/CCAP	North side of General Currie Rd	Garden City Rd	9051 General Currie Rd	55.0	525	675	0.05%	$1,150	$63,250	$22,138	$12,808	$98,196
TZM/CCAP	North side of Jones Rd	St Albans Rd	8700 Jones Rd	196.3	450	525	0.05%	$1,020	$200,221	$70,077	$40,545	$310,843
TZM/CCAP	North side of Jones Rd	8700 Jones Rd	Garden City Rd	196.7	450	525	0.06%	$1,020	$200,634	$70,222	$40,628	$311,484
TZM/CCAP	North side of Westminster Hwy	9500 Westminster Hwy	Garden City Rd	433.8	na	Regrade Ditch	0.29%	$125	$54,225	$13,556	$10,167	$77,948
TZM/CCAP	North side of Westminster Hwy	9500 Westminster Hwy	Garden City Rd	8.9	750	750	0.29%	$1,250	$11,150	$3,903	$2,258	$17,310
TZM/CCAP	North side of Westminster Hwy	9500 Westminster Hwy	Garden City Rd	6.2	900	900	0.29%	$1,600	$9,872	$3,455	$1,999	$15,326
TZM/CCAP	Saba Rd	No 3 Rd	8100 Westminster Hwy	177.6	300/525	600	0.10%	$1,090	$193,628	$67,770	$39,210	$300,607
TZM/CCAP	South Side Granville Ave	Heather St	Ash St	202.8	600	750	0.01%	$1,250	$253,514	$88,730	$51,337	$393,580
TZM/CCAP	South Side Granville Ave	Ash St	Bridge St	193.1	600	750	0.18%	$1,250	$241,405	$84,492	$48,885	$374,781
TZM/CCAP	South Side Granville Ave	Granville Ave	9133 Heather	49.1	450	525	0.05%	$1,020	$50,062	$17,522	$10,137	$77,721
TZM/CCAP	South side of Bennett Rd	7288 No 3 Rd	Garden City Rd	744.2	375/450	750	0.04%	$1,250	$930,260	$325,591	$188,378	$1,444,229
TZM/CCAP	South side of Bennet Rd	No 3 Rd	7288 No 3 Rd	50.6	525/600	1350	0.04%	$2,000	$101,146	$35,401	$20,482	$157,029
TZM/CCAP	South side of Bennett Rd	Minoru Blvd	No 3 Rd	68.9	na	Regrade Ditch	0.09%	$125	$8,614	$2,153	$1,615	$12,382
TZM/CCAP	South side of Bennett Rd	Minoru Blvd	No 3 Rd	186.6	300/375/450	750	0.09%	$1,250	$233,250	$81,638	$47,233	$362,121
TZM/CCAP	South side of General Currie Rd	8600 General Currie	Garden City Rd	200.0	450	525	0.04%	$1,020	$204,000	$71,400	$41,310	$316,710
TZM/CCAP	South side of General Currie Rd	8500 General Currie	8600 General Currie	152.0	375	750	0.16%	$1,250	$190,000	$66,500	$38,475	$294,975
TZM/CCAP	South side of General Currie Rd	No 3 Rd	8400 General Currie Rd	382.0	600	750	0.12%	$1,250	$477,500	$167,125	$96,694	$741,319
TZM/CCAP	South side of General Currie Rd	Garden City Rd	9060 General Currie Rd	43.0	525	675	0.05%	$1,150	$49,450	$17,308	$10,014	$76,771
TZM/CCAP	South side of Jones Rd	8380 Jones Rd	St Albans Rd	93.3	450	525	0.10%	$1,020	$95,194	$33,318	$19,277	$147,788
TZM/CCAP	South side of Jones Rd	8180 Jones Rd	8380 Jones Rd	93.1	525	675	0.10%	$1,150	$107,021	$37,457	$21,672	$166,151
TZM/CCAP	South side of Jones Rd	No 3 Rd	8180 Jones Rd	228.0	600	750	0.10%	$1,250	$285,023	$99,758	$57,717	$442,497
TZM/CCAP	South side of Jones Rd	St Albans Rd	8700 Jones Rd	196.8	450	525	0.05%	$1,020	$200,723	$70,253	$40,646	$311,622
TZM/CCAP	South side of Jones Rd	8700 Jones Rd	Garden City Rd	196.7	450	525	0.06%	$1,020	$200,593	$70,208	$40,620	$311,421
TZM/CCAP	Spires Gate	Spires Rd	Cooney Rd	62.5	450	600	0.33%	$1,090	$68,158	$23,855	$13,802	$105,815
TZM/CCAP	Spires Gate Pump Station	Spires Gate	Cooney Rd	1.0	na	Pump Station Upgrade	na	$1,500,000	$1,500,000	$375,000	$281,250	$2,156,250
TZM/CCAP	Turnill Rd	Rear of 7440 Garden City	General Currie Rd	71.2	300	600	0.05%	$1,090	$77,619	$27,167	$15,718	$120,503
	Consulting fees for modelling					Modelling			$750,000	$187,500	$0	$937,500
			Total Length	12,627				Totals	$18,890,988	$6,229,662	$3,627,473	$28,748,123
Projects to be Deleted Due to Overlap with Current DCC Projects												
TZM/CCAP	No 3 Rd	6380 No 3 Rd	6820 No 3 Rd	55.5	750	900	0.07%	$1,600	$88,741	$31,059	$17,970	$137,770
TZM/CCAP	No 3 Rd	6900 No 3 Rd	6860 No 3 Rd	17.0	525	675	0.36%	$1,150	$19,550	$6,843	$3,959	$30,351
			Total Length	72				Totals	$108,291	$37,902	$21,929	$168,121
								Grand Total	$18,999,279	$6,267,564	$3,649,401	$28,916,244

[redacted]

Notes
Projects highlighted in blue include a contingecy of 25%; all other projects include a contingency of 35%.

APPENDIX H

Overlap Between Current and Proposed Storm Drainage DCC Programs

Table H.1: Storm Drainage Projects to be Deleted From the Current DCC Program

EXISTING DCC — **Coinciding Upgrade Recommendations**

		Catchment	ID	Location	From	To	From Node	To Node	Length	Existing Size	Recommended Size	Type	DCC Portion - Cost Estimate w/ Engineering and Contingency	DCC Portion - Cost Estimate w/ Engineering and Contingency	Benefit Factor %	Benefit to New Development	NPV 2006	DCC Reconstruction	Municipal Responsibility	DCC Reconstruction Costs to Delete from the Current DCC Program
1		A	EXST_GN1	Lansdowne Road	Gilbert Road	No. 3 Road	M3571	M4907	870	1.37 m x 2.29 m Box	1.37 m x 2.79 m Box	BOX	$ 4,872,000	$ 6,333,600	47%	$ 3,007,195.26	$ 30,071.93	$ 2,977,121.35	$ 3,356,478.65	
	REMOVE-yes	66	Existing	Lansdowne Rd Alignment	No 3 Rd	Hollybridge Way			854		ns		1500		$ 2,548,800	$ 3,362,004	100%	$ 3,362,004.00	$ 31,820.04	$ 3,150,383.96	$ 31,820.04	
2	REMOVE-yes	F	EXST_GN7	Westminster Hwy	Gilbert Road	Bowling Green Rd	A2098	M5723	385	450	750	PIPE	$ 596,400	$ 775,320	47%	$ 368,121.94	$ 3,681.22	$ 364,440.72	$ 410,879.28	$ 364,440.72
		107	Existing	South Side Westminster Hwy	7320 Westminster Hwy	Gilbert Rd			356.4		ns		900		$ 570,160	$ 885,173	100%	$ 885,173.40	$ 8,851.73	$ 876,321.67	$ 8,851.73	
3	REMOVE-yes	G	EXST_GN8	Minoru Blvd	S. of Westminster	S. of Westminster	M5702	M5703	75	none	300	PIPE	$ 84,000	$ 109,200	47%	$ 51,845.16	$ 518.46	$ 51,326.68	$ 57,873.32	$ 51,326.68
		68	Existing	Minoru Blvd	Westminster Hwy	6391 Minoru Blvd			279		ns		750		$ 346,750	$ 541,434	100%	$ 541,434.38	$ 5,414.34	$ 536,020.03	$ 5,414.04	
4	Subtract 400	H	EXST_GN10	Granville	No. 3 Road	Garden City	M1010	M1315	900	varies	1200	PIPE	$ 1,512,000	$ 1,965,600	47%	$ 933,266.88	$ 9,332.67	$ 923,934.21	$ 1,041,665.79	
	REMOVE-yes	62	Existing	Granville Ave	St Albans Rd	Garden City Rd			429.4		ns		1050		$ 721,456	$ 1,188,854	95%	$ 1,096,221.37	$ 11,063.21	$ 1,085,158.15	$ 69,415.82	
		63	Existing	Granville Ave	Gilbert Rd	St Albans Rd			1,210.1		ns		1350		$ 2,420,200	$ 3,757,360	100%	$ 3,757,360.50	$ 37,573.61	$ 3,719,786.90	$ 37,573.60	
5		B	EXST_GN3	No. 3 Road	Lansdowne	Westminster Hwy	M4907	A2645	420	0.8 m x 2.1 m Box	1.37 m x 1.52 m Box	BOX	$ 2,352,000	$ 3,057,600	47%	$ 1,451,746.48	$ 14,517.46	$ 1,437,231.00	$ 1,620,368.00	
		C	EXST_GN4	No. 3 Road	Westminster Hwy	Granville	A2645	M1010	860	varies	1200	PIPE	$ 1,444,800	$ 1,878,240	47%	$ 891,758.35	$ 8,917.58	$ 882,870.47	$ 995,369.53	
	NEW PIPE	77	Existing	No 3 Rd	Lansdowne Rd	Granville Ave			1,229		ns		1500		$ 3,007,200	$ 4,668,678	100%	$ 4,668,678.00	$ 46,686.78	$ 4,621,991.22	$ 46,686.78	
	REMOVE-yes	23	TZM/CCAP	No 3 Rd	6860 No 3 Rd	6820 No 3 Rd			55.5	750	900		$ 88,741	$ 137,770	100%	$ 137,770.40	$ 1,377.70	$ 136,392.70	$ 1,377.70	
	REMOVE-yes	24	TZM/CCAP	No 3 Rd	6900 No 3 Rd	6880 No 3 Rd			17.0	525	675		$ 19,550	$ 30,351	100%	$ 30,351.38	$ 303.51	$ 30,047.86	$ 303.51	
																		$ -	$ -	$ -	$ -	
6		D	EXST_GN5	Westminster Hwy	No. 3 Road	Cooney Road	A2645	M4582	350	800	1200	PIPE	$ 588,000	$ 764,400	47%	$ 362,837.12	$ 3,629.37	$ 359,207.75	$ 405,092.25	
		E	EXST_GN6	Cooney	Cooney Road (@ WESTMINSTER)	Cook Road	M4582	M6479	350	800	1200	PIPE	$ 588,000	$ 764,400	47%	$ 362,837.12	$ 3,629.37	$ 359,207.75	$ 405,092.25	
	(twin sbc box culvert)	19	Existing	Cooney Rd (twin sbc box culvert)	Solvey Gate	No. 3 Rd & Westminster	585.0		585		ns		1050		$ 1,037,250	$ 1,611,106	100%	$ 1,611,106.55	$ 16,111.07	$ 1,594,995.48	$ 16,111.07	

OCP DCC — **Coinciding Upgrade Recommendations**

5		B	OCP_CN2	No. 3 Road (includes raising rim elevations at nodes A2799 and A2790)	Cambie Road	Alderbridge Way	M5069	M4155	855	varies	1.5 m x 4.3 m Box	BOX	$ 4,788,000	$ 6,224,400	100%	$ 6,224,400	$ 62,244.00	$ 6,162,156.00	$ 62,244.00	
	REMOVE-yes	74	Existing	No 3 Rd	Leslie Rd	4640 No 3 Rd	20.5		20.5	Concrete	ns		1500 x 2400		$ 42,750	$ 75,044	100%	$ 75,044	$ 750.44	$ 74,293.93	$ 750.44	
6		C	OCP_CN3	Cambie Road	No. 3 Road	Garden City	M5069	M2194	820	varies	1.5 m x 4.3 m Box	BOX	$ 4,592,000	$ 5,969,600	100%	$ 5,969,600	$ 59,696.00	$ 5,909,904.00	$ 59,696.00	
	REMOVE-yes	34	Existing	Cambie Rd	8211 Cambie	8331 Cambie	104.7		104.7	Concrete	250		450		$ 91,585	$ 142,201	100%	$ 142,201	$ 1,422.01	$ 140,778.99	$ 1,422.01	
	REMOVE-yes	36	Existing	Cambie Rd	Seamont Rd	8211 Cambie	107.0		107.0	Concrete	300		600		$ 116,630	$ 181,068	100%	$ 181,068	$ 1,810.68	$ 179,257.39	$ 1,810.68	
																		$ -	$ -	$ -	$ -	
7		D	OCP_WS1	Garden City (incl. all connections to parallel system)	Granville	Francis Road	M1053	M3538	1625	varies	1.5 m x 3.6 m Box	BOX	$ 9,100,000	$ 11,830,000	100%	$ 11,830,000	$ 118,300.00	$ 11,711,700.00	$ 118,300.00	
	REMOVE-yes	28	Existing	East Side Garden City Rd	Granville Ave	Bennett Rd	166.9	Concrete	166.9	250/300/450	600		1050		$ 181,823	$ 282,432	100%	$ 282,432	$ 2,824.32	$ 279,608.03	$ 2,824.32	
	REMOVE-yes	117	Existing	West Side Garden City Rd	General Currie	Bennett Rd	190.8	Concrete	190.8	600	1050		1350		$ 333,800	$ 518,271	100%	$ 518,271	$ 5,182.71	$ 513,088.36	$ 5,182.71	
	REMOVE-yes	119	Existing	West Side Garden City Rd	Blundell Rd	General Currie	391.6	Concrete	391.6	1050	1350		1350		$ 783,000	$ 1,215,765	100%	$ 1,215,765	$ 12,157.65	$ 1,203,606.12	$ 12,157.65	
10		A	OCP_GN1	Gilbert Road	S. of Westminster Hwy	Blundell	M775	A1042	1200	varies	1.5 m x 4.0 m Box	BOX	$ 6,720,000	$ 8,736,000	100%	$ 8,736,000	$ 87,360.00	$ 8,648,640.00	$ 87,360.00	
	NEW PIPE	46	Existing	Gilbert Rd	Blundell Rd	Granville Ave			603.5	ns	900				$ 1,245,800	$ 1,903,884	100%	$ 1,903,884	$ 19,038.84	$ 1,875,935.06	$ 19,038.84	
	Total													$ 50,436,045	$ 66,899,567	$ 24	$ 60,622,715	$ 606,227	$ 60,016,488	$ 6,883,079	$ 415,770

Yellow highlighting indicates projects to be removed from the current DCC program.
Blue highlighting indicates recommended projects for the Existing demand scenario to be included in the new DCC program.
Green highlighting indicates recommended projects for the CCAP demand scenario to be deleted completely.
Pink highlighting indicates recommended projects for the Existing demand scenario to be deleted completely.
No highlighting indicates projects in the current DCC program that are to remain in the DCC program.
Additional projects have been deleted as they have been completed since 2006 - refer to the 2008 DCC Background Report.

APPENDIX I

Proposed DCC Calculations

Table I.1: DCC RECOVERABLE COSTS

Infrastructure	Total Costs	Benefit Factor	Benefit to Development	Municipal Assist (1%)	DCC Recoverable Costs	Municipal Responsibility
Transportation	$ 559,001,055	95%	$ 531,051,002	$ 5,310,510	$ 525,740,492	$ 33,238,488
Water	$ 40,632,689	95% or 100%	$ 39,015,042	$ 390,150	$ 38,624,892	$ 2,007,798
Sanitary	$ 127,143,971	95% or 100%	$ 123,663,183	$ 1,236,632	$ 122,426,551	$ 4,717,419
Drainage	$ 346,433,097	Varies	$ 212,141,748	$ 2,121,417	$ 210,020,330	$ 136,291,190
Parkland Acquisition	$ 335,951,300	95%	$ 319,153,735	$ 3,191,537	$ 315,962,198	$ 19,989,102
Parkland Development	$ 141,826,744	95%	$ 134,735,407	$ 1,347,354	$ 133,388,053	$ 8,438,691

Table I.2: DCC GROWTH SUMMARY - CITY-WIDE (2007-2031)

Land Use	Units	New Development (City-Wide)		
		New Growth (from 2007 to 2031)	New Growth (from 2021 to 2031)	Total
Single Family	lot	2,412	0	2,412
Duplex	lot	53	0	53
Townhouse	dwelling unit	9,279	1,137	10,416
Apartment	dwelling unit	19,248	4,892	24,140
Commercial	square metre of floor area	1,127,373	200,000	1,327,373
Light Industrial	square metre of floor area	3,345,725	100,000	3,445,725
Major Industrial	hectare gross site area	428.80	0	429

Notes:

(1) Residential growth estimates based on Urban Futures' analysis.

(2) Non-residential growth estimates based on current DCC estimates, jobs/economy estimates completed by IBI, and discussions with City Staff - to be revised.

Table I.3: PROPOSED DCC EQUIVALENT FACTORS

Land Use	Units	Infrastructure					
		Water (Equivalent Population)	Sanitary (Equivalent Population)	Roads (Trip Rate)	Drainage	Parkland Acquisition (Equivalent Population)	Parkland Development (Equivalent Population)
Single Family	Lots	3.3	3.3	1.02	1	3.3	3.3
Duplex	Lots	6	6	1.24	2	6	6
Townhouse	Dwelling Units	2.9	2.9	0.66	0.58	2.9	2.9
Apartment	Dwelling Units	2.1	2.1	0.62	0.29	2.1	2.1
Commercial	Square meters gross floor area	0.009	0.009	0.014	0.0032	0.0045	0.0045
Light Industrial	Square meters gross floor area	0.009	0.009	0.01	0.0032	0.0045	0.0045
Major Industrial	Hectare	45	45	12	22.5	4	4

Single family occupancy rates as per City of Richmond request.
Other equivalent factors match those in the 2006 DCC calculations.

Table I.4: Transportation DCC Rate Calculation

A: Traffic Generation Calculation (2031)					
Land Use		**Col. (1)**	**Col. (2)**	**Col. (3)**	**Col. (4) = (1) x (3)**
		Estimated New Development	**Unit**	**Wt. Trip Rate**	**Trip Ends**
Single Family Residential		2,412	lots	1.02	2,460
Duplex Residential		53	lots	1.24	66
Multi Family Residential					
	Townhouse	10,416	dwelling units	0.66	6,875
	Apartment	24,140	dwelling units	0.62	14,967
Commercial		1,327,373	square metres gross floor area	0.014	18,583
Light Industrial		3,445,725	square metres gross floor area	0.01	34,457
Major Industrial		428.80	hectares	12	5,146
				Total Trip Ends	82,553 (a)
B: Unit Road DCC Calculation					
Net Road DCC Program Recoverable			$525,740,492	(b)	
Existing DCC Reserve Monies			$5,221,444	(c)	
Net Amount to be Paid by DCCs			$520,519,048	(d) = (b) - (c)	
DCC per Trip End			$6,305.24	(e) = (d)/(a)	
C: Resulting Road DCCs					
Single Family Residential			$6,431.35	per lot	(e) x Col. (3)
Duplex Residential			$7,818.50	per lot	(e) x Col. (3)
Multi Family Residential	Townhouse		$4,161.46	per dwelling unit	(e) x Col. (3) $3.08 per sq. ft.
	Apartment		$3,909.25	per dwelling unit	(e) x Col. (3) $4.11 per sq. ft.
Commercial			$88.27	per square metre gross floor area	(e) x Col. (3) $8.20 per sq. ft.
Light Industrial			$63.05	per square metre gross floor area	(e) x Col. (3) $5.86 per sq. ft.
Major Industrial			$75,662.89	per hectare gross site area	(e) x Col. (3) $30,619.11 per acre

Table I.5: Water DCC Rate Calculation

A: Water DCC Calculation (2031)					
Land Use	**Col. (1)**	**Col. (2)**	**Col. (3)**	**Col. (4) = (1) x (3)**	
	Estimated New Development	**Unit**	**Person per unit (residential)/ Equivalent Population/hectare (other land uses)**	**Multiple**	
Single Family Residential	2,412	lots	3.3	7,960	
Duplex Residential	53	lots	6	318	
Multi Family Residential					
Townhouse	10,416	dwelling units	2.9	30,206	
Apartment	24,140	dwelling units	2.1	50,694	
Commercial	1,327,373	square metres gross floor area	0.009	11,946	
Light Industrial	3,445,725	square metres gross floor area	0.009	31,012	
Major Industrial	428.80	hectares	45	19,296	
			Total Equivalent Population	151,432 (a)	
B: Unit Water DCC Calculation					
Net Waterworks DCC Program Recoverable		$38,624,892	(b)		
Existing DCC Reserve Monies		$1,426,309	(c)		
Net Amount to be Paid by DCCs		$37,198,582	(d) = (b) - (c)		
DCC per person		$245.65	(e) = (d)/(a)		
C: Resulting Water DCCs					
Single Family Residential		$810.63	per lot	(e) x Col. (3)	
Duplex Residential		$1,473.87	per lot	(e) x Col. (3)	
Multi Family Residential	Townhouse	$712.37	per dwelling unit	(e) x Col. (3)	$0.53 per sq. ft.
	Apartment	$515.86	per dwelling unit	(e) x Col. (3)	$0.54 per sq. ft.
Commercial		$2.21	per square metre gross floor area	(e) x Col. (3)	$0.21 per sq. ft.
Light Industrial		$2.21	per square metre gross floor area	(e) x Col. (3)	$0.21 per sq. ft.
Major Industrial		$11,054.05	per hectare	(e) x Col. (3)	$4,473.33 per acre

Table I.6: Sanitary DCC Rate Calculation

A: Sanitary DCC Calculation (2031)					
Land Use		**Col. (1)** **Estimated New Development**	**Col. (2)** **Unit**	**Col. (3)** **Person per unit (residential)/ Equivalent Population/hectare (other land uses)**	**Col. (4) = (1) x (3)** **Multiple**
Single Family Residential		2,412	lots	3.3	7,960
Duplex Residential		53	lots	6	318
Multi Family Residential					
	Townhouse	10,416	dwelling units	2.9	30,206
	Apartment	24,140	dwelling units	2.1	50,694
Commercial		1,327,373	square metres gross floor area	0.009	11,946
Light Industrial		3,445,725	square metres gross floor area	0.009	31,012
Major Industrial		428.80	hectares	45	19,296
				Total Equivalent Population	151,432 (a)
B: Unit Sanitary DCC Calculation					
Net Sanitary DCC Program Recoverable			$122,426,551	(b)	
Existing DCC Reserve Monies			$1,514,525	(c)	
Net Amount to be Paid by DCCs			$120,912,026	(d) = (b) - (c)	
DCC per person			$798.46	(e) = (d)/(a)	
C: Resulting Sanitary DCCs					
Single Family Residential			$2,634.91	per lot	(e) x Col. (3)
Duplex Residential			$4,790.75	per lot	(e) x Col. (3)
Multi Family Residential	Townhouse		$2,315.53	per dwelling unit	(e) x Col. (3) $1.72 per sq. ft.
	Apartment		$1,676.76	per dwelling unit	(e) x Col. (3) $1.77 per sq. ft.
Commercial			$7.19	per square metre gross floor area	(e) x Col. (3) $0.67 per sq. ft.
Light Industrial			$7.19	per square metre gross floor area	(e) x Col. (3) $0.67 per sq. ft.
Major Industrial			$35,930.62	per hectare	(e) x Col. (3) $14,540.33 per acre

Table I.7: Drainage DCC Rate Calculation

A: Drainage DCC Calculation (2031)					
Land Use		**Col. (1)**	**Col. (2)**	**Col. (3)**	**Col. (4) = (1) x (3)**
		Estimated New Development	**Unit**	**Equivalence Factor**	**Multiple**
Single Family Residential		2,412	lots	1	2,412
Duplex Residential		53	lots	2	106
Multi Family Residential					
	Townhouse	10,416	dwelling units	0.58	6,041
	Apartment	24,140	dwelling units	0.29	7,001
Commercial		1,327,373	square metres gross floor area	0.0032	4,248
Light Industrial		3,445.725	square metres gross floor area	0.0032	11,026
Major Industrial		428.80	hectares	22.5	9,648
				Total Equivalent Population	40,482 (a)

B: Unit Drainage DCC Calculation		
Net Drainage DCC Program Recoverable	$210,020,330	(b)
Existing DCC Reserve Monies	$2,268,198	(c)
Net Amount to be Paid by DCCs	$207,752,132	(d) = (b) - (c)
DCC per person	$5,131.99	(e) = (d)/(a)

C: Resulting Drainage DCCs					
Single Family Residential		$5,131.99	per lot	(e) x Col. (3)	
Duplex Residential		$10,263.98	per lot	(e) x Col. (3)	
Multi Family Residential	Townhouse	$2,976.55	per dwelling unit	(e) x Col. (3)	$2.20 per sq. ft.
	Apartment	$1,488.28	per dwelling unit	(e) x Col. (3)	$1.57 per sq. ft.
Commercial		$16.42	per square metre gross floor area	(e) x Col. (3)	$1.53 per sq. ft.
Light Industrial		$16.42	per square metre gross floor area	(e) x Col. (3)	$1.53 per sq. ft.
Major Industrial		$115,469.76	per hectare	(e) x Col. (3)	$46,728.08 per acre

Table I.8: Parkland Acquisition DCC Calculation

A: Parkland Acquisition Calculation (2031)					
Land Use	**Col. (1)**	**Col. (2)**	**Col. (3)**	**Col. (4) = (1) x (3)**	
	Estimated New Development	**Unit**	**Person per unit (residential)/ Equivalent Population/hectare (other land uses)**	**Multiple**	
Single Family Residential	2,412	lots	3.3	7,960	
Duplex Residential	53	lots	6	318	
Multi Family Residential					
Townhouse	10,416	dwelling units	2.9	30,206	
Apartment	24,140	dwelling units	2.1	50,694	
Commercial	1,327,373	square metres gross floor area	0.0045	5,973	
Light Industrial	3,445,725	square metres gross floor area	0.0045	15,506	
Major Industrial	429	hectares	4	1,715	
			Total Equivalent Population	112,372 (a)	
B: Unit Parkland Acquisition DCC Calculation					
Net Parkland DCC Program Recoverable		$315,962,198	(b)		
Existing DCC Reserve Monies		$5,768,721	(c)		
Net Amount to be Paid by DCCs		$310,193,477	(d) = (b) - (c)		
DCC per person		$2,760.41	(e) = (d)/(a)		
C: Resulting Parkland Acquisition DCCs					
Single Family Residential		$9,109.36	per lot	(e) x Col. (3)	
Duplex Residential		$16,562.48	per lot	(e) x Col. (3)	
Multi Family Residential	Townhouse	$8,005.20	per dwelling unit	(e) x Col. (3)	$5.93 per sq. ft.
	Apartment	$5,796.87	per dwelling unit	(e) x Col. (3)	$6.10 per sq. ft.
Commercial		$12.42	per square metre gross floor area	(e) x Col. (3)	$1.15 per sq. ft.
Light Industrial		$12.42	per square metre gross floor area	(e) x Col. (3)	$1.15 per sq. ft.
Major Industrial		$11,041.65	per hectare	(e) x Col. (3)	$4,468.31 per acre

Table I.9: Parkland Development DCC Rate Calculation

A: Park Development Calculation (2031)					
Land Use	**Col. (1)**	**Col. (2)**	**Col. (3)**	**Col. (4) = (1) x (3)**	
	Estimated New Development	**Unit**	**Person per unit (residential)/ Equivalent Population/hectare (other land uses)**	**Multiple**	
Single Family	2,412	lots	3.3	7,960	
Duplex Residential	53	lots	6	318	
Multi Family Residential					
Townhouse	10,416	dwelling units	2.9	30,206	
Apartment	24,140	dwelling units	2.1	50,694	
Commercial	1,327,373	square metres gross floor area	0.0045	5,973	
Light Industrial	3,445,725	square metres gross floor area	0.0045	15,506	
Major Industrial	429	hectares	4	1,715	
			Total Equivalent Population	112,372 (a)	
B: Unit Park Development DCC Calculation					
Net Parkland DCC Program Recoverable		$133,388,053	(b)		
Existing DCC Reserve Monies		$1,080,308	(c)		
Net Amount to be Paid by DCCs		$132,307,745	(d) = (b) - (c)		
DCC per person		$1,177.41	(e) = (d)/(a)		
C: Resulting Park Development DCCs					
Single Family Residential		$3,885.44	per lot	(e) x Col. (3)	
Duplex Residential		$7,064.44	per lot	(e) x Col. (3)	
Multi Family Residential	Townhouse	$3,414.48	per dwelling unit	(e) x Col. (3)	$2.53 per sq. ft.
	Apartment	$2,472.55	per dwelling unit	(e) x Col. (3)	$2.60 per sq. ft.
Commercial		$5.30	per square metre gross floor area	(e) x Col. (3)	$0.49 per sq. ft.
Light Industrial		$5.30	per square metre gross floor area	(e) x Col. (3)	$0.49 per sq. ft.
Major Industrial		$4,709.63	per hectare	(e) x Col. (3)	$1,905.88 per acre